Pathways to Open Educational Practices

Editors

Shironica P. Karunanayaka
Som Naidu

The Open University of Sri Lanka

Pathways to
Open Educational Practices

Editors

Shironica P. Karunanayaka

Som Naidu

The Open University of Sri Lanka

Copyright © The Open University of Sri Lanka, 2020

Except where otherwise noted, this work is licensed under the terms of the Creative Commons Attribution-Share Alike 4.0 International (CC BY-SA 4.0). To view a copy of this license, visit http://creativecommons.org/licenses/by-sa/4.0/ or send a letter to Creative Commons, 444 Castro Street, Suite 900, Mountain View, California, 94041, USA.

CC BY-SA

Pathways to Open Educational Practices

Shironica P. Karunanayaka and Som Naidu (Editors)

ISBN 978-955-23-1763-7

Printed and published by

The Open University of Sri Lanka, Nawala, Nugegoda, Sri Lanka

Contents

Foreword

Finding Your Pathway to Open Educational Practices

Curtis J. Bonk, Indiana University

As is evident to everyone turning on their phones or computers, the pathways to an education in the twenty-first century are amazingly diverse, rapidly growing, and increasingly free and open. It is this notion of openness in its many forms that beckoned me to interview a multitude of people with exciting and unusual stories of their open education quests for my book, "*The World is Open: How Web Technology is Revolutionizing Education*" (Bonk, 2009). At that time, there had been 40 years in the evolution of open universities, more than a decade of developments into open source software, and nearly a decade in the history of open courseware (OCW) and open educational resources (OER).

Today, there are new forms of openness in the air for the field of education with open educational services (e.g., tutoring, testing, feedback services, etc.) (Mulder, 2015) as well as open teaching practices and open pedagogy which some consider as being part of open educational practices (OEP) (Naidu, 2019). Ehlers (2011) defines OEP "as practices which support the (re)use and production of OER through institutional policies, promote innovative pedagogical models, and respect and empower learners as co-producers on their lifelong learning path." It is in such educational practices that OER springs to life and finds value and meaning in society.

This book is an attempt to help those wanting to understand, develop, and use OEP. In this volume, Karunanayaka and Naidu chronicle accounts of

research and development related to four massive open online courses (MOOCs) meant to build capacity around OEP. These particular MOOCs were designed as part of the "continuing professional development" of practitioners around the adoption of OER and OEP; hence, these are referred to as CPDMOOCs.

With more than 400 participants registered from 28 countries, of which 136 completed one or more of the CPDMOOCs offered, the potential for impact on the world community is immense. Of course, as mentioned, their primary goal was capacity building. Mishra and Kanwar (2015) insightfully argue that capacity building cannot simply be mandated through government policy development. As they point out, "Training on quality and OER development is central to the creation of additional OERs. In the absence of local capacity, OERs will only create consumers of external information or knowledge resources" (p. 125).

As each of the four CPDMOOCs was completed by the participants, the concept of OEP had a greater chance of being understood and thoughtfully utilized in other communities and countries. For many involved in this project, the experiences within these MOOCS was the very first time that they had heard of OER and this forced them to rethink the design of their classes and experiences. Some of the participants were now focused on the expandedness of their course resources (Lee & Bonk, 2013) and the usefulness of what already existed, whereas others honed in on the time required and technical resources involved in creating resources and artifacts to add to the global OER resource pool. Most participants in the CPDMOOCs, however, were clearly won over by the organization, structure, and utility of

the OER that they had discovered and employed. A few even admitted to being amazed.

In the midst of this project Karunanayaka, Naidu, and their colleagues made many crucial discoveries. Among them, they learned that those who complete the first assessment in a MOOC will strive to complete them all. That begs several key questions: What enticements are the most alluring and valuable to MOOC participants? And how does that value alter and shift with different topics or disciplines and types of MOOCs (i.e., cMOOCs xMOOCs, pdMOOCs, hybrid, etc.)? In addition, with my educational psychologist hat on, I ponder, does completion of the first assessment or unit positively impact the self-efficacy of MOOC learners (Bandura, 1977), thereby drawing them into further units? As these and other questions point out, much work remains related to motivation and assessment in MOOCs.

In this CPD programme, the goal was to create a more participatory, meaningful, reflective, collaborative, open, and innovative culture in terms of teaching and learning. These principles are both explicitly stated and implicitly connected. As you will soon discover, Karunanayaka, Naidu, and colleagues created an iterative refinement in the design, development, implementation, and evaluation process of the CPDMOOCs. They were able to design a series of MOOCs which encouraged learner engagement in their learning, reflection on their learning, application of their learning, exchanges with others about their learning, and monitoring of processes within their learning. As detailed in the following six chapters of this book, the project team was quite successful in this regard. In effect, due to the detailed documentation of all events, the framework that they followed can serve as a model or template for similar OEP efforts in other parts of the world.

One innovation that struck me was the use of scenario-based learning videos as a key resource of these MOOCs. Instead of content delivery or other backward facing attempts at mind stuffing, the designers, developers, and evaluators of these four MOOCs aimed to produce short videos that would transport the viewer into a series of real-world situations and challenges faced by practitioners. Unlike typical educational videos, the quality of the acting and overall design of these videos was deemed vital by the participants as they observed the model or vicariously learned from them (Bandura, 1986). In addition, the evaluation indicated that such videos should be short, understandable, natural, and engaging. Worth noting, these scenario-based videos were meant to be valuable enough to stand on their own.

Importantly, video, audio, and other media were also used to introduce the course and share resources. Effective pedagogical practices are documented in the various chapters by having the CPDMOOC participants discuss and reflect on their artifact creations and collaborative activities. Interview quotes and insights about such open pedagogical practices are embedded in most chapters along with pointed conclusions and shrewd suggestions.

As readers wind their way through this book, two things will become obvious. First, the participants in this initiative embedded support mechanisms for learners that relied on decades of seminal research in cognitive, social, and behavioral psychology as well as inroads in various strands and brands of constructivism (Bonk & Cunningham, 1998). Not only were they aware of the cognitively powerful benefits of scenario-based learning, Karunanayaka, Naidu, and their colleagues utilized a wealth of

other techniques with decades of psychological research support such as concepts maps, course maps, study maps, summary tables, and other visuals. In addition, introductory ice breakers, self-assessment reflection points (e.g. quizzes), and key course announcements, were among the other specific instructional methods that they utilized for further stimulation and guidance in the learning process. With this wide arsenal of strategic tools, these MOOC designers addressed diverse learner preferences and backgrounds with multimedia formats and multiple options purposefully intended to arouse interest but not overwhelm participants; or, as Tharp and Gallimore (1988) stated long ago in their award-winning book, such techniques are often employed to nudge, prod, and push learners to the outer edges of their skills and competencies, and, in turn, "rouse minds to life."

As one proceeds through the chapters of "*Pathways to Open Educational Practices*," what becomes increasingly clear is that Karunanayaka and Naidu distilled a huge amount of data into a set of activities and learning tactics that could and should be replicated and tested in other settings. Stated another way, as Tharp and Gallimore would have hoped, they are rousing minds to life in each step of the journey laid out in this book. Impressively, they built on the work of the foremost leaders in the field of technology-enhanced learning; specifically, Reeves, Anderson, Jonassen, Clark, Kozma, Mayer, Salomon, Scardamalia and Bereiter, Littlejohn, Reeves, Garrison, Moore, Siemens, Bates, Naidu, Gunawardena, Laurillard, and Merrill who are all referenced within.

The second take-away I had as I read through the chapters in this book was never explicitly mentioned by the authors. It relates to self-directed learning

(SDL) and the tools that foster SDL (e.g., tracking one's progress such as with progress indicators, offering self-assessments, embedding reflection questions, sending course reminders of activities and deadlines, making course announcements, helping learners set goals, generating optional materials, designing organizational aids, visuals, and other macro course structures, etc.) (Zhu & Bonk, 2019, 2020). As one reads through the pages in this book, it will become clear what types of design principles can be effective in engaging, challenging, and fostering curiosity among learners so as to increase course retention and completion. Suffice it to say, one could simply read this book for the learning and design principles and come away with an important set of skills. Additionally, one might learn how to motivate MOOC learners more effectively.

With this book, you will also learn how to conduct effective collaborative design-based research (DBR). By employing DBR, each chapter is like a weigh station or temporary stopping point to ponder what happened thus far in the journey to build pathways to capacity building in OEP. In effect, the course components must be inspected and properly weighed and evaluated after each segment or milestone of the journey. More specifically, with each MOOC, the project team paused to collect data using participant surveys and focus groups, learning logs and reflective journals, concept maps, and various forms of self-reflection. Additionally, discussion forum data were another source of information tapped into for vital planning and decision making. Without a doubt, this was a highly data-driven design and evaluation project.

At times, the chapter introductions, especially Chapter 3, provide the reader with a history of the field of online learning. These history lessons are

offered in a soft way that educate but do not confuse, overwhelm, or dominate. As part of such efforts, various frameworks, schemes, and models that have governed the online learning research landscape are introduced in this book, including Henri's (1992) coding scheme for analyzing online discourse and Garrison, Anderson, and Archer's (1999, 2001) Community of Inquiry (CoI) framework for examining cognitive presence, social presence, and teaching presence. In addition, assessment rubrics and schemes are provided to better understand the online discussion within the collaborative activities of the four MOOCs.

Karunanayaka, Naidu, and their colleagues also hope to foster self-regulated learning processes and behavior in MOOC participants. How do we foster learners' ability to monitor and evaluate strategies employed, ambitions and motivations, goal setting behaviors, strategic planning skills, and reflections on their learning as well as the ability to make sage learning adjustments when needed? Drawing on solid theoretical and empirical literature, Chapter 4 provides much guidance for the design of CPDMOOCs. For instance, they provide a framework in a summary table which includes specific tactics for implementation in a digital learning environment. The quotes from participants are particularly insightful in this chapter, perhaps because the psychology of these MOOC learners is on full display—their self-efficacy beliefs (Bandura, 1997) as a learner, proximal and distal goals, mastery goal orientations, and sense of belongingness, as well as their disappointments, grievances, and challenges.

Clearly, Karunanayaka, Naidu, and their team have embarked on a comprehensive and meticulously detailed exploration of capacity building for OEP. As might be expected, there are assorted pathways we can take to

the adoption of open educational practices. This book offers a multifaceted and highly collaborative one. Perhaps when reading the various chapters that lie ahead you will find your own unique pathway to OEP that is specific to your local context. Time now to enter the door to those possibilities and enjoy reading the remainder of this thought-provoking book.

Curt Bonk *is Professor of Instructional Systems Technology at Indiana University where he has published a dozen books, including his groundbreaking 2020 volume with Routledge, MOOCs and Open Education in the Global South. He has also authored The World Is Open, Empowering Online Learning, The Handbook of Blended Learning, Electronic Collaborators, Adding Some TEC-VARIETY which is free as an eBook (http://tec-variety.com/), and MOOCs and Open Education Around the World (http://www.moocsbook.com/). Professor Bonk has published 125 journal articles and over 60 book chapters on research related to various emerging learning technologies, online and blended learning, MOOCs and open education, and collaborative technology. In 2020, he was awarded the IU President's Award for Excellence in Teaching and Learning Technology. Curt can be contacted at cjbonk@indiana.edu and http://curtbonk.com/.*

References

Bandura, A. (1997). *Self-efficacy: The exercise of control.* W.H. Freeman.

Bandura, A. (1977). *Social learning theory*. Prentice Hall.

Bonk, C. J. (2009). *The world is open: How Web technology is revolutionizing education.* Jossey-Bass.

Bonk, C. J., & Cunningham, D. J. (1998). Searching for learner-centered, constructivist, and sociocultural components of collaborative educational learning tools. In C. J. Bonk, & K. S. King (Eds.), *Electronic collaborators: Learner-centered technologies for literacy, apprenticeship, and discourse* (pp. 25-50). Erlbaum.

Ehlers, U.-D. (2011). *Extending the territory: From open educational resources to open educational practices. Journal of Open, Flexible and Distance Learning, 15(2).* http://www.jofdl.nz/index.php/JOFDL/article/view/64/46

Garrison, D. R., Anderson, T., & Archer, W. (1999). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education, 2*(2-3), 87-105. https://doi.org/10.1016/S1096-7516(00)00016-6

Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. *American Journal of Distance Education*, *15*(1) 7−23. https://doi.org/10.1080/08923640109527071

Henri, F. (1992). Computer conferencing and content analysis. In A. Kaye (Ed.), *Collaborative learning through computer conferencing: The Najaden papers* (pp. 117-136). Springer-Verlag.

Lee, M. M., & Bonk, C. J. (2013). Through the words of experts: Cases of expanded classrooms using conferencing technology. *Language Facts*

and Perspectives, *31*, 107-137. https://pdfs.semanticscholar.org/1907/44921f754b0eb1221b66c14a2e48c79b9d20.pdf

Mishra, S., & Kanwar, A. (2015). Quality assurance for open educational resources. In C. J. Bonk, M. M. Lee, T. C. Reeves, & T. H. Reynolds, T. H. (Eds.), *MOOCs and open education around the world* (pp. 119-129). Routledge.

Mulder, F. (2015). Open(ing up) education for all…boosted by MOOCs? In C. J. Bonk, M. M. Lee, T. C. Reeves, & T. H. Reynolds, T. H. (Eds.), *MOOCs and open education around the world* (pp. xiii-xvii). Routledge.

Naidu, S. (2019). The idea of open education, *Distance Education, 40*(1), 1-4, https://doi.org.10.1080/01587919.2018.1564622

Tharp, R., & Gallimore, R. (1988). *Rousing minds to life: Teaching, learning, and schooling in social context*. Cambridge University Press.

Zhu, M., & Bonk, C. J. (2019). Designing MOOCs to facilitate participant self-directed learning: An analysis of instructor perspectives and practices. *International Journal of Self-Directed Learning*, *16*(2), 39-60. https://6c02e432-3b93-4c90-8218-8b8267d6b37b.filesusr.com/ugd/6c1db2_3ab135498618442abe908811fb68a1b2.pdf

Zhu, M., & Bonk, C. J. (2020). Technology tools and instructional strategies for designing and delivering MOOCs to facilitate self-monitoring of learners. *Journal of Learning for Development*, *7*(1), 31-45. https://jl4d.org/index.php/ejl4d/article/view/380/447

Preface

This book*, Pathways to Open Educational Practices,* is based on the experiences of participants in the development and offer of four Massive Open Online Courses (MOOCs) at the Open University of Sri Lanka (OUSL) on the adoption of Open Educational Practices. The development of these MOOCs and the associated research carried out by the authors is significant to the OUSL in several ways.

Firstly, these are the first set of MOOCs that were launched at OUSL. Since its conceptualization in 2008 by Dave Cormier, by the end of 2019, the MOOC portfolio worldwide has grown to include more than 13,500 courses offered by 900 universities around the world involving 110 million learners, excluding China (Shah, 2020). In 2019 alone, around 2,500 courses were launched by 450 universities with an increase of 27 million new learners across five platforms, Coursera, EdX, and Udacity from the USA, Future Learn from the UK and XuetangX from China, against the previous year figures (Shah, 2019). Further, another 10 million learners are registered with the Indian learning portal SWAYAM (Shah, 2019). With the development and offering of the four MOOCs, the OUSL too has joined this global movement, being the first university in Sri Lanka to do so.

The second aspect that is of significance about these MOOCs, is the subject matter – Open Educational Resources (OER) and Open Educational Practices (OEP). The aim of the four MOOCs that were developed is to enable the development of competencies among practitioners in the integration of OER

and the adoption of OEP. The concept of OER is relatively new in Sri Lanka. The OUSL being the premier Open and Distance Learning (ODL) institution in the country has taken the lead in popularizing and practicing adoption of OER in Sri Lanka. The University formulated its OER policy in 2015 and has taken steps to develop an OER repository which can be accessed through its website. In addition, the library of the university has created a web page where links for OER materials available in the web are given under relevant subject indexes. The University has also undertaken various other initiatives to popularize OER. As the message of OER spreads from the OUSL, it is our fervent hope that one day we will be able to develop a National Policy on OER for Sri Lanka.

The third significant aspect of this work is the diversity of the people who were involved in the development process. Resource persons from four different institutes and eight different specializations were involved in the design and development of these MOOCs. The eleven-member team consisted of eight OUSL academics across three Faculties namely, Education, Engineering Technology and Natural Sciences, and three members from outside of OUSL. Further, the team members comprised experienced, as well as early career researchers, along with doctoral students. We encourage this kind of collaboration across traditional boundaries to bring out the best in each one of us.

The associated research has covered topics and issues on capacity building around OEP, the use of scenario-based videos in MOOCs, learner interactions in peer- facilitated discussions, effects of instructional design strategies on self-regulation of learning, and learner perceptions on learning

resources and learner engagement with assessment activities. The contributions in this book map out pathways for the adoption and integration of OER and OEP in educational practices and to share these experiences with the broader community. We believe that though gaining knowledge is the first step to wisdom, sharing it is the first step to humanity.

> *In vain have you acquired knowledge - if you have not imparted it to others!* (*Deuteronomy Rabbah)*

We hope that the contents of this book will enrich and motivate its readers to integrate effective approaches to open educational strategies into their own professional practices.

S. A. Ariadurai

Vice-Chancellor, The Open University of Sri Lanka

July 2020, Colombo, Sri Lanka

References

Shah, D. (2019). *Online Degrees Slowdown: A Review of MOOC Stats and Trends in 2019.* Class Central. https://www.classcentral.com/report/moocs-stats-and-trends-2019/

Shah, D. (2020). *MOOCs are Back — Even Though They Never Left.* Class Central. https://www.classcentral.com/report/apparently-moocs-are-back/

Samuel Anbahan Ariadurai *is a Senior Professor and the current Vice Chancellor of the Open University of Sri Lanka (OUSL). He possesses a Doctor of Philosophy from University of Manchester Institute of Science and Technology, United Kingdom and has more than thirty years of experience in teaching, research, and academic administration at OUSL. His areas of specialization include Technical Textiles, Fabric Design and Mechanics, and Distance Education. Professor Ariadurai has more than fifty research publications and has supervised more than ten postgraduate research students. He has also authored thirty books as sole author and twenty books as co-author for distance learners in various areas of his expertise.*

orcid.org/0000-0002-3705-039X

About the Book

This book presents our experiences with the design, development and implementation of an online Continuing Professional Development (CPD) Programme for practitioners on their adoption of Open Educational Resources (OER) and Open Educational Practices (OEP). This programme took the form of a suite of four MOOCs (Massive Open Online Courses) that were offered by the Open University of Sri Lanka (OUSL) over 2017-2019 and with the support of the Commonwealth Educational Media Center for Asia (CEMCA).

The origins of this work extend back to an earlier initiative at OUSL carried out during 2014/2015 on capacity building of educators in the integration of OER in their teaching, also supported by CEMCA. This involved adaptation of the OER-based e-Learning (OEReL) course that was jointly developed and offered by CEMCA and Wawasan Open University (WOU) in 2014. The work reported in this book was carried out in two phases. Phase one comprised the design and development of the four courses (2017-2018); and Phase two comprised their implementation and evaluation (2018-2019). The research component of this work was carried out with support from the Committee on Research Advice on Distance Education (CRADE) at OUSL. The contents of this volume capture the experiences of the course team with various innovative aspects of the initiative.

Acknowledgements

This book is a product of the efforts and contributions of many. This includes foremost, CEMCA for the sponsorship of the project and its implementation, and the Vice-Chancellor and the Senior Management of the OUSL for offering institutional support. We are particularly grateful for the support of all contributors to the production and publication of this book, the invited commentators and Professor Curtis J. Bonk from Indiana University, for providing a Foreword to the book.

Shironica P. Karunanayaka and Som Naidu (Editors)

1

Capacity Building Around Open Educational Practices

Shironica P. Karunanayaka and Som Naidu

Introduction

Open educational practices are behaviors, approaches and activities that seek to afford the greatest opportunities for the greatest good. The idea of open education implies equality of opportunity, for without it there can be no real freedom or justice. This may include freedom from servitude due to unfair advantage and competition. As such, open education is a great leveler, because it enables to level the playing field and give everyone a fair go, and an equal opportunity to reach their potential. It is a public good and one that needs to be nurtured for the promotion of productive livelihoods, individuals, communities and societies.

The imperative to build capacity around Open Educational Practices (OEP) in Sri Lanka was triggered by the successful implementation of several research projects in the integration of Open Educational Resources (OER) (see Karunanayaka & Naidu, 2017; Karunanayaka & Naidu, 2016; Karunanayaka et al., 2015; Karunanayaka & Naidu, 2014; Karunanayaka, 2014). These projects revealed that OEP including OER are in their early stages of development in Sri Lanka, and that increased sensitization around these concepts would improve their adoption in the education system. A Massive Open Online Course (MOOC) on OEP seemed like an appropriate

strategy for achieving this kind of widespread immersion and enculturation. Four MOOCs were developed as part of this initiative. The key purpose of this suite of MOOCs was to build capacity among practitioners as part of their continuing professional development (CPD).

As such, these MOOCs were called "CPDMOOCs on OER and OEP", because their goal was to support practitioners adopt OER and OEP in their professional practice. Topics covered included the understanding of the concept of OER; finding, identifying, and creating OER; integrating OER and adopting OEP. These MOOCs sought to support practitioners move beyond a mere focus on accessing OER, towards the adoption of more participatory and open culture around learning and teaching.

The design, development, implementation and evaluation of this project began at OUSL in 2017 with the support of CEMCA (the Commonwealth Educational Media Center for Asia). This was a significant development, as it was the first MOOC initiative in the Sri Lankan Higher Education System. Phase 1 of the project involved the design and development of four CPDMOOCs, which was completed in June 2018 (See Karunanayaka, 2018). Phase 2 of the Project, which was on implementation and evaluation of the CPDMOOCs, was completed in May 2019 (See Karunanayaka, 2019). The Project Team comprised eleven members from a variety of disciplinary backgrounds such as Education, Information Technology, Engineering, Physics and Chemistry, with a common interest in promoting open, online and flexible learning.

The design and development of these CPDMOOCs comprised a significant deviation from contemporary educational practices at OUSL. A design-based

approach was adopted where the researchers collaboratively engaged in a contextualized, process-oriented and a self-reflective inquiry on how best to design an effective CPDMOOC on OER and OEP. Phase one of the project comprised the development of four MOOCs on the following topics:
1) *Understanding OER*; 2) *Searching and Evaluating OER*; 3) *Adapting and Creating OER*; 4) *Integrating OER and Adopting OEP*. Phase two comprised the implementation and evaluation of these four MOOCs.

Adoption of Open Educational Practices

The adoption of OEP involves scholarly practices that are participatory, collaborative and innovative (Cape Town Open Education Declaration, 2007). OEP essentially represent collaboration and co-operation through open sharing of resources, and co-construction of knowledge. Diffusion of OEP within a specific context will involve two aspects: how individuals practice openness, and how they involve with others through collaboration and shared open practices (Ehlers, 2011). The degree of openness exhibited will also depend on the culture and context of the individuals involved.

Adoption of OEP by individuals can be truly effective if it reflects changes in their thinking and actions. This requires capacity development around OEP, which is best achieved through a strategic, systematic design of appropriate learning experiences. Careful design of such learning experiences has the potential to shift perspectives and practices towards OEP (Karunanayaka & Naidu, 2018; Naidu & Karunanayaka, 2015; Naidu & Karunanayaka, 2014).

While MOOCs have the potential to support the professional development of practitioners, most MOOCs are not designed to encourage the kind of

self-regulated learning that is required for professional development of practitioners (Littlejohn & Milligan, 2015). To be effective, these MOOCs have to be designed in such a way such that they are authentic and meaningful for practitioners. Beyond this, the basic requirements of sound online learning experience design apply. Furthermore, such MOOCs should, not only promote independent learning but also provide an opportunity for learners to connect, collaborate, and engage in the learning process.

A scenario-based approach to learning (SBL) was adopted in the design of the four CPDMOOCs. This is an approach that is grounded in constructivist pedagogy (Jonassen et al., 1999) where learners are placed in real world learning settings to provide the context and scaffolding for all their learning activities (Naidu et al., 2007). The SBL approach comprises an authentic learning scenario, learning activities and assessment tasks, where learners assume key roles in which they are confronted with various challenges and asked to demonstrate developed competencies.

The process involves identifying key competencies, formulating specific learning outcomes for the competencies that are to be developed, creating learning scenarios reflecting real life and challenging situations and developing a variety of learning and assessment tasks supported with OER integration as learning resources (see Fig. 1.1).

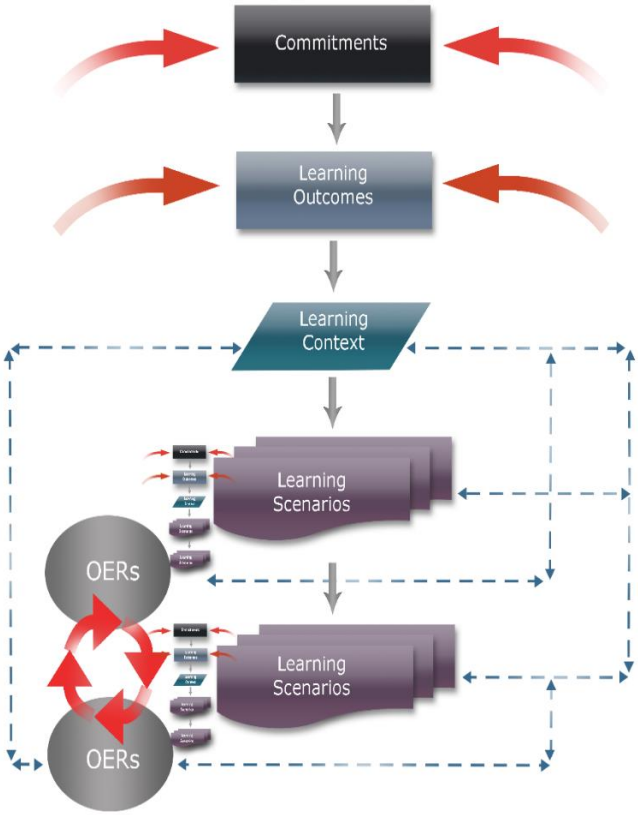

Figure 1.1: Learning Engine Framework
(Source: Naidu & Karunanayaka, 2014, p.8)

Nine steps derived from the first principles of instruction (Merrill, 2002), and good practices of online learning experience design (Anderson, 2008) also provided useful insights in the design process of the CPDMOOCs. (See Table 1.1).

Table 1.1: Design strategies of the CPDMOOCs

Guiding principles for e^3-teaching (Source: Naidu, 2010)	**Design strategies of the CPDMOOCs**
1. Teachers and learners are clear about the learning outcomes.	Specific learning outcomes formulated for each CPDMOOC.
2. Learning is situated within a meaningful context and within the culture and the community in which learners live and work.	Learning scenarios (in the form of videos) created for each CPDMOOC, reflecting real life situations of practitioners.
3. Learners are engaged in pursuing and solving meaningful and real-world challenges and problems, and where they have opportunities to work on a variety of problems and tasks of increasing complexity with timely and useful feedback.	Learning activities created as real-life challenges within the scenarios; A variety of activities with increased complexity embedded; OER integrated as learning resources; Peer feedback and tutor feedback mechanisms built in.
4. The learning activities in these learning situations are clearly articulated and explicitly linked to knowledge and skills already mastered.	Three types of learning/assessment tasks - a creation; a collaborative activity and a reflective activity, were provided, linked with the existing knowledge/skills of learners.
5. Learners, while working on learning situations, are required to think for themselves by reflecting in and upon their actions and regulating their own performance.	Learning/assessment tasks designed to encourage reflecting on their actions; Requirement to maintain a reflective journal, to promote reflective practice.
6. The development of understanding is promoted as a social process with learners acting upon authentic situations in groups and with dialogue, discussion and debate.	Peer-facilitated discussion forum to support co-construction of knowledge, community building and social learning.
7. The assessment of learning outcomes is closely aligned with the learning context.	Constructive alignment of learning/assessment tasks with the intended learning outcomes.
8. The assessment of learning outcomes is linked to meaningful problems and tasks, and aimed at helping students further develop their knowledge, skills and problem-solving abilities.	The learning activities, directly linked with the authentic learning scenario, function as the assessment tasks- individual/ collaborative/ reflective activities.
9. The assessment of learning outcomes is designed to develop self-regulatory and meta-cognitive skills.	Assessments and assessment rubrics created to facilitate development of self-regulatory and meta-cognitive skills among learners.

Methodological Framework

The design, development, implementation and evaluation of the CPDMOOCs adopted a design-based research (DBR) approach (Reeves, 2006). The DBR process comprises four phases: analysis of existing levels of practices by researchers and practitioners; designing, developing and implementing solutions as appropriate; testing and refining solutions in practice; and reflection by researchers and practitioners on authentic problems to produce design principles and enhance solution implementation (See Fig. 1.2).

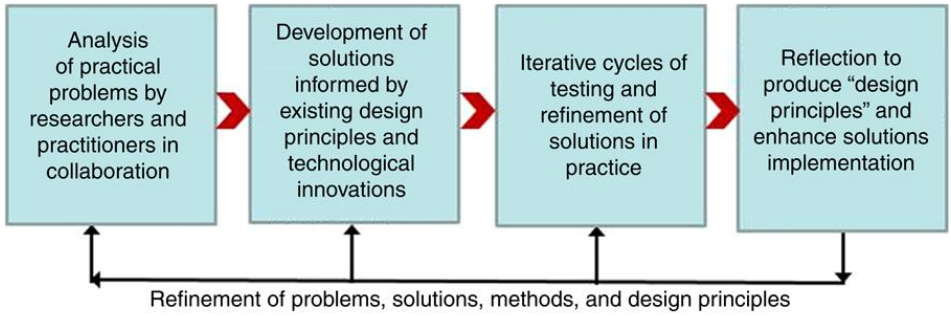

Figure 1.2: Design-based Research Approach (Adapted from: Reeves, 2006)

Design, Development, Implementation and Evaluation Process

The design, development, implementation and evaluation processes were planned and carried out in accordance with the conceptual and methodological frameworks adopted in the project (see Table 1.2).

Table 1.2: Design, development, implementation and evaluation process

Stages of the DBR approach	Specific Activities
Stage 1: Analysis of the problem and existing practices by researchers and practitioners in collaboration.	• Review existing material in relation to OER-based eLearning (OEReL) course of OUSL and identify how to revise, refine and re-develop its modules as MOOCs. • Identify desirable design strategies to be adopted in the CPDMOOCs, based on prior experiences and through a comprehensive review of literature on good principles of online learning and MOOCs.
Stage 2: Development of solutions informed by existing design principles and technological innovations	• Development of design strategies as a solution to address the key research problem "How best to design an effective CPDMOOC on OER and OEP?" • Designing effective, efficient and engaging online learning experiences in the four CPDMOOCs, in accordance with the SBL pedagogical approach, supported with relevant theoretical constructs. • Creating video-based learning resources including four Scenario-based Videos (SBV), three Resource Videos and one Introductory Video • Development of the four CPDMOOCs on OER and OEP in Moodle LMS
Stage 3: Iterative cycles of testing and refinement of solutions in practice	• Implementation of the four CPDMOOCs (each CPDMOOC in two rounds) • Conduct of a Progress-Review Workshop • Continuous evaluation of learner participation in the CPDMOOCs and learner feedback analysis
Stage 4: Reflection to produce design principles and enhance solution implementation	• Continuous evaluation of learner participation in the CPDMOOCs and learner feedback analysis • Conduct of Evaluation Workshops • Compilation of the content of CPDMOOCs to be published • Research dissemination activities

The four MOOCs focused on the integration of OER and the adoption of OEP. The overall key competency expected to be developed by the learners was, the ability to integrate OER and adopt OEP in professional practice. Specific learning outcomes for each CPDMOOC were formulated in line with this key competency (see Table 1.3).

Table 1.3: Key Competency and Learning Outcomes of the CPDMOOCs

CPDMOOCs on the Adoption of OER and OEP	
Aim: To develop competencies in the integration of OER and adoption of OEP among practitioners	
Key Competency: Ability to integrate OER and adopt OEP in professional practice	
CPDMOOCs	**Learning Outcomes** This CPDMOOC will enable learners to;
CPDMOOC 1: Understanding OER	1. Explain the concept of OER.
	2. Identify different license types for OER for specific needs.
CPDMOOC 2: Searching and Evaluating OER	1. Search for different types of OER using common search engines.
	2. Evaluate OER for their quality and suitability.
CPDMOOC 3: Adapting and Creating OER	1. Adapt existing OER to meet different purposes.
	2. Create different types of OER.
CPDMOOC 4: Integrating OER and Adopting OEP	1. Develop a plan to integrate OER in professional practice.
	2. Devise strategies to adopt OEP in professional practice.

These MOOCs were carefully designed to help practitioners develop competencies in the adoption of OER and OEP and meet challenges that they

are likely to be facing in their professional contexts. The key purpose of this exercise was to promote practitioner engagement with OER and OEP.

Key design features of the suite of MOOCs comprised:

1. Scenario-based learning which situated participants in authentic learning scenarios that enable them to build new competencies by engaging in a series of challenging tasks;
2. Integration of subject related OER as the key learning resources to support the participants to engage in learning and assessment activities.
3. Creation of the open, online learning environment in Moodle LMS for technological affordance.

Several innovative design features were incorporated in the development of the MOOCs. In accordance with the SBL approach, the learning scenarios developed were presented in short video form, as opposed to commonly used video-based lectures in most contemporary MOOCs. These scenario-based videos (SBV) were used to activate learning by gaining attention and situating learners in the learning context. Each video is goal-based in which the role to be played by the learner is presented as a challenge.

Learning and Assessment Tasks

Three interrelated learning activities were designed, addressing three different aspects:

1. *Creation* - The first learning activity is an individual task in the form of a creation of an artefact, to promote creative learning.

2. *Collaboration* - The second task requires sharing of their creation in the peer-facilitated discussion forum, to receive and provide peer feedback, encouraging collaborative learning and co-construction of knowledge.
3. *Reflection* - The third and the final task is writing of a self-reflection about their learning experience, which promotes reflective learning and self-regulated learning.

These activities also served as assessment tasks, for which assessment rubrics were created and shared with learners.

Learning Resources

To support learner engagement in the learning/assessment tasks, various forms of carefully selected OER were integrated. These offered relevant and specific content to support knowledge construction of learners, during the learning activities and assessment tasks.

The following considerations were made in the OER integration:

- Selection of OER that are either in the Public Domain or released with Creative Commons licenses CC BY or CC BY-SA, in order to be compatible with the CC BY-SA license of the CPDMOOCs.
- Provide a mix of media types – text, graphics, animations, audio and video, catering to different learning styles.
- Provide most relevant materials as Essential Learning Resources and other materials as Additional Learning Resources
- Provide a brief description about each OER to further support learners.

Learner Support

Adequate learner support mechanism was built-in and ensured throughout, using several strategies:

- An Introductory video was incorporated to orient the learners.
- Clear guidelines were provided in a user-friendly and motivating manner, using simple text, graphics, links, summarised tables, course map and study maps.
- The learner-centred Scenario-based Learning (SBL) approach supported situating practitioners in solving real life challenges.
- Self-Assessment Quizzes enabled learners to self-evaluate their prior knowledge.
- The Announcements Forum provided continuous instructions and guidance to learners.
- The Self-Introductions Forum provided an icebreaker for learners.
- The Q/A Forum provided a space for learners to add questions/ideas/suggestions and provide peer-assistance.
- Provision of multiple options in learning and assessment tasks catered to diverse learner needs.
- Provision of varied multimedia formats in learning resources catered to diverse learning styles.
- Learning Resources were categorized, and provided with a brief description, for easy reference.
- Assessment criteria were shared with the learners through Assessment Rubrics.

Implementation and Evaluation of the MOOCs

The four CPDMOOCs were launched on 3rd October 2018. Each CPDMOOC was of 04 weeks' duration, with a week's break in between each round. Two CPDMOOCs were implemented at a time, in parallel, allowing more flexibility for learners to register and follow the courses according to their needs.

The four (04) CPDMOOCs were implemented (each CPDMOOC in two rounds) as indicated in Table 1.4.

Table 1.4: Implementation Rounds of the CPDMOOCs

CPDMOOC	Round 1	Round 2
Understanding OER	19 Oct. 2018 – 16 Nov. 2018	01 Feb. 2019 – 01 March 2019
Searching and Evaluating OER	19 Oct. 2018 – 16 Nov. 2018	23 Nov. 2018 – 21 Dec. 2018
Creating and Adapting OER	23 Nov. 2018 – 21 Dec. 2018	28 Dec. 2018 – 25 Jan. 2019
Integrating OER and Adopting OEP	28 Dec. 2018 – 25 Jan. 2019	01 Feb. 2019 – 01 March 2019

Participants

Initially, 319 participants, representing 28 countries registered in the CPDMOOCs. Subsequently, more numbers registered in different rounds of the CPDMOOCs. Altogether, 417 participants registered in all four rounds, and 136 participants have completed who were awarded with digital badges

(either “Achiever” or “Participant” badges). Table 1.5 indicates a summary of the number of participants registered and successfully completed in each round of each CPDMOOC.

Table 1.5: Registered and Completed Numbers in CPDMOOCs

ROUND	**1**		**2**		**3**		**4**		**TOTAL**
CPDMOOC	**1-1**	**2-1**	**2-2**	**3-1**	**3-2**	**4-1**	**4-2**	**1-2**	
Total Number Registered	183	46	53	31	39	19	20	26	**417**
Total Number Completed	57	12	18	13	13	06	13	04	**136**
Percentage Completed	31.1	26.1	34.0	41.9	33.3	31.6	65.0	15.4	**32.6**

Despite the initial number of registrations to the CPDMOOCs programme, the number of participants who continued with learning and successfully completed the courses in each round of CPDMOOCs was not very high as expected. However, the overall completion rate (32.6%) could be considered quite satisfactory, when compared with the typical trend of low completion rates generally observed in MOOCs.

Evaluation

A wide range of approaches and instruments were used to collect data from participants. These included concept mapping, self-reflections, focus group discussions, questionnaire surveys, learner logs and analysis of assessments.

- *Concept Mapping* – Concept mapping was used as a strategy to visualize the concept formation by organizing and representing relationships between them (Novak & Cañas, 2007). This helped the research team in planning the structure of the CPDMOOCs.
- *Self-Reflections* – The research team engaged in writing self-reflections at various stages of the MOOC design and development process, guided by answering three questions- 'What?' 'So, what?' and 'Now what?' (Rolfe et al., 2001).
- *Focus Group Discussions* – Focus group discussions among research team were held at the interactive workshops.
- *Learner Logs in Moodle LMS* - Learner logs extracted from the Moodle Learning Management System (LMS) enabled evaluation of learner participation in the CPDMOOCs.
- *Reflective Journals* – Learners maintained reflective journals, reflecting on their learning experiences.
- *Learning Experience Surveys* **-** Questionnaire Surveys conducted at the end of each CPD MOOC provided learner feedback on their experiences, under several aspects. Qualitative feedback was also obtained via open-ended questions in the surveys.
- *OEP-Impact Evaluation Index* – This was used to capture the learners' existing degrees of OEP, in terms of perceptions, perspectives and practices, prior to the learning experiences in each of the CPDMOOCs.
- *Analysis of Assessments* – Content analysis of the three types of assessments – created artefacts, forum discussions and self-reflections provided data on learner progress and competency development.

Lessons Learned and Way Forward

Although access to open educational resources is growing, the adoption of open educational practices remains patchy. Open educational practice is so much more than the use of OER. Its adoption requires a radical shift in mindsets about what comprises intellectual property, who owns it, and how it can be shared for the empowerment of individuals and societies. For without such a radical shift, global aspirations such as United Nation's 'Education for All' agenda will remain pipe dreams.

The implications of this shift in mindsets are especially potent in resource-poor educational contexts. Our goal in this project has been to build capacity around open educational practices among the widest group of people. The development and use of a suite of MOOCs seemed like the best approach to meeting such a challenge. But we were keen to develop MOOCs that are more than a resource platter. We were keen to develop MOOCs that not only met best practices in online learning experience design, but those that made innovative use of the affordances of the technology.

One of the major innovations in the project has been the use of videos for the articulation of the learning context and the challenges they posed for the learner in that context. Our intention here has been to help participants engage with open educational practices and how these can help solve authentic learning and teaching challenges. The contributions in this book are reflections of the team members as they engaged with the challenges this posed for them and the lessons learned. We hope you find these insights useful.

Shironica P. Karunanayaka *is a Professor in Educational Technology at the Open University of Sri Lanka (OUSL). She is the current Dean of the Faculty of Education and has been an academic at OUSL since 1993. Professor Karunanayaka holds a first class in the Bachelor's Degree in Science from the OUSL, the Post Graduate Diploma in Education from the University of Colombo and the Degree of Doctor of Education from the University of Wollongong, Australia, specializing in Information Technology in Education and Training. Her key research focus areas include Information and Communication Technologies in Education, Open and Distance Learning, Learning Experience Design, Open Educational Resources and Open Educational Practices.* orcid.org/0000-0003-1995-8828

Som Naidu *is currently Pro Vice-Chancellor Flexible Learning, and Director of the Centre for Flexible Learning at the University of the South Pacific. Dr. Naidu possesses undergraduate qualifications in Education from the University of Waikato in New Zealand, and graduate qualifications in Educational Technology from Concordia University, Canada. A former president of the Open and Distance Learning Association of Australia, Dr. Naidu has served as executive editor of its journal Distance Education since 1997. In May 2014 the Open University of Sri Lanka awarded Dr. Naidu a D.Litt. (Honoris Causa) in recognition of his extensive contribution to the field of open, flexible, distance and e-learning both regionally and internationally.* orcid.org/0000-0002-7480-8120

References

Anderson, T. (2008). Towards a theory of online learning. In T. Anderson (Ed.), *The theory and practice of online learning* (2nd ed., pp. 45–74). Athabasca University Press. http://biblioteca.ucv.cl/site/colecciones/manuales_u/99Z_Anderson_2008-Theory_and_Practice_of_Online_Learning.pdf

Cape Town Open Education Declaration. (2007). *Cape Town open education declaration: Unlocking the promise of open educational resources*. http://www.capetowndeclaration.org/read-the-declaration

Ehlers, U-D. (2011). Extending the territory: From open educational resources to open educational practices. *Journal of Open, Flexible, and Distance Learning*, *15*(2), 1–10. http://www.jofdl.nz/index.php/JOFDL/article/view/64/46

Jonassen, D., Peck, K., & Wilson, B. (1999). *Learning with technology: A constructivist perspective*. Merrill.

Karunanayaka, S., & Naidu, S. (2017). Impact of integrating OER in teacher education at the Open University of Sri Lanka. In C. Hodgkinson-Williams & P. B. Arinto (Eds.), *Adoption and impact of OER in the Global South* (pp. 459–498). African Minds, International Development Research Centre & Research on Open Educational Resources for Development. http://doi.org/10.5281/zenodo.1094860

Karunanayaka, S., & Naidu, S. (Eds.) (2014). *Integrating OER in Educational Practice: Practitioner Stories*. The Open University of Sri Lanka. http://www.ou.ac.lk/home/images/OUSL/publications/intergratingOERinEducationalPractice.pdf

Karunanayaka, S., & Naidu, S. (Eds.) (2016). *Dreamweaving Open Educational Practices*. The Open University of Sri Lanka. http://www.ou.ac.lk/home/images/OUSL/publications/Dreamweaving%20Open%20Educational%20Practices.pdf

Karunanayaka, S. (2014). Open University of Sri Lanka –Integrating OER in a Teacher Education Course. In S. Naidu & S. Mishra (Eds). *Case Studies on OER-based eLearning* (pp. 1-10). CEMCA. http://oasis.col.org/bitstream/handle/11599/561/CaseStudies_OER-based_eLearning.pdf

Karunanayaka, S. P. (2018). *Design, Development, Implementation and Evaluation of Massive Open Online Courses for Continuing Professional Development (CPDMOOCs) on Adoption of Open Educational Resources (OER) and Open Educational Practices (OEP) – A Design-based Capacity Development Initiative – Phase 1 – 2017-2018*. Project Report - CEMCA. http://bit.ly/OUSLCPDMOOCsReport1

Karunanayaka, S. P. (2019). *Design, Development, Implementation and Evaluation of Massive Open Online Courses for Continuing Professional Development (CPDMOOCs) on Adoption of Open Educational Resources (OER) and Open Educational Practices (OEP) – A Design-based Capacity Development Initiative – Phase 2 – 2018-2019*. Project Report - CEMCA. http://bit.ly/OUSLCPDMOOCsReport2

Karunanayaka, S. P., & Naidu, S. (2018). Designing capacity building of educators in open educational resources integration leads to transformational change. *Distance Education*, *39*(1), 87–109. https://doi.org/10.1080/01587919.2017.1413933

Karunanayaka, S. P., Naidu, S., Rajendra, J. C. N., & Ariadurai, S. A. (2018). Designing continuing professional development MOOCs to promote the adoption of OER and OEP. *Open Praxis*, *10*(2), 179–190. https://doi.org/10.5944/openpraxis.10.2.826

Karunanayaka, S., Naidu, S., Rajendra, J.C.N., & Ratnayake, H.U.W. (2015). From OER to OEP: Shifting Practitioner Perspectives and Practices with Innovative Learning Experience Design. *Open Praxis, 7*(4), 339–350. https://doi.org/10.5944/openpraxis.7.4.252

Littlejohn, A., & Milligan, C. (2015). Designing MOOCs for professional learners: Tools and patterns to encourage self-regulated learning. *eLearning Papers*, 42, Article 4. http://oro.open.ac.uk/46385/

Merrill, M.D. (2002). First principles of instruction. *Educational Technology Research & Development*, *50*(3), 43–59.

Naidu, S., & Karunanayaka, S. P. (2015). *Impacts of OER: What difference does it make & how?* [Paper presentation]. International Conference on Distance Education (ICDE), 14-16 October 2015, Sun City, South Africa.

Naidu, S. (2010). Using scenario-based learning to promote situated learning and develop professional knowledge. In E. P. Errington (Ed.), *Preparing graduates for the professions using scenario-based learning* (pp. 39–49). Post Pressed.

Naidu, S., & Karunanayaka, S. (2014). Engines of education: Integrating OER in learning and Teaching. In S. Karunanayaka & S. Naidu (Eds.), *Integrating OER in educational practice: Practitioner stories* (pp. 3–22). The Open University of Sri Lanka. http://www.ou.ac.lk/home/images/OUSL/publications/intergratingOERinEducationalPractice.pdf

Naidu, S., Menon, M., Gunawardena, C., Lekamge, D., & Karunanayaka, S. (2007). How can scenario-based learning engender and promote reflective practice in online and distance education? In M. Spector (Ed.), *Finding your online voice: Stories told by experienced online educators* (pp. 53–72). Lawrence Erlbaum Associates, Inc.

Novak, J. D., & Cañas, A. J. (2007). Theoretical origins of concept maps, how to construct them, and uses in education. *Reflecting Education*, *3*(1), 29–42. https://www.researchgate.net/publication/228761562_Theoretical_origins_of_concept_maps_how_to_construct_them_and_uses_in_education

Reeves, T. C. (2006). Design research from a technology perspective. In J. van den Akker, K. Gravemeijer, S. McKenney & N. Nieveen (Eds.), *Educational design research* (pp. 52–66). Routledge. http://www.fisme.science.uu.nl/publicaties/literatuur/EducationalDesignResearch.pdf#page=102

Rolfe, G., Freshwater, D., & Jasper, M. (2001). *Critical reflection in nursing and the helping professions: a user's guide*. Palgrave Macmillan.

2

The Use of Scenario-based Videos in MOOCs

I. A. Premaratne and K. G. S. K. Perera

Introduction

Scenario Based Videos (SBV) provide a novel approach to the use of videos in Massive Open Online Courses (MOOCs). Unlike conventional lecture-based educational videos, SBVs are not designed to deliver subject matter. Instead, these videos visualize the real-life scenarios by means of a play, and trigger the learners start learning by posing a challenge. This chapter discusses the impact of the use of SBVs in MOOCs. We first summarize the environment of the videos which are included as learning scenarios in MOOCs. Then we discuss the nature of their production including both pre- and post-production stages.

Four CPDMOOCs were designed to develop capacity among professionals in adapting OER and adopting OEP. A scenario-based learning approach was used to design the learning experiences. Since the MOOC development team expected participants from different professions as learners, it was a challenging task to develop learning scenarios in the MOOCs to suit diverse learner needs. Our main concern was to maintain authenticity in the scenarios, in order to make them more realistic to the learners. Considering these facts, the team decided to introduce videos as the learning scenarios. Accordingly, the context of the scenario was to be visualized with a video in

each CPDMOOC, and four short videos were created for this purpose. These videos were termed “Scenario-based Videos” (SBV).

Since the concept of SBV had been introduced as a novel strategy in a MOOC environment, it was important to investigate how effective this concept was, to support learners engage in scenario-based learning. This study focused on finding out the effect of SBV in supporting MOOC learners to engage in the scenario-based learning experience. The findings of this study would be helpful for future MOOC developers to adopt the SBV concept with necessary modifications.

Review of Literature

Instructionally Sound Videos

Video is a powerful learning aid, when produced based on sound instructional and multimedia principles and best practices. Videos help the learners to move into scenarios which are physically impossible to visit, visualize complex concepts, use simulations, scale up or down the time scale to see various processes and understand procedures. According to multimedia principles of learning (Mayer, 2002), use of animated graphics or videos are powerful learning aids over text-based material. Various forms of instructional videos are constantly produced to support learning. A popular repository of such videos is the YouTube channel. Videos in YouTube may not be usually produced following strict instructional and multimedia learning design principles. Often, it is observed that a wide range of video formats are available from documentaries to “how to do it” types. However,

learners still find them helpful in their learning, even though the contributors may not necessarily be educationists and the products may not be screened and evaluated before releasing on the internet (Gumienny, 2018).

The impact of video on student learning and student engagement is well-researched. For instance, a study conducted by Zahn et al., (2010) using 234 secondary school students, found that advanced digital video technologies could support cognitive, action-related and socio-cognitive processes of students who performed complex visual design tasks in history lessons even when the explicit instructional guidance was limited. However, it was found that students had spent less time on planning and evaluation though they were much engaged in the use of different technologies. Less time on planning would render the use of metaphors in the instruction less utilized. An experimental research conducted by Antonija et al., (2017) on the effect of the use of video on learning of PowerPoint skills of engineering students found that learners with whom a constructive approach was used (eg. commenting on videos and rating comments) performed significantly better than those who only watched videos. Further, research on the use of educational videos in higher education has identified its significance as an important content-delivery tool in online and blended modes, providing great benefits to both teachers and learners, in many contexts (Brame, 2016; Carmichael et al., 2018).

Use of videos could be either limited to trigger the learning or used as a visual aid throughout the learning process. However, retention of knowledge may not be improved by using videos, since just viewing them is a passive experience and learners may not attempt to consolidate the

gained knowledge and transfer the knowledge from short-term memory to long-term memory (Mor & Warburton, 2016). Hence, it is important to consider how to encourage user engagement when integrating videos into the learning process.

User Engagement in Instructional Videos

Most videos in online courses are observed to be either lectures or tutorials. Further analysis lead to categorizing instructional videos into several formats such as, PowerPoint style presentations with background narration, screen recording on how to use software or programming lessons, Khan-style videos (http://www.youtube.com/user/khanacademy/about.) i.e. video capture of a teacher's use of blackboard in teaching, recording of a teaching in a classroom, a studio recording of a lecture without audience and close-up of a lecture (talking-head) etc. Some instructional videos are produced as a combination of these formats (Guo et al., 2014).

User engagement with the video is a necessary requirement for learning, although it is not sufficient to ensure a better learning effect. Several factors determine effective user engagement with the videos such as the length, format of instruction or the style of the video, number of words uttered per minute, real characters or cartoons and technical quality…etc. However, over-engagement is to be avoided in order to maintain a balance between the time allocation for watching videos and carrying out the learning tasks (Brame, 2015).

Fadde and Sullivan (2013), in their quasi-experimental study, used two interactive video modes, Video Annotation and Guided Video Viewing, to

develop preservice teachers' (n=63) classroom behavior. Both modes of video had recordings of authentic classroom teaching of near peers of the participants with annotations of experts' comments. The comments of video annotations were shown to the participants only after they had made their own comments whereas in the other mode, comments were available throughout the video viewing. For baseline purposes a control group was used without a video. Although the effects were not significantly different on ANOVA, the t-test indicated a significant difference in the effect of guided video over the control group.

Results of an experimental research conducted by Cronin (1994) established that there was a positive effect of interactive video instructions on constructing speaking outlines or developing key ideas based on students' learning and formative evaluations of the learning experience. Ninety-one college students at a middle-sized, comprehensive university served as the sample. However, further research is required to isolate the relative impact of the combined instructional messages and strategies used in this study.

Scenario-Based Videos in Learning

It is an accepted fact that videos can be created as powerful and flexible instructional material capable of offering rich learning experiences (Franzoni, Ceballos & Rubio, 2013). The information to be delivered can be coded as content of a video and these could also be scenario-based. Scenarios are integral parts of human lives (Schank et al., 1999). Scenario-based videos (SBV) developed with scenario-based learning in mind, offer good opportunities for problem-based and experiential learning environments.

Scenario Based Learning (SBL) is an effective strategy to design meaningful learning experiences (Naidu et al., 2007). Learner engagement is enhanced in SBL since it represents real life situations. It provides the learner with a comfortable learning environment and helps getting clarifications for the results of learner actions (Pandey, 2018). SBL is based on situated learning theory (Lave & Wenger, 1991), and promotes learning in context by simulating authentic learning settings (Ireland et al., 2013) which can be implemented through SBV.

Learning scenarios should be corresponding with the subject matter and the intended learning outcomes. These should be closer to real-life experiences of the learners to ensure triggering of their engagement in the learning process (Naidu et al., 2007). Further, scenarios should offer challenging activities and guidance for learning while arousing learner curiosity and opportunities for practice and exploration (Avcı & Bayrak, 2013). In order to keep learners engaged in learning, Gutierrez (2017) suggests five rules for creating scenarios in e-learning: (a) Identification of learning outcomes, (b) Creation of realistic characters, (c) Narration of a story, (d) Being emotional and (e) Arousal of learner curiosity to learn more.

Scenario-based videos can have a triggering effect on learning. In educational conditions, a 'trigger' is used to stimulate the students' motivation and support their learning. The trigger can be presented in different ways, such as video, slides, computer games, puzzles, written information, problems, and so on (Siklander et al., 2017). A literature review conducted by Sun and Siklander (2018) revealed three important aspects related to key points of interest in triggering of learning: (a) scaffolding, e.g.,

teacher–student interaction and teacher intervention and support, (b) collaboration, including face-to-face and online collaborative learning, and (c) perceived ease of use, relating to the attitude towards digital technology use in the learning activities.

A scenario can also be an effective pathway into subject matter that is complex or uninteresting. Scenarios usually give no judgment, but they lead the learner into learning, prompting some self-reflection and prefacing the learner for the content to follow (Karaolis, 2019). SBV in SBL has the potential for providing opportunities for self-regulated learning which passes the control of learning to the learner, and catering to individual differences while cutting across geographical barriers against learning (Dettori & Persico, 2008; Güvenç, 2010). Self-regulated learning has four principles: Goal, action, monitor and evaluate. In the first step - goal, the motivation and engagement of the learner is formulated. In the action step, the learner queries into the subject matter with the help of supplementary resources provided. In the monitoring step, the learner reflects upon his/her progress. Finally, in the evaluation step, the learner performs a self-evaluation (Ertmer & Newby, 1996; Cennamo et al., 2002). SBL, provided via SBV, opens up avenues for the learner for self-regulated learning by working on a problem presented in a scenario (Yang et al., 2010; Zhuang, 2014).

Based on the literature review, a methodological framework for this study was developed.

Methodological Framework

The methodological framework of the study is illustrated in Figure 2.1.

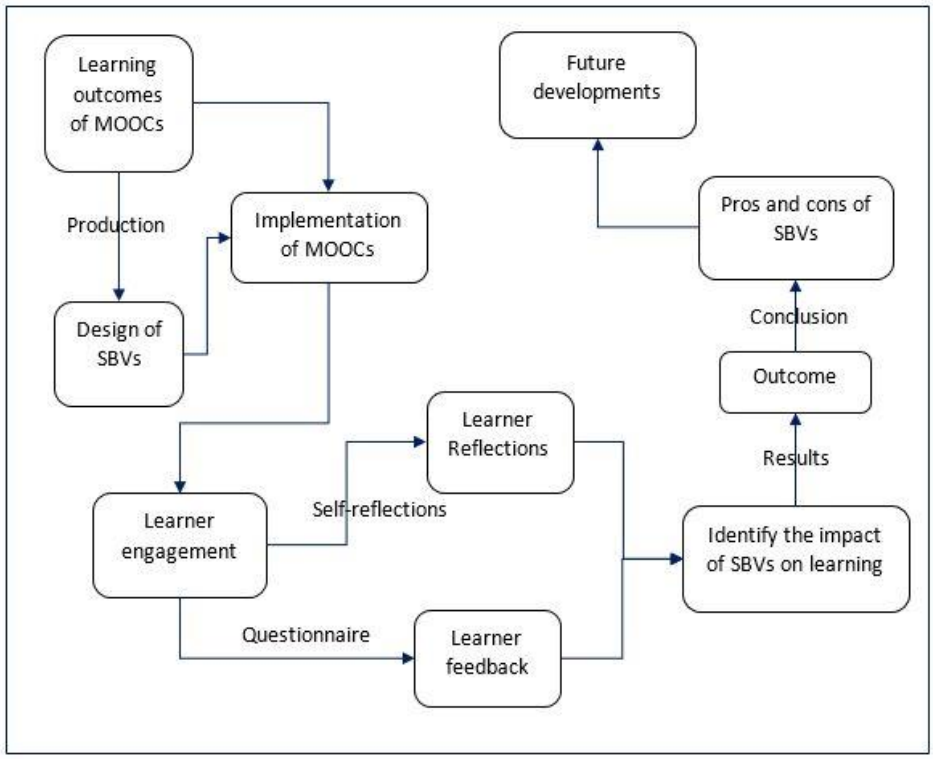

Figure 2.1: Methodological Framework of the Study

As explained in the Introduction, there were four SBVs integrated in the four CPDMOOCs, one in each. The SBVs were created in accordance with the learning outcomes of each MOOC. The SBV production process is described in the next section.

The Process of SBV Production

Scripting

Usually, MOOCs and other online courses contain videos as resources. They mainly deliver the subject matter. The difference between SBV and resource

videos is, the SBV is a play of a real-life activity. Therefore, unlike a conventional educational video, SBV had to be created just like a movie clip. As the main part of the pre-production stage of videos, the MOOC development team developed the scripts for each SBV. First, the scenarios were developed according to the learning objectives of each MOOC. Then the scripts were developed as a collaborative work of the entire team. These were reviewed by subject experts, and then the technical team contributed to further develop them according to video production practices.

Casting

After developing the scripts, the team worked on selecting the actors and locations for shooting. It was again considered that all locations to be realistically selected in order to maintain the authenticity of SBVs. During the production, the actors faced a challenging situation since most of them did not have previous experience at being in a front of a camera for shooting. The technical support was provided by a professional production team at OUSL, including directing, camera, lighting and sound. Therefore, the MOOC development team worked collaboratively with the technical team to guide and support the cast to maintain the required authenticity in the scenarios.

Post-production, editing

The post-production stage was completed with the help of a professional video editing team at OUSL. The MOOC development team had to work closely with the editors to maintain the authenticity of the scenarios. It was a major concern that every camera angle, props and casting would affect the

context. Therefore, the editing process was carefully carried out, considering all these aspects.

Methodology

Research questions

The following research questions were addressed in this study:

1. How have the SBVs supported participants to engage in the learning process?
2. What are the perceptions of participants on the design of the SBVs?
3. What are the strengths and limitations of the SBVs, as perceived by the learners?

Research Design

A mixed-mode research design was adopted in this study where both quantitative and qualitative data collection methods were used. These included a questionnaire survey and an analysis of self-reflections of the participants who successfully completed the MOOCs.

Sample

When deciding on the criteria to select the sample, the research team considered the participants' engagement in the MOOCs. Self-reflections of participants were considered the best source of information on their learning, and completion of a MOOC was a necessity to reflect on self-learning. Therefore, all learners who had completed at least one of the

MOOCs were selected as the participants of this study. Among them, there were 15 participants who have successfully completed all four MOOCs, and altogether, 136 participants who had completed at least one MOOC.

Aspects of the SBVs Investigated

Several aspects in relation to the SBVs were identified to be investigated in this study, as described in this section.

Design features of the SBVs

Since the entire production process was carried out to maintain the authenticity of the scenarios, it was very important to find out how the learners have identified and perceived those features of SBVs, which are stated below:

- *Real-life settings of the learning situation* - The entire process focused on making the learners feel that they are a part of the scenario. Therefore, the settings were selected to maintain a real-life situation.
- *Enactment of the learning challenge* - In SBL, it is important to highlight the learning challenge to the learners. Therefore, the plot has been designed to help learner identify the learning challenge.
- *Use of simple dialogues* - Since the learners in a MOOC is a diverse group of people, it was very important to maintain a simple, dialogue-form language in the plot. Also, since the main concept was to visualize the scenario, simple dialogues have been used in the SBVs.
- *Short duration (length) of the video* - Making a video lengthy makes it difficult for the viewers to concentrate on the context. Therefore, the duration has been limited as much as possible. The designers have worked on writing the scripts to make the SBVs short, yet active.

- *Technical aspects of the video* - Even though the SBVs can be designed according to the selected context, it is also important to apply correct technical features to maintain a good video quality. This includes the lighting, sound, camera angles, colours and props in the plot. These have been selected appropriately, in accordance with context as well.

Accessing/Watching the SBVs

The learning experiences of each MOOC were sequenced for the learners, first to access the SBV and view it, and then to move on to the learning and assessment tasks. Therefore, it was required to find out the accessing or watching rate of the SBVs by learners.

Refer to SBVs in relation to learning

Since the SBVs were developed to trigger the learners to start the learning process, it was necessary to identify whether the learners experienced any such advantage from the SBVs. This aspect was to find out the evidence of such impacts on the learners.

Methods of data collection and analysis

Questionnaire Survey

A questionnaire was administered to find out the perceptions of the participants about SBVs. This contained statements to receive feedback on different aspects as stated below, using a five-point Likert scale.

The following items were included in the questionnaire:

- To what extent the SBVs supported/helped you in the learning process?
    - Understanding the learning situation/context.
    - Engagement with the learning activities.
    - Engagement with the assessment tasks.
    - Engagement with the learning resources.
    - Achieving the learning outcomes.

- To what extent the following specific design features of the SBVs supported you?
    - Real-life settings of the learning situation
    - Enactment of the learning challenge
    - Use of simple dialogues
    - Short duration (length) of the video
    - Technical aspects of the video

The data collected as responses to the above questions have been considered for quantitative analysis.

Further, the questionnaire contained open-ended questions for participants to provide any other comments, which were qualitatively analyzed.

Even though the SBVs were designed for SBL, it was important to make them attractive in order to get the attention of the viewer. Since the scope of the SBVs was to create a realistic and authentic situation, it was also important to find out whether the learners have experienced the same. The following questions were provided to find out the key features that the learners have liked and disliked in the SBVs.

- What were the feature/s you liked most in the SBV and why?
- What were the features/ you disliked most in the SBVs, and why?

Further, the following questions were provided to identify any strengths and limitations of each SBV that the learner has experienced.

- What are the strengths of SBVs?
- What are any limitations of SBVs?
- What suggestions can you make to further improve SBVs to support learning?

Self-reflections

Self-reflections made by each individual participant on the learning experiences, were examined to identify specific comments made in relation to SBVs. In the first selection, attention was paid on identifying the phrases with keywords such as “video”, “scenario-based video” and “trigger” which were considered as fine evidence on commenting about SBVs. Thereafter, phrases that indirectly mean an impact of SBV on the triggering of learning were identified. These qualitative data were analyzed to identify categories or trends in relation to the effect of SBVs on the participants’ learning process.

Findings and Discussion

Findings of the study are presented in this section. Results of both quantitative and qualitative data analysis are presented and discussed under the specific research questions.

How have SBVs supported participants to engage in the learning process?

The specific questionnaire on SBV, which was administered among the fifteen participants who had successfully completed all four CPDMOOCs, received only six responses. The results indicate that basically all SBVs have positively supported the learners in the learning process.

Figures 2.2 to 2.6 represent the number of responses of participants according to the 5-point Likert scale, on the list of questions respectively with reference to the SBVs of MOOC1 to MOOC4. (Chart title is the aspect which the question was asked. The horizontal axis labels represent the Likert scale and the vertical axis represents the number of responses.)
(5=Extremely; 4=To a great extent; 3=Moderately; 2= Just a little; 1= Not at all)

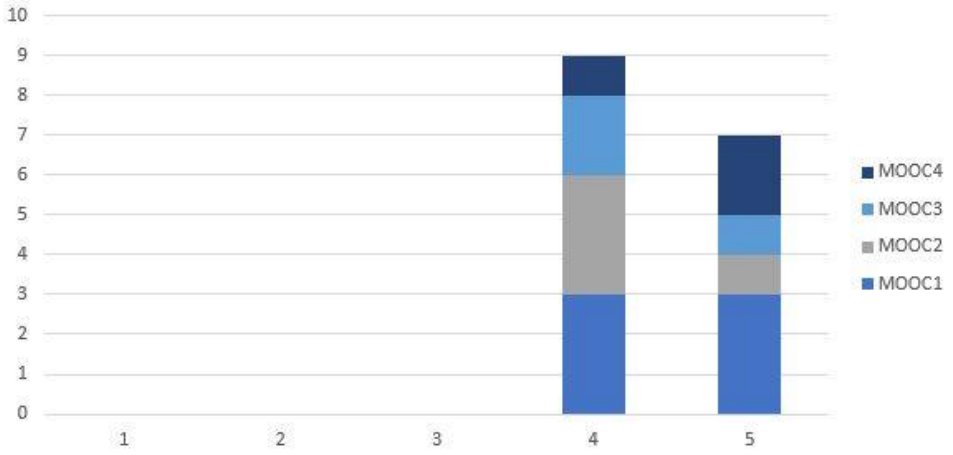

Figure 2.2: Understanding the Learning Situation/Context

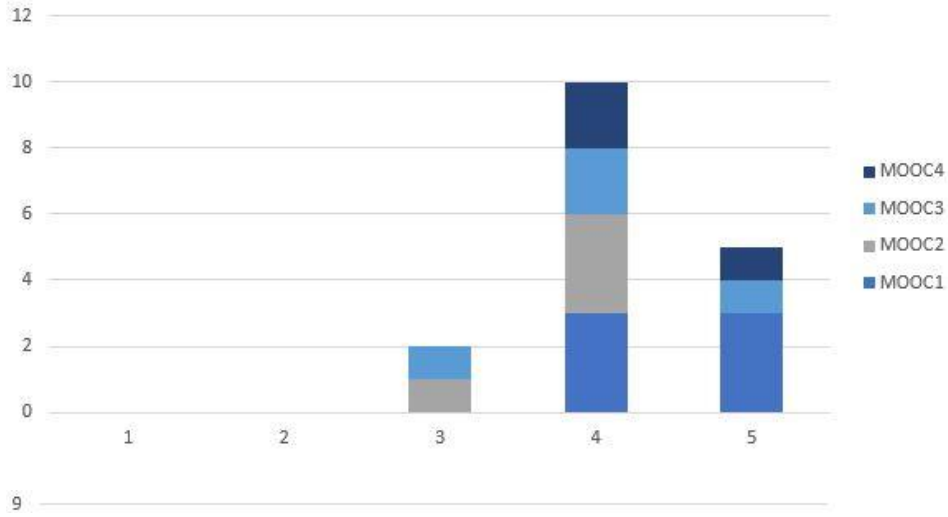

Figure 2.3: Engagement with the learning activities

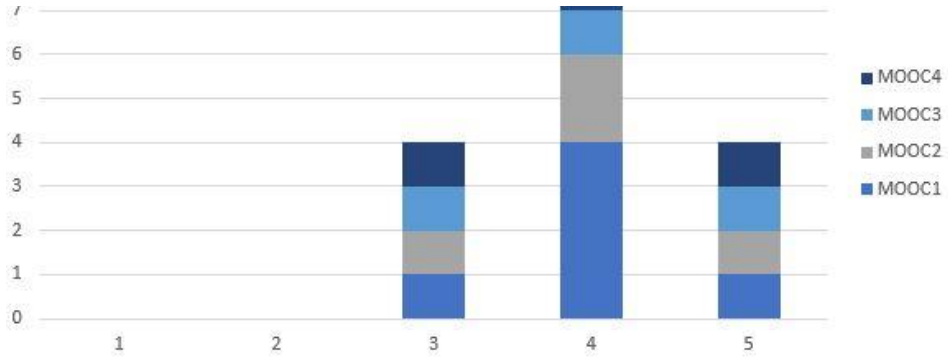

Figure 2.4: Engagement with the Assessment Tasks

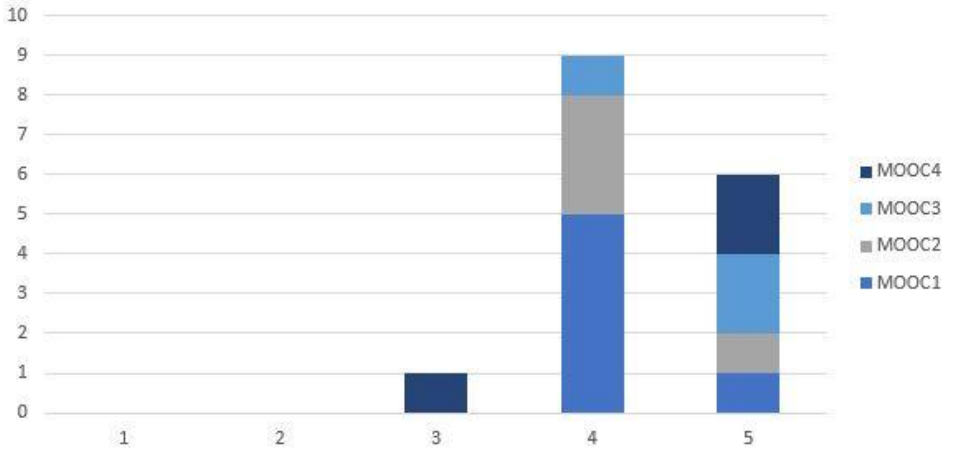

Figure 2.5: Engagement with the Learning Resources

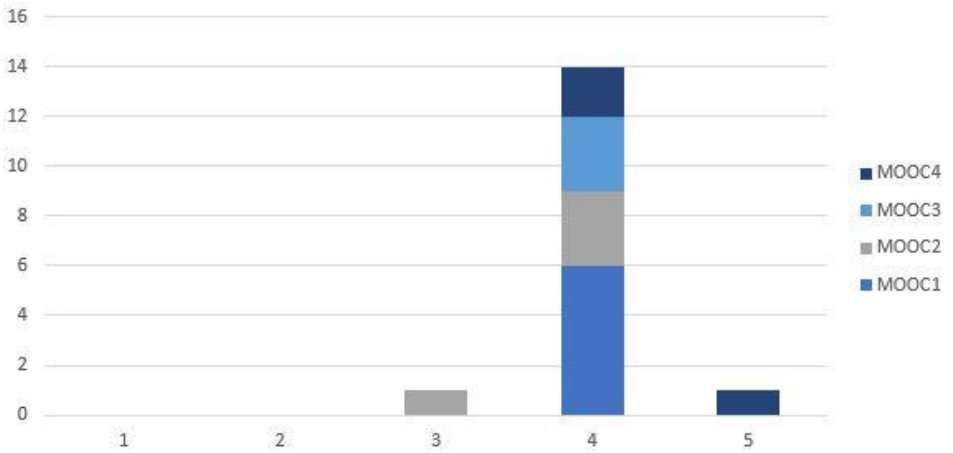

Figure 2.6: Achieving the Learning Outcomes

These charts reveal how and to what extent the SBVs in the four MOOCs have supported the participants in their learning process. For instance, all participants have agreed that the SBVs supported them very well to

"Understand the learning situation" (see Fig. 2.2). Similarly, a majority of them have indicated that SBVs helped them "Engage with the learning activities" (see Fig. 2.3).

The responses received in the third part, "The engagement with the assessment tasks", show that not all the learners have identified SBVs as very helpful for assessment tasks (see Fig. 2.4). This is understandable because, the main purpose of SBV is not specifically about providing support to carry out the assessment tasks, but to initiate learning as a part of the learning scenario.

In relation to the "Engagement with learning resources", except for one response in the MOOC4, all have responded very positively on the support of SBVs (see Fig. 2.5). For the important part of "Achieving the learning outcomes", all SBVs, except for one response in the MOOC2, have received an above moderate level of positive responses (see Fig. 2.6), indicating that the SBVs were helpful for them to achieve the intended learning outcomes.

Analysis of participants' self-reflections also provided evidence on the support of SBVs for learners.

The following statements indicate that the learners were motivated and have gained a clear understanding of the main concept by watching the SBVs.

> *The videos had given a crystal-clear idea of searching and evaluating OER.*
>
> *The beginning was fabulous.*

Some reflections clearly show how the learners have grasped the idea of the scenario through the SBV. The following statement provides evidence for this.

> *Prior to the assignment 1, I watched the video based on learning scenario. The video was a very effective way to convey the necessity of understanding the concept of OER and different uses. Learner has been brought to a certain stage of curiosity to make further studies on the concept of OER.*

From the word "curiosity" mentioned in the above phrase, we can interpret that the learner has come to the expected level of interest on starting the learning process, by engaging with the SBV.

Further, the following statement proves that the message delivery in the SBV has been successful.

> *The videos on learning scenario and learning resources are content loaded and excellent in delivering the exact message to the learning with ease.*

From the self-reflections, another evidence on delivery of the main message to the learners has been found. Following statement is an example for this.

> *…learnt how an existing OER reduces the burden of the people when preparing any topic.*

As played in the scenario of SBV, reducing the burden of the people by using OER has been understood by this learner.

Even when the learners were totally new to the learning content, the SBV has helped them to understand it before reading much on the same. Therefore, it can be considered as perfectly situating the learner in the context. Following is an example for this type of understanding.

> *Week 1 provided a problem case-study video which suggested OER will be the solution to solve their issue. This portion of video discussion gave me a first idea on OER. Thus, first assignment made me to read the given materials to get more idea.*

Even though the key objective of an SBV is not to deliver subject matter directly, some reflections contained evidence of understanding the related areas of subject matter, in terms of new understandings. Following set of statements provides evidence for such instances.

> *I understood why the education system needs Open Educational Recourses (OER) after watching this video.*
> *After watching this video, I understood Searching an OER under the relevant topic is not an easy task.*
> *After watching this video, I got a brief idea about how adapting and creating a new OER material by revising and reusing and how to provide appropriate licensing.*

The learners in these cases, probably have thought a little beyond the scenario. However, it can be considered as an evidence on triggering the learners' thinking process by the SBVs and a motivation for them to proceed with the learning process.

What are the perceptions of participants on the design of the SBVs?

The perceptions of participants on different aspects of the specific design features of SBVs were observed from the questionnaire responses. Since each SBV had its own unique design features specific to the context, each of the SBVs has been analyzed individually.

Figures 2.7 to 2.11 represent the responses of participants on the specific questions respectively with reference to the SBV of MOOC1 to MOOC4. (Chart title is the aspect which the question was asked. (The horizontal axis labels represent the Likert scale and the vertical axis represents the number of responses.)
(5=Extremely; 4=To a great extent; 3=Moderately; 2= Just a little; 1= Not at all)

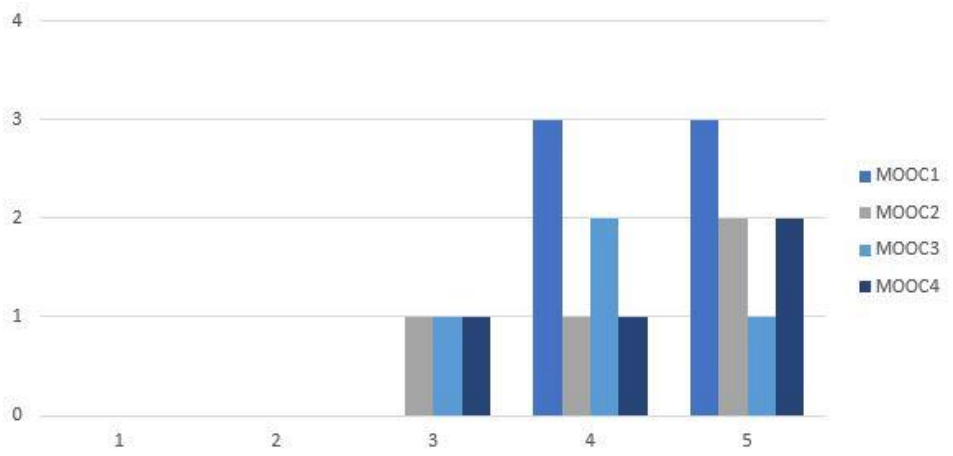

Figure 2.7: Real-life Settings of the Learning Situation

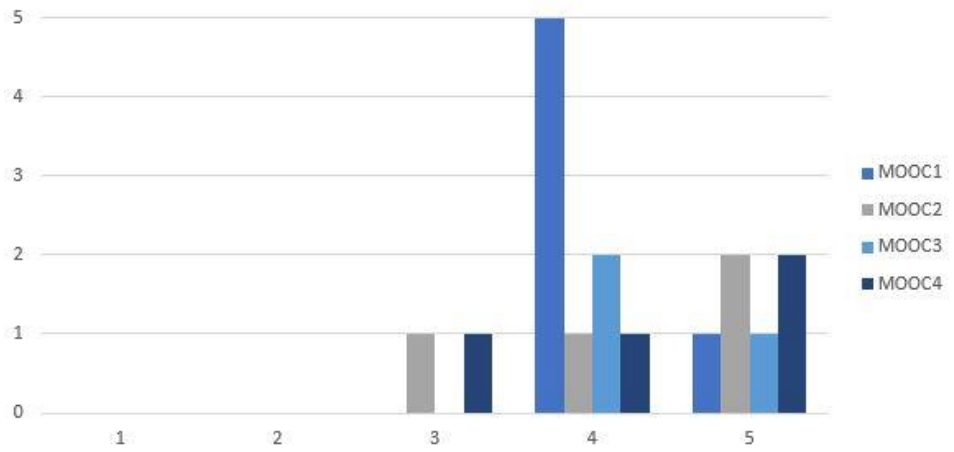

Figure 2.8: Enactment of the Learning Challenge

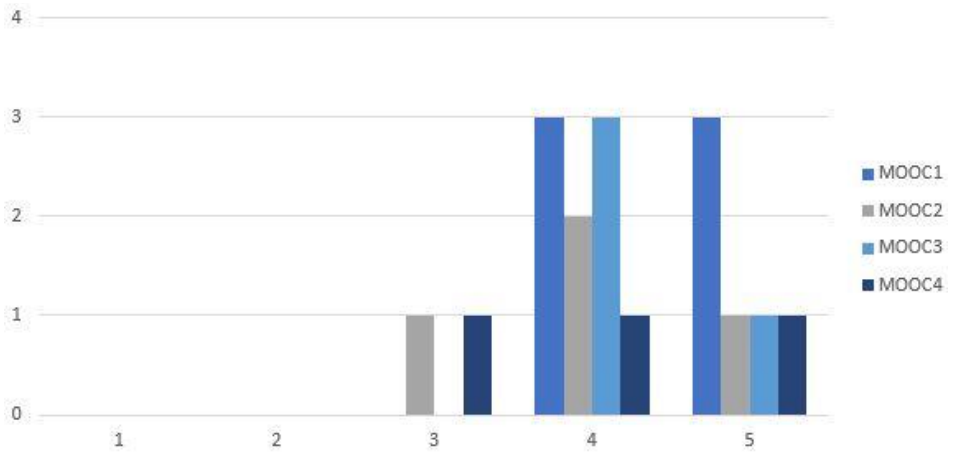

Figure 2.9: Use of Simple Dialogues

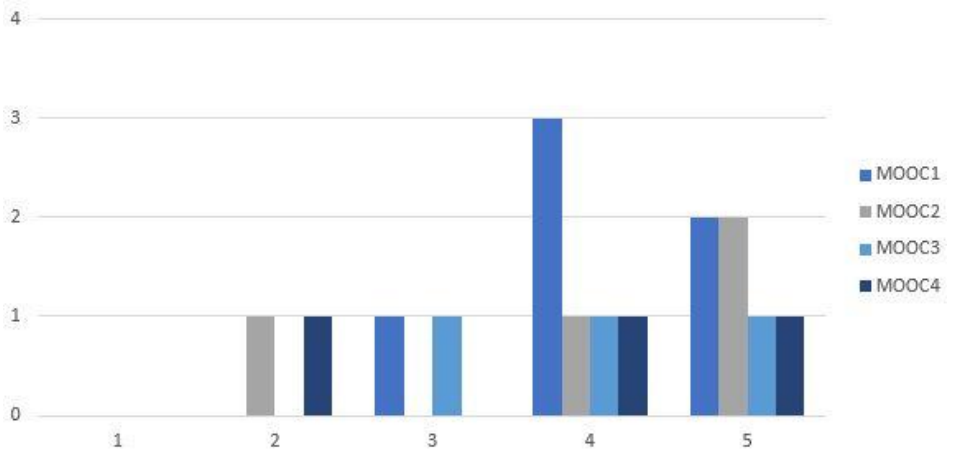

Figure 2.10: Short Duration (length) of the Video

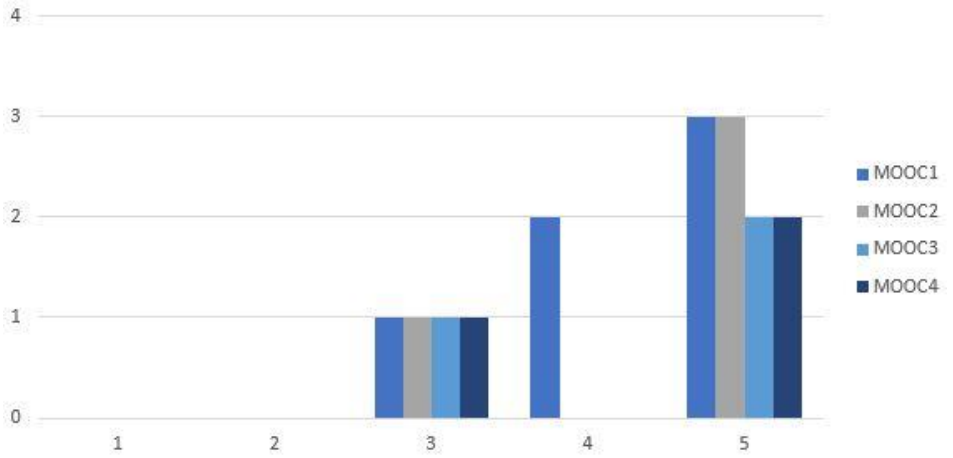

Figure 2.11: Technical Aspects of the Video

From the above charts it is clear that the design features of all SBVs were generally appreciated by the learners. A majority of them have provided responses on an above moderate level, in relation to their satisfaction with different design aspects. However, in the SBVs of MOOC2 and MOOC4 the short duration of the video has not met the preference of one learner in the responses. Other than that, all the responses were on or above the moderate level.

The third question of the questionnaire intended to identify the features which were most liked by the learners. From their responses to this open-ended question, it was found that most of the learners were interested on the simplicity of the set, and especially the dialogs. The responses listed below are evidence for this feature:

Its simple to understand.

Natural behaviour of the actors.

Simple example; high understandability.

Dialogs are very active and attractive.

Using simple English.

Out of the responses it was also found that some learners have (identified the support from) accredited the casting and background setting of videos. The following response is an example.

Creatively used the physical environment (eg. Use of sharing teacups among friends to convey sharing of ideas).

This was a message delivered to the viewers in MOOC3, not by dialogues but through physical acts.

Also, in MOOC4, the enthusiasm of a group of professionals has been identified by the learner as follows:

Attractive facial expressions with the models.

The fourth question of the questionnaire was to find out any feature/s in the SBVs which were disliked by the learners. Out of 12 responses, 7 said that they had nothing to dislike in any of the SBVs. However, there were a few responses from the others which indicated some dislikes as follows:

Would have been better if only two people discuss about it. (In MOOC1)

Discussion has limited to only 2 persons. (in MOOC4)

These two contrasting comments on the number of people in a discussion suggest that, the discussion type is a fact of personal preference of the learner. Therefore, it can be stated that, to cater to different preferences of the learners, it is important to use a mix of group and two-person discussions in SBVs.

What are the strengths and limitations of the SBVs, as perceived by the learners?

In the questionnaire survey, the strengths of SBVs are identified by the learners as responses to question no. 05, which has received many positive responses.

For instance, the following comments made on MOOC1 clearly explain the strengths of its SBV.

Got the main idea about the concept within a few minutes.

Easy to understand content.

Real-life activities.

Understandable, simple.

As a real thing, it is stored in the mind.

As the first comment expresses, the learner could grasp the idea within a few minutes from the SBV. This was a major concern of the design team when developing the SBVs. Unlike in conventional text-based scenarios, the video has effectively triggered the learner within a very short time.

MOOC3 got following responses which mostly reflects the effective use of acting techniques.

Use of physical things have created a vast impact to understand the concepts.

Giving real time experience.

As a common response, all MOOCs have received "understanding concepts" as a strength of the SBVs.

The sixth question in the questionnaire, which queried the learner's views on the limitations of SBVs, has received contrasting responses regarding the duration of them. Interestingly, MOOC3 has received the following two responses from two learners.

Duration of the video should be more.

Feels that the length of the video is too much.

The above contrasting comments again reflects the different preferences and requirements of individual learners. Therefore, the length of an SBV should be carefully decided, to have a balance between a lengthy and short

clip type. It is required to maintain the length of videos to suit the specific purpose of placing them in the scenario and not to make the viewers boring.

There were responses asking for more energetic dialogues and more attractiveness in the SBVs.

Need energetic dialogs which motivate to watch the video.

Better to be more attractive.

This is an indication that, a viewer would be always looking for attractiveness in order to keep watching the video and also to continue with the process of learning. SBV designers should pay more attention on this concept when developing the script as well. This can even be done technically by creating a more viewer-friendly frame with proper lighting, sound balancing and camera angle selecting.

Finally, in the questionnaire, it was asked to provide suggestions to improve the SBVs to support learning. There, we could find some interesting thoughts of learners in the responses.

Can be used as training models to act in the videos. (in MOOC1)

Improving the soft skills of the actors. (in MOOC3)

As apparent from the above quotes, the learners watch the SBVs as viewers, and hence look for professional acting in them. On the other hand, they have figured out the fact that these SBVs were created with non-professional casting teams. For the designers, it would be better if the actors are trained before casting or obtain the service of at least few people who have previous experience in acting.

The following comment suggests limiting the time but giving the broad idea by the SBVs.

Better to give a broad idea within the limited time. (in MOOC4)

It implies that the designers may try to deliver it as a triggering event, but with more emphasis in using dialogues or physical appearance changes in the set, to convey the key message.

Conclusions and Suggestions

We now summarize the conclusions based on our findings and make suggestions for future efforts.

The SBVs have received positive comments from the participants on many aspects such as technical and academic. It was clear that most of the learners have been supported by SBVs in the process of their learning, especially by triggering them at the beginning of the learning process. It is evident that the SBVs appear as an effective way of triggering the learners in SBL.

The main challenge identified in SBVs was to cater to different needs of learners. While some of them prefer stereotype dialogues with more subject matter, some others prefer non-formal type discussions with more realistic environments. Similarly, duration of the videos also received contrasting comments. This highlights the need to be mindful about diverse learner types when designing SBVs.

The quality of acting is a feature mostly appreciated by the viewers of any video. Regardless whether its' instructional or scenario-based, the video itself should be good enough to stand as a movie. Therefore, when selecting actors, it would be better to pay attention on previous acting experience. Similarly, the script writing should be done by education specialists with knowledge on video production

A good balance between scenario-based learning in line with the reality, and the quality of the video should be well-maintained to produce maximum results in using SBVs in MOOCs.

I. A. Premaratne *is a Lecturer in Electrical Engineering attached to the Faculty of Engineering Technology, The Open University of Sri Lanka. He graduated from The Open University of Sri Lanka, in 2012, specializing in Electronics and Communications Engineering. He has completed a professional development online course on OER based e-learning in 2015. Since joining the academia, he has been involved in research related to Engineering Education and OER-based teaching and learning. He is currently working on his MPhil in Electrical Engineering at the Faculty of Engineering, University of Peradeniya, Sri Lanka.* orcid.org/0000-0002-3920-6685

K.G.S.K. Perera *is a Lecturer in the School of Education at Sri Lanka Institute of Information Technology. Formerly, he served as an Assistant Project Officer at the National Institute of Education (NIE), Sri Lanka. He obtained his B.Sc. from University of Colombo, PG Diploma in Education from the NIE and PG Diploma in Information Technology from the University of Moratuwa, Sri Lanka. He obtained his MEd in Educational Technology from the Universiti Sains Malaysia and was awarded PhD in ICT in Education by the Open University of Sri Lanka. Dr. Perera has a wide range of academic experience in educational technology, and is an enthusiastic researcher in the field of ICT in Education.* orcid.org/0000-0002-7031-0042

References

Antonija, M., & Mathews, M. (2017). *Using active video watching to teach presentation skills*. https://ako.ac.nz/assets/Knowledge-centre/RHPF-s1606-Reflective-experiential-learning/9f8a0445ca/RESEARCH-REPORT-Using-Active-Video-Watching-to-Teach-Presentation-Skills.pdf

Avcı, D. E., & Bayrak, E. B. (2013). Investigating teacher candidates opinions related to scenario-based learning: An action research. *Elementary Education Online, 12*(2), 528-549. http://ilkogretim-online.org.tr/index.php/io/article/viewFile/1418/1274

Brame, C. J. (2015). *Effective educational videos*. Vanderbilt University, Center for Teaching. https://cft.vanderbilt.edu/guides-sub-pages/effective-educational-videos/

Brame, C. J. (2016). *Effective Educational Videos: Principles and Guidelines for Maximizing Student Learning from Video Content*. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5132380/

Carmichael, M., Reid, A.K., & Karpicke, J.D. (2018). *Assessing the Impact of Educational Video on Student Engagement, Critical Thinking and Learning: The Current State of Play*. https://us.sagepub.com/sites/default/files/hevideolearning.pdf

Cennamo, K. S., Ross, J. D., & Rogers, C. S. (2002). Evolution of a web-enhanced course incorporating strategies for self-regulation. *Educause Quarterly*, *25*(1), 28–33.

Cronin, M. W. (1994). Interactive video instruction for teaching organizational techniques in public speaking. *Basic Communication Course Annual*, 6, 19-35.

Dettori, G., & Persico, D. (2008). Supporting self-regulated learning with ICT. In A. Cartelli (Ed.), *Encyclopedia of Information and Communication Technology,* (pp. 735–741). Idea Group.

Ertmer, P. A., & Newby, T. J. (1996). The expert learner: Strategic, self-regulated, and reflective. *Instructional Science*, *24*(1), 1–24. https://doi.org/10.1007/BF00156001

Fadde, P., & Sullivan, P. (2013). Using interactive video to develop pre-service teachers' classroom awareness. *Contemporary Issues in Technology and Teacher Education*, *13*(2), 156–174.

Franzoni, A. L., Ceballos, C. P., & Rubio, E. (2013). *Interactive video enhanced learning-teaching process for digital native students*. Proceedings of the IEEE 13th International Conference on Advanced Learning Technologies-2013, 270–271. https://doi.org/10.1109/ICALT.2013.84

Gumienny, K. (2018, March 6). *Using video in training: Should you or shouldn't you?* https://www.microassist.com/learning-dispatch/using-video-in-training/

Guo, P. J., Kim, J., & Rubin, R. (2014). *How video production affects student engagement: An empirical study of MOOC videos.* Proceedings of the First ACM Conference on Learning @ Scale Conference - L@S '14, 41–50. https://doi.org/10.1145/2556325.2566239

Gutierrez, K. (2017, May 18). *5 Rules for creating scenarios in eLearning.* https://www.shiftelearning.com/blog/creating-scenarios-in-elearning

Güvenç, H. (2010). The effects of cooperative learning and learning journals on teacher candidates' self-regulated Learning. *Educational Sciences: Theory & Practice, 10* (3), 14 77-1487. https://pdfs.semanticscholar.org/a7f2/0892e97ab4a6bc186de8a3b2ba4f6224414f.pdf

Ireland, L., Nickson, A., Sorin, R., Caltabiano, M., & Errington, E. P. (2013). A funny thing happened on the way to learning: SBL fosters student engagement in higher education. *Journal of Teaching and Education, 2*(2), 249-256.

Karaolis, S. (2019). *5 branching elearning and branching scenario examples*. https://www.elucidat.com/blog/branching-elearning-examples/

Lave, J., & Wenger, E. (1991). *Situated Learning: Legitimate Peripheral Participation* (1st ed.). https://doi.org/10.1017/CBO9780511815355

Mayer, R. E. (2002). Cognitive Theory and the design of multimedia instruction: An example of the two-way street between cognition and instruction. *New Directions for Teaching and Learning, 89,* 55–71. https://doi.org/10.1002/tl.47

Mor, Y., & Warburton, S. (July, 2016). *Patterns for Using Video in MOOCs.* [Paper presentation] EuroPLoP Conference, Bavaria, Germany . https://www.researchgate.net/publication/312495129_Patterns_for_Using_Video_in_MOOCs

Naidu, S., Menon, M., Gunawardena, C., Lekamge, D., & Karunanayaka, S. (2007). How scenario-based learning can engender and promote reflective practice in online and distance education. In M. Spector (Ed.), *Finding Your Online Voice* (4th ed., pp. 53–72). Lawrence Erlbaum Associates.

Pandey, A. (2018, February 22). *7 Examples on Scenario Based Learning (SBL) for Formal and Informal Learning.* https://elearning.adobe.com/2018/02/7-examples-on-scenario-based-learning-sbl-for-formal-and-informal-learning/

Schank, R. C., Berman, T. R., & Macperson, K. A. (1999). Learning by doing. In C.M. Reigeluth (Ed.), *Instructional-design Theories and Models: Vol. II*., (pp 161-181).

Siklander, P., Kangas, M., Ruhalahti, S., & Korva, S. (2017, March). *Exploring triggers for arousing interest in the online learning*. 9081–9089. https://doi.org/10.21125/inted.2017.2150

Sun, L., & Siklander, P. (2018). *How to trigger students' interest in digital learning environments: A systematic literature review*. https://www.researchgate.net/publication/326682783_How_to_trigger_students'_interest_in_digital_learning_environments_A_systematic_literature_review

Yang, J. C., Chen, C. H., & Chang Jeng, M. (2010). Integrating video-capture virtual reality technology into a physically interactive learning environment for English learning. *Computers & Education*, *55*(3), 1346–1356. https://doi.org/10.1016/j.compedu.2010.06.005

Zahn, C., Krauskopf, K., Hesse, F.W., Pea, R. (2010 June 29-July2). *Digital video tools in the classroom: Empirical studies on constructivist learning with audio-visual media in the domain of history: Learning in the Disciplines*. [Paper presentation] 9th International Conference of the Learning Sciences, Illinois, USA. https://www.researchgate.net/publication/326682783_How_to_trigger_students'_interest_in_digital_learning_environments_A_systematic_literature_review

Zhuang, Y. L. (2014). A Research of the application of Visual Simulation Technology in college English teaching. *Advanced Materials Research*, *1044–1045*, 1565–1567. https://doi.org/10.4028/www.scientific.net/AMR.1044-1045.1565

3 Engagement of Learners in Discussion Forums

M. N. K. de Zoysa and S. R. Hettiarachchi

Introduction

In the conventional system, teaching and learning take place with the teacher and students interacting in a physical classroom. In general, exchange of information occurs as a result of these face-to-face teacher – student interactions in class discussions. However, learning in the online environment is different from a face-to-face classroom environment (Khlaif et al., 2017). Learners in an online environment communicate using technology-based tools such as discussion boards, emails, chats…etc. In online teaching and learning, the teacher's role is more that of a facilitator while learners are provided with online activities in order to engage actively in the learning process. One of the popular technological tools is the online asynchronous discussion forum, which provides a platform for the learners to interact among themselves and share knowledge with their peers. Discussion forums (DF) were first introduced in the mid-1980s as a form of asynchronous electronic communication which promotes collaborative learning. The collaborative environment in the DF helps learners to share knowledge and experiences and interact among peers, facilitating their active engagement in the learning process.

This paper presents a study conducted on learner engagement in the discussion forum activities of the four CPDMOOCs implemented by the Open University of Sri Lanka for continuing professional development of practitioners on the adoption of OER and OEP.

Review of Literature

Knowledge Construction in MOOCs

Designing MOOCs with a well-structured learning environment will support learners to construct knowledge (Laurillard, 2014). A variety of MOOC designs have evolved over the years, including cMOOCs which are based on connectivist theory promoting knowledge creation and generation, and xMOOCs which focus on knowledge duplication (Siemens, 2014). Although varieties of MOOCs were introduced to promote knowledge creation, it is believed that most contemporary MOOCs promote transfer of knowledge only (Bates, 2015).

Discussion forums provide asynchronous interactions among students and teachers which plays an important role to support community formation and knowledge construction in online learning (Geo et al., 2013). In online learning, where the learning process emphasizes on knowledge sharing, discussion forum becomes an effective tool to engage learners interact with each other by posting messages and giving peer feedback. Although peer-facilitated discussion forum is a common feature in online learning environments, designing discussion forum activities for meaningful interactions and engaging learners in knowledge construction is a challenging task (Karunanayaka et al., 2016).

MOOC designs support in changing the traditional teacher-centered environments to learner-centered environments. Designing a collaborative learning environment in MOOCs will promote a constructivist learning approach enabling knowledge construction which can be achieved through properly designed discussion forum activities. A constructivist learning environment will support collaborative construction of knowledge through social negotiation among individuals, and the meaningful use of technology will enable such learning (Jonassen et al., 1999). Hence, a discussion forum needs to be well structured and well-designed, to engage learners in meaningful peer-facilitated discussions and encouraging co-construction of knowledge.

Interaction types in discussion forums

Peer-facilitated discussions play a significant role in enhancing knowledge and cognitive development process (Pena-Shaff & Nicholls, 2004). Previous studies have revealed that students are able to get meaningful ideas and very good satisfaction when they are able to interact with peers (Chang & Smith, 2008; Sher, 2009). This important tool allows participants to share their ideas and compare progress with others (Soon & Fraser, 2011). Further, peer-facilitated discussions provide a social context for learning and motivate collaborative learning (Liu & Tsai, 2008). It also provides an opportunity for the learner to think, reflect and share their own ideas and experiences with peers and search for new information (Anderson & Dron, 2011; De Wever et al., 2006; Pena-Shaff & Nicholls, 2004).

Different types of interactions may occur in online learning including learner-content interaction, learner-instructor interaction, and learner-learner interaction (Moore, 1989) as well as learner-interface interaction (Hillman et al., 1994). Online teaching and learning can be enhanced by integrating different dimensions of flexibility in engagement as stated below (Naidu & Roberts, 2018, p.7).

- Learner-content engagement - which is about learners' engagement and interaction with the subject matter in ways that suit individuals, their styles and approaches to studying and its time, place and pace.
- Learner-teacher engagement - which is about choices learners have in relation to the mode and method of their engagement and interaction with their teachers and tutors.
- Learner-learner engagement - which is about choices learners have in relation to the mode and method of their engagement and interaction with their peers in small and large groups.
- Learner engagement with the learning environment - which is about adaptable access, interaction and engagement with the learning environment.
- Learner engagement with assessment activities - which is about choices learners have in relation to the fulfillment of their assessment requirements.
- Learner engagement with feedback - which is about choices learners have in relation to access to feedback on their learning and assessment activities.

Engagement in online discussions may focus on design attributes relating to some or all of the above dimensions. Discussion forum provides opportunities for interactions among learners which are aligned with the

social constructivist approach. Interactions among learners promote social collaboration while they engage in meaningful discussions.

Studying online interactions

Studies on online interactions have been carried out by many. A widely used coding scheme was established by Henri in 1992, to determine whether online interactions occur at surface or deep level, and whether the interactions were social, interactive, cognitive or metacognitive in nature (Henri, 1992). This framework identified both social and cognitive dimensions for studying online learning. This coding scheme has also been used to analyze asynchronous discussions by Hara et al. (2000).

Gunawardena et al. (1997) created an interaction analysis framework to examine the social construction of knowledge in collaborative learning environments facilitated by computer conferencing. This Interaction Analysis Model (IAM) was based on sociocultural theory and situated learning which is committed to the study of situated practice involving individuals, artifacts, and culture, focused on understanding systems of interaction and how practices are adopted and adapted. Understanding context is a key feature of IAM. They discovered that the large group asynchronous listserv debates consisted almost exclusively of sharing and comparing of information (Gunawardena et al., 1997). Kanuka and Anderson (1998) applied this model to study asynchronous professional development interactions and found that mostly information was shared among learners rather than knowledge constructed.

Several tools for analyzing learning processes have been discussed in online education research. One of the most widely researched frameworks is the Community of Inquiry (CoI) framework by Garrison et al. (2000; 2001). The CoI framework identifies critical pre-requisites for a successful online learning experience. This model was created specifically to assess outcomes of collaboration in a higher education online course environment. The CoI framework comprises three elements, Cognitive Presence, Social Presence and Teaching Presence, as well as categories and indicators to define each presence (Garrison & Arbaugh, 2007). (See Fig. 3.1).

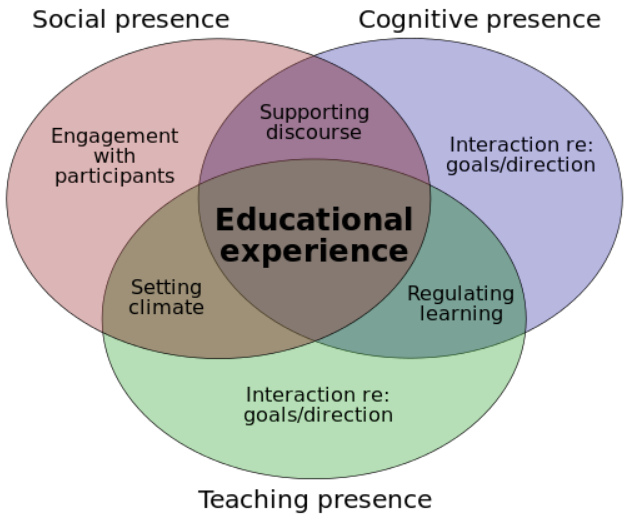

Figure 3.1: Community of Inquiry Model

(https://commons.wikimedia.org/wiki/File:Community_of_inquiry_model.svg)

According to the CoI model (Garrison & Arbaugh, 2007);

- Cognitive presence - is the extent to which the participants are able to construct meaning through sustained communication

- Social presence - is the ability of participants to project their personal characteristics into the community, thereby presenting themselves to the other participants as “real people”
- Teaching presence– is either the design of the educational experience; facilitation and direct instruction, by the instructor or the facilitation and direct instruction by the students

The conceptual and methodological framework of this study was developed based on the CoI model.

Context of the study

This study was conducted on the four CPDMOOCs implemented by the OUSL on the adoption of OER and OEP. These were, Understanding OER; Searching and Evaluating OER; Creating and Adapting OER; and, Integrating OER and Adopting OEP. In each CPDMOOC, three inter-linked learning/assessment tasks were designed as follows: An individual creation of an artifact, to promote creative learning; Sharing of the creations in a peer-facilitated discussion forum, to encourage collaborative learning; and Writing of a self-reflection, to promote reflective learning. To support learner engagement in these tasks, carefully selected OER were integrated appropriately, which offered relevant content to support knowledge construction of learners during the activities.

The learning/assessment tasks designed were constructively aligned (Biggs, 2003) with the learning outcomes, to support students construct meaning through engagement in the relevant activities and achieving the desired outcomes. For instance, the first challenging task designed in CPDMOOC 1 -

Understanding OER, was to create a graphical representation on OER and related concepts including different license types and media formats of OER. The second task was to share their creations in the discussion forum to receive and provide peer feedback. Finally, the learners reflected on their learning experience, as the third task. Specific guidelines were provided to the learners to engage in each of the prescribed learning and assessment tasks.

Engagement in peer-facilitated discussion forum was a key learning activity in each CPDMOOC. This was designed to promote collaborative learning and to facilitate co-construction of knowledge among the learners. In this assessment task, learners were required to share their creations in the discussion forum and provide constructive feedback to each other. Table 3.1 indicates the guidelines provided for the discussion forum activity in all CPDMOOCs.

Details of the guidelines provided for learners to engage in the collaborative discussion forum activity in each of the CPDMOOCs are presented in Table 3.2.

Assessment Rubrics with specific criteria were used to evaluate each task, which were also shared with the learners. Table 3.3 indicates an example of the assessment rubric used to evaluate the discussion forum task in CPDMOOC 1 – *Understanding OER*.

Table.3.1: Guidelines for Peer-facilitated discussion forum - CPDMOOCs

Details of the Learning Activity / Assessment Task - 2 of CPD MOOC 1

Requirement	Description
Nature of the task	Group Activity - Collaboration - Discussion Forum
Description	Each learner is allocated in a peer group. Share your graphical representation (created for Assessment Task 1) in the discussion forum to receive peer feedback
Guidelines	• Post your graphical representation to the discussion forum (as an attachment), along with a short description about it (self-post). • Review and respond to the posts of at least three (03) of your peers. • Your feedback should be: Helpful; Meaningful; Constructive; Critical • Respond to at least two (02) peer comments you receive.
Time frame	One week
Learner Support	Instructor guidance and peer feedback
Participation Requirements	• Your individual forum post with uploaded graphical presentation • Providing feedback to at least three (03) peers' submissions • Responding to at least two (02) peers' comments on your submission
Assessment Criteria	Your participation will be evaluated against the Assessment Rubric. (see Table 1.6)
Deadline	Complete engaging in this task by DD/MM/YYYY, HH.MM Hours

Table 3.2: Details of the Discussion Forum Activity Guidelines in each CPDMOOC

CPDMOOC			
Understanding OER	*Searching and Evaluating OER*	*Creating and Adapting OER*	*Integrating OER and Adopting OEP*
Active participation in the discussion forum was required as follows:			
1. A self-post with a clear description on your own graphical presentation	1. A self-post on strategies for efficient searching and evaluation of OER	1. A self-post on creating a specific OER for a specific purpose by adapting existing OER to the discussion forum	1. A self-post on your plan to promote integration of OER and adoption of OEP at institutional level
2. Graphical presentation uploaded as an attachment to your post	2. Provision of a clear set of strategies for efficient searching and evaluation of OER to identify relevant and quality OER material	2. Provision of a clear description about the created OER indicating Purpose; Media type; What OER, How OER were adapted; CC license;	2. Indication of clear activities, strategies, time-frame, resources and expected outcomes of your plan
3. Providing feedback to at least three (03) peers' submissions.			
4. Responding to at least two (02) peers' comments on your submission.			
5. Providing helpful; meaningful; constructive; and critical comments.			

The Open University of Sri Lanka

Table 3.3: Assessment Rubric for Discussion Forum Activity in CPDMOOC 1

Assessment Task – Collaborative Activity					
Criteria	Active participation in the discussion forum as follows: 1. A self-post with a clear description on your own graphical presentation 2. Graphical presentation uploaded as an attachment to your post 3. Providing feedback to at least three (03) peers' submissions 4. Responding to at least two (02) peers' comments on your submission 5. Providing helpful; meaningful; constructive; and critical comments				
Marking Scheme					
5 Marks	**4 Marks**	**3 Marks**	**2 Marks**	**1 Mark**	**Marks received**
Engaging in the discussion, satisfying **all five (05) criteria.**	Engaging in the discussion, satisfying **any four (04) criteria only.**	Engaging in the discussion, satisfying **any three (03) criteria only**.	Engaging in the discussion, satisfying **any two (02) criteria only.**	Engaging in the discussion, satisfying **any single (01) criterion only.**	

Methodology

A qualitative research approach was adopted in this study. It was mainly based on an in-depth content analysis of the discussion forum entries in all four CPDMOOCs.

Research questions

The following research questions guided this study:

1. How and to what extent have the learners engaged in the discussion forum?
2. What factors have supported learner engagement in the discussion forum?
3. How the learner interactions have supported co-construction of knowledge?

Participants

All learners who engaged in the discussion forum activity in each CPDMOOC were the participants of this study. All messages posted by these participants in the threaded discussions were analyzed. Table 3.4 indicates the number of participants in each CPDMOOC (offered in two rounds), and the number of posts analyzed in each instance.

Table 3.4: Details of the Discussion Forum Participants and Posts

CPDMOOC	1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	Total
No. of Participants	58	04	13	18	13	13	06	13	138
No. of DF Posts	380	25	103	110	82	133	48	97	978

Collection and Analysis of data

All peer to peer conversation threads in the discussion forums of the four CPDMOOCs were coded and categorized according to the CoI framework. Content analysis of all the messages that were posted by the participants in the threaded discussions was done using coding and categorizing.

A data analysis strategy was developed based on the CoI framework (Garrison et al., 2001) and employed in the content analysis of the posts in the discussion forums. An individual post by each participant was considered as the 'unit of analysis'. These individual posts were analyzed, categorized and coded according to the three presences based on the CoI framework (Garrison et al, 2001) – Cognitive Presence (CP), Social Presence (SP) and Teaching Presence (TP). The coding template presented in Table 3.5 was used for this purpose.

Table 3.5: Coding Template (adapted from Garrison et al, 2001)

Element	Category	Code	Indicators
Social Presence (SP)	Open Communication	SP-OC	Risk free expression
	Group Cohesion	SP-GC	Encourage collaboration
	Affective Expression	SP-AE	Emotions
Cognitive Presence (CP)	Triggering	CP-T	Puzzlement
	Exploration	CP-E	Information exchange
	Integration	CP-I	Connecting ideas
	Resolution	CP-R	Apply new ideas
Teaching Presence (TP1) (Teachers)	Design and Organization	TP1-DO	Curriculum and methods
	Facilitation of Discussion	TP1-FD	Sharing personal meaning
	Direct Instruction	TP1-DI	Focusing discussion
Teaching Presence (TP2) (Learners)	Facilitation of Discussion	TP2-FD	Sharing personal meaning
	Direct Instruction	TP2-DI	Focusing discussion

Findings & Discussion

The SBL design adopted in the CPDMOOCs was supported by providing OER as learning resources. Before attempting the assessment tasks, the participants were directed to refer to the learning resources and understand the related concepts in preparing their own creations. Then, they had to post their creation in the discussion forum for feedback from peers. Once the individual creation was shared in the discussion forum, peer to peer discussion commenced. Analysis of the discussion forum posts are presented and the findings are discussed in this section providing examples of coded quotes from all four CPDMOOCs.

How the learners have engaged in the DF and what factors have supported learner engagement?

The participants were first required to post their creations done for assessment 1, to the discussion forum with a small description. Next, they were required to provide feedback to their peers, as well as respond to the comments of the peers. During the threaded discussions participants interacted among themselves by commenting on the individual posts of each participant, and responding to each other. From the large number of posts observed in each discussion threads (see Table 3.4). it was evident that the participants were actively engaging in the peer-discussions. Further, all three presences in different categories were observed, as exemplified from the following coded statements in selected posts from each of the CPDMOOCs.

CPDMOOC 1

> *Dear Mr. …, You have done a wonderful work and it is so attractive as well.* (SP-OC)
>
> *The edited version of your graphic presentation is very clear. (*SP-OC) *The beginners can get clear idea about the presentation.* (SP-GC) *Thank you.* (SP-AE)
>
> *I'm very happy that I got this opportunity to learn about OER as it's very useful to a learner/ Educator.* (SP-OC)
>
> *Dear colleagues, I edited my assignment as per all your suggestions. Thank you for all. (SP-AE)*
>
> *Your assignment is very attractive.* (SP-GC)

You have mentioned OER and its concepts clearly. (SP-OC) *We can get a good idea about OERs.* (SP-GC) *Fantastic Work!* (SP-AE)

Thank you very much for your comments on my concept map. (SP-AE) *I already edited and uploaded my concept map including your comments.* (SP-GC)

Yes, I found it. (CP-T) *The 5R of OER are Retain, Reuse, Revise, Remix, and Redistribute. I learnt it.* (CP-E) *Thank you very much.* (SP-AE)

This is the beauty of this MOOC that is a fine blending of personalized learning and collaborative learning...learning from each other. (SP-GC)

The above statements in the discussion forum posts reveals that social presence has played a major role in motivating the participants to actively engage in the discussion forum. The feedback given by peers have encouraged and triggered the learners to improve their assessments by exploration and integration which are relevant to cognitive presence.

CPDMOOC 2

It's Great job. (SP-AE) *You have brought your table according to guideline and its easy to catch the relevance.* (SP-GC) *You have found 7 URLs in 4 Medias.* (CP-E) *Also, gave useful strategies, but last two strategies are difficult to implement I think so better to add general and specific strategies.* (TP2-DI)

Great work!!! (SP-AE) *I would like to know why you have excluded animation links. Whether animation links available are not OER or not available on the net?* (TP2-FD)

You have properly completed the assignment and added new column course which is really new and insightful thought. (CP-E) *I have found animation links which lacks in others' assignments, it shows your hard work.* (CP-I) *I feel that your strategies may be little bit comprehensive.* (CP-I) *In all I find your assignment useful for me.* (SP-GC)

You have provided a very useful and realistic list of strategies. (SP-OC)

I think you are right that the main strategies are the same for the different search engines, but what differs is which kind of features the search engines have. (CP-R)

CPDMOOC 3

Your document was well remixed and the videos enhances the document. (SP-OC) *It would have been further better if you have included few questions.* (TP2-DI) *Wish you all the best.* (SP-AE)

Your work is amazing. It is very nice, creative, and interesting. (SP-AE) *At the same time the retention power is increased.* (SP-OC) *Therefore, it is a good work.* (SP-AE) *But you have to add more information to it.* (TP2-DI)

Your instructional model ADDIE is very useful and easy to plan online environment lesson. (SP-GC)

Good luck! (SP-AE)

CPDMOOC 4

> *Dear…, I am pleased to read your plan to promote the OER at the institution level.* (SP-AE) *You are describing vision and mission descriptively.* (SP-OC) *I have some suggestions for your plan…*(TP2-FD)
>
> *Dear Sir, Congratulations for successful completion of Institutional plan.* (SP-OC) *Well, the strength of your plan is detailed specifications given in terms of description of the activity, resources required, target group, time duration and outcome. Detailed work plan is provided. Very well thought of minute detailing of the plan. (CP-I) However following are some of the suggestions for the same. Institutional plans are prepared keeping in mind long term goals. Institutional plans are prepared on the basis of felt needs. These aspects need to elaborate. (TP2-DI)*
>
> *Your work is great, comprehensive, well organized and sequenced.* (SP-OC) *It is almost like organizing this overall MOOC-courses for us.* (SP-GC)

The posts stated above indicate that the opportunity to provide and receive feedback from peers have motivated participants to express their views freely, and thus actively engage in the discussion. For instance, the open communication and direct instructions of peers were appreciated as seen by their affective expressions to each other. Further, group cohesion through collaborative learning is indicated.

It was evident that peer interactions have also supported cognitive presence by allowing information exchange, connecting ideas and applying new ideas. In addition, indicators of teaching presence occurred where the learners have shared personal meaning and providing direct instructions focusing on the discussions.

How the learner interactions have supported co-construction of knowledge?

For the purpose of this study, knowledge construction was examined based on the exchange of ideas and expressions that resulted during peer to peer interactions in the discussion forum activities. In this collaborative activity, discussions among the peers have helped co-construction of knowledge, initially by sharing their creations in the forum for peer review, and next by interacting providing meaningful comments to each other.

The quotes stated below indicate that peer to peer interactions have led to a great extent in supporting knowledge construction. It is evident from these statements that meaningful discussions have led to a better understanding of the assessment task supporting cognitive presence.

CPDMOOC 1

> *I think your thinking regarding OER is so comprehensive and broad and you have explored it in more meaningful way.* (SP-GC) *I think if you indicate the interconnection with other sub concepts, then your mind map will be more perfect.* (TP2-FD) *For Instance you can easily make interconnection between licensing and digital resources and learning resources*. (TP2-DI)
>
> *Dear …, Thank you very much for giving comments about my graphical presentation on OER.* (SP-AE) *And I want to give some clarifications*. (CP-T) *In my presentation I didn't consider OER as an Open learning. My idea is OER facilitate and provides a path for Open learning* (TP2-FD). *I agree with some of your comments.* (CP-E) *…I have learnt about OER that what*

it is, why it is and what are the relative concepts stands for OER (CP-E). *I hope to see feedback and effective comments and corrections to my assignment*. (SP-GC)

The messages in the above conversation clearly indicate that sharing of ideas and experiences have inspired the participants to improve their creation leading to knowledge construction. Comments given by peers have encouraged learners to reflect and improve their assessment task.

CPDMOOC 2

Yes, I agree with your second strategy which we have to ensure the key words when we search OERs. (SP-GC) *I also searched all four, Google (advanced search), CC Search, OER Commons, Wikimedia Commons and what I realized is that Google is any way flexible to search any OER material in any form but when it comes to the other search tools I feel that the key words or simple combination of words are essential*. (CP-E; CP-I; CP-R)

Dear…, You have stick to the criteria and done the job. (SP-AE*) I appreciate that you read the short description on OER when selecting OER.* (TP2-FD) *Can you mention some other tips that you use when finding OER and it's better if you can list the strategies/steps in order of finding OER.* (TP2-DI)

The above discussion shows that peer to peer information exchange had occurred via providing constructive comments and queries to each other to improve their search on OER.

CPDMOOC 3

> *Dear …, your document was well remixed and the videos enhance the document.* (SP-OC) *It should have been further better if you have included few questions.* (TP2-FD) *You have produced an interesting paper and made use of a range of OERs in doing so* (SP-OC) *…The video links are good and relevant.* (CP-I) *They also help add variety to the resource.* (CP-I) *You could embed them in a final edition so that the user's interest is awakened and they can access them without leaving the resource.* (TP2-FD)
>
> *…I have a lot more work to do on it.* (CP-T) *Once I started researching my idea and the available material, I realized that the task is more challenging and time-consuming than first envisaged…* (CP-I)

During the above discussion it is seen that when a peer shared his/her views by giving constructive feedback, it triggers the other learner to think and connect ideas, which shows clear cognitive presence.

CPDMOOC 4

> *Dear Sir, Congratulations for a noteworthy and useful institutional plan for integrating OER and adopting OEP.* (SP-AE) *It reflects the in-depth thought and referencing that you have put in to develop this plan.* (SP-OC) *Your plan is an illustration of open education scenario instrumental for developing countries like India.* (SP-GC) *However I would like to point out a few things…* (TP2-FD)
>
> *I appreciate your detailed and systematic plan.* (SP-AE) *Quite a comprehensive proposal covering all points.* (SP-OC) *Your attempt to*

present institutional plan is constructive and executable. (SP-GC) *I feel that your aim is somewhat different than the planned activities. Your target group always changed with the activity?* (TP2-FD)

As revealed by the above quotes providing peer feedback, meaningful comments have been provided during the peer interactions. While social presence has motivated the participants to engage actively and collaboratively in the discussion forum, the teaching presence of peers has also played a major role in knowledge sharing among the learners.

It is evident from the discussion threads given above that peer to peer discussions had promoted information exchange, applying new ideas, sharing personal meaning, and focusing discussion. These indicators of cognitive presence as well as teaching presence of peers have well-contributed to deeper learning and encouraged learners to think and reflect on their assessment task, as well as providing constructive feedback, resulting in co-construction of knowledge.

Concluding Remarks

The present study explored how the learner engagement has occurred in the discussion forum activities in CPDMOOCs and how knowledge construction among the learners has been supported. As revealed by the findings, learners have actively engaged in the discussions in all CPDMOOCs. Participants engaged in the activity based on the guidelines and the assessment rubric provided, which encouraged them to critically comment and provide constructive feedback to peers. The opportunity provided for

meaningful exchange of ideas has promoted sharing of knowledge and co-construction of knowledge among the learners.

The findings also revealed that the active engagement of learners in the discussion forum was in different ways according to the three types of presences- cognitive, social and teaching presence. It provided opportunities to interact and share their own ideas and experiences among peers as well as search for new information, all of which have also promoted knowledge construction.

M N. Kumudinee de Zoysa *is currently serving as a Senior Lecturer in Chemistry at the Open University of Sri Lanka. She graduated from the Institute of Chemistry, Ceylon in 1984. She joined the Open University of Sri Lanka in 1985. She has obtained Post Graduate Diploma in Distance Education and M.A in Distance Education from the Indira Gandhi National Open University, India. Kumudinee received M. Phil Degree in Chemical Education from the Open University of Sri Lanka in 2008. Her research interests lie in the area of distance education and she has published many journal articles.* orcid.org/0000-0003-1882-9768

S. Ruvinie Hettiarachchi *joined the Open University of Sri Lanka in 2003 and currently serves as a Professor in Chemistry. She graduated from University of Ruhuna, Sri Lanka in 1998 with a BSc Special Degree in Chemistry. In 1999 she joined University of Maine, USA and obtained PhD in Chemistry in 2002. Her research interests are in the areas of photo chemistry, natural product chemistry, environmental chemistry, and open and distance learning. She was awarded an Endeavour fellowship in 2011. She has published in high indexed journals as well as shared her research findings at International conferences.* orcid.org/0000-0001-5194-7331

References

Anderson, T., & Dron, J. (2011). Three generations of distance education pedagogy. *International review of research in open and distance learning 12*(3), 80-97. http://www.irrodl.org/index.php/irrodl/article/view/890/1663

Bates, A.W. (2015). *Teaching in a Digital Age: Guidelines for Designing Teaching and Learning.* Tony Bates Associates Ltd. https://opentextbc.ca/teachinginadigitalage/

Biggs, J. (2003). *Aligning for constructing learning.* https://www.researchgate.net/profile/John_Biggs3/publication/255583992_Aligning_Teaching_for_Constructing_Learning/links/5406ffe70cf2bba34c1e8153.pdf

Chang, S.H., & Smith, R. A. (2008). Effectiveness of personal interaction in a leaner-centered paradigm distance education class based on student satisfaction. *Journal of Research on Technology in Education*. *40*(4), 407–426. https://www.learntechlib.org/p/106113/

De Wever, B., Schellens T., Valcke, M., & Van Keer, H. (2006). Content analysis schemes to analyze transcripts of online asynchronous discussion groups: A review. *Computers & Education, 46*(1), 6-28. https://doi.org/10.1016/j.compedu.2005.04.005

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical Inquiry in a Text-Based Environment: Computer Conferencing in Higher Education. *The Internet and Higher Education, 2*(2-3), 87-105. https://doi.org/10.1016/S1096-7516(00)00016-6

Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical thinking and computer conferencing: A model and tool to assess cognitive presence. *American Journal of Distance Education, 15*(1), 7−23.

https://core.ac.uk/download/pdf/58774863.pdf

Garrison, D. R., & Arbaugh, J. B. (2007) Researching the community of inquiry framework: Review, issues, and future directions. *Internet and Higher Education*, *10*(3), 157-172. https://doi.org/10.1016/j.iheduc.2007.04.001

Geo, F., Shang T., & Franklin, T. (2013). Designing asynchronous online discussion environments: Recent progress and possible future directions, *British Journal of Educational Technology, 44*(3), 469-483. https://doi.org/10.1111/j.1467-8535.2012.01330.x

Gunawardena, C. N., Lowe, C. A., & Anderson, T. (1997). Analysis of a global online debate and the development of an interaction analysis model for examining the social construction of knowledge in computer conferencing. *Journal of Educational Computing Research*, *17*(4), 395-429. https://www.academia.edu/2120414/Analysis_of_a_global_online_debate_and_the_development_of_an_interaction_analysis_model_for_examining_social_construction_of_knowledge_in_computer_conferencing

Hara, N., Bonk C. J., & Angeli, C. (2000). Content analysis of online discussion in an applied educational phycology course. *Instructional Science, 28*(2), 115–152. https://doi.org/10.1023/A:1003764722829

Henri, F. (1992) Computer Conferencing and Content Analysis. In A.R. Kaye (Ed.). *Collaborative Learning Through Computer Conferencing: The Najaden Papers,* (pp. 117-136). Springer Nature. https://doi.org/10.1007/978-3-642-77684-7

Hillman, D.C.A., Willis, D.J., & Gunawardena, C.N. (1994) Learner-interface interaction in distance education: An extension of contemporary models and strategies for practitioners, *American Journal of Distance Education*, *8*(2), 30-42. https://doi.org/10.1080/08923649409526853

Jonassen, D. H., Peck, K. L., & Wilson, B. G. (1999). *Learning with technology: A constructivist perspective*. Prentice Hall.

Karunanayaka, S. P., Rajendra, J.C.N. & Ratnayake, H.U.W., & Naidu, S. (2016). Peer-facilitated discussions to enhance OER-based eLearning. *AAOU Journal, 11*(1), 1-16. https://doi.org/10.1108/AAOUJ-07-2016-0022

Kanuka, H., & Anderson, T. (1998). Online social interchange, discord, and knowledge construction. *Distance Education, 13*, 57-74.

Khlaif, Z., Nadiruzzaman, H., Kwon, K. (2017) Types of interaction in online discussion forums: A case study. *Journal of Educational issues, 3*(1), 156-169. https://doi.org/10.5296/jei.v3i1.10975

Laurillard, D. (2014). *Anatomy of a MOOC for Teacher CPD.* UCL Institute of Education. https://iite.unesco.org/files/news/639194/Anatomy_of_a_MOOC.pdf

Liu C. C., & Tsai, C. C. (2008). An analysis of peer interaction patterns as discoursed by online small group problem solving activity. *Computers and education, 50*(3), 627-639. https://doi.org/10.1016/j.compedu.2006.07.002

Moore, M. G. (1989). Three Types of Interaction. *American Journal of Distance Education, 3*(2), 1-7. https://doi.org/10.1080/08923648909526659

Naidu, S. (2015). Methodological issues in educational research, *Distance Education, 36(1).* 1-4. https://doi.org/10.1080/01587919.2015.1030097

Naidu, S., & Roberts, K. J. (2018). Future Proofing Higher Education in the Pacific with Open and Flexible Learning. *Journal of Learning for Development, 5*(3), 280-295. http://jl4d.org/index.php/ejl4d/article/view/309/349

Pena-Shaff, J.B., & Nicholls, C. (2004). Analyzing student interactions and meaning construction in computer bulletin board discussions. *Computers & Education, 42*(3), 243-265. http://dx.doi.org/10.1016/j.compedu.2003.08.003

Sher, A. (2009). Assessing the relationship of student-instructor and student-student interaction to student learning and satisfaction in web-based online learning environment. *Journal of Interactive Online Learning, 8 (2)*, 102-120. https://www.learntechlib.org/p/109393/

Siemens, G. (2014). *Massive Open Online Courses: Innovation in Education*? https://oerknowledgecloud.org/sites/oerknowledgecloud.org/files/pub_PS_OER-IRP_CH1.pdf

Soon, L., & Fraser, C. (2011). Knowledge sharing and knowledge exchange in distance education online group work. *International Journal of Information and Education Technology, 1*(2), 156-162. http://www.ijiet.org/index.php?m=content&c=index&a=show&catid=23&id=25

4 Effect of Instructional Design Strategies on Self-Regulation of Learning

S. A. S. Kaushalya Perera

Introduction

Self-regulated learning (SRL) is a much-researched area of study which is related to learner autonomy and lifelong learning. From a psychological perspective, SRL involves three key components: the use of strategies for self-regulating one's learning, responsiveness to self-oriented feedback on one's performance, and interdependent motivational processes of self-regulation and feedback on self-efficacy in learning (Zimmerman, 1990). In their review of contemporary theoretical models and recent empirical investigations on applications of digital technology to promote SRL, Johnson and Davies (2014) present an instructional framework of SRL in digital environments, which indicates a variety of design strategies of an online learning platform that support the cognitive processes involved in SRL.

This chapter seeks to explore the effect of the design strategies of the Continuing Professional Development Massive Open Online Courses (CPDMOOCs) on learner SRL through the theoretical lens of the works of Zimmerman (1990), and Johnson and Davies (2014) as evidenced through the reflective notes of the MOOC learners. It is hoped that such an investigation will shed light on strategies that could be adopted by MOOC developers in similar contexts.

Review of Literature

SRL as a Process

SRL is defined as the ability of learners to engage in their learning process with motivation and metacognitive awareness by executing appropriate learner behaviour (Zimmerman, 1990). As SRL embodies a complex set of skills and actions, different models have been presented to describe it as a process. According to Zhao and Johnson (2012), SRL involves four actions of the learner, i.e. comprehending the learning task, planning one's learning, formulating strategies for learning and evaluating the effectiveness of the strategies. Quite similarly, Johnson and Davies (2014) present a model of SRL as a cyclic process that involves the cognitive processes of comprehending the required learning task, strategic planning to complete the task, implementing the plan and monitoring the efficacy of the strategies in completing the task with success.

The cyclical phase model of SRL by Zimmerman (2002) provides a more comprehensive picture of the processes involved in self-regulation. According to this model, SRL takes place in three phases: the forethought phase, the performance phase and the self-reflection phase. The first of these phases, which takes place prior to the learning process, includes the two main processes of task analysis and self-motivation beliefs. Task analysis involves setting goals on learning and planning the strategies to be adopted for learning. Learners' self-motivation beliefs drive the initiation of the learning process in different forms: learner self-efficacy beliefs, expectations on the outcomes of learning, the intrinsic interest or value attributed to the learning task and learning goal orientation. The next phase in SRL, the

performance phase, involves the two key processes of self-control and self-observation. The former is related to the implementation of strategies to engage in learning and the latter helps the learner make observations on the different effects of the strategies used by oneself. The third step in the cyclical phase model of SRL is the self-reflection phase. This phase also embodies two main processes: self-judgement and self-reaction. The former is a self-evaluation of one's learning and attribution of causes for the quality of one's performance; the latter is the emotional response to one's learning (e.g. - satisfaction or dissatisfaction). According to the cyclical phase model of SRL, self-reflections on one's learning experience has an impact on the forethought phase of the subsequent attempts at learning.

The above discussion makes it evident that motivation plays a crucial role in SRL. Let us now examine the relationship between MOOCs and SRL, taking motivation as a key aspect of the latter.

SRL and Motivation in MOOCs

Massive Open Online Courses or MOOCs provide distance learning opportunities to a large number of learners at the same time. This 'massiveness' requires learners to be able to regulate their own learning on MOOC environments (Kizilcec et al., 2017). Therefore, MOOC learners are expected to be "self-directed" (Moe, 2015) and "self-motivated" (Milligan & Littlejohn, 2017). Nevertheless, as Alston and Brabon (2014, p. 182) state, "the very freedoms associated with 'connectivist' SRL account in part for the low completion rates of MOOCs." Research on the performance of MOOC learners and their SRL show that explicit recommendations on self-regulatory practices are not adequate for learner success in MOOCs;

instead, in the quest for strategies to enhance MOOC learner persistence and performance, it is imperative to study the effect of "approaches to support SRL that are embedded in the course and adaptive to the learners' skills and motivations" (Kizilcec et al., 2017, p.4).

Empirical evidence testifies that a learner's motivation to enroll in a MOOC can stem from a variety of factors. Although the popular belief is that SRL requires a high level of intrinsic motivation, it is evident that some learners are motivated to enroll in a MOOC due to extrinsic rewards (Milligan & Littlejohn, 2014). A study on a MOOC offered by three German higher education institutions (Haug et al., 2014) revealed that learners whose aim was to obtain an open badge, or a certificate of attendance showed a lower level of decline of engagement in the MOOC over time. Thus, the study provides evidence to support the notion that awarding certification could motivate MOOC learners "to set their own learning goals and ensure ongoing participation" (p. 71).

Studies also show that learner enrollment and SRL behaviour in a MOOC is influenced by his/her context and role. Milligan and Littlejohn (2014) investigated what motivated learner enrolment in a MOOC on clinical trials. Their findings show that the most common motivation (51.4% of the learners) was an aspiration to compliment or formalize their existing professional knowledge. Among other motivations were the ambition to embark on a career as a clinical researcher, to network with professionals from other countries so as to learn about their research contexts and to learn from a course offered by a reputed University. A study on learner self-regulation in the MOOC 'Introduction to Data Science' offered by the University of Washington shows that professional or learning context of a

MOOC learner has a significant impact on their self-regulatory behaviour (Hood et al., 2015). For instance, learners who were working as data professionals and/or were studying for higher educational qualifications were found to manifest more SRL behaviour than those who were not employed as data professionals and who were not studying for a higher educational qualification.

The above brief survey of empirical studies indicates that learners are motivated to enroll, participate and complete MOOCs due to a variety of reasons. In most cases, their motivation is linked to their professional roles and responsibilities or professional aspirations. Some learners set out to learn in a MOOC in order to develop specific skills or knowledge about specific topics related to their profession while some others aim at broader or higher-level goals such as networking with a community of practice. MOOC learners are also driven to engage in learning primarily due to intrinsic or extrinsic motives.

Having studied the dynamics of learner self-regulation and motivation in MOOCs, it would be of interest to explore the impact of the design strategies of the four CPDMOOCs on learner self-regulation based on the following research questions:

1. What sources of self-motivation were instrumental in triggering the learning process of the learners?
2. Which design strategies of the CPDMOOCs supported learner engagement in SRL?
3. To what extent has the learning experience of CPDMOOCs motivated learners to continue SRL?

Designing for self-regulation

In order to explore the effect of instructional design strategies on learner self-regulation in the CPDMOOCs, it is fitting to investigate what MOOC design strategies can support learner engagement in SRL, as substantiated in empirical literature.

Based on studies on the MOOC 'Fundamentals of clinical trials' of Harvard University, Littlejohn and Milligan (2015, pp.5-7) present a set of recommendations on the design of MOOCs for professional learners that aim at promoting SRL. These are:

- allowing learners to personalize the learning goals of the MOOC in order to help them link theoretical knowledge with their professional practice
- getting learners to reflect on their learning so that they will think of ways in which they can apply the knowledge in their professional practice
- capitalizing on learner diversity in terms of motivations, expectations, prior knowledge and work experience
- breaking down barriers to link formal learning with their professional experience by encouraging learners to exchange ideas on what they learn, both with their professional communities outside the MOOC and with peers in the MOOC
- encouraging learners to engage in authentic tasks to help them gain lasting knowledge
- helping learners to constantly monitor their learning process in order to determine how the whole learning experience would benefit them long term

The above recommendations can be adopted as principles in the design of MOOCs for professional learning. They chiefly emphasize the need to take into consideration the learners' professional context as well as the interaction between the learner and his/her profession when designing MOOCs.

Johnson and Davies (2014) present a theoretical framework on SRL in digital environments which include more specific aspects of instructional design and digital tools that support SRL. They propose a cyclical model of cognitive processes similar to that of Zimmerman (2002). This model consists of the processes of (i) learner task comprehension (ii) strategic planning of the learning and (iii) monitoring and evaluation of the learning strategies employed by oneself. In addition, the model also elaborates on self-regulated learner behaviours encompassed in each of these three cognitive processes and means of scaffolding the processes in terms of aspects of instructional design and tools, to be embedded in the digital environment to complement those design aspects. The instructional framework of SRL in digital environments presented by Johnson and Davies (2014) suggest that learner self-regulation in digital learning environments can be supported by the instructional design of and the tools made available in the online learning platform.

During the design phase of the CPDMOOCs on OER and OEP, specific strategies were adopted based on guiding principles drawn from both theoretical and empirical literature (Karunanayaka et al., 2018). The design strategies that were adopted can be summarized as follows:

- specifying learning outcomes for each CPDMOOC in line with the key competency
- presentation of learning scenarios for each CPDMOOC to facilitate situated learning
- assigning learning and assessment tasks constructively aligned with learning outcomes
- providing opportunities for learners to engage in dialogue, discussion and debate through the discussion forum
- presenting an assessment rubric for each assessment task in order to facilitate development of self-regulatory and meta-cognitive skills among learners

The next section of this chapter will examine the effect of these design strategies on the SRL of the learners based on the conceptual framework developed by integrating the theoretical framework of the cyclical phase model of SRL by Zimmerman (2002), the instructional framework of SRL in digital environments by Johnson and Davies (2014) and the design strategies of the MOOCs (Karunanayaka, et al., 2018).

The Conceptual Framework

A summary of the conceptual framework adopted in this study is presented in Table 4.1.

Table 4.1: Summary of the Conceptual Framework on SRL, Design Strategies of the CPD MOOCs and Possible Means of Scaffolding SRL in Digital Learning Environments

Cognitive Processes in SRL (Johnson & Davies, 2014)	Phases of Self-regulation (Zimmerman, 2002)	Self-regulated Learner Behaviour (Johnson & Davies, 2014)	Key Design Strategies of the MOOCs (Karunanayaka et al., 2018)	Means of Scaffolding Cognitive Processes (Johnson & Davies, 2014)	
				Instructional Design	Digital Environment
Task comprehension	**The Forethought Phase** -task analysis (setting goals and planning the learning strategies) -self-motivation beliefs (beliefs which drive the initiation of learning)	-Access materials -Read and summarize -organize information -seek clarification -set personal goals	-Specifying learning outcomes for each MOOC -Presentation of learning scenarios for each MOOC -Presenting an assessment rubric for each assessment task	-Detailed directions -Specific instructions -Examples and prototypes -Marking criteria -Common problems	-electronic resources including web-based text, audio, video and images -tools for communicating with teachers and peers
Planning/ strategizing	**The Performance Phase** -self-control (implementation of learning strategies) -self-observation (observing the effects of strategies used by oneself)	-manage and monitor time -regulate effort and stress -seek help as necessary -access learning resources and support materials -select and utilize tools	-Assigning learning activities/ assessment tasks -Requirement to maintain a reflective journal -Engaging the learners in dialogue, discussion and debate through the discussion forum -Presenting an assessment rubric for each assessment task	-Timelines and reminders -Questions and answers -Mnemonics and algorithms -Ideas and solutions -Model and demonstrate -Scaffolded guidance	-calendaring applications -peer collaboration tools such as discussions and wikis -links and help features -online training and tutorials -communicating tools
Monitoring/ evaluating	**The Self-reflection Phase** -self-judgement (self-evaluation of one's learning, and attribution of causes for the quality of one's performance) -self-reaction (emotional response to one's learning)	-state learning goals -determine personal progress towards goals -clarify requirements -re-consider approach -revise timelines	-Requirement to maintain a reflective journal -Engaging the learners in dialogue, discussion and debate through the discussion forum -Presenting an assessment rubric for each assessment task	- Encourage and motivate -Review and redirect -Self-assessment materials -Peer assessment strategies -Detailed and frequent teacher feedback	-grades and marks apps -tracking and progress tools -online quizzes and tests -reminder/ listing apps -tools for teacher and peer assessment

Methodology

Design of the Study

This study was conducted as a case study that explored the effect of design strategies of the four CPDMOOCs and their effect on learner self-regulation during the preliminary implementation of the MOOCs. A case study can be defined as "a transparadigmatic and transdisciplinary heuristic that involves the careful delineation of the phenomena for which evidence is being collected" (VanWynsberghe & Khan, 2007, p. 90). As such, the team that was involved in the design, development and implementation of the four CPDMOOCs were interested in conducting an in-depth exploration of how the design strategies of the MOOCs impacted learner self-regulation that a case study would allow (Harrison et al., 2017).

Research Questions

The following research questions guided this investigation:

1. What sources of self-motivation were instrumental in triggering the learning process of the learners?
2. Which design strategies of the CPDMOOCs supported learner engagement in SRL?
3. To what extent has the learning experience of CPDMOOCs motivated learners to continue in SRL?

Participants

The participants of this study were the learners who enrolled in the first two cycles of the four CPDMOOCs on OER and OEP conducted by the Open University of Sri Lanka during the period of 19th October 2018 to 01st March 2019. This study takes into consideration the data generated by all 417 learners who enrolled in the four MOOCs.

Majority of the learners in the MOOCs were female (57%), and males consisted of 43% of the sample. In terms of educational qualifications, a majority (i.e. 62%) had postgraduate qualifications and 29% of the learners had at least a basic degree. A high percentage of the participants (84%) were affiliated to educational institutions such as universities and schools in a variety of capacities (e.g. - educators, administrators and educational consultants) (Karunanayaka, 2019).

In presenting the findings of this study, each participant was assigned a pseudonym so that anonymity and confidentiality of data will be ensured. In this chapter, these names appear in italics.

Methods of Data Collection and Analysis

Data from multiple sources were used in exploring answers to the research questions. Table 4.2 provides a summary of these sources of data in line with each research question.

Table 4.2: Sources of Data in line with the Research Questions

Research Question	Source of Data	Relevant items/prompts in the data collection tool
1. What sources of self-motivation were instrumental in triggering the learning process of the learners?	SIF posts	
	Learner RJs	
	LES	- What did you think about the online learning environment (OLE), at that time?
2. Which design strategies of the CPD MOOCs supported learner engagement in SRL?	Learner RJs	
	3rd ATS	
	LES	-What do you think about scenario-based learning (SBL), now? -What do you think about OER, now? -What do you think about OLE, now? -How helpful were the following types of support? (Engaging in the learning and assessment tasks within the SBL experience, Accessing and using OER related to your learning, Engaging in the learning and assessment tasks within the OLE) -What is the feature you liked MOST in this course, and why? -What is the feature you liked LEAST in this course, and why?
3. To what extent has the learning experience of CPD MOOCs motivated learners to continue in SRL?	-Learner RJs	
	-3rd ATS	
	-LES	-What is the GREATEST IMPACT this course had on you as a professional, and how/why? -How are you applying/planning to apply your experiences gained, in your profession?

The Open University of Sri Lanka

These sources were the self-introduction forum (SIF) posts of the learners, reflective journals (RJ) maintained by them throughout the learning process, their third assessment task submissions (3rd ATS) which were also a reflective piece of writing on the entire learning process, and their responses to the Learning Experience Survey (LES) which they took part in after completing each MOOC.

The data were analysed qualitatively by way of content analysis (open coding, axial coding and selective coding) to construct an understanding of the nuances and dynamics of learner SRL on the MOOCs platform.

Findings and Discussion

Sources of Self-Motivation in CPDMOOC Learners

As discussed earlier, SRL behaviours of learners are preceded by their thinking processes that motivate them to initiate, engage and persist in learning. Therefore, it was important to build up an understanding as to what stimulated their learning behaviors in the CPDMOOCs. Analysis of learner SIF posts, RJs and their responses to the LES revealed that they were motivated to enroll in the MOOCs and engage in the learning tasks for a variety of reasons. Although most learners had not voiced their motives for engaging in the MOOC learning in their self-reflections, all the four sources of motivation elaborated by Zimmerman and Cleary (2009)—i.e., learner self-efficacy beliefs, outcome expectations, task interest or valuing and goal orientation—were present in the data. A definition and evidence for each of these sources of motivation of the MOOC learners are presented in Table 4.3.

Table 4.3: Sources of Self-motivation in the MOOC Learners

Sources of Self-Motivation	Self-Efficacy Beliefs	Outcome Expectations	Task Interest or Valuing	Goal Orientation		
Definition of the source of self-motivation (Zimmerman and Cleary, 2009)	Beliefs about one's ability to learn or perform at designated levels	Beliefs about the ultimate ends of one's performance, ranging from social acclaim and a desirable job to failure or the loss of a position.	Appreciating a task for its inherent properties rather than for its instrumental qualities in gaining other outcomes	beliefs or feelings about the purpose of learning rather than the act of goal setting		
				Mastery/ Learning Goal Orientation (orientation towards mastery or in-depth learning)	Proximal Goal Orientation (orientation towards completing a particular academic event at a given point in time)	Performance Goal Orientation (orientation towards performance phase outcomes)
Example quotes	*I am keen to have a go at adapting and creating an OER as I have ideas on EFL that I have been noting down.* *(RJ: Emma)*	*I believe MOOCs will guide me to achieve my career goals with success.* *(SIF: Thakshila)*	*I […] hope to get the maximum use of working with OER.* *(RJ: Sanduni)*	*We realize that though the world looks at you as an expert, […] we are at the tip of the iceberg. Still so much to learn.* *(RJ: Nidhu)*	*I have gone through the additional and essential resources for submitting my assignment.* *(RJ: Ranghbir)*	*I am facing some problems related to evaluating OER. I am now reading more about it to understand the evaluating criteria.* *(RJ: Sahan)*

The Open University of Sri Lanka

One source of self-motivation that was voiced by the learners was their self-efficacy beliefs. Some of the learners, who were already adept in learning online, were confident of their ability to engage in MOOC learning with success, and therefore were motivated to enroll:

> *I was very much familiar with the online learning environment so it will be an easy job for me to finish it.* (*LES*)

Some learners demonstrated a high level of self-efficacy as they were confident in their ability to engage in the level of learning required in the MOOCs. *Sahan*, who successfully completed all the four MOOCs, conveys a similar idea in his self-introduction to MOOC 3-1:

> *I am completing the CPDMOOC2_2018 and CPDMOOC3_2018 at the same time. Both tasks are challenging. But I am confident enough to follow both while reading, watching videos and studying relevant study materials. (SIF: Sahan)*

It is to be noted that both positive and negative self-efficacy beliefs motivated the learners to engage in SRL. In the following example, it is apparent that the negative self-efficacy belief of one's not having an adequate level of skills to create a graphical representation motivated the learner to master new skills so as to complete the learning task:

> *Developing a graphical presentation is a challenging task for me since I am not much familiar with graphic designs […] I learned about mind mapping. It is a new area of study for me*. (*RJ: Maahir*)

A similar type of idea was conveyed by some learners who stated that their sense of inadequacy in terms of knowledge and use of OER motivated them to enroll in the MOOCs.

Data from SIF posts and RJs also testify that prior experience of successful learning in the same series of CPDMOOCs appear to have contributed in the improvement of learner self-efficacy beliefs. This has stimulated further learning in some of the learners. Memory of success in the earlier MOOCs also seem to have triggered their motivation to persist in learning during challenging situations where they had to balance their online learning with their professional and other commitments. Gaining positive reinforcement on one's attempts at learning in the form of positive feedback during the MOOC learning experience also made the learners develop high self-efficacy beliefs of one's ability to progress in their learning.

Overall, data shows that learner self-efficacy beliefs that motivated them to engage in SRL in the MOOCs originated from a variety of factors such as their confidence in learning through online platforms, confidence in their ability to engage in the relevant level of learning, prior experience of successful learning in similar contexts, gaining positive reinforcement on their attempts at learning and feeling the need to close gaps in their learning.

Learner outcome expectations such as social acclaim and gaining certification or experience that would be useful in obtaining a desirable career placement or career advancement also motivated some learners to engage in MOOC learning as evident in the following excerpt of a professional in the field of distance education:

> *The development in Information Technology during the recent past has increased the reach of the people to education. […] online learning has become more popular among the working community. As an employee working in an institute offering distance education,*

I wish to follow an online course to get more exposure so I enrolled myself in this course. (RJ: Sabri)

It is apparent that *Sabri* was motivated to enroll in the MOOCs as she felt the need to keep herself updated in knowledge and skills related to her professional practice, and she was convinced that the MOOCs would provide her with more 'exposure' to a distance learning culture.

Learner reflections also testify that task interest also motivated learner participation in the MOOCs:

It was an unfamiliar area as I came from the science field and I never heard the word 'OER' before. But I got interested to know about it. (RJ: Sabri)

In the above extract, it is apparent that the tasks were of interest to the learner due to the novelty of subject matter. Reflecting on one of her learning experiences, *Kartika* mentions how she was motivated to engage in a learning task as she realized the practical difficulties in completing the previous task:

Learned how difficult it is to find OER. This made me find a different solution to make my search easy. (RJ: Kartika)

Learner beliefs or feelings about the purpose of learning or goal orientation was another source of motivation visible in learner SIF posts and RJs. The most commonly expressed type of goal orientation in the MOOC learners was task mastery, also known as mastery goal orientation or learning goal orientation. *Rishitha*, a university academic, states that she enrolled in the MOOCs to get more exposure to the MOOC learning culture in order to

enhance one's professional practice in offering similar learning opportunities to her students:

> *I have experience of offering online courses to [graduate] students through MOOCs. This has further motivated me to undergo such MOOCS. (SIF: Rishitha)*

Another instance of the goal orientation of task mastery appears in the SIF post of *Emma*:

> *[A] few years ago I took part in [a university] project where we studied OERs […] and did some research on potential applications. I have been meaning (thinking) to get back to this area and this course provides me with such an incentive. I would like to know more on the actual and potential use of OERs in language teaching and learning. (SIF: Emma)*

Gaining the exposure, knowledge and skills for resuming work and studies on an area of interest seems to have motivated *Emma* to enroll. The qualitative data shows that, by the time they enrolled in the CPDMOOCs, some of the learners were already aware of OER or had already worked on OER related projects, yet were motivated to study about it further. It appears that mastery goal orientation acted as a motivator both prior to the enrollment and also during the learning process in the MOOCs.

Proximal goal orientation—orientation to complete a particular task at a given point of time—was a less visible motivation in learner reflections. Those who expressed proximal goals as motivators mentioned how they engaged in the learning process in order to complete activities in the MOOCs. In the following excerpt, *Samaira* reflects how she was motivated to read relevant resources in order to complete a learning task:

> *It was a challenge to prepare a specific OER relevant to the guidelines given. Without a comprehensive knowledge on OER there is no way of completing the task. Referring literature is the best way. (RJ: Samaira)*

In other words, the above example shows an instance when a learner engaged in learning so as to achieve the proximal goal of completing an activity. A similar idea is expressed by *Yuvaan* in his reflections on his engagement in MOOC 3:

> *It is a good learning experience. I have gone through the additional and essential resources for submitting my assignment. (RJ: Yuvaan)*

Performance goal orientation—or orientation towards performance phase outcomes—was another source of motivation voiced by the MOOC learners in their reflections. The following reflection from *Sadewmi* is an example:

> *I faced a small issue when selecting an appropriate CC license because I was a bit confused with the licensing process. I tried to solve it by referring to the given learning materials. (RJ: Sadewmi)*

Here, the purpose of referring to the learning resources was to assign an appropriate Creative Commons license to the OER created by the learner.

Exploration of learner writings show that they were driven to embark on and persist in SRL in the MOOCs due to a variety of sources of motivation such as their self-efficacy beliefs, outcome expectations, task interest and the nature of their goal orientation.

Design Strategies of the CPDMOOCs that Supported Learner Engagement in SRL

During the design and development of the CPDMOOCs, the instructional design strategies of the MOOCs mentioned in Table 4.1 were adopted with the expectation of supporting learner engagement in SRL. In this section, it will be discussed which specific design strategies and corresponding online tools of the MOOCs scaffolded learners to engage in SRL during different stages of their learning, drawing on evidence from learner RJs, 3rd ATS and LES.

Specifying learning outcomes for each MOOC was one instructional design strategy used by the design team to motivate SRL during the forethought phase (task comprehension stage). *Saagar*'s RJ provides an example:

> *I was able to think about the planning required regarding specific activities and strategies to implement. I was also able to think regarding the resources required. It was important to visualize the learning outcomes and outputs during planning. (RJ: Saagar)*

The above excerpt shows how being aware of the general learning outcomes of the MOOC facilitated the SRL process not only during the task comprehension stage but also during the planning/strategizing stage.

Presentation of a learning scenario in the form of a video (scenario based video or SBV) for each MOOC was the key strategy employed by the MOOC designers to situate the learner in a concrete context so as to trigger their learning process (Premaratne, et al., 2018). The impact of the SBVs on learner SRL during the forethought phase is evident in the following excerpt:

> *Prior to assignment 1, I watched the video based on the learning scenario. [It] was a very effective way to convey the necessity of understanding the concept of OER and different uses. Learner has been brought to a certain stage of curiosity to make further studies on the concept of OER. (RJ: Sadewmi)*

According to Fowler et al. (2007, p. 130), "[a] scenario can be defined as a narrative description of a scene, normally involving actors and activities set within a given context and time frame. […] In learning design, [scenarios] describe the learning experience from which the description of what the learner needs to do within a given environment to achieve a learning outcome or objective can be derived." The following quote from a learner shows that the SBVs were useful in making learners aware of the learning tasks that they were to engage in:

> *Having a scenario to relate to, enabled me to make sense of what I was trying to do. (LES)*

Presenting an assessment rubric for each assessment task was another design strategy used in the MOOC development process to encourage learner self-regulation. Providing access to the rubrics scaffolded learner understanding of what exactly is required of them when completing the tasks:

> *I created the map […] according to the required assessment criteria. It was a totally new experience. (RJ: Imesha)*

The above quote suggests that having access to the assessment criteria helped the learner engage in the learning task while monitoring and evaluating one's own performance. RJ entries also show that availability of

these criteria also scaffolded learner self-evaluation after completing the learning task as well; obviously, they could identify limitations in their performance by referring to the assessment criteria. However, it is evident that some of the motivated learners understood the assessment criteria to be indicators of the minimum level of expected performance, and thus felt the need to perform above that level:

> *I felt that I addressed the criteria but was aware that I needed to research more, be more rigorous, make it more coherent and logical etc. (RJ: Emma)*

On the whole, making learners aware of the assessment criteria throughout the MOOC learning experience appear to have facilitated their performance during all the three phases of self-regulation—the forethought phase, the performance phase and the self-reflection phase.

Among the other means of scaffolding task comprehension specified by Johnson and Davies, 2014, which are available on the MOOC learning environment are detailed directions, specific instructions and tools for communicating with tutors and peers. Some learners found the guidelines and instructions given with the learning tasks to be "easy to understand" *(RJ: Sabri)* and "very clear" *(RJ: Sadewmi).* In the LES, some learners mentioned guidelines and instructions as the feature that they liked the most in the course. These ideas were also reflected in their 3rd ATS:

> *I was able to use different search engines and find relevant information easily and accurately by referring to given guidelines and instructions. (3rd ATS: Sadewmi)*

Moreover, the learners found the availability of tools to communicate with tutors and peers such as the messaging tool and the Help Wanted-Help Given Forum were helpful during both the task comprehension stage and the planning/strategizing stage:

> *For this course the instructions and guidance provided to us from the course team is well appreciated. Very quick response to our message. (RJ: Saadia)*

These tools of communication seem to have given the learners a sense of being part of an "engaging and supportive learning community." It is interesting to note that learners of other MOOCs also have found such a sense of belongingness to be a factor that has helped their successful completion (Mabuan, 2018, p. 205). As learner motivation is directly related to their emotions, sustaining learner motivation in SRL would also entail giving space for them to voice their disappointments and grievances in relation to their attempts at engaging in learning. Discussion fora on the MOOCs also provided them with this type of 'space.'

> *Although I posted the document on Monday, I did not get any comment till Friday. That makes me so upset and I have put the complaint about this on FQA forum. (3rd ATS: Sahan)*

It was evident that the availability of means to communicate with tutors and peers humanized the MOOC learning environment for the learner, who would mostly trudge a lonely path in the online learning journey.

Assigning learning activities or assessment tasks, requiring learners to maintain a reflective journal and engaging them in dialogue, discussion and debate through the discussion forum were three key design strategies of the

MOOCs that were intended to facilitate learner SRL during the performance phase or the planning/strategizing stage. In their reflective pieces of writing, learners mentioned the importance of learning/assessment tasks:

> *These online activities open an unseen area of educational resources. (3rd ATS: Sahan)*

Satisfaction of gaining new knowledge by engaging in the tasks is connoted here. As mentioned in the LES responses, the learners found these tasks both "challenging" and "interesting." One learner had stated the following in the LES:

> *Since I am an academic, I think this kind of assessment tasks within the SBL experience helps me to develop my career.*

The emphasis here is the situated nature of the task, in which learners are guided to engage with real world scenarios and complete tasks which resemble authentic challenges that they would encounter in their own contexts.

Maintaining a reflective journal throughout the learning process and writing a reflective note at the end of each MOOC as the third assessment task was intended to facilitate learner self-regulation during both the performance phase and in the self-reflection phase. As evident in LES, some learners found this to be one of their most liked features on the MOOCs.

Some also reported that they found reflective journal writing to facilitate their metacognitive awareness:

> *Reflective journal is the best thing, to see the things I'm doing and adjust my learning methods. (RJ: Gayan)*

Some of them reflected on the usefulness of reflective writing as a self-assessment mechanism:

> *The self-reflection activity made me to revisit all the things that I have done since the beginning of this course. (RJ: Chakrapani)*

However, some respondents to LES mentioned RJ writing to be the least liked feature due to time constraints.

A design strategy employed by the course team to facilitate learner SRL, both during the performance phase and the self-reflection phase, was to engage the learners in dialogue, discussion and debate through the discussion forum. The following quote from a RJ summarizes the ideas expressed by a number of learners as to how the forum facilitated peer learning as well as self-evaluation of their own performance:

> *I think the discussion forum was a highly effective idea since we can share our work with peers […]. We could also identify our mistakes and the facts left behind by letting our peers to comment on the work. Discussion forum allowed me to observe different methods of presenting our graphical work. (RJ: Sadewmi)*

Learner reflections show that the discussions facilitated learner self-evaluation in two ways—through peer feedback and by evaluating the work of peers against one's own work. It was evident that the collaborative learning opportunities provided by the discussions supported learner SRL by making them co-dependent rather than tutor-dependent learners.

Some other means of scaffolding learner self-regulation during the performance phase that are mentioned by Johnson and Davies (2014) are

timelines and reminders. During the planning/strategizing stage or the performance phase, learners found the e-mail notifications or reminders to be highly useful in concentrating on the course and completing the tasks on time:

> *Reminding the activities time to time via email […] makes it easier to accomplish tasks on time. (LES)*

It was evident that the study map given at the beginning of each MOOC indicated the learners a suitable sequence of steps to follow, thus facilitating their strategizing of learning:

> *I started studying the Essential and Additional Learning Resources in order to engage in the learning activities, as indicated in the Study Map. (RJ: Dilini)*

During the performance phase, the learners also found the learning resources made available in the online platform to be "very useful" *(LES)," clear* and focused" *(RJ: Kavindi).* Some learners mentioned learning resources as the feature they liked most in the MOOCs as they helped them to develop their knowledge on OER and OEP:

> *My understanding about OER was […] broadened after referring these resources*. *(RJ: Rishitha)*

It also appears that the learning resources motivated some of the learners to extend their search for learning resources beyond the MOOC platform:

> *The essential learning resources led me to other publications in the field of OER and OEP that I found useful and interesting. (RJ: Emma)*

This effect might be attributed to the hypertextuality of online resources.

As discussed above, requiring learners to maintain a reflective journal, engaging them in dialogue, discussion and debate through discussion fora and presenting an assessment rubric for each assessment task supported leaner self-regulation during the third phase of SRL - self-evaluation phase - as well. Self-assessment material such as the self-assessment quiz provided at the beginning of each MOOC, mechanisms for providing peer and tutor assessment and tools made available to track one's own progress in the course also scaffolded learner SRL during this phase.

Fostering Continued SRL Practices Through the CPDMOOC Learning Journey

Overall, the reflective notes of the CPDMOOC learners indicated their interest to adopt SRL skills and make continued use of similar opportunities to engage in SRL practices. For example, *Maahir*'s reflections show that the MOOC learning experience has been effective in fostering in him, the use of new study skills that are required to engage in effective SRL:

> *Sahan […] shared links related to mind mapping. That was really useful and I learned about [it]. It is a new area of study for me. (RJ: Maahir)*

It was apparent that engaging in collaborative learning in the CPDMOOCs has also motivated learners to get to know and use various technological tools that complement independent learning:

> *Through this collaborative learning activity, I learnt how to prepare attractive graphical representations and […] software that can be used to prepare graphical representations. This is the advantages of collaborative learning. (RJ: Vidarshana)*

By the end of MOOC 1, the learners also expressed their interest in engaging in further studies on the subject of OER and OEP:

> *I hope to improve my knowledge and awareness on OER and OEP and apply it in my teaching and learning process*. (LES)

Data on LES also show that, in a broader sense, learning on the MOOCs has motivated the learners to engage in "life-long learning." Some of the learners who are teachers by profession mentioned that the awareness of OER and OEP that they gained through the MOOCs helped them to improve their abilities in learning as well as teaching. To illustrate this, one student stated that by the end of the MOOC learning experience, s/he felt "more confident in using open resources for future learning" (LES).

This shows that engaging with a variety of learning resources on the MOOC learning environment has improved learner confidence in accessing and studying materials independently, which is a necessary skill in SRL. Although MOOCs normally have a high dropout rate due to various reasons - with learners' lack of abilities to engage in SRL as one reason (Gutiérrez-Rojas et al., 2014) - some of the CPD MOOC learners expressed their interest to continue learning through MOOCs, which require SRL skills and practices:

> *Ultimately this course motivated me to learn through MOOC courses. (RJ: Chakrapani)*

Collaborative and co-operative learning practices help learners become co-dependent rather than teacher-dependent. This, in turn, paves the way for learner autonomy and SRL. As the above excerpt shows, it was evident that the opportunities provided for MOOC learners to engage in collaborative

learning have motivated them to engage in collaborative and co-operative learning in the future as well. This is more pronounced in the following reflection:

> *This experience made me become more flexible and open minded as lifelong learner cum teacher educator. Now I understand and accept the value of cooperation and collaboration in the learning process. I value sharing of perspectives and resources with others to enhance learning. (RJ: Saagar)*

Another learner expressed the willingness to maintain contact with the peers in the MOOCs in the future as well for collaborative professional and academic development:

> *I would like to continue my communication with peers in future as well. It would be a great opportunity. I strongly trust that knowing each other will help our future studies.* (LES)

This shows that the opportunities provided in the CPDMOOCs for collaborative learning have had an impact on improving learner attitudes towards learning with peers and motivating them to form communities of practice to support one another in SRL.

Concluding Remarks

This chapter set out to explore to what extent the design strategies of the CPDMOOCs on OER and OEP have been able to promote SRL in the learners from the perspective of the learners themselves. Learner generated data show that they come with their own motives to initiate and persist in a MOOC learning experience. Further, it was also evident that the design

strategies of the MOOCs align with the recommendations of Littlejohn and Milligan (2015) on the design of MOOCs for professional learners in aspects such as getting learners to reflect on their learning to facilitate application of knowledge in professional practice, encouraging learners to exchange ideas on what they learn, both with their professional communities outside the MOOC and with peers in the MOOC, encouraging them to engage in real world tasks to help them gain lasting knowledge and helping them to constantly monitor their learning process in order to determine how the whole learning experience would benefit them long term.

S.A.S. Kaushalya Perera *has been serving the Open University of Sri Lanka (OUSL) as a Lecturer in Secondary and Tertiary Education for over five years where she teaches courses on Educational Psychology and Educational Technology. With a Bachelor of Education from the University of Colombo (UoC), she is currently reading for the degree of M.A. in T.E.S.L. at the Post Graduate Institute of English affiliated to the OUSL. She is a budding researcher currently engaged in multi-disciplinary research studies in collaboration with the UoC. Kaushalya's research mainly focuses on online learning, learner autonomy and teacher development from a psychological perspective.* orcid.org/0000-0001-7272-4129

References

Alston, P., & Brabon, B. (2014). "A hostage to fortune?" – Validating Massive Open Online Courses (MOOCs) for University Credit. In U. Cress & C.D. Kloos (Eds.), *EMOOCs* (pp. 178-83). https://www.researchgate.net/profile/Anja_Lorenz/publication/263543544_Open_Online_Courses_in_the_context_of_higher_education_an_evaluation_of_a_German_cMOOC/links/54941c560cf2e1b6095f97bc.pdf

Fowler, C.J.H, van Helvert, J; Gardner, M.G., and Scott, J.R. (2007). The use of scenarios in designing and delivering learning systems. In H. Beetham & R. Sharpe (Eds.), *Rethinking pedagogy for a digital age: designing and delivering e-learning*. (pp. 129-141). Routledge.

Gutiérrez-Rojas, I., Alario-Hoyos, C., Pérez-Sanagustín, M., Leony, D., & Delgado-Kloos, C. (2014). Scaffolding Self-learning in MOOCs. n U. Cress & C.D. Kloos (Eds.), *EMOOCs* (pp. 41-49). https://www.researchgate.net/profile/Anja_Lorenz/publication/263543544_Open_Online_Courses_in_the_context_of_higher_education_an_evaluation_of_a_German_cMOOC/links/54941c560cf2e1b6095f97bc.pdf

Harrison, H., Birks, M., Franklin, R., & Mills, J. (2017). Case Study Research: Foundations and Methodological Orientations. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, *18*(1), Article 19. http://nbn-resolving.de/urn:nbn:de:0114-fqs1701195

Haug, S., Wodzicki, K., Cress, U., & Moskaliuk, J. (2014). Self-regulated learning in MOOCs: Do open badges and certificates of attendance motivate learners to invest more. n U. Cress & C.D. Kloos (Eds.), *EMOOCs* (pp. 66-72).

https://www.researchgate.net/publication/264094250_Self-regulated_learning_in_MOOCs_Do_open_badges_and_certificates_of_attendance_motivate_learners_to_invest_more

Hood, N., Littlejohn, A., & Milligan, C. (2015). Context counts: How learners' contexts influence learning in a MOOC. *Computers & Education*, *91*, 83-91.

Johnson, G., & Davies, S. (2014). Self-regulated learning in digital environments: Theory, research, praxis. *British Journal of Research*, *1*(2), 1-14.

Karunanayaka, S. P. (2019). *Design, Development, Implementation and Evaluation of Massive Open Online Courses for Continuous Professional Development MOOCs (CPDMOOCs) on Adoption of Open Educational Resources (OER) and Open Educational Practices (OEP) – A Design-based Capacity Development Initiative - Phase 2*: Final Report - CEMCA. http://cemca.org/ckfinder/userfiles/files/CPDMOOCs_OUSL_CEMCA_UPDATED_FINALREPORT_WithAnnexes_01.07.2019_ShironicaPKarunanayaka.pdf

Karunanayaka, S., Naidu, S., Rajendra, J. C. N., & Ariadurai, S. A. (2018). Designing Continuing Professional Development MOOCs to promote the adoption of OER and OEP. *Open Praxis, 10*(2), 179-190. https://openpraxis.org/index.php/OpenPraxis/article/view/826

Kizilcec, R. F., Pérez-Sanagustín, M., & Maldonado, J. J. (2017). Self-regulated learning strategies predict learner behavior and goal attainment in Massive Open Online Courses. *Computers & Education*, *104*, 18-33. https://doi.org/10.1016/j.compedu.2016.10.001

Littlejohn, A., & Milligan, C. (2015). Designing MOOCs for professional learners: Tools and patterns to encourage self-regulated learning. *eLearning Papers*, *42*. http://oro.open.ac.uk/46385/

Mabuan, R. A. (2018). Confessions of a MOOCER: an autoethnographic inquiry on online distance education. *Turkish Online Journal of Distance Education*, *19*(4), 198-213.

Milligan, C., & Littlejohn, A. (2014). Supporting professional learning in a massive open online course. *The International Review of Research in Open and Distributed Learning*, *15*(5). https://doi.org/10.19173/irrodl.v15i5.1855

Milligan, C., & Littlejohn, A. (2017). Why study on a MOOC? The motives of students and professionals. *The International Review of Research in Open and Distributed Learning*, *18*(2). https://doi.org/10.19173/irrodl.v18i2.3033

Moe, R. (2015). The brief & expansive history (and future) of the MOOC: Why two divergent models share the same name. *Current issues in emerging elearning*, *2*(1), Article 2. https://scholarworks.umb.edu/cgi/viewcontent.cgi?article=1009&context=ciee

Premaratne, I.A., Sandanayake, T.C., Hettiarachchi, S.R., Perera, S.A.S.K., Karunanayaka, S.P., & Naidu, S. (2018, November). *Reflections on the design and development of scenario-based videos in MOOCS.* [Paper presentation] The Open University International Research Sessions-2018, Nawala, Nugegoda, Sri Lanka.

VanWynsberghe, R., & Khan, S. (2007). Redefining case study. *International Journal of Qualitative Methods*, *6*(2), 80-94. https://doi.org/10.1177/160940690700600208

Zhao, P., & Johnson, G. (2012, February). A theoretical framework of self-regulated learning with web-based technologies. In *Global TIME* (pp. 163-168). Association for the Advancement of Computing in Education (AACE).

Zimmerman, B. J. (1990). Self-regulated learning and academic achievement: An overview. *Educational psychologist*, *25*(1), 3-17. https://www.researchgate.net/publication/243775466_Self-Regulated_Learning_and_Academic_Achievement_An_Overview

Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory into practice*, *41*(2), 64-70. https://www.researchgate.net/publication/237065878_Becoming_a_Self-Regulated_Learner_An_Overview

Zimmerman, B. J., & Cleary, T. J. (2009). Motives to self-regulate learning. In K. R. Wenzel & A. Wigfield (Eds.), *Handbook of motivation at school*, (pp. 247-264.). Routledge. https://www.researchgate.net/profile/Barry_Zimmerman/publication/281465214_Motives_to_self-regulate_learning_A_social-cognitive_account/links/56b4e32908ae44bb3305603d/Motives-to-self-regulate-learning-A-social-cognitive-account.pdf

5 Learner Perceptions on Learning Resources

S. A. Ariadurai and J. C. N. Rajendra

Introduction

In this Chapter, we present a study on the perceptions of learners on the learning resources provided to support the learning process in the CPDMOOCs on OER and OEP.

When it comes to online learning, students have the freedom to choose the time, the method and the learning resources they would like to use for their learning (Milligan & Littlejohn, 2014). In this context, the onus of monitoring and attuning the behaviour and action to suit the context of learning is upon the learner him/herself (Zimmerman, 2000). If the learner is self-directed, then he or she would seek the required information, and plan and self-evaluate the activities of learning actively (Geng et al., 2019). Moreover, this type of active learning is found to increase learner participation which leads to improvement in the process of learning and learner performance (Freeman, et al., 2014; Yilmaz, 2016). In addition, the learning environment can influence and shape or structure the learners' approaches for learning. This study looked at the ways in which learners perceived how their learning experiences have been influenced by the learning resources recommended by the CPDMOOC course team.

Integration of Learning Resources in the CPDMOOCs

Scenario-based learning (SBL) pedagogical design approach was adopted when designing the learning experience of the four CPDMOOCs, where the participants were situated in authentic learning scenarios. During the design process, special attention was given to facilitate knowledge construction of learners, by incorporating relevant learning resources to support them complete the learning activities and assessment tasks. Existing OER were identified as the key learning resources to support the learners.

Throughout the course design process, a variety of resources were identified, collected, and evaluated by the course team. After a rigorous process, the learning resources which are relevant, specific, interesting, and in a variety of forms, viz., text, graphics, Power-Point presentations, audio clips, video clips, and animations, were selected. All these were OER with either CC BY or CC BY-SA license. When selecting the learning resources, special consideration was given to allow innovative use of technology as well as innovative use of pedagogy and knowledge construction by learners.

Learning resources provided for all the four modules comprised two sets: Essential Learning Resources and Additional Learning Resources. The essential learning resources were provided to support the learner to engage in the learning activities and the specified assessment tasks, whereas the additional learning resources were provided to help the learner gain additional knowledge to engage in the learning activities and assessment tasks in a deeper way. Table 5.1 describes an example of different types of essential learning resources that have been included in one of the CPDMOOCs.

Table 5.1: Types of Essential Learning Resources Included in CPDMOOC-1

Essential Learning Resources				
No.	**Resource**	**Type of Material**	**CC License**	**Brief Description**
1	**Why Open Education Matters?**	Animated video	CC BY	This is a video about how technology is transforming our system of education, generating equal opportunities for all. Duration: 2:27 Minutes Web-link: http://whyopenedmatters.org/video/67/why-open-education-matters/
2	**What do you mean by OER?**	Animated video	CC BY	This video explains the basics of OER. Duration: 2:36 Minutes Web-link: https://www.youtube.com/watch?v=-xGRztrWv-k&t=80s
3	**Understanding Open Educational Resources**	Text	CC BY-SA	This text describes the concept in the form of definition and benefits of OER and provides a brief description of history and development of OER and challenges in using OER. Pages: 5-15 Web-link: https://oerknowledgecloud.org/sites/oerknowledgecloud.org/files/2015_Butcher_Moore_Understanding-OER.pdf
4	**What are Creative Commons Licenses?**	Video and text	CC BY	This resource describes about the creative commons, the elements in creative common licenses, the types of licenses and its usage. Duration: 5:32 Minutes video and the text on the web Web-link: http://www.openwa.org/module-5/
5	**Creating OER and Combining Licenses**	Video	CC BY-SA	This is a video describing how to create an OER and different ways of combining the licenses. Duration: 9:16 Minutes Web-link: https://www.youtube.com/watch?v=Hkz4q2yuQU8

Similarly, in all the CPDMOOCs, various types of essential learning resources were provided to the learners to facilitate their learning. Further, in each of the four CPDMOOCs, additional learning resources of different types were also suggested for those leaners who needed extra information or supplementary knowledge on the subject matter.

Review of Literature

Ever since OER became part of learning resources, many researchers have attempted to determine their impact on the learning experiences of learners. The growing awareness of the potential reach of large-scale systems of technology-enabled instruction has focused attention on the history of how such systems developed and the accumulation of knowledge over the past forty years of how learning with such systems could be maximized (Scanlon et al., 2015).

Student learning outcomes are traditionally measured by scores, knowledge or skills gained in the course. It is generally accepted that learning materials are important because they can significantly increase student achievement by supporting student learning. However, there are differences in opinions on whether the different types of media used in the learning process, such as text, video, animations, etc. make different impacts on the learner.

According to Clark (1983), the differences in learning are rather influenced by instruction and not by the media used. He contends that the significant differences reported in research are not due to the effects of media but because of the instructions being designed well. Clark compares media to trucks or delivery vehicles that carry goods and insists that the quality of instruction is what matters and not the mode of delivery.

However, the position taken by Clark has been challenged by many in the educational technology community. For example, Kozma (1991) while conceding the importance of instructional design, argues that media mattered too. It has been found, based on research, that more positive outcomes are noted in students when instead of using multimedia resources that have only words, both pictures and words are used (Mayer, 2008). According to Salomon (1981), all media support specific kinds of instruction and are less supportive of others. Many authors accept that use of media, especially video, provides a significant means to improve student learning and enhance student engagement (Allen & Smith, 2012; Hsin & Cigas, 2013; Kay, 2012; Lloyd & Robertson, 2012; Rackaway, 2012; Stockwell, Stockwell et al., 2015). However, according to Brame (2016), to maximize the benefit of video as an educational tool, it is important to keep in mind three key components - cognitive load, elements that impact engagement, and elements that promote active learning.

Today, most educational technologists concur that the unique significant characteristics of different media should be taken advantage of when designing instructions for teaching and learning. People tend to learn more deeply from words and pictures than from words alone (Mayer, 2008). However, according to Eady and Lockyer (2013), not all information presented in multimedia form support learning. For learning to occur, the resources themselves need to be designed using sound educational principles and need to be purposefully integrated into the learning experience by the teacher. According to Brame (2016), elements that promote cognitive activity during video viewing can enhance student learning. Zhang et al. (2006) report that students who were able to control

movement through interactive media, selecting important sections to review and moving backwards when desired, demonstrated better achievement of learning outcomes and greater satisfaction.

Theoretical and Conceptual Basis

The main objective of this study was to find out about how effective were the various learning resources provided for learners under the categories of 'essential learning resources' and 'additional learning resources' in the CPDMOOCs, in terms of the perceptions of the learners. Since the learning resources consisted of different types, such as text, videos and animations, the research study was conceptualized based on the Cognitive Theory of Multimedia Learning, initially proposed by Mayer (Mayer et al., 2001; Mayer & Moreno, 2003; Mayer, 2005), and later expanded by various authors (Brame, 2016; Ginns, 2005; Mayer, 2017; Schneider et al., 2018).

Cognitive Theory of Multimedia Learning (CTML) seeks to explain the processes that take place in the minds of learners during meaningful learning from multimedia instruction. It defines multimedia as the use of words (verbal) and pictures (visual) and the theory has clear implications for instructional design to facilitate multimedia learning. The goal of multimedia learning is to develop instructional media considering how the human mind works. Based on this principle, CTML presents the idea that the brain does not interpret a multimedia presentation of words, pictures, and auditory information in a mutually exclusive fashion; rather, these elements are selected and organized dynamically to produce logical mental constructs. Moreover, Mayer (2002) emphasizes the importance of learning when new information is integrated with prior knowledge. CTML is based on three key

assumptions about the way people learn from words and pictures: the dual channel assumption, the limited capacity assumption, and the active processing assumption.

Methodology

The overall CPDMOOCs project was divided into two segments. The first segment was to develop and offer four CPDMOOCs by incorporating OER resources in the teaching environment. The second phase was to conduct research on the experiences of the learners and the facilitators on various aspects during the implementation of four MOOCs. Keeping this in mind, the entire project was carefully planned as a research project incorporating multiple strategies of quantitative and qualitative data collection and analysis. Accordingly, in this particular study, the intention was to study the usefulness of the learning resources provided to learners using a mixed mode of quantitative and qualitative analysis with a higher emphasis on the qualitative data.

In the last few decades, the movement of mixed methods research has evolved as a new alternative, in social and behavioural science (Creswell & Plano Clark, 2010; Teddlie & Tashakkori, 2009). Models of a combination of qualitative and quantitative research approaches have been developed (Mayring, 2001; Mayring et al., 2007). This movement, however, has not led to a new methodology but it puts together different steps of analysis with their different logics, mainly following a pragmatic theory of science. On the other hand, Mayring (2014) has proposed a step-by-step model of the research process, consisting of seven steps, that could be used for qualitative and quantitative (and mixed methods) research. This study too

adopted a mixed methods research approach in finding the answers for the research questions.

Research Questions

The following two research questions were formulated to guide the study.

1. How have the essential and additional learning resources supported the participants in completion of learning / assessment tasks?
2. How have the different types of learning resources motivated participants to engage in the learning process?

Participants

The four CPDMOOCs that were offered through the Open University of Sri Lanka were open to any interested learner from anywhere in the world. The entire programme was offered by implementing each course in two cycles. Initially, 319 participants from 28 countries registered in the platform. However, the actual number of learners who registered for the individual courses in each cycle were much less. Data were collected from all participants who registered in the four CPDMOOCs.

Collection and Analysis of Data

When delivering this fully online course, the MOODLE platform was used as the Learning Management System (LMS) to deploy the four CPDMOOCs. This eventually provided large data sets recorded in the LMS, which were analysed and used to investigate the learning process.

Data were gathered from the following sources:

a) Learner comments as recorded in their reflective journals of all four CPDMOOCs.
b) Self-Reflections of learners submitted as an assessment task in the four CPDMOOCs.
c) Responses to the learner experience surveys administered at the end of each CPDMOOC.
d) Discussion forum entries of learners in all four CPDMOOCs.

In the reflective journals, 56 individual learners have reflected on their learning experiences on the four CPDMOOCs. In the self-reflections, 55 individual learners have given their reflections on the four CPDMOOCs. Therefore, in this study a total of 220 entries, many of them which were long passages, were analysed. The contents of the reflective journal consisted of 33,009 words and self-reflections consisted of 44,801 words. Further, at the end of the two cycles of the CPDMOOCs a learning experience survey was conducted, where a cumulative total of 71 responses were received for all four CPDMOOCs. The detailed data of the responses received are given in Table 5.2.

The analysis of the online content in the reflective journals and the self-reflections was unobtrusive. That is, the comments given by the learners on their reflective journals and self-reflections were not studied during the time the learners were still undergoing their learning, but they were studied only after the learners had completed the course and been given their final grades. The facilities available in the Moodle platform were used to archive the content transcripts.

Table 5.2: Comments received in Reflective Journals, Self-Reflections and Learning Experience Survey

MOOC No.	Number of entries / responses			Number of entries with comments on learning resources	
	Reflective Journals	Self-Reflections	Learning Experience Survey	Reflective Journals	Self-Reflections
MOOC 1	45	48	35	26	36
MOOC 2	26	30	18	16	23
MOOC 3	19	25	16	12	14
MOOC 4	08	19	12	07	13
Total	98	122	71	61	86

Content analysis method was used to analyse the asynchronous discussions of the MOOC participants. The discussion transcripts for this study were exported from the Moodle platform to the MSWord which was used to organize and code the discussion transcripts. Further, written comments received from the learners on the survey done were also studied, and any direct comments made on the learning resources were included for the analysis.

Content analysis (using quantitative and/or qualitative methodologies) is a way to analyse a range of aspects in online discussion groups, such as the nature of the interaction between contributors or analysis of cognitive

activity (Akyol & Garrison, 2008). Content analysis techniques are widely used in qualitative research. Current applications of content analysis show three distinct approaches: conventional, directed, or summative (Hsieh & Shannon, 2005). All three approaches are used to interpret connotation from the content of text data and, hence, adhere to the naturalistic paradigm. The major differences among the approaches are coding schemes, origins of codes, and threats to trustworthiness. In conventional content analysis, coding categories are derived directly from the text data. With a directed approach, the analysis starts with a theory or relevant research findings which act as guidance for initial codes. Summative content analysis involves counting and comparing, usually of the keywords or content, followed by the interpretation of the underlying context.

It is generally accepted that when the content analysis is used, it is important that the theoretical foundation of the approach should be well established. To this effect, there are many analytical approaches available. Table 5.3 shows some of the schemes that have been proposed by various authors (Patriarcheas & Xenos, 2012).

Table 5.3: An Overview of the Content Analysis Schemes

Instrument	Theoretical background	Unit of analysis
Henri (1992)	Cognitive and metacognitive knowledge	Thematic unit
Newman et al. (1995)	Critical thinking	Thematic unit
Zhu (1996)	Theories of cognitive and constructive learning – knowledge construction	Message
Gunawardena et al. (1997)	Social constructivism – knowledge construction	Message
Bullen (1997)	Critical thinking	Message
Fahy et al. (2000)	Social network theory – Interactional exchange patterns	Sentence
Veerman & Veldhuis-Diermanse (2001)	Social constructivism – knowledge construction	Message
Javela & Hakkinen (2002)	Social constructivism – perspective taking	Complete discussion
Lockhorst et al. (2003)	Social constructivism – learning strategies	Thematic unit
Pena-Shaff & Nicholls (2004)	Social constructivism – knowledge construction	Paragraph
Weinberger & Fisher (2006)	Social constructivism – knowledge construction	Micro and macro level

The three qualitative data sets in relation to the content of learning experience surveys, self-reflections, and discussion forum posts of all four CPDMOOCs were coded separately. The learners have used various words to describe the learning resources. The 'Find' tool in the MSWord package was used to find the various words used by the users.

Accordingly following are the words that were searched within the contents: learning, resources, materials, video, essential, and additional. Using the

'Special' features available in the 'Replace' tool of the MSWord package, the different words which were searched were assigned colour codes.

The 'units of analysis' consisted of each message thread from each of the participants in the three sets of qualitative data. In the next step, all the statements pertaining to learning resources and the statements which referred to learning resources were identified and separated out and tabulated against each of the learners. Afterwards, all the three sets of data pertaining to an individual learner were combined and any repetitive comments by the same learner were deleted so that only one set of statements from each learner was available for the analysis of the statements made.

Considering all the above, and going through the contents of the collected data, a coding template (see Table 5.4) was developed to analyse the content to arrive at conclusions on how the learning resources have supported the participants in the completion of learning / assessment tasks and how they have motivated participants to engage in the learning process. Every statement made by each learner was analysed and all the elements and categories found in a sentence were coded at the end of the sentence.

Table 5.4: Coding Template

Element	Category	Code	Indicators – Examples
Cognitive elements	Course Level	CE-L	Useful
	Contentment	CE-C	Focused
	Clarity	CE-Y	Clear
	Audio-Visual	CE-A	Video
Non-cognitive elements	Emotional	NC-E	Enjoyable
	Attraction	NC-A	Interesting
	Originality	NC-O	Authentic
	Cognizance	NC-C	Experience
Transformational Aspects	Attitude	TR-A	Realization
	Practice	TR-P	Use
	Self-Critical	TR-C	Questioned
	Learnedness	TR-L	Understand

In the foregoing section on findings and discussion, all the texts which are in italics corresponds to the very words used by the participants. However, where necessary, suitable grammatical and language corrections have been made without sacrificing the intended meaning of the comments.

Findings and Discussion

Learners' general perceptions on the learning resources

In the learning experience survey conducted, there were two questions pertaining to what the learners liked the most and least. Table 5.5 presents

the number of learners, from among the total number of 71 respondents, who have commented on this attribute, in relation to the learning resources.

Table 5.5: Learner Perceptions on Resource Materials as the Most/Least Liked Aspect of the Course

	MOOC1	MOOC2	MOOC3	MOOC4	Total
Most Liked	5	2	2	1	10
Least Liked	2	0	1	0	3

It can be seen from the data given in Table 5.5, that about 14% of 71 respondents, have found the resources provided as the best thing they liked in the course. On the other hand, about 4% of 71 respondents, have found the resources provided, as the thing they liked least in the course.

In the learner feedback survey, there were two questions which were directly relevant to the learning resources provided.

a. How do you rate the accessing and using of OER provided, in relation to your learning? What are the reasons for your answer?
b. What is your rating on access to learning materials and resources provided?

The responses received for the questions raised in the learner feedback survey with reference to the ratings (on a scale of 1 to 5) provided are given in Table 5.6 for all the four MOOCs.

Table 5.6: Answers for the Questions in the Learner Feedback Survey

	MOOC1	MOOC2	MOOC3	MOOC4
How do you rate the accessing and using of OER provided related to your learning in the light of online learning experience?	4.1	4.2	4.0	4.8
What is your rating on access to learning materials and resources provided in the light of Scenario Based Learning?	4.2	4.4	4.3	4.8
Overall rating on Access and Use of learning resources	4.2	4.3	4.2	4.8

According to data presented in Table 5.6, it is observed that a high rating (above 4.0) has been provided by the participants of all four CPDMOOCs, in relation to accessing and using learning resources. This indicates that the learners who followed these four CPDMOOCs were highly satisfied with the learning materials and resources provided.

The statements made by the learners with reference to the learning resources to the open-ended questions in the survey were analysed separately for each of the four CPDMOOCs, along with other qualitative data gathered from self-reflections and discussion forums.

Role of learning resources in completion of learning and assessment tasks

MOOC 1

For many participants, this has been the first online course they have ever enrolled. It was apparent from the feedback received, that the learning resources provided have been useful in completing their learning and assessment tasks to both who had prior knowledge about OER and for whom this was a new concept.

Some of the feedback are given below:

> *This is my first online course which provides me a new experience for my teaching and learning process [NC-C, TR-P]. The background knowledge which I had, and the resource materials uploaded in the MOOC facilitated me to successfully complete the first assessment [NC-C, CE-L, CE-C].*
>
> *Watching videos and getting information from the e-Learning resources is a new experience for me, this enable me to enhance my knowledge on the use of e-learning resources [CE-A, CE-C, NC-C, TR-L].*
>
> *Although I had prior knowledge about OER, but the essential and additional resources as well as video resources gave depth to my understanding [NC-C, CE-A, CE-L, TR-L]. These resources were quite authentic and useful [NC-O, CE-L]. They made me to have profound understanding of the concept of OER [TR-L, CE-C].*
>
> *I got the knowledge about the OER from this module [TR-L, CE-C]. The reading materials are helpful to understand about OER [CE-L, TR-L].*

I referred all the resources provided [NC-C]. I referred essential and additional Learning resources [NC-C]. My understanding about OER was widened and broadened after referring to these resources [CE-L, CE-C, TR-L].

Many participants were of the opinion that the information available in reading materials provided in the online class had been helpful for them to have a very clear idea about OER. One of the participants has said it was 'a bit confusing' when he first read all the articles, however 'repeated reading' had been very much helpful for him to have a better understanding. Even though, he had not enough time to go through all the additional reading materials before attempting the first assignment, later he could experience that the additional reading materials provided 'more information' and 'deep insight' into OER.

There were substantial comments about the videos provided. Some of these observations are given below:

I understood why the education system needs Open Educational Recourses (OER) after watching this video [TR-A, CE-A].

I do not know anything about OER [NC-C]; so, I looked into the resources provided in the OUSL-MOOC web account [NC-C]. Video links and documents were very useful to me to understand the basics of OER [CE-A, CE-C, CE-L, TR-L].

The learning resources and scenarios in video clips helped me to understand this concept in a more meaningful way as a learner [CE-A, CE-L, CE-C, TR-L, TR-A].

A few participants have stated that the learning resources provided were not adequate.

I watched the video about open licensing [NC-C, CE-A]. Those videos give the basic idea [CE-L, TR-L]. But the details in the videos, not enough [CE-L]. Maybe it is good to introduce animated form of videos [NC-A]. The utility of the resource and the preference change from one user to another [CE-L].

In addition to the learning materials provided, I have gathered different learning resources from educational websites [TR-L].

When I read the text, which was given as a reference material, I got difficulties to grasp as the terminologies are new to me [CE-Y, NC-C, TR-C]. So I used to see the videos to get clarification and after seeing them, I attempted to search my interested topics by using different search engines such as Creative Commons, OER Commons, Google advanced Search and You Tube Filter [CE-A, CE-Y, NC-A, NC-C, TR-P].

I started reading about OER [NC-C]. I watched the video clip uploaded by OUSL [CE-A, NC-C]. But I did not grasp clear idea of OER [TR-C, CE-Y]. When I read the commonwealth textbook on OER, I understand how important these concepts are especially for teachers [NC-C, TR-L].

At very first I am amazed that there are many ways to increase our resources in various licenses [NC-E, TR-L]. I watched many videos about OER which explained what OER means and by what, why, how to find such things [NC-C, CE-A, TR-L]. Those are very useful [CE-L].

The only participant who was not very happy with the learning resources provided was a person who claimed that he was already familiar with the OER concepts, and stated the following:

> *It is useful to revisit the following: In providing learning resources, a variety is needed - short and snappy, deeper, and more extensive [CE-L, NC-A]. Even though I myself am quite studious, I will still opt for short videos and short articles when perusing a topic [TR-C, CE-A, NC-C]. This is necessary when there is so much potential reading out there, and time and brain space (!) is limited [CE-A]. Academic content provided from the experts in the form of videos and text was of moderate level [CE-A, CE-L]. More academic content on topic is expected [CE-L]. Also, experts of the subject should engage more with their own Video / Text contents [CE-A]. In my opinion, both content and engagement are the key components of learning [TR-A, NC-C]. In future while developing OER there aspects need to be considered [TR-P].*

On the other hand, another participant who claimed that she had a good prior knowledge in the field of OER, OEP, Open Educational Culture (OEC) and of conducting courses, keynotes, guidance, consultancy and research and who stated that she signed in for this MOOC due to both the topic, which is in her research area and because she is currently co-writing a book on OER, had the following to say:

> *I found this MOOC very useful, with its rich resources and guidelines on OER [CE-L, CE-C, NC-C]. It is very important to offer a MOOC on this topic as there are need to go from awareness-raising to actions and to consider OER as default [TR-A, TR-P]. The more it is used, the better it is for all [CE-C].*

MOOC 2

Many participants have expressed their satisfaction on the amount of resource materials provided. One of the participants has thus stated as follows:

> *Plenty of Learning materials and resources were given to learn about the searching and evaluating of OER [NC-C, CE-L].*

With reference to the usefulness of the resources, a majority of the participants agreed that the resources provided in the MOOC including the video links were very useful for them to understand and search for appropriate OER. One of the participants said that the first impression she got after watching the scenario-based video on Searching and Evaluating OER was that searching an OER under the relevant topic would not be an easy task. However, according to her, after she referred the essential learning resources and additional learning resources and the accompanying videos, "OER Search Techniques" and "How to find and evaluate OER", she could successfully complete the task assigned to her. Another participant said that the clarity of the contents and the procedures used in the videos were of very high standard and it helped to clearly understand and easily follow the steps in the videos to successfully complete the assigned tasks.

However, one of the participants had a different opinion. According to him, he found the learning resources somewhat limited to completely understand the context, but the essential and additional learning resources allowed and motivated him to search for more resources. However, he also said that the videos gave a clear idea on searching and evaluating OER. According to him the concept of evaluating OER, apart from its license type, needs to be further discussed. He also suggested that the size of the video

(over 650 MB) should be smaller so it could be accessed through a mobile phone. Another participant too commented that the learning scenario-video was very limited, and that she could not get anything much from this video but the video under the brainstorming was very useful. This seems to be the general opinion with regard to the learning scenario video in MOOC2.

However, the resource video that provided guidance on the use of search engines with the keywords was found to be very effective and efficient in conveying the message on how to find resources of any media type from the OER repositories in OER sites. A participant commenting on the usefulness of the resources in the final assessment task- developing a Searching Strategy, stated the following:

> *I had background knowledge on searching and evaluating OER since I have already gone through the essential and additional resources given in MOOC [TR-L, CE-L, NC-C]. However, creating five strategies was a little bit of a task since from among the information provided, I had to find the most suitable strategies in order to fulfil the task [NC-C, TR-A, TR-C]. For this purpose, I had to browse supplementary materials other than learning resources provided in the MOOC [NC-C, TR-A].*

MOOC 3

Many participants of MOOC3 have stated that the resource materials provided were of high quality. Most participants have also stated that the videos on learning scenario and learning resources were useful and sufficient to do the assigned tasks. However, some of the participants noted that they had to refer to additional materials also, to complete their assessment tasks.

Multiple participants were appreciative of the resource video provided in this MOOC.

One of the participants said that:

> *When I watched the YouTube (video) adapting and creating OER, that is drawing a flower, made me understand the creative common licenses" [NC-C, TR-L, CE-A]*

Another stated:

> *I learnt most of the things from watching the video about adapting and creating OER and how to adapt and create OER"*
> *[TR-L, CE-A, NC-C]*

When considering the fulfilment of the objective of providing the required knowledge to create their own OER materials, some of the comments made by the participants with reference to the learning resources provided, are presented below:

> *I went through the learning materials: texts and videos provided [NC-C, CE-A]. Thereby I gained knowledge and learnt to create OER by remixing, revising, and combining license, choosing a CC license, and applying license to the work [TR-L, TR-P]*

> *This learning experience was really critical and useful for me [NC-C, CE-C, CE-L]. It gave me hands-on experience of adopting existing OER as per requirement and create my own OER [NC-C, CE-C, TR-P]. It taught me the entire process of selecting and remixing OER as well as publish it with proper licensing [TR-L, TR-P]. This has made me motivated to adopt,*

remix existing OERs as per need of the students and create my own OERs [TR-A, NC-E, CR-C, TR-P].

It was a wonderful and enriching experience of watching videos and referring to essential and additional learning resources and thinking of how to develop a plan for integrating OER and adopting OEP at institutional level [NC-E, NC-C, CE-C, CE-L, TR-A, TR-P]. The learning experiences provided for 'adapting and creating OER' in terms of watching videos, referring essential and additional learning resources helped in understanding the concept in better way [NC-C, CE-A, TR-L].

I have watched the video about the adopting and creating OER materials two times [NC-C, CE-A]. This video gave me a clear idea about this [CE-A, CE-Y]. I read the resources [NC-C]. The resources are useful to understanding about this theme [CE-L, TR-L]. I read the materials and watched the video [NC-C, CE-A]. Then I got the idea about how to remix the document [CE-C, TR-L, TR-P].

However, at least two of the participants have raised the issue of the technical capabilities required to remix text and video contents. One of them had suggested that it would have been better if additional technical sources of help in editing videos, audios, and graphics, are given within the module itself. Another person has said that he practically faced problems to download the OER materials in the pdf format and edit them. He says he got away with this problem by converting the pdf document in to word format using online converter and then edited the document and then changed the edited document to pdf format and uploaded it. These two comments suggest that if certain additional tools on revising and remixing contents

were provided as supplementary notes the participants would have been more benefitted.

MOOC 4

Most learners have given positive feedback on the learning resources provided in MOOC 4. With reference to the resource videos provided at least four participants stated that the video links provided in the course were very supportive. One of the participants specifically stated that the video links were very useful for her to understand how to promote and plan the integration of OER and adoption of OEP at institutional level.

Even though many learners mentioned that the essential and additional learning materials were well focused and useful to complete the activity tasks, there were certain comments from a few participants about their inadequacy. One of the participant has said that even though she was able to complete the self-assessment quiz by referring to the resource materials provided, for the first assessment task she had to refer more resources and get help from her colleagues as she did not have a clear picture of the task at the beginning.

Another participant too stated that though the provided resources and supplementary materials were convenient and highly useful to improve the knowledge regarding OER at the beginning, later he ran into trouble as he could not get a clear idea about the topic. Therefore, he had to study the given materials and provided videos in deeper manner. He also states that some of the resource materials provided for this module were not helpful at all.

Similar comments have been made by yet another participant. According to her, even though she could provide answers to self-assessment questions by referring to the Essential and Additional Learning resources, she has felt the second task of creating a plan to promote integration of OER and adoption of OEP at an institutional level to be a huge task. Once again, she too states that within the limited time period, she could not get a clear idea about it by only referring to the learning resources provided. She goes on to state that she referred more resources, especially, videos related to institutional plans. According to her she would have preferred more resources to be included on "How to create a plan to promote an integration of OER and adoption of OEP".

Another participant was of the view that if one follows the step by step instructions given in the documents, reports, success stories and videos, the learning resources are very useful to stimulate the thinking on how to start an institutional plan and process the activities for their purpose. She further states that if the participants go through every given source, they would have gained a good knowledge about the integrated process. According to her by reading the additional resources and further resources from the web she was able to enhance her knowledge on how to decide to proceed with each activity, the resource persons, the selection of target groups and the outcomes of each activity. However, to her, the main challenge was the given time frame.

In general, while there were very positive responses on the usefulness of the learning resources, there also seems to be some reservations about the adequacy of the learning resources provided for this MOOC.

Role of learning resources in motivating participants to engage in the learning process

MOOC 1

Based on the feedback received it was observed that the learning resources provided had motivated most learners to engage with their learning process, as evident by following quotes:

> *This is my first experience as a student in a MOOC [NC-C, TR-L]. Actually, this learning experience is very enjoyable, and this learning journey helped me to refresh and enhance my knowledge about Open Educational Resources and about its related concepts [NC-C, NC-E, TR-L, CE-C]. Given resources and peer interactions facilitated this process well [CE-L, CE-C].*
>
> *This is my first online course [NC-C]. I am very interesting to follow this course [NC-A, NC-C].*
>
> *It was much interesting to watch the related videos and also it was very helpful to get a clearer picture about OER [NC-A, CE-A, CE-L, CE-Y]].*
>
> *I got confused about the first criteria identifying the basic attributes of OER, and to overcome the confusion I read many references and also watched more videos [NC-E, CE-Y, NC-C, CE-A, TR-A].*
>
> *It was much interesting to watch the related videos and also it was very helpful to get a clearer picture about OER [NC-A, NC-C, CE-A, CE-L, CE-Y]. But I failed to refer all the resources provided as I did not have enough time for it [TR-C].*
>
> *The video was a very effective way to convey the necessity of understanding the concept of OER and different uses [CE-A, CE-L, TR-L,*

CE-C]. Learner has been brought to a certain stage of curiosity to make further studies on the concept of OER by referring to it [NC-C, TR-C].

The provided learning materials in the form of videos were very interesting as they were short and managed to keep attention from beginning to the end [NC-A, CE-A, CE-L, CE-C, NC-C].

Except for one participant, all the other learners have given very positive comments about the learning resources provided to them. Some selected comments are given below:

Learning resources which were provided by this course and those were very useful, clear, and focused. [CE-L, CE-Y, CE-C]

I listened to each of the videos and found them to very useful in conceptualizing OERs and especially the one that demonstrates how more than one OER can be mixed [NC-C, CE-A, CE-L].

Some of the participants have had challenges with the learning resources when it came to managing time. Some of their comments are given below:

The challenge faced by me was to allocate considerable amount of time to go through the learning resources leisurely [TR-C, TR-A]. So, most of the time I just scanned them, and it would have been really interesting if I had more time to read and watch the videos leisurely [NC-C, NC-E].

In an online course time management is important [TR-A]. It requires a lot of time and intensive work [TR-A]. I had a very big challenge to complete each activity on time [TR-C, TR-A]. Same time the learning resources and additional learning resources provided for this course were very helpful to manage my time [CE-L, TR-A].

I started the online course while I was doing an examination in my masters [NC-C]. The biggest challenge at that time was to the active participation and learning through this MOOCs course [TR-C].

MOOC 2

Many participants have given very positive feedback on the way the learning instructions and learning resources have been organized and structured. One of the participants had this to say:

This is the very first time that I have learned about OER [NC-C, TR-L]. Initially it was somewhat uncomfortable for me as some concepts are very new things for me [NC-C, TR-A, TR-C]. But as there was a clear path of following the course, I had a better understanding what is going on with in this course and it enabled for a quality way of learning [CE-Y, TR-L, CE-C].

Further, commenting on the learning resources provided in the course, another participant was of the view that at the beginning of the course the given instructions and the provided learning resources were very useful to start the learning journey. She further states that the step by step instructions given were very important and efficient, to engage in learning about OER and OEP with the provided learning resources.

There was another interesting comment from a participant who was a regular student of the Psychology degree programme of the OUSL, who said that the learning experience she gained from following this MOOC based on the learning resources provided became a great help for her to understand the learning resources provided for one of her degree courses, titled "Academic Writing in Psychology". In fact, she said that if she had not been

involved with this MOOC, continuing with her regular course would have been a disaster.

MOOC 3

Many of the participants of MOOC3 have said that the resource materials provided were of high quality though one of the participants is of the view that she would have preferred shorter videos which are very effective in keeping the attention rather than watching a longer video.

Similar comments have been made by another participant who states that as the study requirements need to be manageable if busy people are going to engage with and complete the MOOC and it would have been better if short videos and the links to websites were provided. However, she was of the opinion that web links could be problematic as, in one case when there was no clear direction as to what to do or how to use these learning resources.

Another participant was of the opinion that if there was a short film or a documentary on embedding cc licenses for a preparation of a document, it would have been more helpful. Another participant has said that she would have liked more videos of case studies to make things clearer.

MOOC4

One of the participants stated that this session was very complicated and therefore she had to read more learning resources to get the exact knowledge. In fact, she had to refer to additional resources from the web, and she had given a list of resources she referred which she found to be

useful. She had also mentioned that with her workload, time period was not enough to complete the assessment.

According to one of the participants:

> *It was a wonderful experience of watching videos and referring essential and additional learning resources and thinking of how to develop a plan for integrating OER and adopting OEP at institutional level [NC-E, CE-A, NC-C, TR-P, CE-C]. It was very enriched experience of learning through MOOC [NC-E, TR-L, CE-C]. The learning experiences provided for 'Integrating OER and adopting OEP' in terms of watching videos, referring essential and additional learning resources helped in understanding the concept in better way [CE- A, NC-C, TR-L, CE-C]. It was a good experience to refer material provided, read case studies and prepare one's own institutional plan [NC-C, TR-P].*

Another participant stated that the essential learning resources did not inspire her very much but that they did provide a springboard which led her to other publications in the field of OER and OEP that she found useful and interesting. Though she found evaluating and reading materials of immediate relevance to complete the assignment was quite challenging, she saved the referred materials for later reading. This person who had read a lot of materials on strategy and policy in education two years ago, states that she initially skimmed through publications on strategy and policy and only read fully if she spots something that attracts her interest!

Effectiveness of learning resources on the cognitive, non-cognitive and transformational aspects

In this section, the results of an analysis done on how the learning resources have influenced the three elements described in Table 5.4, viz. cognitive, non-cognitive and transformational aspects of the learner are discussed. Among the three elements, the first two correspond to the attributes of the learning resources while the third element, transformational aspects, relates to the impact on the learner due to the learning resources. To analyze the effectiveness on the identified three elements, the coded responses of the learners for all four MOOCs were combined. The main reason for combining the responses is that since all four MOOCs are interdependent, it is desirable to analyze the responses of all four MOOCs to see the learners' perception on learning resources.

Among the responses received from learners a total of 218 indicators were identified of which 39.9% belonged to the cognitive element, 29.8% to the non-cognitive element and another 30.3% were transformational aspects. Therefore, it is seen that the learning resources have had adequate influence on all the three elements.

However, within the non-cognitive elements, only one indicator was identified for the originality category. This indicates that the learners have not commented on this category of the learning resources. It may be due to the reason that learners did not identify any significant originality in the learning resources that were provided.

The self-critical category of the transformational aspects had only about 15% among the 66 indicators identified under this element. Based on this it can be argued that the learning resources did not substantially encourage or influence the learners to critically assess themselves.

Moreover, only about 10% comments were given by the learners on the clarity category within the cognitive element, and another 10% comments on the attraction category and 12% comments on the emotional category within the non-cognitive element. These figures indicate that the learning resources need to be further improved to motivate the learners to be show interest and enjoy their learning experience.

Within the cognitive element, majority of the comments, which were positive, have been about the course level (32%) and the audio-visual categories (31%). This indicates the learners have found the audio-visual materials provided in the MOOCs to be very effective and also the courses to be at the appropriate level in relation to their usefulness. This is a very encouraging result, as when the courses were designed much emphasis was directed towards providing the learners with appropriate and useful audio-visual materials that would be of useful to the learners. This inference is confirmed by the fact that among the transformational aspects most indicators (44%) belong to the learnedness category. These findings are further substantiated by the qualitative analysis undertaken on the learner responses.

Further, cognizance category had 75% of the indicators within the non-cognitive element. This shows that the lesson materials instilled positive experiences on the learners. This has probably made the learners to make

comments on their contentment with the lesson materials, with almost a quarter of the indicators (26%) within the cognitive element category, being attributed to contentment category.

Finally, another important inference that could be made from the analysis is that about 41% of indicators within the transformational aspects correspond to attitude (23%) and practice (18%). This implies that the lesson materials provided, seem to have influenced the attitudes of the learners towards the use of OER materials and encouraged them to mention that they would practice what they have learnt through the learning resources in the MOOCs. This could be considered as a positive outcome of the MOOCs.

Concluding Remarks

In this chapter we have explored the role played by the learning resources provided in the CPDMOOCs, in supporting learners to complete the given tasks and motivating the learners to engage in the learning process. The contents of responses from self-reflections, reflective journals, discussion forums and learner experience surveys were analysed under three elements: cognitive elements, non-cognitive elements, and transformational aspects with reference to the learning resources provided. Under the cognitive element, the course level, learner's contentment, clarity of the materials and the role of the audio-visual materials provided were studied. Under non-cognitive elements that influenced the learner, emotional aspects, attractiveness, originality of the course and the learner's cognizance were looked at. Under transformational aspects, how the MOOCs, and in particular how the learning resources aided the learner to

transform his or her attitude, practicing of what they have learnt, their self-critiquing and the knowledge gain or the learnedness were explored.

It was apparent from the findings that most learners have expressed contentment with the learning resources provided in all four CPDMOOCs, in terms of being useful and helpful for their learning. Certain concerns were raised by some of participants on the inadequacy and the relevance of certain essential resource materials provided. Nevertheless, based on the feedback received from both types of participants, those who had prior knowledge about OER and for whom this was a new concept- who were the majority, it was revealed that the learning resources provided were at the right level to complete their learning and assessment tasks and also in motivating them to pursue with their studies.

Most learners had positive views on the videos provided and perceived that both the videos and the reading materials provided in the online courses had been helpful for them to have a very clear idea about OER. However, there were some concerns about lack of details, lack of interactivity, and limited scope in certain videos. Also, suggestions have been made to include more animated form of videos and shorter videos to maintain the learner attention.

A few learners have expressed their amazement at the possibilities that were available for them with adopting OER, which they have learnt through the resources provided to them and attending to the learning tasks. Many have enjoyed the learning resources and expressed their interest in learning more about OER. At least one of the participants commended on the

originality of the learning resources stating that the materials provided were authentic.

For a substantial number of participants, the biggest challenge has been allocating time to go through all the resource materials provided and to actively participate in the learning process, within the given time period. Many participants of the MOOCs were practitioners who indicated that the experience they gained through this learning experience has been helpful in their teaching practice as well. Further, the resource materials have provided them the opportunity to gain hands-on experience in adapting existing OER as per the requirement of their students as well as to create their own OERs.

In general, it can be concluded that the essential and additional resources including the video resources incorporated in the CPDMOOCs have helped in widening and broadening the understandings of the participants about the concept of OER during their learning process, and enabled them getting deeper insights in relation to the adoption of OER.

Samuel Anbahan Ariadurai *is a Senior Professor and the current Vice Chancellor of the Open University of Sri Lanka (OUSL). He possesses a Doctor of Philosophy from University of Manchester Institute of Science and Technology, United Kingdom and has more than thirty years of experience in teaching, research, and academic administration at OUSL. His areas of specialization include Technical Textiles, Fabric Design and Mechanics, and Distance Education. Professor Ariadurai has more than fifty research publications and has supervised more than ten postgraduate research students. He has also authored thirty books as sole author and twenty books as co-author for distance learners in various areas of his expertise.* orcid.org/0000-0002-3705-039X

Joseph Calistus Nihal Rajendra *is a Senior Professor in Physics and the current Dean of the Faculty of Natural Sciences of the Open University of Sri Lanka. He graduated from the University of Jaffna, Sri Lanka in 1984 and received his Doctor of Philosophy in Physics from the University of Sussex, United Kingdom in 1991. He has a distinguished academic career in teaching and research spanning more than three decades. Professor Rajendra has published in reputed national and international peer-reviewed journals and has authored three textbooks in Physics. In addition, he has spent a substantial amount of his professional life in enhancing teaching and learning practices in Physics Education and research focused on Open and Distance Learning (ODL) environment.* orcid.org/0000-0002-9641-4528

References

Akyol, Z., & Garrison, D. R. (2008). The development of a community of inquiry over time in an online course: Understandong the progression and integration of social, cognitive, and teaching presence. *Journal of Asynchronous Learning Networks, 12*(2-3), 3-23.

Allen, A. W., & Smith, R. A. (2012). Effects of video podcasting on psychomotor and cognitive performance, attitudes and study behavior of student physical therapists. *Innovations in Education and Teaching International, 49*, 401-414.

Brame, C. (2016). Effective Educational Videos: Principles and Guidelines for Maximizing Student Learning from Video Content. *CBE Life Sciences Education, 15*(4). https://doi.org/10.1187/cbe.16-03-0125

Bullen, M. (1997). *A case study of participation and critical thinking in a university-level course delivered by computer conferencing*. [Doctoral dissertation, University of British Columbia]. https://open.library.ubc.ca/cIRcle/collections/ubctheses/831/items/1.0056000

Clark, R. E. (1983). Reconsidering research on learning from media. *Review of Educational Research, 53*(4), 445-459. https://doi.org/10.3102/00346543053004445

Creswell, J., & Plano Clark, V. (2010). *Designing and conducting mixed methods research.* SAGE.

Eady, M., & Lockyer, L. (2013). Tools for learning: technology and teaching strategies. In P. Hudson (Ed.), *Learning to teach in the primary school* (pp. 71-89). Cambridge University Press.

Fahy, P., Ally, M., Crawford, G., Cookson, P. S., Keller, V., & Prosser, F. (2000). The development and testing of a tool for analysis of computer

mediated conferencing transcripts. *Alberta Journal of Educational Research, 46*, 85-88.

Freeman, S., Eddy, S. L., McDonough, M., Smith, M. K., Okoroafor, N., & Jordt, H. (2014). Active learning increases student performance in science, engineering, and mathematics. *Proceedings of the National Academy of Sciences of the United States of America, 111* (23), 8410-8415.

Geng, S., Law, K. M., & Niu, B. (2019). Investigating self-directed learning and technology readiness in blending learning environment. *International Journal of Educational Technology in Higher Education, 16*, Article 17. https://doi.org/10.1186/s41239-019-0147-0

Ginns, P. (2005). Meta-analysis of the modality effect. *Learning and Instruction, 15*(4), 313-331.

Gunawardena, C. N., Lowe, C. A., & Anderson, T. (1997). Analysis of a Global Online Debate and the Development of an Interaction Analysis Model for Examining Social Construction of Knowledge in Computer Conferencing. *Journal of Educational Computing Research, 17*(4), 397-431.

Henri, F. (1992) Computer Conferencing and Content Analysis. In A.R. Kaye (Ed.). *Collaborative Learning Through Computer Conferencing: The Najaden Papers,* (pp. 117-136). Springer Nature. https://doi.org/10.1007/978-3-642-77684-7

Hsieh, H-F., & Shannon, S. E. (2005). Three Approaches to Qualitative Content Analysis. *Qualitative Health Research, 15*(9), 1277-1288. https://doi.org/10.1177/1049732305276687

Hsin, W. J., & Cigas, J. (2013). Short videos improve student learning in online education. *Journal of Computing Sciences in Colleges, 28*, 253-259.

Jarvela, S., & Hakkinen, P. (2002). Web-based Cases in Teaching and Learning - the Quality of Discussions and a Stage of Perspective Taking in

Asynchronous Communication. *Interactive Learning Environments, 10*(1), 1-22.

Kay, R. H. (2012). Exploring the use of video podcasts in education: a comprehensive review of the literature. *Computer in Human Behaviour, 28*, 820-831.

Kozma, R. B. (1991). Learning with media. *Review of Educational Research, 61*(2), 179-211. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.91.5693&rep=rep1&type=pdf

Lloyd, S. A., & Robertson, C. L. (2012). Screencast tutorials enhance student learning of statistics. *Teaching of Psychology, 39*(1), 67-71.

Lockhorst, D., Admiraal, W., Pilot, A., & Veen, W. (2003). *Analysis of electronic communication using 5 different perspectives*. [Paper presentation] ORD 2003 Heerlen, The Netherlands.

Mayer, R. (2005). Cognitive Theory of Multimedia Learning. In R. Mayer (Ed.), *The Cambridge Handbook of Multimedia Learning* (pp. 31-48). Cambridge University Press. https://doi.org/10.1017/CBO9780511816819.004

Mayer, R. E. (2002). Multimedia learning. In B. H. Ross, *The psychology of learning and motivation* (pp. 85-139). Academic Press.

Mayer, R. E. (2008). Applying the science of learning: Evidence-based principles for the design of multimedia instruction. *American Psychologist, 63*(8), 760-769.

Mayer, R. E. (2017). Using multimedia for e-learning. *Journal of Computer Assisted Learning, 33*(5), 403-423.

Mayer, R. E., & Moreno, R. (2003). Nine Ways to Reduce Cognitive Load in Multimedia Learning. *Educational Psychologist, 38*(1), 43-52.

Mayer, R. E., Heiser, H., & Lonn, S. (2001). Cognitive constraints on multimedia learning: When presenting more material results in less understanding. *Journal of Educational Psychology, 93*, 187-198.

Mayring, P. (2001). Combination and integration of qualitative and quantitative analysis. *Forum: Qualitative Social Research, 2*(1). http://www.qualitative-research.net/index.php/fqs/article/view/967

Mayring, P. (2014). *Qualitative content analysis: theoretical foundation, basic procedures and software solution.* Gesis. https://nbn-resolving.org/urn:nbn:de:0168-ssoar-395173

Mayring, P., Huber, G. L., Guertler, L., & Kiegelmann, M. (2007). *Mixed methodology in psychological research.* Sense Publishers.

Milligan, C., & Littlejohn, A. (2014). Supporting professional learning in a massive open online course. *The International Review of Reserach in Open and Distributed Learning, 15*(5). 197-213. https://doi.org/10.19173/irrodl.v15i5.1855

Newman, D. R., Webb, B., & Cochrane, C. (1995). How to measure critical thinking in face-to-face and computer supported seminars do things impossible in face-to-face meetings through content analysis. *Interpersonal Computing and Technology Journal, 3*(2), 56-77.

Patriarcheas, K., & Xenos, M. (2012). Fora for Distance Education: Another Way for Analysis of Discussions, *Proceedings of the Second International Conference on Social Eco-Informatics* (pp. 70-75). International Academy, Research, and Industry Association (IARIA).

Pena-Shaff, B, J., & Nicholls, C. (2004). Analyzing student interactions and meaning construction in computer bulletin board discussions. *Computers & Education, 42*(3), 243-265.

Pena-Shaff, J. B., Martin, W., & Gay, G. (2001). An epistemological framework for analyzing student interactions in computer-mediated

communication environments. *Journal of Interactive Learning Research, 12*, 41-48.

Rackaway, C. (2012). Video killed the textbook star? Use of multimedia supplements to enhance student learning. *Journal of Political Science Education, 8*, 189-200.

Salomon, G. (1981). *The Interaction of Media, Cognition and Learning.* Jossey-Bass.

Scanlon, E., McAndrew, P., & O'Shea, T. (2015). Designing for Educational Technology to Enhance the Experience of Learners in Distance Education: How Open Educational Resources, Learning Design and MOOCs are Influencing Learning. *Journal of Interactive Media in Education, 1*. Article 6. http://doi.org/10.5334/jime.al

Schneider, S., Beege, M., Nebel, S., & Rey, G. D. (2018). A meta-analysis of how signaling affects learning with media. *Educational Research Review, 23*, 1-24.

Stockwell, B. R., Stockwell, M. S., Cennamo, M., & Jiang, E. (2015). Blended learning improves science education. *Cell, 162*(5), 933-936.

Teddlie, C., & Tashakkori, A. (2009). *Foundations of mixed methods research: Integrating qualitative and quantitative approaches in the social and behavioral sciences.* SAGE.

Veerman, A., & Veldhuis-Diermanse, E. (2001). Collaborative learning through computer-mediated communication in academic education . *Proceedings of the first European conference on computer supported collaborative learning* (pp. 9-23). Maastricht McLuhan Institute.

Weinberger, A., & Fischer, F. (2006). A framework to analyze argumentative knowledge construction in computer supported collaborative learning. *Computers & Education, 46* (1), *71-95*.

Yilmaz, R. (2016). Knowledge sharing behaviors in e-learning community: Exploring the role of academic self-efficacy and sense of community. *Computers in Human Behavior, 63*, 373-382.

Zhang, D., Zhou, L., Briggs, R. O., & Nunamaker Jr, J. F. (2006). Instructional video in e-learning: Assessing the impact of interactive video on learning effectiveness,. *Information and Management, 43*, 15-27.

Zhu, E. (1996). Meaning Negotiation, Knowledge Construction, and Mentoring in a Distance Learning Course. *Proceedings of Selected Research and Development Presentations at the 1996 National Convention of the Association for Educational Communications and Technology*, (pp. 821-844). Indianapolis. http://eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED397849

Zimmerman, B. J. (2000). Attaining self-regulation: A social-cognitive perspective. In M. Boekaerts, P. R. Pintrich, & M. Zeidner, *Handbook of Self Regualtion* (pp. 13-39). Academic Press.

6 Learner Engagement with Assessment Activities

T. C. Sandanayake and D. D. M. Ranasinghe

Introduction

Assessment is an integral part in the teaching-learning process. Assessments help to evaluate the performance of learning and the learning process, as it determines whether, and to what extent, the learning goals are being met (Dumford & Miller 2018). With the changing landscape of teaching-learning methodologies from teacher-centered methods to more student-centered approaches, and from classroom-based learning to open and distance learning, the methods of assessment too have been changed. In traditional classroom-based learning, usually the assessment of learning takes place in the same learning environment in the presence of the teacher. In the distance learning mode, while the physical presence of the learner at a designated place is required in some of the assessments, more flexible and authentic assessment strategies are being explored and introduced.

Massive Open Online Courses (MOOCs), which are considered as global mega online classes (Bozkurt, 2016), provide a fully digital learning environment which attracts a large number of learners with diverse demographics, learning requirements and learning habits. However, these aspects are not usually identified and considered in the factory model of

teaching in MOOCs, where the same content, same learning activities and same assessment tasks are given to all learners. Bayne and Ross (2014) indicated three emerging issues for MOOC pedagogy as, the *role of the teacher, learner participation and assessment*. Due to the diversity of the learners dispersed in the globe, the traditional teaching, learning and assessment methods became insufficient with respect to MOOCs. Hence designing of assessments in MOOCs needs a significant amount of effort to capture the diversity of learning among individuals and cater to their needs.

Further, the intention of learners following a MOOC could also differ. While some learners of MOOCs may intend to complete the course, and earn a badge or a certificate, another set of learners may intend only to gain knowledge for their self-development. In many MOOCs, learners are given the options of either to engage in continuous peer and self-assessments or, take end of the course examinations to receive a certificate on successful completion of the course. Designing of assessments to evaluate learners' real performance in MOOCs are extremely challenging.

The CPDMOOCs developed at OUSL adopted a scenario-based learning (SBL) approach where all the assessments were also placed within the SBL design. The learning activities and assessment tasks of the CPDMOOCs were designed with constructive alignment with the course learning outcomes. The learning experience starts with a learning scenario, and a learning challenge was posed at the end of the learning scenario, which is linked with the learning activities and assessment tasks. There were three main assessment tasks in each MOOC, which were: an individual creation, discussion forum and reflective journal entry. All assessments were evaluated based on assessment rubrics.

In the design of the assessments of CPDMOOCs, three key instructional design aspects which have a strong impact on learner behavior were considered, i.e. providing information on assessments, instructions on assessments, and relevant learning resources. Required information and instructions were provided through the learning outcomes, study maps, assessment instructions and assessment rubrics. Successful completion of the assessments was the goal of learning or achieving the learning outcomes and it was considered important to evaluate the learner behavior and engagement in the process of completing the assessments. This research study mainly focused on evaluating the learner engagement with assessment activities in the CPDMOOCs. These were captured mainly via the learning logs extracted from the Moodle Learning Management System (LMS). Hence the study was based on learner engagement captured through the assessment-related learning logs recorded in the LMS.

Review of Literature

Assessment is the driving force for course completion by learners, whether online or offline, and often, more emphasis is placed on the components that are being assessed (Swan et al., 2008). Three main types of assessments - diagnostic, formative and summative assessments, are used in teaching and learning (Farell & Rushby, 2018; Morgan et al., 2005). Diagnostic assessment, (or assessment *for* learning), is used to identify the current knowledge, skills and capabilities of the learner with respect to a particular subject area. In formative assessment (assessment *as* learning), the learners are evaluated at different stages of the learning process and students get the opportunity to correct their mistakes and any misconceptions on the

subject area, whereas summative assessment (assessment *of* learning) is done at the end of the learning process to evaluate the overall outcome of student learning (Dunn et al., 2005).

It is believed that assessment *for* learning reinforces the learning process whereas the assessment *of* learning checks the final achievement of learning. Assessment as learning focuses more on the learning process and treat assessment as a part of learning and gives opportunity for deeper learning (Harlen, 2007; Woolcott et al., 2007). All these types of assessments can be used as supportive tools for learner progression, and the outcome of the assessments can also be used for decision-making where the learning elements can be designed and redesigned to improve the identified weaknesses, gaps and deficiencies either in online or offline learning and teaching.

In MOOCs, since the learner and the teacher is at a distance, the learners do not get a chance to validate the knowledge they gain or correct any misconceptions if only a summative assessment is adopted. In addition, the diagnostic assessment tools will be supportive only to place the learner at a particular entry level such as at the beginner's level or expert level etc. Therefore, adopting formative assessment methods would be more useful, as the learner can identify the level of his/her learning while in the process of learning and take any required corrective measures for learner progression (Dunn et.al, 2005).

The whole array of available formative assessment methods cannot be adapted in a MOOC since its entire platform is digitized, hence there is a need to carefully select the most suitable one/s for online learning (Andrade

et al., 2010). Some of the common features integrated to online assessments are multiple type or structured questions with simple and clear instructions, user friendly interfaces and automated marking (Graff, 2013; Hewson & Charlton, 2019). Some online assessments are available during a specified time period in a restrictive environment such as a computer laboratory. In some other self paced learning environments, the learner is free to take the assessment once he/she completes the given learning tasks and these are not time-bound or location-restricted. There are many potential advantages of online assessment for learners such as the availability on demand at any time during the specified period, and provision of immediate feedback (Graff, 2013). At the same time, the learners who do not possess adequate IT skills will be at a disadvantage.

Most of the MOOCs offered by popular MOOC providers have a set of computer-graded multiple questions in the middle or at the end of each session as the assessment (Siemens, 2013). In most MOOCs, irrespective of the outcome of the assessment, the learners are exposed to the next level/section of learning. At this stage, the learner is left alone to critically think and decide whether further reinforcement is needed to maintain his/her motivation to complete the tasks. Further, Woolcott et.al (2007) argue that the lack of design and development activities hinder the creativeness of learners in MOOCs. Facilitating the learner to design and develop a creative solution for a given problem, based on the knowledge gained integrated with prior real-world knowledge will pave the way for authentic assessment (Tanner, 1997).

Authentic assessments evaluate the realistic, relevant and applicable knowledge in real-life experiences (Wiggins, 1993). Compared to traditional

methods of assessment where the student is being tested for recall, recognize or plug-in what was learned in the given context, in authentic assessments students must effectively apply the acquired knowledge in real world applications. They pave the way for evaluating the process involved in developing the end product (Wiggins, 1993) rather than evaluating only the end product. Authentic assessments also promote the development of higher order cognitive skills such as critical thinking, analytical thinking and creativity, which inculcate deep learning. However, in an entirely digitized learning environment with computer-assisted assessment, fostering creativity for deep learning is a challenge. Yet this can be overcome to a certain extent with the supply of assessment rubrics (Cropley & Cropley, 2016).

In online learning, it is always desirable to adopt assessment as a tool of motivation and peer interaction, and it has become one of the main motivating factors for completion of MOOCs. Peer review and evaluation of creative products of learners lays a platform for peer collaboration and enforces critical thinking (Scardamalia & Bereiter, 1994). Reflecting on the tasks you have done or what you have created would be a supportive strategy for enhancing what has been already learned, by allowing the learner to assess how far he/she has been able to internalize the knowledge. It requires meta-cognitive levels of planning and monitoring as well as higher-order thinking skills (Lee et al., 2006).

Incorporation of tasks to facilitate development of higher order cognitive skills into the learning and assessment process provides an opportunity for the learner to become a professional in the particular subject he/she has learned. For instance, the ability of synthesizing or creating a concept/model

and being able to apply it to the real-world environment makes the learner a practical person. Similarly, carefully integrated collaborative activities and assessments gives the learner an opportunity to become a team player. Further, reflective thinking enables the learner to critically think about the learning path taken by him/her.

Based on the literature review, the conceptual framework of this study has been developed.

Conceptual Framework

The conceptual framework of the research study is illustrated in Figure 6.1.

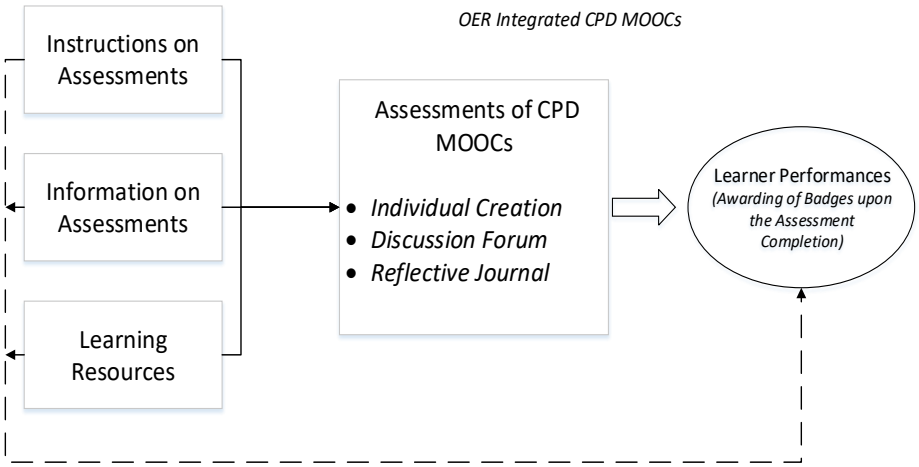

Figure 6.1: The Conceptual Framework of the Study

According to the conceptual framework, assessments of the CPDMOOCs were designed and developed based on three main components: Instructions on assessments; Information on assessments; and learning

resources required to complete the assessments. Each component plays a major role in all three assessments. The learners pass through three types of assessments which have a clear alignment with the learning outcomes of each CPDMOOC. Each component contributes to the learner performances, their successful completion and awarding of badges.

Design of Assessments in the CPDMOOCs

Assessment Structure

Each assessment had a specific guideline to follow and learners were given clear instructions on how to engage in these tasks. The required essential learning materials were provided as OER, as a help and guide for learners. Assessment rubrics were also provided as key guidelines for each assessment activity. Table 6.1 shows the structure of assessments conducted in all four CPDMOOCs.

Table 6.1: Assessment Structure of CPDMOOCs

Assessment Activity	Nature of the Assessment
Assessment 1 – Creation	Creative Activity (Individual-basis)
Assessment 2 – Discussion Forum	Collaborative Activity (Group-basis)
Assessment 3 – Reflective Journal	Reflective Activity (Individual-basis)

Instructions on Assessments

Each assessment included specific instructions to be followed by the MOOC learners. These instructions were given to make the learners get aware on

what they are supposed to do within a given time framework. An example of an assessment submission instruction is given in Table 6.2.

Table 6.2: Submission Instructions for the Assessment 1 in CPDMOOC 1

Requirement	Description
Type of the assessment	Individual activity
Nature of the assessment	Creation
Description of work	Create a graphical representation on OER and related concepts (including license types) Options for the graphical presentation - Diagram/ Flow chart/ Mind map/ Concept map or any graphic form
Guidelines	Your graphical representation must include: Key concepts; Related Concepts; Relationships among concepts.
Time frame	One week
Learner Support	Learning Resources –Relevant OER given in the course
Submission Requirements	The assessment task has to be submitted as follows: Single (One) page; Upload as a PDF file Submit to the Discussion forum for peer review Indicate the type of the graphical presentation Provide three (03) keywords in the discussion forum
Marking Criteria	Your submission will be evaluated against the assessment rubric.
Deadline	Submit your work on or Before DD/MM/YYYY, HH.MM Hours

A study map was provided in each MOOC as a guide for the learners. Study maps is a graphic organizer which provide ~~a~~ guidance for learning while highlighting the knowledge and skills the learners should get from a lesson. An example of a study map is given in Figure 6.2.

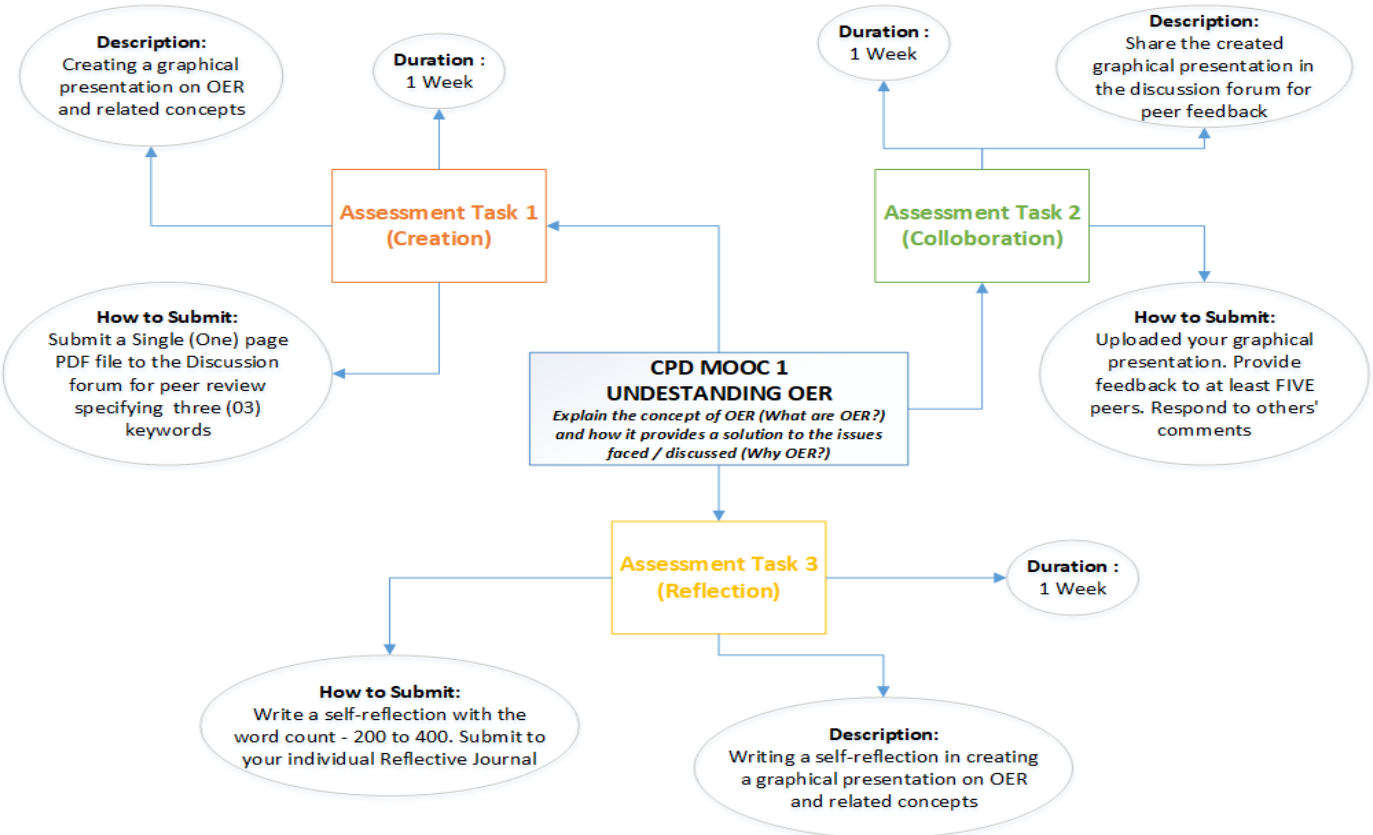

Figure 6.2: Study Map of CPD-MOOC 1

Information on Assessment Activities

All required information related to the assessments in CPDMOOCs were provided through the learning outcomes, course structure, explanations and illustrations on necessary guidelines for the assessment tasks, deadlines and reminders, responses on assessment queries sent via messages and assessment rubrics. Each of these activities played a major role in getting the learners engaged in the assessment activities. Especially, the statement of specific learning outcomes allows the learners to get a clear idea of the behavioral change that is expected from them at the end of a course. The information on assessment provides a direct link and connectivity to the learning outcomes of each CPDMOOC.

Learning Resources – Open Educational Resources

In each CPDMOOC a list of OER materials in different media formats (i.e. text, audio, video, graphics and animations) were provided as learning resources to support the learners to complete the assessment tasks. These OER materials were categorized as essential learning resources and additional learning resources. Essential learning resources provided a direct link or direct support for the assessment activities and additional learning resources were made available for the learners to refer to, if required.

Methodology

Research Questions

Major research questions of the study were as follows;

1. How and to what extent the learners have engaged in the assessment tasks in the CPDMOOCs?

2. What design features have supported the learners to complete the assessment tasks?

Specific Research Objectives

According to the major research questions, the following two specific objectives were formulated:

1. To find out the levels of learner engagement in assessment activities in the CPDMOOCs.
2. To identify the key design features which contributed to the successful completion of different assessment activities by the learners.

Sample

All the students who registered and continued with all four CPDMOOCs were considered as the sample in this study. There were 417 registered participants in total, and out of them 136 participants have successfully completed at least one CPDMOOC.

Collection and Analysis of Data

The methodology used in this study was to extract and analyze the learner logs in relation to the assessment activities in all four CPDMOOCs. The CPDMOOCs consisted of three different assessment activities. Learner engagement was captured through the assessment-related learning logs recorded in the LMS, in relation to the three types of assessments in all four CPDMOOCs.

Three major criteria were used in analyzing the learning logs according to the three aspects indicated in the conceptual framework i.e. Instructions on assessments, Information on assessments and Learning resources (OER). The findings are presented and discussed according to these three aspects.

Findings and Discussion

Assessments in all CPDMOOCs were designed and developed using a common specific format. Thereby the levels of learner engagement were analyzed based on the learning logs in the LMS. Figure 6.3 indicates the overall format of the assessments and the study map.

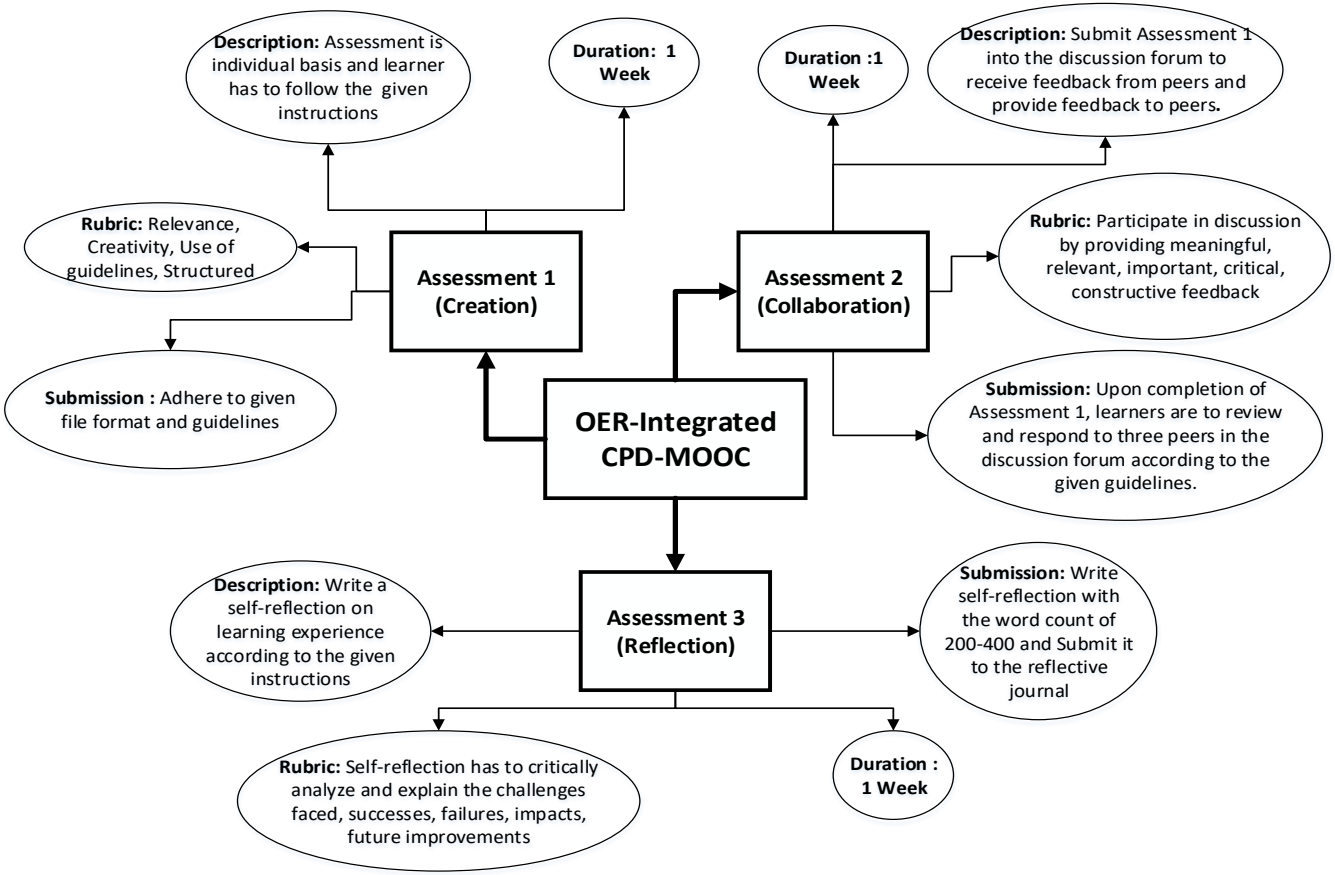

Figure 6.3: Overall format of the assessments and the study map

Learner Registration and Completion

Initially, 316 participants registered in the CPDMOOCs Programme. Each CPDMOOC was offered twice and learners were registered in each round in different numbers. However, it was observed that all participants who got registered in each CPDMOOC have not completed all assessments. Table 6.3 shows the number of learners registered at the beginning of each CPDMOOC, assessment completion records and number of course completion badges awarded.

Table 6.3: CPDMOOC Registration, Assessment Completion and Badges Awarded Numbers

CPDMOOC	Number Registered	Assignment Completion						Badges Awarded	
		Ass. 1	%	Ass. 2	%	Ass. 3	%	No.	%
1-1	183	68	37%	58	32%	47	26%	57	31%
1-2	26	4	15%	4	15%	3	12%	4	15%
2-1	46	18	39%	13	28%	13	28%	12	26%
2-2	53	18	34%	18	34%	17	32%	18	34%
3-1	31	13	42%	13	42%	13	42%	13	41%
3-2	39	13	33%	13	33%	12	31%	13	33%
4-1	19	6	32%	6	32%	6	32%	6	31%
4-2	20	14	70%	13	65%	13	65%	13	65%
Total	**417**							**136**	**33%**

According to the data presented in Table 6.3, even though more than 180 participants were registered in the initial course, numbers have declined in the subsequent courses. Based on the overall registered numbers, the average completion rate of assessments are as follows: Assignment 1 - 38%, Assignment 2 – 35% and Assignment 3 – 34%. Accordingly, assessment completion rates varied between 30% - 40%. Many learners have accessed the course materials but have not tended to complete the assessments. At the same time, it is seen that the learners who complete the first assessment tend to complete all three assessments in the respective course and get the badges awarded.

Individual Assessment – Creation

Assessment 1 was an individual creation. In order to complete Assessment 1, the learners were required to follow the learning activities such as studying the learning outcomes, following the study map, watching a video on the learning scenario, facing the 'your challenge' activity, following instructions, browsing essential resource, browsing additional resources, and engage in the activity 1-creation, and self-evaluating using the activity 1-assessment rubric. Learner logs on the number of views on each of these activities related to Assessment 1 are shown in Table 6.4.

Table 6.4: Learner Engagement in the Activities in Assessment 1 of CPDMOOCs

Assessment Design Requirements	**Activities of Assessment 1**	***Learner access details (Logs)***			
		CPDMOOC1	***CPDMOOC2***	***CPDMOOC3***	***CPDMOOC4***
		(209 Total Learners)	***(99 Total Learners)***	***(70 Total Learners)***	***(39 Total Learners)***
Instructions on Assessments	Activity1-Creation	366	110	80	38
	Learning Scenario	117	74	17	4
	Study Map	181	0	40	19
	Your Challenge	272	48	66	19
Information on Assessments	Activity1-Rubric	304	54	20	22
	Learning Outcomes	206	36	18	19
Learning Resources	Essential Resources	355	63	73	35
	Additional Resources	196	35	71	14

Instructions related to Assessment 1 were depicted by the learning scenario, study map, your challenge and Assessment 1-creation activity. Information related to Assessment 1 were depicted by learning outcomes and assessment rubrics. OER were offered as learning resources, after categorizing them as essential resources and additional resources considering their relevance to the assessment. Many learners' main intention was to complete the assessment and thereby the learners access the most needful resources to complete the task.

According to data presented in Table 6.4, the most ~~c~~ontributing activities to support learners for the Assessment 1 were found to be viewing of Activity 1-Creation, Activity 1-Rubric, and browsing of Essential Resources respectively. Comparing the learning logs in all CPDMOOCs, it was observed that the learners had not paid much attention on accessing the study map, learning outcomes and additional resources.

A high number of views were shown in Activity 1-Creation in all four CPDMOOCs, which provided the information for learners on the required method of engagement. Many learners not being very interested in viewing the study map may be due to them becoming familiar with the instructions for the assessment activity by referring to the Activity1 – Creation. At the same time, the mostly viewed information on assessment 1 is the Activity 1-Rubric, which explained the marking criteria of the assignments. Out of the two types of learning resources provided in the CPDMOOCs, a majority of learners have accessed only the Essential Resources but not Additional Resources.

Group Assessment – Discussion Forum

The group assessment was an important part of the whole MOOC learning journey since it encouraged the collaborative learning aspects. The learners were quite responsive and active in the discussion forums as they shared their learning experiences with the peers. As indicated in Table 6.2, the instructions on Assessment 2 were given by the discussion forum post, your challenge activity, instructions for the assessment, sharing creation and study map. At the same time relevant information were given through learning outcomes and rubric of the Assessment 2.

The learning logs in relation to Assessment 2 are presented in Table 6.5. It indicates that the learners were highly engaged in the discussion forum by sharing their creations. Learners were very particular about the assessment instruction and the learning outcomes. The rubric of the assessment gave the importance of providing constructive comments for the peers so that the learners who have successfully completed the activity have provided productive and meaningful feedback.

Table 6.5 - Learner Engagement in the Activities in Assessment 2 of CPDMOOCs

Assessment Design	**Assessment 2 - Group Assessment**	***Learner access details***			
		MOOC1	**MOOC2**	**MOOC3**	**MOOC4**
		(209 Total Learners)	***(99 Total Learners)***	***(70 Total Learners)***	***(39 Total Learners)***
Instructions on Assessments	Discussion Forum Posts	1622	493	355	131
	Your Challenge	272	48	66	19
	Assessment instructions	236	36	56	18
	Sharing Creation	174	24	5	4
	Study Map	181	0	40	19
Information on Assessments	Learning Outcomes	206	36	18	19
	Activity2-Rubric	176	31	6	8

According to the data presented in Table 6.5, it is observed that there were many instructions on assessment related activities, and majority of the learners have viewed the Discussion forum posts, your challenge activity and assessment

instructions, but not the others. Similar to the assessment 1, the study map has not been used by many learners which may be due to the fact that the relevant instructions were given in other activities. Information with regard to the assessment 2 were presented via Learning Outcomes and Activity 2 – Rubric, and a majority of learners have accessed both.

At this point, the individual learning journey has changed to a more collaborative movement and it was observed that the learners actively participated in the completion of Assessment 2. Based on the logs, the most contributed activities were identified as the discussion forum posts, your challenge, learning outcomes and assessment instructions.

Reflective Journal Assessment

As Assessment 3, the learners had to reflect on their overall learning experience during each MOOC, and write in the reflective journal. Required instructions were provided in the reflective journal section, assessment instruction and study map activities. Information relevant for the assessment were provided through the learning outcomes~~,~~ and assessment rubrics. Table 6.6 presents the learner engagement activities in relation to Assessment 3.

Table 6.6- Learner Engagement in the Activities in Assessment 3 of CPDMOOCs

Assessment Design Requirements	**Assessment 3 - Reflective Journal Activity**	***Learner access details***			
		MOOC1	MOOC2	MOOC3	MOOC4
		(209 Total Learners)	***(99 Total Learners)***	***(70 Total Learners)***	***(39 Total Learners)***
Instructions on Assessments	Reflective Journal Instructions	452	128	100	43
	Assessment Instruction	180	31	38	17
	Study Map	181	54	40	19
Information on Assessments	Learning Outcomes	206	36	18	19
	Assessment 3- Rubric	136	24	28	3

According to the data presented in Table 6.6, the learners have accessed instructions on Assessment 3 quite substantially. Similar to the other two assignments, learners were not much interested in accessing study map. It was observed that the learners have mostly accessed reflective journal instructions and the learning outcomes. The use of assessment Instruction, study map and the rubric were comparatively less. This could be due to the fact that the reflective journal instructions provided all key information required to complete this assessment. Further, since the format for writing the reflections were similar in each instance, learners who have successfully completed CPDMOOC1 and proceeded to the other MOOCs would be quite familiar with these requirements.

Concluding Remarks

This study was conducted to examine the learner engagement in the completion of assessments in the CPDMOOCs, based on the analysis of learner logs related to assessment completion recorded in the Moodle LMS. Even though the numbers registered in the CPDMOOCs were not very high, it was observed that the completion rate was satisfactory, when compared with general low completion rates of MOOCs. While many learners get registered in MOOCs many of them may dropout from the course in between implementation due to numerous reasons. However, the learners who successfully completed the whole learning journey in the CPDMOOCs have remained until the end due to their enthusiasm and interest in learning.

The findings revealed that the design features in relation to instruction on assessments, information on assessment and the learning resources have supported the learners to complete the assessment tasks in the CPDMOOCs. The key design features contributed to the completion of assessment activities were, Assessment instructions, Your Challenge, Rubrics, Learning Outcomes and Essential Learning Resources.

The completion of the three types of assessments, linked with the learning scenarios, and aligned with the learning outcomes, have been supported by different design aspects in different levels. The learner engagement levels related to the three types of assessment tasks indicated that the collaborative activity – discussion forum to be the most engaged activity by the learners. Having multiple strategies such as provision of specific guidelines and instructions, access to learning resources and assessment rubrics were supportive to the learners to actively engage in the assessment tasks, and successfully complete them.

Thanuja Chandani Sandanayake *is a Senior Lecturer in the Faculty of IT of University of Moratuwa (UoM) since 2006. She is the Director of Post Graduate Studies and Student Counselor at UoM. Thanuja holds a Doctor of Philosophy in Educational Technology from OUSL, Master of Philosophy in E-Learning and affective computing from UoM and Bachelor of Science degree in Applied Sciences from Wayamba University. Her research interests are Open Educational Resources, Online Learning, Social and Business Innovation, Social entrepreneurship, and Organizational Behavior. She has research and academic collaborations in the areas of Computer Science, Business Management and Social Science in technology innovation.* https://orcid.org/0000-0001-5430-6070

Menaka Ranasinghe *is a Senior Lecturer in the Department of Electrical and Computer Engineering, Faculty of Engineering Technology of The Open University of Sri Lanka since 2010 and is the present Head of the Department. Menaka holds a Doctor of Philosophy in Computer Science in the area of Artificial Intelligence from OUSL and Bachelor of Science Honours degree in Statistics from University of Colombo. She was a recipient of Commonwealth Split-site PhD scholarship at University of Leeds UK. Her research interests fall in the areas of Artificial Cognitive Systems, Machine Learning, Learner/Social Analytics and Technology enabled Education.* https://orcid.org/0000-0002-3890-3278

References

Andrade, H.L., Cizek G. J., (2010). *Handbook of Formative Assessment*. Taylor and Francis e-Library.

Bayne, S., & Ross, J. (2014). *The pedagogy of the Massive Open Online Course: The UK view*. The Higher Education Academy.

Bozkurt, A. (2016). *Identifying interaction patterns and teacher-learner roles in connectivist massive open online courses*. [Doctoral dissertation, Anadolu University, Turkey].

Cropley, D. H. and Cropley, A. J. (2016). Promoting creativity through assessment: A formative CAA tool for teachers, *Educational Technology Magazine*, *56*(6), 17-24.

Dumford, A.D., Miller, A.L. (2018). Online learning in higher education: exploring advantages and disadvantages for engagement. *Journal of Computing in Higher Education*, *30,* 452–465. https://doi.org/10.1007/s12528-018-9179-z

Dunn L., Morgan C., O'Reilly M., & Parry S. (2005). *The Student Assessment Handbook-New Directions in Traditional and Online Assessment.* RoutledgeFalmer.

Farrell, T., Rushby, N., (2018). Assessment and learning technologies: An overview. *British Journal of Educational Technology*, 47, 106-120. https://doi.org/10.1111/bjet.12348

Graff, M. (2013). Cognitive Style and Attitudes Towards Using Online Learning and Assessment Methods, *Electronic Journal of e-Learning*, *1*(1), 21-28

Harlen, W. (2007). *Assessment of Learning.* SAGE.

Hewson, C., Charlton, J.P. (2019). An investigation of the validity of course-based online assessment methods: The role of computer-related attitudes and assessment mode preferences, *Journal of Computer Assisted learning*, *35*(1), 51-60. https://doi.org/10.1111/jcal.12310

Lee, E.Y.C., Chan, C.K.K., & van Aalst, J. (2006). Students assessing their own collaborative knowledge building. *International Journal of Computer-Supported Collaborative Learning*, *1*(1), 57–87.

Morgan, C., Dunn, L., Parry, S & O'Reilly, M., (2005). *The Student Assessment Handbook*, RoutledgeFalmer

Scardamalia M. and Bereiter C., (1994). Computer Support for Knowledge-Building Communities, *The Journal of Learning Sciences*, *3*(3), 265-283.

Siemens, G. (2013). Massive Open Online Courses: Innovation in education? In R. McGreal, W. Kinuthia, S. Marsha & T. McNamara (Eds.), *Open Educational Resources: Innovation, Research and Practice* (pp. 5-16). Commonwealth of Learning and Athabasca University.

Swan K., Shen J., Hiltz S.T., (2008). Assessment and collaboration in Online learning, *Journal of Asynchronous Learning Network, 10*(1), 45-62. https://www.researchgate.net/publication/238477443_Assessment_and_collaboration_in_Online_learning

Tanner, D.E., (1997). *The Long (Suit) and the Short (Comings) of Authentic Assessment.* https://eric.ed.gov/?id=ED405326

Wiggins, G. P. (1993). *The Jossey-Bass education series. Assessing student performance: Exploring the purpose and limits of testing.* Jossey-Bass.

Woolcott G., Seton C., Mason R., Chen O., Lake W., Markopoulos C., Boyd W., Harlen W., (2007) *Assessment of Learning*, SAGE.

In the journeys of participants in this project, there are noteworthy examples of creative and innovative use of technology as well as open, flexible and distance learning for capacity building in open educational practices. Lessons learned from their experience will resonate with others globally.

Chandra Gunawardena
Emeritus Professor of Education, The Open University of Sri Lanka

This book reports on an in-depth case study of capacity building among practitioners in OEP. The various chapters present a powerful example of not only how to design effective and efficient MOOCs, but also how these can be used for continuing professional development of educators.

Sanjaya Mishra
Education Specialist, eLearning, Commonwealth of Learning

This book maps out pathways to the adoption of OEP that will be of value beyond the Commonwealth countries of Asia. The beauty of this work is in its presentation of teachers and students as developers and creators of OER, and not only as its consumers.

Manas Panigrahi
Senior Programme Officer, Commonwealth Educational Media Center for Asia

With this book, the Open University of Sri Lanka consolidates its reputation as a global leader in open education by presenting a scalable approach to building capacity around OEP that is both innovative and rigorous. The four scenario-based learning MOOCs emphasize how OEP can help address authentic teaching and learning challenges.

Rajiv Jhangiani
Associate Vice Provost, Open Education, Kwantlen Polytechnic University, Canada

This publication provides a comprehensive overview of the introduction of OEP, which includes scientific practices that are participatory, cooperative, innovative, and go far beyond the use of OER, the adoption of which requires a radical shift of mindsets in the achievement of Education for All agenda.

Ebba Ossiannilsson
Chair, ICDE Quality Network, Swedish Association for Distance Education

A hallmark feature of this work is how the participants in this initiative embedded support mechanisms for learners that relied on decades of seminal research in cognitive, social, and behavioral psychology, as well as inroads in various strands and brands of constructivism.

Curtis J. Bonk
Professor of Instructional Systems Technology, Indiana University, USA

ISBN 978-955-23-1763-7

9 789552 317637

Designed by Kalindika Karunanayaka