DREAMWEAVING OPEN EDUCATIONAL PRACTICES

Karunanayaka, S.;Naidu, S.;

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Shironica Karunanayaka
Som Naidu

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Shironica Karunanayaka and Som Naidu (Editors)

This book is dedicated to the hard-working teachers in the Sri Lankan school system, and their search for excellence under the most trying and testing conditions.

Contents

Foreword

In vain have you acquired knowledge if you have not imparted it to others!

These are the words from an ancient Jewish book, Deuteronomy Rabbah, a homiletic commentary on the Book of Deuteronomy. The conviction that is shared by this saying has been put into practice by the concept of Open Educational Resources or OER, a term first introduced at the Forum on Open Courseware of UNESCO in 2002. In Sri Lanka, the concept of OER is fairly new and the Open University of Sri Lanka being the premier Open and Distance Learning institute in Sri Lanka has taken the initiative to popularize and practice it. The University has already formulated its OER policy and is in the process of developing an OER repository and a concept document for practice of OER in the University.

When it comes to sharing acquired knowledge, the most important group of people who do this on a daily basis are the teachers. Therefore, it is important that this group of individuals be equipped with the necessary knowledge, skills and tools to share their knowledge with their students and fellow beings.

Dreamweaving Open Educational Practices narrates the stories from the nine-provinces of Sri Lanka on the experiences of teachers who had attempted to integrate OER and Open Education Practices (OEP) in their teaching and learning. It describes the impacts OER and OEP have made in terms of changes in the quality of teaching-learning materials used, and the differences in pedagogical perspectives and practices.

Prof. Shironica Karunanayaka and Prof. Som Naidu, whom I have personally known for several years, have taken nine individual and varied stories of OEP and woven them into this wonderful piece of tapestry that would go a long way in helping teachers in Sri Lanka to learn the experiences of their fellow men and women in the practice of integrating OER and OEP.

Prof. Karunanayaka and Prof. Naidu are ardent advocates of the practice of OER and OEP, as these concepts enable the best quality resource materials to freely reach even the most remote and under developed places. They are two individuals who are convinced that practice of OER and OEP is making education accessible not only to few elite privileged but for everyone who is motivated, enthused and willing to seek it. I am confident that the work done by them and

others with similar convictions would result in avenues being opened for affordable universal education to be attained, thus eliminating inequalities in access to education due to geographic limitations or economic circumstances.

I am convinced that the experiences shared in this book, *Dreamweaving Open Educational Practices*, will help motivate more and more educational practitioners to adopt OER and OEP in their teaching and learning experiences, thus making a greater impact on their students and the world we live in.

Prof. S. A. Ariadurai
Vice Chancellor , The Open University of Sri Lanka

Preface

Reflections of a Pioneer – Emeritus Professor Chandra Gunawardena

I feel privileged on being requested to pen down my reflections on this academic discourse published in book form, especially because the title takes me back to our younger days when our lives were centered on dreams more than reality. Some of our dreams became reality but even when they did not, they remained with us and could not be erased from our memories. Life without dreams, we realize becomes monotonous.

For those in any profession, dreaming is the first step in building one's capacities. The book, as explained by Shironica and Som, is a novel attempt to re-look at what has been achieved in their attempt to integrate Open Educational Resources (OER) and adopt Open Educational Practices (OEP) by Sri Lankan teachers.

I feel enthralled with the titles around which the dreams have been woven too; not only are they novel but suit the localities in which they have been initiated. Especially the "Singing fish", *Salmons* and *Dolphins*, from Batticaloa and *Rubies* and *Sapphires* from Ratnapura are eye-catching. The journey around the island, - Jaffna, Anuradhapura, Batticaloa, Badulla, Kurunegala, Kandy, Colombo, Matara and Ratnapura, capturing what has been achieved and how, in itself, is a tremendous undertaking. It is in the context of barriers to realizing teachers' dreams and supporting them to share knowledge that the OER project has been initiated by the Open University of Sri Lanka (OUSL) with the assistance of the International Development Research Center (IDRC), Canada. It is noteworthy that the adoption of OER is not restricted to the teacher educators at the Faculty of Education, OUSL, but has been extended to bring into the fold, the Postgraduate Diploma in Education students, from nine OUSL Centres, representing every Province, whose horizons would undoubtedly been expanded as a result of participating in this venture and through them the schools in these teachers teach.

The authors explain that an attempt was made to develop teachers' competencies to identify, use and create OER innovatively and freely using available teaching-learning materials, and to engage in sharing. Here, using an intervention which was implemented over a year and a half, through workshops and continuous monitoring and evaluation, using questionnaires, concept mapping, observations, in depth interviewing, focus group discussions and self-reflections to support the adoption of OER and OEP among the participant teachers, also needs to be appreciated. The

Project employing strategies used across nine OUSL centres, distributed over all parts of country, is simply awesome. It is more so, because this was not a simple exercise where participants were instructed to follow stipulated academic guidelines but were groomed to use their initiative, and think creatively.

Going through the case studies makes it clear that, for example in all the Centres, it was a case of starting at scratch, where the participants knew nothing about OER. Even teachers of IT had not heard about OER! Progress was noted, however, in identification of OERs, developing concept maps, and organizing workshops for peers in their schools, as how *Trendsetters* and *Explorers* in the Anuradhapura Centre wrote stories regarding their "journey". Especially noted is the transition that took place in the process: explanation, guidance, and support, with the resource persons and participants of the workshops becoming co-researchers, and how the participants themselves became self-evaluators of the integration of OER into their own courses and sharing of knowledge. The groups also report about the opportunity to benefit from the expert resource persons- Professors Shironica and Som. The Anuradhapura Case Study also notes the challenges and frustrations, especially the lack of Sinhala OERs and their plan to introduce the concept to colleagues in their own schools. The evaluation, it is reported, did not stop at identifying the challenges but records achievements, where the teachers themselves identified relevant OER, created OER in Sinhala, integrated technology and improved their own teaching.

The story related by participants from the Badulla Centre is very similar. Though their interest had waned by the mid-intervention workshop due to various challenges, the few teachers who continued were enthusiastic to integrate OER in their teaching. They specifically mention about finding additional subject matter through OER, giving examples of such sources, identifying relevant PowerPoint presentations and integrating OER in their lesson plans, during their teaching practice period.

The participants of the "Singing Fish" team In the Batticaloa Centre were interested from the outset. The workshops have further developed their interest and organization of an OER Committee marked a breakthrough. The climax was a"surprise" at which a book on OER was launched, and an award being made to the 'Most Active Participant' from the Centre. The *Rainbows* and *Salmons* were familiar with using downloaded materials, though credibility of some dubious, they themselves were aware. The *Salmons* and *Groupers* related how they could save time spent on creating teaching aids, by using relevant OERs. The *Dolphins*, on the other hand, integrated videos and animated resources which captured the interest of their students. The *Groupers*, unlike the Anuradhapura group who could not locate Sinhala OERS,

were able to identify Tamil OERS. Their other achievements were the publication of a magazine released at the Regional Centre and the organization of a workshop by themselves. They have gained ownership of the Project!

Colombo group, both *Initiators* and *Creators*, were clueless at first, and some of them without any curriculum development experience and with low skills in using LMS, yet having experience in sharing resources. This appeared as a positive starting point, especially as they were in the practice of using internet-based materials even without recognizing them as OER. Their entry into OER was termed as magnificent experience where they had accessed a "gold mine". Yet, integration of OER was a challenge for some who did not have facilities and with language barriers as the OERs were in English while they teach in Sinhala or Tamil, and the necessity to be online. Developing concept maps and writing reflections were also novel experiences for the participants. Overall, the stories indicate progress in identifying OER and sharing with peer teachers and students through smart phones, raising awareness of parents, and organizing workshops. *Creators* talked about how the children enjoyed downloading relevant resources. The journey is captured through the statement of the *Initiators*, "We, as pioneers, have the great responsibility to take this innovative activity forward to our education community in an effective manner where everyone can enjoy the benefit of it".

The students in Jaffna too, even though they were not aware of OER were very much motivated to become participants and felt lucky and happy at the given opportunity. Lack of internet access was a challenge but the participants shared computers which had access. Difficulties in accessing had continued but the story recounts how the teachers and their students were enthusiastic to integrate various types of OERS such as quizzes, videos and animations. It is to be commended that the group had conducted an awareness-raising workshop in two prestigious Colleges in Jaffna and Vavuniya. Jaffna *Sprinters* also had conducted such a workshop in a school. The *Achievers* explain about the barriers faced such as lack of English Language competency and lack of computer skills in addition to those pinpointed by the first group. Yet they were also able to identify relevant OER to integrate in their teaching. In addition, they and *Innovators* had uploaded Tamil OERs they had found. It is with pride that the *Achievers* talk about their colleague who received the "Most Active Participant" award for her achievements in this project. Challenges similar to those encountered by other groups hampered the *Pioneers* and the *Innovators* also but the former group could contribute a publication to the Project. In Jaffna, particularly, the effect of the long drawn-out war continued to hamper the quality of equipment and services. The student teachers "felt very satisfied and proud of

being participants in the OER project of OUSL". At the evaluation workshop, Jaffna group also had launched their own publication on OER. Despite all difficulties, Jaffna Centre could win the "Best Centre" award in the OER project.

The verbatim excerpts included in the Kandy report add value to their story. The Kandy group had integrated OER for their teaching and some teachers had developed DVDs. They also encountered issues of low participation, lack of internet facilities, negative attitudes of school administrators and peers and the language barrier. Yet, like their colleagues in other Centres, they were 'inspired' to make headway and get maximum possible benefits to improve their teaching. Kandy participants reported gains such as improving English language skills, and felt happy about integrating technology in their teaching, developing a booklet, mixing OER with their own materials and developing Sinhala and Tamil materials through translation.

The group from Kurunegala describes how those who had computers and internet facility endeavored to search for OER even at home. They affirm that the project enabled them to brush up their knowledge and skills, to have more effective relationships with students and parents and to change with times and technology rather than stagnate. There was diversity among the participants – some lacking computer skills while others who were computer literate trying to work independently. Yet they had striven to share knowledge with peers and students.

In Matara, an initial stumbling block appeared to be the heavy work schedules of teachers. Similar to Kandy, verbatim quotes explain how the change in mindset of students was effected. In this Centre too, participation sagged after the orientation. Yet as the authors comment those who remained were the 'cream' who were motivated to integrate OER. They had found that OER had helped them to plan and implement attractive lessons. They felt that they were making use of their time more profitably without 'wasting time in the libraries'! However they stated that they ensured to check for originality and accuracy of the materials. Go-getters in Matara were able to realize that what they had been doing up to then, downloading and using materials without acknowledgement was a wrong practice. Later they had used OER with their own creations and integrated in their teaching, translating some into Sinhala.

Ratnapura group comprised teachers who possessed English language competency but they were happy to be allowed to write their reflections in local language. Later they had created OERs in their native language, Sinhala. Those who did not have adequate computer skills, on the other hand, faced difficulties. Yet monitoring of their

lesson plans showed that progress was being made. Some teachers themselves stood out as innovators by encouraging their own students to search for OERs. The Ratnapura *Rubies* had formed their own group of "self-learners" to go beyond the project to search for relevant OER. Sharing had gone beyond their own school and Centre to sharing with other Centres too.

The contents of this book represent a realization of the dreams of participating teachers from the Sri Lankan school system. The stories of their journeys that have been captured here are a testament of their thirst for knowledge and the improvement of the lives of their students as well as their own as teachers. This has been a massive effort which would not have been possible without the support of IDRC and its collaborators and the drive and enthusiasm of the project team members. This publication is a product of that effort. It should be appreciated as an innovative attempt in promoting the adoption of OER and OEP in Sri Lankan schools.

Emeritus Professor Chandra Gunawardena,
Founding Dean, Faculty of Education,
The Open University of Sri Lanka

Acknowledgements

Shironica Karunanayaka and Som Naidu (Editors)

1 Introduction & Overview

Dreams, Dreamers and Dreamweaving

Shironica Karunanayaka and Som Naidu

Introduction

As educators we are in the habit of weaving dreams. These include the dreams of school teachers who are aspiring to become better teachers as well as the dreams of teacher educators about building teacher capacity in relation to teaching and supporting their students' learning. The work captured in this book is about helping dreamers realize their dreams and weaving these dreams into a coherent picture of the impacts of the integration of open educational resources and the adoption of open educational practices by teachers in the Sri Lankan school system.

Teachers as dreamers

Teachers often have dreams about their teaching and learning practices and how to realize them. Most new teachers venture into the teaching profession with dreams of becoming 'good' teachers and about bringing in new ideas, using new resources, trying out new methods, and hoping to make a change in the lives of their learners. But many of these dreams are vanished into thin air without teachers being able to realize them.

This happens because of the many challenges faced by teachers in real life such as limited access to resources and facilities, time constraints and lack of support and appreciation by school administration for the work that they do. Hence, over time, this enthusiasm gradually dwindles into frustration and diminished motivation, leading teachers to merely shuffle along with existing prescriptive, conventional thinking and teaching practices. This is a familiar story for teachers in Sri Lankan schools.

When this is the case teachers are criticized for not being innovative, creative or collaborative and being resistant to change. Rather than blaming teachers, further de-motivating them and shattering their dreams of doing any better, it is best to think about how to help them realize their dreams and become better teachers. As teacher educators, our goal has been to build that kind of teacher capacity, empowering them to achieve their dreams to become great teachers who can make a difference to learners and their learning context.

Opening up educational practices

We believe that education is, and always has been about sharing. The adoption and use of Open Educational Resources (OER) supports this notion of 'opening up' education, by providing teachers and learners with opportunities for sharing educational resources openly and freely. This notion is captured by the 5-Rs framework– Retain; Reuse; Revise; Remix & Redistribution (Wiley, 2014), and the 'open licensing' of materials (Creative Commons, 2016).

Making teachers' dreams come true

Our goal in the work that is reported here has been to help teachers "make their dreams come true" in relation of adopting and developing a culture of sharing in educational settings where resources are often lacking and where there is a need to promote such a culture.

Our work in this regard was made possible with a seed grant from the International Development Research Center (IDRC), Canada, administered by Wawasan Open University, Malaysia as part of the Research on Open Educational Resources for Development (ROER4D) program. A key goal of this project has been to investigate how, and in which ways the integration of OER is having an impact on teaching and learning in Sri Lankan schools.

To achieve this goal, we engaged with teachers in the Sri Lankan schools system who were also students of the Post Graduate Diploma in Education (PGDE) Programme of the Faculty of Education at the Open University of Sri Lanka (OUSL) to integrate OER in their teaching and then study its impacts on pedagogical perspectives andpractices. This project has been implemented at nine OUSL centres of the OUSL – Anuradhapura, Badulla, Batticaloa, Colombo, Jaffna, Kandy, Kurunegala and Ratnapura, representing the nine Provinces of Sri Lanka. This ensured that the benefits of this work did not remain confined to the central campus of the University, and that it filtered down to remote areas where the teaching and learning is actually taking place.

From this work, we expected that participating teachers will be able to develop their competencies in identifying, using and creating OER as well as engaging in innovative use of openly and freely available teaching-learning materials. Our intervention program was designed to offer opportunities, support and appreciation, and motivation to help these teachers overcome their uncertainties and to progress confidently towards fulfilling their hopes and dreams.

Adopting a design-based approach

As OER is a novel concept for many school teachers in Sri Lanka, it has been essential that we foremost seek to raise teachers' awareness of OER and the opportunities afforded by it in order to build their capacity in OER integration. We believe that the design of effective, efficient, and engaging experiences based on innovative pedagogical practices offers a viable model for influencing the thinking and practices of practitioners (See Karunanayaka & Naidu, 2016; Naidu & Karunanayaka, 2014).

Design-based Research (DBR) is a systematic and flexible methodology aimed at improving educational practices through iterative analysis, design, development, and implementation, based on close partnership among researchers and practitioners in real-world settings (see Reeves, 2006; Wang & Hannafin, 2005).

During this process we, the project team played a dual role - as designers and researchers, not only just observing the interactions taking place, but also actually influencing these interactions (Barab & Squire, 2004). The experiences in the intervention we designed for the teachers were based on a model of situated learning (Brown, Collins, & Duguid, 1989; Duffy & Jonnassen, 1991).

Our intervention was implemented at the nine OUSL Centres in three iterative cycles during the project (March-July'15; Aug'-Dec'15; Jan-June'16). The process started with the first intervention workshops in March 2015, which was followed up with continuous communication and monitoring via a dedicated Learning Management System (Moodle) titled "OER-integrated Teaching and Learning", as well as a series of intermittent evaluation workshops, culminating in the final evaluation workshop in June, 2016. During this intervention process the researchers, together with the participant teachers, attempted to find answers to the issues identified in relation to the adoption of OER and OEP in the teaching-learning process, using a variety of data gathering strategies, as part of the four stages of the DBR cycle – Analysis; Solutions; Testing & Refinement; Reflection (Reeves, 2006).

Ascertaining impacts

Our journey began with believing in teachers, their hopes and dreams. Our aspirations have been to empower teachers to help them become creative, innovative and self-directed so that they can explore their own ambitions and aspirations. The intervention we designed offered them the opportunity to explore new possibilities for open educational practices in their teaching and learning.

This has been a process-oriented, self-reflective journey, where researchers and teachers worked together in partnership as co-researchers, actively engaging in

finding solutions to authentic problems and situations in real-life settings, and to overcome challenges in fulfilling their dreams for being better teachers. A range of 'pull' and 'push' factors were deployed as part of this process and used to lead, guide and motivate teachers to rekindle their enthusiasm, overcome their uncertainties to progress more positively and confidently towards fulfilling their dreams and expectations towards OEP.

By encouraging teachers to explore the adoption of OER and OEP, and then reflect on their experiences, and its impacts on their pedagogical beliefs and [practices, we offered them the opportunity to become reflective practitioners. The meaning of this experience for teachers was discovered through their own and researchers' interpretations of their 'lived experiences". These are their stories, in their own words, and they reflect the impacts of OER integration in their teaching practices.

We hope that the flame of this little lamp we have lit will glow for evermore!!

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2 Case Study

Anuradhapura

Journeying towards Open Educational Practices

2.1

W.M. Sunil Weerakoon and L. Ranjan Gonsalkorala

At the beginning

We, the team of academics from the Faculty of Education, visited the Anuradhapura Regional Centre with some trepidation as we were not certain about the number of student teachers that would participate in the workshop organized to build the capacities of them in integrating Open Educational Resources (OER) into the teaching-learning process. However, when we stepped into the computer laboratory where we were due to conduct the workshop we had a very pleasant surprise. There were more than twenty five of them in there! The initial survey revealed that they knew next to nothing about OER, let alone integration of OER in the teaching-learning process. They had no knowledge of OER, their importance and benefits and where to find them. Words of the student teachers provide evidence to this situation.

"Initially we had no clear idea about the usage of OER. We were confused as to why we were going to use OER instead of using the internet".
"Actually we did not have any understanding regarding OER and their usages and advantages."
"We did not have any idea about copyright laws. The concept "Openness" was also novel to us. First we were confused as to where those OER are deposited and who updated those resources".

Furthermore, the concept maps they drew at the first workshop also illustrate their situation about OER. Those initial versions of the concept maps submitted by them illustrate their lack of awareness and limited knowledge on OER and Open Educational Practices (OEP). Two of those concept maps are given in Fig. 2.1.1

The first capacity building workshop aimed at raising awareness on OER and related concepts, and also to develop competencies in identifying, using and creating OER. By the end of the first workshop held on 29th March 2015 when the participants wrote their reflections it was clear that their awareness on OER and their significance had increased to a satisfactory level. Some of the reflections written by them are reproduced below to show this improvement.

"Today I recognized what are the OER and now I think I can use them in my teaching-learning process effectively."
"When starting the workshop I had not known anything about OER, but by the end of the workshop I got some idea about OER and how to create a concept map. I think these resources are more useful for my teaching task and I hope to use these OER in my lessons"
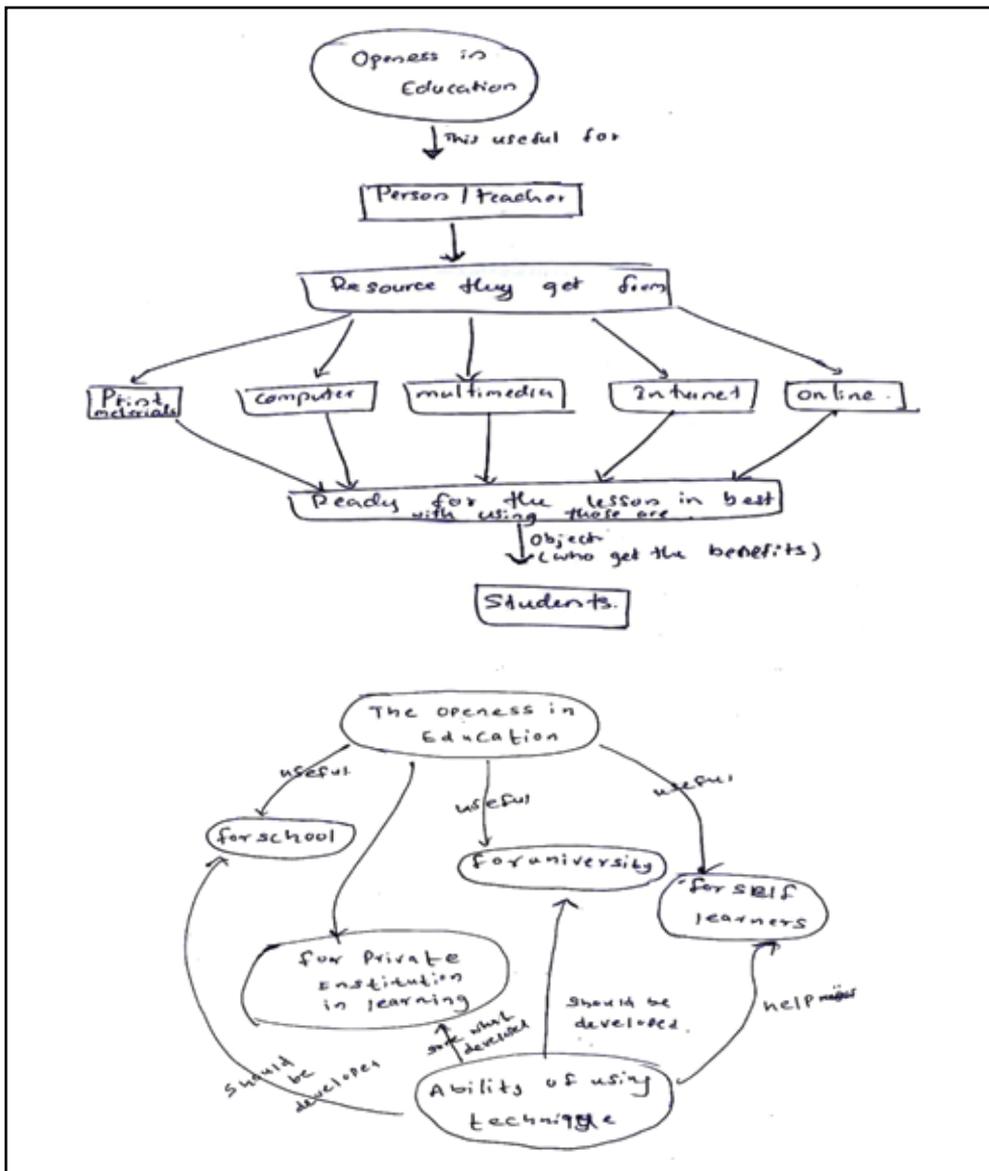
Fig. 2.1.1 : Some Initial Concept Maps

During the orientation workshop participants were asked to fill a table to indicate the relevant OER they have found for their selected lessons. Accordingly, the participants indicated some of the resources relevant to their grades and lessons. (See Table 2.1.1). Finding, adding and sharing relevant Open Educational Resources for various discipline made an interesting experience for the student teachers which they could practice effectively.

Table 2.1.1: Relevant OER found by teachers for various subjects in the school curriculum

Subjects	Grades	Resources (OER) Found/ Topics
Science	12	Photosynthesis
ICT	10	Digital & Analog Conversion
Science	12	Photosynthesis
Science	6	Identifying and naming the magnetic poles
Science	6	Climate, Weather and Climatic Factors
Accounting	12	Accounting Principles
Buddhism	6-9	Dhammapadaya
Mathematics	10	Solving systems with the Substitution Method
Agri. Science	12	Hydroponics
English	9	Synonyms for given English words

Halfway through

Mid-intervention workshop organized by the research team on 29th July 2015 at Anuradhapura Regional center was helpful to encourage the participants and enhance their awareness on OER and OER related practices further.

Some of the reflections written by them reproduced below indicate their improvement.

 "Finding OER was somewhat difficult task in early period. But today I gained a sound knowledge of OER including finding, sharing and uploading."
"Today I could refresh my knowledge about OER further. After the orientation I had some doubts. Today all the doubts were clarified and I clearly learnt how to Reuse, Remix, Revise and Redistribute and add something new. So I wish to use OER as much as possible in future for my teaching- learning process"

Furthermore the concept maps they drew after the mid intervention workshop illustrated the richness in their thinking about OER. Those second versions of the concept maps submitted by them illustrate significant increase in the awareness and knowledge on OER and Open Educational Practices. An example is given below, in Fig. 2.1.2
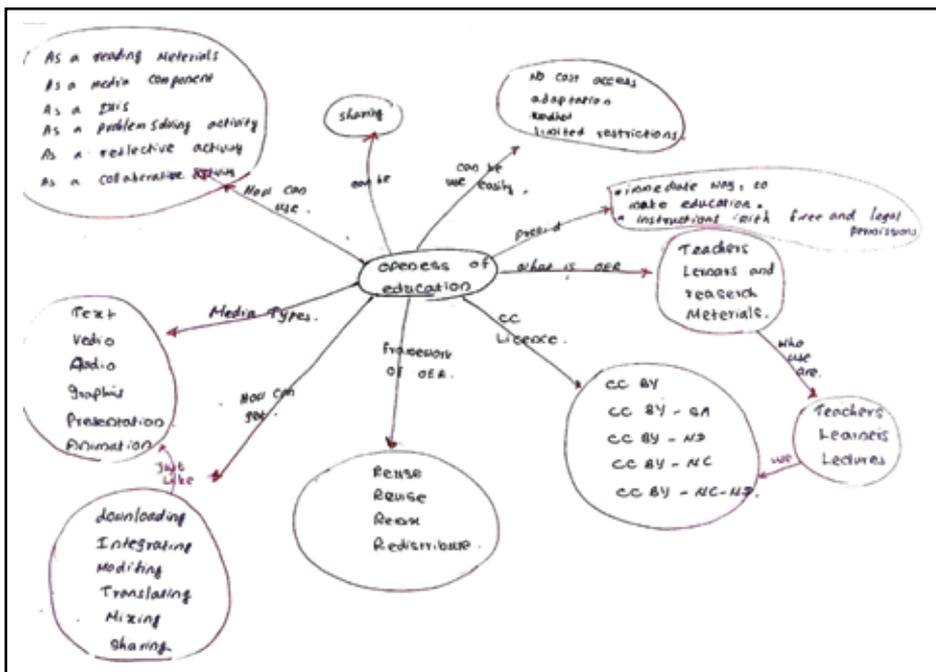
Fig. 2.1.2 : Concept Map Version 2

Focus group interviews held with the participants during the Mid–intervention workshop helped to identify some activities that student teachers had planned and organized to promote OER and OER related practices within their school settings. They revealed that they wished to organize small-scale workshops to raise awareness of their colleagues on OER and OER related concepts and practices.

Fig. 2.1.3: Engaging in focus group interviews and workshop activities

Accordingly, some of the participants were able to organize awareness workshops for other teachers in their schools to raise their awareness on OER and promote OER related practices. Fig. 2.1.4 illustrates such a workshop organized by some participants at their schools.

Fig. 2.1.4.:- An awareness raising workshop organized by some participants

An evaluation workshop was organized on 6th January 2016 to evaluate the progress of the participants' activities. It also introduced a framework for participants to write their stories based on their journey in integrating OER in the teaching–learning process as reflective practitioners. Accordingly, the two groups formed in the Anuradhapura center were named as "Trendsetters" and "Explorers". Specifics guidance and feedback were provided by the workshop leaders during this process. At the evaluation workshop participants were able to complete their draft stories and the research team provided specific feedback to revise and improve their stories. Fig. 2.1.5 shows participants engaged in such activities during the Evaluation workshop.

Fig. 2.1.5: Participants engaged in writing stories

At the finishing line

During the Final Evaluation workshop organized on 13th June 2016, the team leaders of the two groups were able to tune-up their stories and finalize with the guidance provided by the leaders of the research project. The teachers were able to revise their team stories growing more reflective; they were more creative in writing while including supportive evidence. They became reflective practitioners in the process. The photographs in Fig.2.16 illustrate group leaders improving their stories with the facilitation of a Co-Lead Researcher.

Fig. 2.1.6: The participants and the research team facilitated by a Co-Lead Researcher

At the Final Evaluation Workshop (FEWS) the research team was able to identify the awareness level of participants on OER and OER related practices. The final version of the concept map created at the Final Evaluation Workshop illustrates the level of awareness and knowledge on OER and Open Educational Practices. Through the creation of the final version of a group concept map, they were able to think at a deeper level, and covered many concepts and ideas developed throughout their

whole journey. Figure 2.1.7 illustrates that final group concept map created by the two groups.

Fig. 2.1.7: Final Group Concept Map

Conclusion

Finally, the small group of participants at the Anuradhapura Centre, who continued to be actively engaged throughout the project and improved their awareness of OER and the skills of integrating OER to their teaching and learning processes successfully, and completed the journey they voluntarily began. Now they have become practitioners of open education in the true sense of the term. They would continue to share what they have created with other teachers in the system and would also initiate capacity building of other teachers in integrating OER into the teaching-learning process. It gives us, the members of the research team, much pleasure and contentment to have contributed to achieve this goal.

Anuradhapura

Trend-setters

Our first perceptions

When we first heard the word OER, we did not have any idea about it. We were unable to understand the meaning of the term 'Open Educational Resources'.   Initially we had no clear idea about the usage of OER too. We were confused why we were going to use OER instead of using the Internet. Earlier we used to download resources from the internet without thinking whether it is legal or illegal. We did not have a clear idea about copyright laws.

The concept 'Openness' was also novel to us. First we were confused about where those OER are deposited and who have uploaded those resources. Then we had questions about how those resources are related to the teaching and learning process. Different open licenses and 4Rsconcept were also novel to us. Two of the very first concept maps we drew given in Fig. 2.2.1 illustrate our initial thinking.

Fig.2.2.1: Concept Maps Version 1

Starting point of OER integration

There was an intervention workshop about OER in March 2015 at the Open University Regional Centre, Anuradhapura. During that workshop we were able to get an idea about Open Educational Resources and its related concepts. We were motivated because of this workshop and then we commenced practicing those concepts in our teaching and learning process. We could also access the OER site created for us, 'OER- Integrated Teaching & Learning' in the Moodle LMS and search for OER materials relevant to our subject areas. We could identify appropriate OER to integrate in lesson plans. The Research team organized another workshop (Mid-Intervention workshop) and we were able to share our experiences with each other and got more practice and guidance on integrating OER into our teaching-learning designs. Next versions of the concept maps we drew during that time are given in Fig. 2.2.2.

Fig. 2.2.2: Concept Maps Version 2

Adoption and integration of OER

We engaged in various activities related to integrating OER into our teaching-learning process. We created new learning activities and learning materials by adopting existing OER. We practiced sharing of materials created by us too, by publishing them as OER. When we included OER into our teaching process, there were good responses from the students. So we continuously integrated OER in our lessons.

We used different types of OER such as videos, audios, tests, text book, course materials, lesson plans, presentations, animations, and graphs etc. Most of the OER were in the English language. So we had to translate them into Sinhala. For example, there was a lesson of photosynthesis in science for O/L students, and we were able to find interesting presentations on photosynthesis. We translated one presentation into Sinhala and used it to teach the students. Sometimes we downloaded exercises and tests and made copies. Then we distributed them among students. Sometimes we had to simplify and reduce the content to suit our local syllabus.Some examples of OER we found, used and shared are given in Fig. 2.2.3
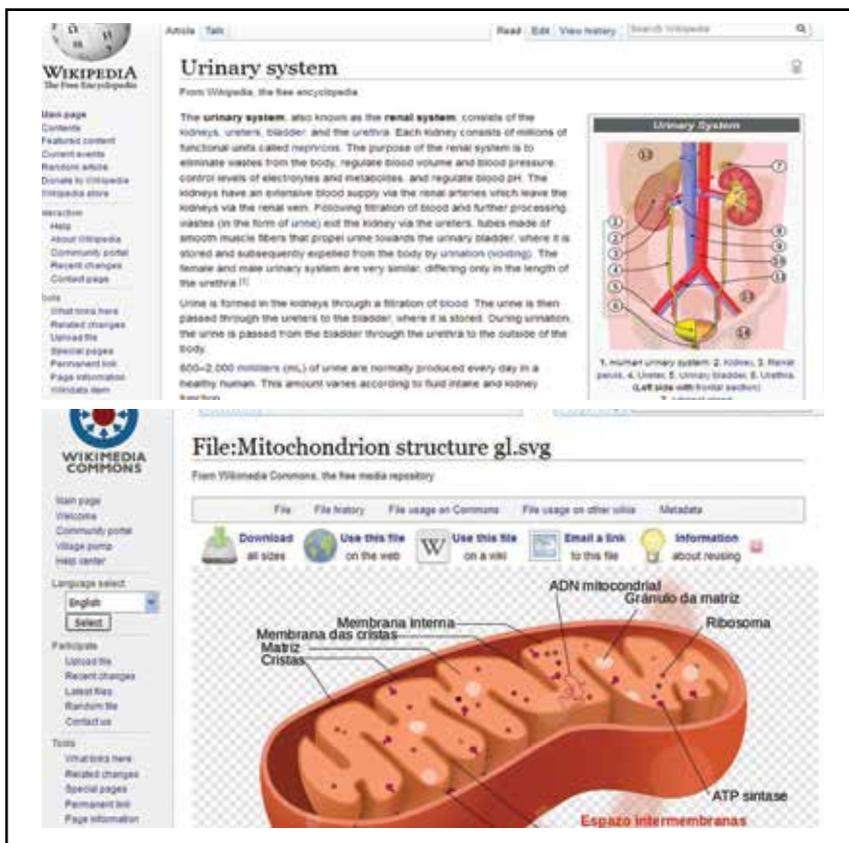
Fig. 2.2.3: Some OER we found, used and shared

Challenges and frustrations

At the beginning we faced the difficulty of finding OER in the internet. Instead of OER we were receiving copyrighted materials in the internet. Sometimes we found OER but we were unable to find the CC license type easily. Some modules were too difficult for our students. And we had to simplify them to suit our syllabus. We were confused about the complexity of some materials.

There were no OER found in Sinhala. So every time we found a suitable OER we had to translate it into Sinhala. It became a rather tedious and difficult task for us. Sometimes we faced difficulties in finding subject matter for some subject areas. Sometimes it became a very time consuming task. We were discouraged by these reasons and it made us revert to our earlier practices of downloading copyrighted material from the Internet. Then we discussed our problems with our resource persons and colleagues and sorted them out. To overcome the problems of finding OER through the given sites, we got used to search OER via Google. Sometimes the internet signals in our area were insufficient. This was also a hindrance for us. Lack of internet facilities and low internet speed were some discouraging issues for us.

Achievements / successes

When we started to use OER in our teaching- learning process we felt we could teach with more confidence than before. We were able to give more resources, activities and tests to students. When we were using some lessons over and over again for parallel classes we were able to develop them further. Finally, we were able to prepare more effective and attractive lessons for students. Students were also motivated and actively participated in their activities. They were eager to see different attractive videos. They came to the class more enthusiastically than earlier. They were motivated to ask questions and they got used to find facts from different sources. We also encouraged students to find OER.

We were able to update our knowledge through the shared documents. We felt we were becoming more successful teachers by using and sharing OER. We became familiar with the novel techniques used in the world for education. We were able to prepare new OER in Sinhala and share them. The feeling that other teachers can use the OER we created in their teaching –learning processes made us very happy as we were sharing what we had with others. We were really enjoying the sharing culture. The comments of our friends and others when sharing resources encouraged us. Therefore we were encouraged to do more, and better too. We felt that we were developing our careers further with OER Integration. Our final group concept map (Fig. 2.2.4) indicates our enhanced thinking around OER concept and related practices.
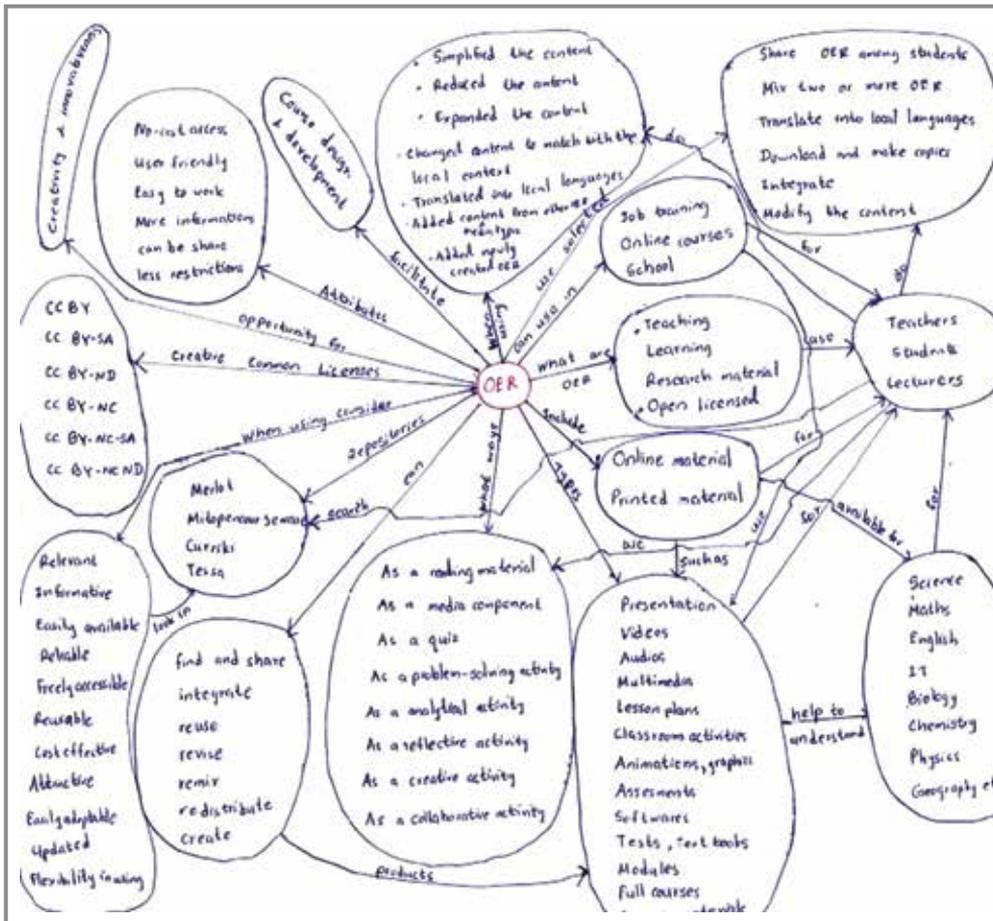
Fig. 2.2.4: Our Final Group Concept Map

Good practices

Our earlier practice was to use whatever materials we had or found by ourselves. In fact it appeared as if every teacher was for his or her self only. Even those who taught the same subject in different parallel classes usually did not share the material or information they had used in the lessons. The sharing culture was somewhat novel for us. After coming to know about OER and having realized that people can freely use what others have created we understood the meaning of sharing and its value. Then we got used to share the materials that we created and found, with others. After that we promoted this sharing culture by finding, developing and uploading resource materials as OER. As we were so impressed with the sharing culture we were able to develop teaching materials with a renewed enthusiasm.

We created new OER in Sinhala for our students. Sometimes we translated existing OER into Sinhala and developed it further. We were able to use presentations, audios, videos, etc. to our lessons and such additions made our lessons more attractive to students. When we were using OER we became more and more familiar with the new technology. It was helpful for the development of our careers. We had the opportunity to compare our knowledge with the global knowledge. It helped to develop our knowledge further. We got more confidence to teach than earlier by using OER. We are pleased to note that we developed our personalities through such activities.

Impacts on the teaching-learning process

The concept of OER directed us on a different path. We became more creative and practical teachers by using OER. We practiced to use new technology for our lessons. We applied multimedia resources for our teaching and learning process. By doing all those activities teaching and learning process was further enhanced. We were further motivated to teach and students were also motivated to learn. When we were using presentations, audios, videos and other different types of OER, we were able to attract students into the teaching-learning process, and students' understanding of subject matters was also enhanced. Finally we became successful and popular teachers among the students and staff.

Futureplans

We introduced this novel concept of OER to our colleagues at school. The newly recruited teachers liked to apply this concept to their teaching-learning process. We wish to introduce this concept to other teachers of our school too. This concept is also helpful for A/L students, and we hope to make them aware of OER. It is a novel concept for PGDE student teachers. So we hope this concept will be introduced to other teachers who had followed PGDE in the OUSL and also to those who wish to follow PGDE at OUSL in the future. We hope to hold a workshop for school teachers and introduce this concept. We will seek the support of our school principal for this purpose.

Center:	*Anuradhapura Regional Centre, OUSL*
Team:	*Trend-setters*
Participants:	*Rev. N .Indrarathana Thero*
	H.G. Mahima Padmachandrani
	W.M Nalika Subashini
Writer:	*H.G. Mahima Padmachandrani*
Translators/Editors:	*L.Ranjan Gonsalkorala*
	W.M. Sunil Weerakoon

Anuradhapura

Explorers

Our first perception/impressions

We did not know about OER before starting the project on integrating OER into the teaching learning process. We obtained some awareness on OER through the first workshop. Although we have been downloading and using videos, audios etc. from the internet for our lessons, we were not aware of copyrights and license types. This project helped us to find suitable OER and use those resources according to the copyright laws. Given below are some reflections of our colleagues on the initial workshop, which express its importance to us.

 "Today I recognized what are the OER and now I can use it to my teaching learning process effectively"
 "Today I could learn about the importance of OER as a teacher. So in future I hope to utilize OER for my teaching- learning process"

Starting point of integration of OER

The project began on the 29th March 2015 at the Anuradhapura Regional Centre. Earlier we were informed about the project and were also motivated to participate. Even though 40 teachers expressed their willingness to participate, only 26 attended the first workshop. The absence of some was due to zonal education workshops, answer script marking and personal reasons. Members of the Research team participated as resource persons for the first workshop. We were shown a video on the OER concept titled 'copying is not theft'. The concept maps we did at the first workshop were very simple. Some examples of those concept maps are presented in Fig. 2.3.1.
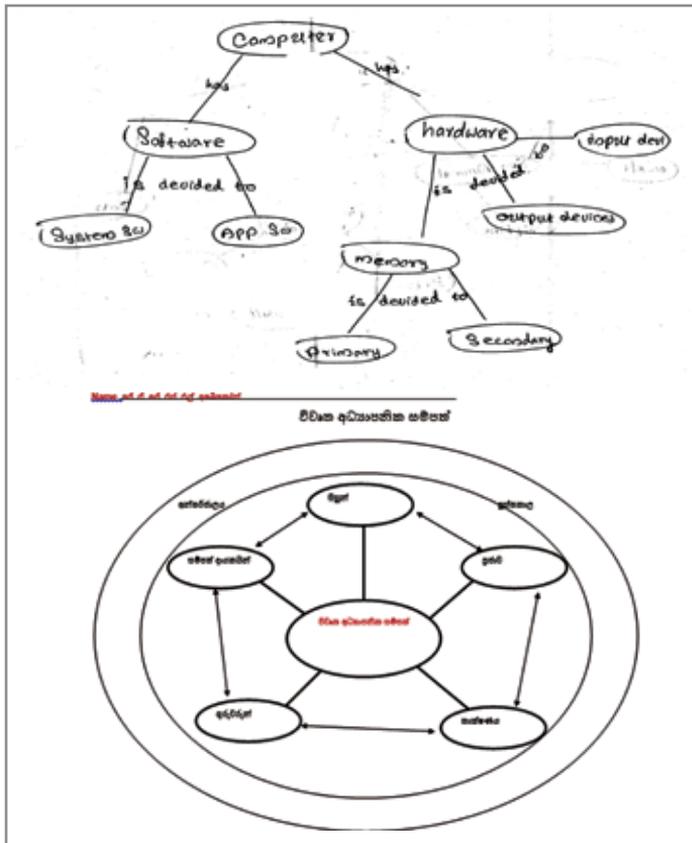
Fig. 2.3.1:Our initial concept maps

Adoption & integration of OER

The second workshop (Mid-Intervention workshop) was very useful in changing our mindsets. The discussions and presentations conducted by Prof. Shironica Karunanayaka using Video Conferencing helped to increase our awareness on OER and their usage further (Fig. 2.3.2.)

Fig. 2.3.2 :Mid-Intervention workshops

Workshop activities helped us to identify relevant OER and identify the nature of their licenses. We understood the importance of the 5 R concepts in Open Educational Practices as well. (Fig. 2.3.3)

Fig. 2.3.3: OER-related concepts we learnt

Developing concept maps was an important aspect of the workshops which enabled us to identify our own progress in gaining knowledge of OER and of OEP. During the Mid-intervention workshop we were able to find relevant OER for related subjects of our school curriculum. Table 2.3.1 indicates some OER links relevant to some subjects found by our team. (Table 2.3.1)

Table 2.3.1: Sample OER found for different subjects

Subject	Url (Web link)
Mathematics (Secondary)	http://www.open.edu/openlearnworks/mod/subpage/view.php?id=56440
English (Secondary)	http://www.open.edu/openlearnworks/mod/subpage/view.php?id=56423
Home Economics	https://www.oercommons.org/browse?f.general_subject=nutrition

Notes of reflections added by our colleagues at the Mid-intervention workshop show the importance and the significance of the workshop activities, as mentioned below.

"Today I got a real understanding of what is OER. I got a chance to use the method of using OER, such as selecting subject related materials, understanding the kind of license of OER, sharing the knowledge, and uploading of materials"
"Actually today I was able to gain lot of knowledge about OER, for example, about licenses. In the past I tried to log into the LMS, but I failed. I think today I was successful. I think OER will help me to become a valuable and a confident teacher."

The Mid-Intervention workshop also helped to share our experience with each other and get further practice and guidance on integrating OER into our teaching-learning designs. The discussions conducted helped us to be clear about the

future activities that we were going to plan during the 3rd school term. At these discussions we mentioned some activities we intended to plan and implement to promote OER within the school and classroom setting. Some of them are mentioned below:

1. Organizing workshops to raise awareness for teachers on OER and OER-related concepts and practices.
2. Preparing OER –Learning Resources Bank for particular subject areas for use by the teachers in their school.
3. Establishing OER School Clubs
4. Sharing OER integrated teaching-learning materials and other resources with our colleagues.

This Mid-intervention workshop was very helpful to use OER-integrations to improve our teaching learning process. Preparation of lesson plans, using video, audio and animations were facilitated by this experience. OER integration helped to maintain students' attention very well in the classroom. It helped to complete the syllabi in advance.

Challenges/ frustrations

Some school principals were not willing to provide official leave to attend the workshops held for this purpose. Lack of resources (computer facilities) available in the school was one of the most significant barriers we faced when integrating OER into the teaching-learning process. Negative attitudes of some school administrators and the lack of ICT skills of teachers also were main obstacles in engaging in the project activities. We made a full effort to make our students aware of OER and their practices. Most of the students of our school system are used to traditional teaching-learning methods and materials. Therefore it was very difficult to change them to this novel way of teaching and learning. In our school system we do not have sufficient opportunities to use the internet facility. Many of the teachers were reluctant to practice and undergo this experience due to lack of knowledge in English.

Achievements/successes

Even though we faced a lot of difficulties as mentioned above, we could also gain a lot of advantages by engaging with these activities. We were able to prepare student activities adapting OER. Our team members were able to create our own OER with our own language. An example of an OER created by one of our colleagues is given below. (Fig. 2.3.4)
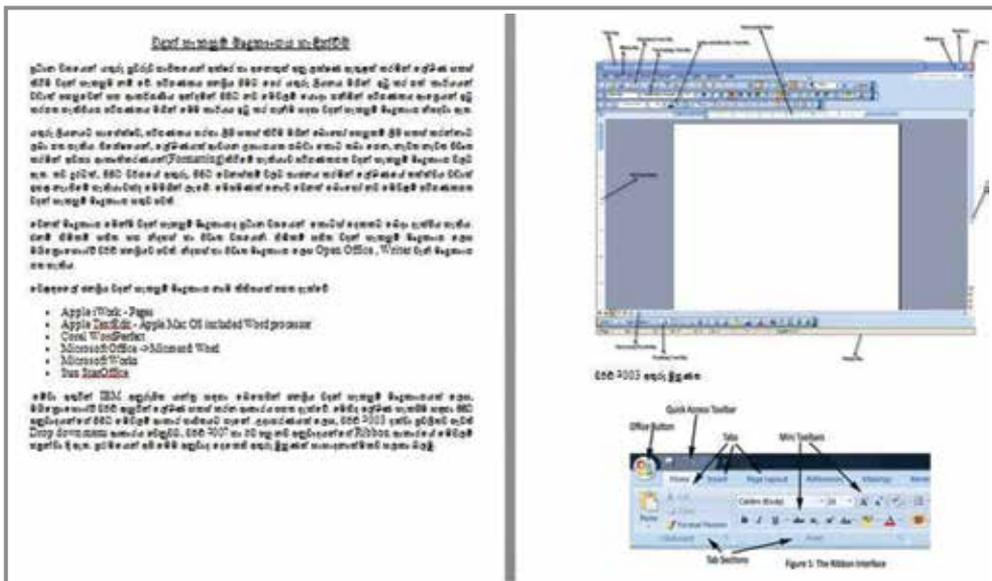
Fig. 2.3.4: An OER material created by a team member

We understood that we can use OER available in the internet in an ethical manner. Now we can consider the copyright matters when using teaching-learning materials available in the internet. Beside the traditional way of teaching-learning we can adopt new and innovative methods and techniques with the help of OER. This research project helped us to create a sharing culture among our colleagues. We improved our relationship with other teachers with this new sharing culture. We were able to share OER materials we found from the Internet and also resources we created as OER with our colleagues, with the confirmation of their licenses. We found relevant OER using most popular OER repositories Like Merlot, Curriki, and OER Commons for various subjects in our school curriculum. Some examples are given below.

http://www.oercommons.org/courses/adjacent-angles/view
https://www.oercommons.org/courses/graphing-linear-equations-2
https://www.merlot.org/merlot/assignments.htm?category=2513&isSerc=false&
http://www.curriki.org/oer/Volume—Formulas-practice-worksheet/?mrid=19026
https://www.oercommons.org/courses/global-citizenship-cultural-citizen-ship-and-world-religions-in-religion-education

When considering the entire process of the research project, now we have acquired a broader knowledge and awareness on OER and OER related practices. Now we have confidence to find relevant OER to integrate in our teaching-learning process. During the project we were able to closely work with the educational specialists,

Professor Som Naidu and Professor Shironica Karunanayaka (Project leaders). We consider it a great opportunity to our success. We were able to gain a lot of experience by working with them, sharing their knowledge and experiences, for us to succeed in this remarkable journey. During the Final Evaluation workshop one of our colleagues was able to win the most active student teacher award for our Centre.

Fig.2.3.5: Facilitation from the Research Project Team

Good practices

Sharing the OER created by us with our colleagues is a very good practice which resulted from this experience. Integrating OER into our teaching learning process also enabled the integration of new and innovative methods and techniques, and with the help of OER we could improve our teaching-learning process.

Impacts on the teaching-learning process

OER integration helped us to maintain our teaching-learning process effectively. This helped to improve the quality of the teaching learning process. We could manage time in an effective way in the classroom. It was easy to teach OER- integrated lessons to the students. When considering the changing world, we are able to find / search quality teaching learning materials shared through the internet or OER repositories and thus this movement helped us to become innovative thinkers.

Earlier we used internet resources for our teaching learning process without considering much about copyright laws. After participating in this research project we understood the importance of copyrights and using quality teaching-learning materials ethically. We identified the significance of using OER for our teach-

ing-learning process. We can easily find relevant OER for particular subjects we are teaching using OER repositories. Now we are confident to integrate OER in our teaching learning process.

Future plans

As mentioned earlier, some of our team members were able to organize awareness programmes for other teaching staff of their own school on OER. We hope to organize more small-scale workshops and discussion forums for teachers in our schools to make them aware of OER and their practices. We also plan to organize awareness programmes for students on OER, and also, for school principals with the support of Zonal Director of Education.

Center:	*Anuradhapura Regional Centre, OUSL*
Team:	*Explorers*
Participants:	*B.K.I. Dinushani*
	S.B.Nadeesha Dilani Bandara
	W.G.K.C. Priyadarshani
Writer:	*B.K.I. Dinushani*
Translators/Editors:	*L. Ranjan Gonsalkorale*
	W.M. Sunil Weerakoon

3 Case Study
Badulla

A Light Shining in the Darkness

3.1

T.D.T.L. Dhanapala and M.L. Sudarshana

Introduction

Education is an effective way to shine a light on darkness of human beings. According to William Butler Yeats, "Education is not the filling of a pail, but the 'lighting of a fire'. Our work with teachers in Badulla district was such 'lighting of a fire'. To initiate our exercise, we could find some enthusiastic teachers, who were willing to learn new things and trying to teach in innovative ways. Badulla education sector has been facing a lot of challenges: for instance, lack of physical and human resources, shortage of appropriate learning materials/resources other than text-books…etc. Therefore, we were able to support these teachers to overcome some existing challenges with the help of Open Educational Resources (OERs).

Today, new information of any programme can be sent electronically, or placed online, and any number of students can access the material quickly. As a result, there is a marked decrease in costs, which has significant implications on education; and it allows distance educators to play an important role in the fulfillment of the right to universal education.

The Faculty of Education of the Open University of Sri Lanka raised awareness of student teachers of the Post Graduate Diploma in Education (PGDE) programme to adopt different OERs in their teaching and learning. With the awareness that OER include full courses, course materials, modules, textbooks, videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge, we ourselves were highly motivated to search OERs related to our subjects. Similarly, we thought of motivating our student teachers at the Badulla Regional Centre. Our reflections on the experiences of school teachers from this area of natural beauty are presented here.

First perceptions/ impressions

It was noted that almost all student teachers (PGDE students) in the Badulla district had no idea about OERs at the very beginning. Many of them had not even heard the term OER. Some student teachers' comments are given below:

"After participating in the first workshop we understood that this OER concept could be used to make the teaching process more interesting…"
"After the first session we felt very happy for being able to participate in it…"

The teachers' expressed their views with regard to the enlightened thinking and practices they have gained.

"…we were able to find different and various ways to improve our knowledge through the OER found from the internet…"

"… the ability to share and exchange the knowledge through this enabled us to prepare new teaching-learning aids, and improve subject content which were also used by our fellow teachers…It was also a very good opportunity for us…"

"…we were able to understand how to perform the teaching learning process in a more productive and quality manner that will suit today's life style…"

They also mentioned few practical difficulties as their perceptions:

"…We also understood the difficulties that will arise…Due to lack of time allocated as well as the limited number of machines available it is difficult to cope up with the need to use the computers, except in ICT…"

Our student teachers' first concept maps (Fig. 3.1.1) are good evidence to support the above statements.
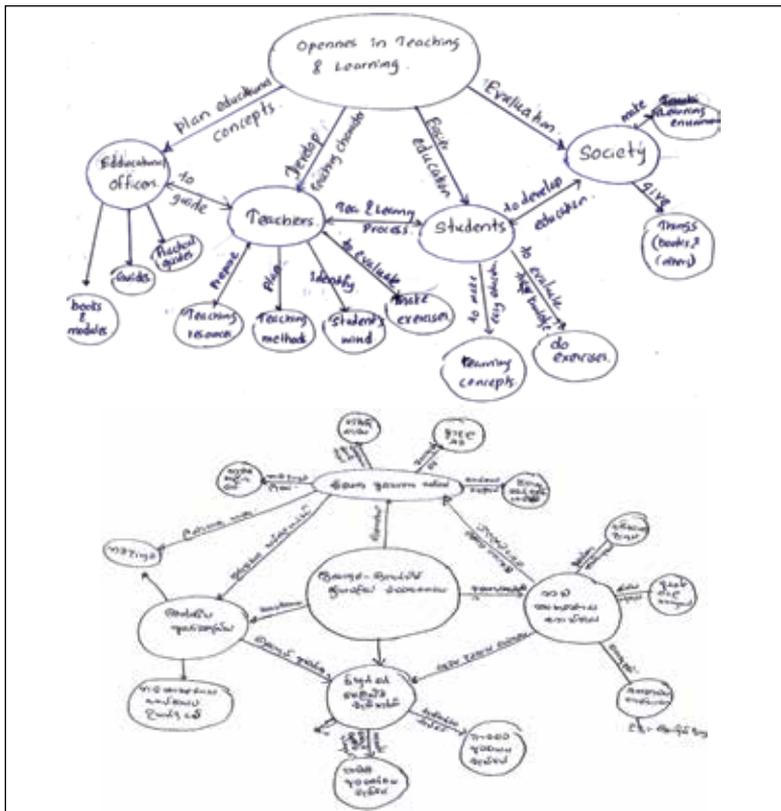
Fig. 3.1.1: Student teachers' first concept maps

Starting point

The first orientation workshop could be considered as the turning point of our student teachers, since all activities started from this point. Teachers were encouraged to search for and use OERs. At the workshop teachers were informed about what are OERs, and different types of licenses with the symbols and the purpose of these licenses.

Many teachers stated; *"… we started to use OER after the first orientation…"*

Teachers also said; *"… we came to know about various websites such as OER Commons, Learning space, Merlot, Curriki from where we could get OER …"*

They had found many useful websites of OER repositories. Our teachers had used search engines such as Google, Yahoo to search for OER, other than the OER repositories provided to them through the Moodle LMS.

"At the very beginning we were able to get a good knowledge about how to search for OERs and about the different ways they could be obtained." one stated.
"We are very happy to mention that we experienced how to find the required subject matter through OER during a very short time." another one said.

This means that all student teachers were motivated to search and find the relevant OER for their subjects after the first orientation workshop. Student teachers have indicated many and different web sources of OER, what they have searched and found, as evidence. Few examples are given in Table 3.1.1

Table 3.1.1: Weblinks of some OER found by student teachers

http://www.oercommons.org/courses/adjacent-angles/view
http://www.mathopenref.com/common/appletframe.html?applet=anglea-cute&wid=600&ht=300
https://www.oercommons.org/courses/graphing-linear-equations-2
https://www.merlot.org/merlot/assignments.htm?category=2513&isSerc=false&
http://www.oercommons.org/courses/sheppard-software-learning-games/view –

Adaptation/integration of OERs

Teachers at the Badulla Centre used many different modes to explain how and why they integrated OER to the teaching-learning process, such as concept maps, lesson notes and reflections. They agreed that the first workshop gave them a good impression and understanding on what OER are and how they can use OER in their day-to-day lessons. However, many of them were encouraged to integrate OER during their PGDE teaching practice period. The photograph in Fig. 3.1.2 is one

example to illustrate how teachers were encouraged to integrate OERs into their teaching-learning process.

Fig. 3.1.2: A teacher conducting an OER-integrated lesson

Teachers stated how they found and integrated OER in some subjects like ICT, Mathematics as given below:

"…After getting a clear understanding of this process we were able to use various kinds of figures, diagram and, photos for our daily lessons and it made our task easy …"

"…by using the links which were shared by others, we were able to search and find OER for subject matter easily, especially for subjects like ICT…"

"…it was possible to find attractive problems, puzzles, games and other materials for Mathematics…"

An example of OER integration in a mathematics lesson is given Fig. 3.1.3:
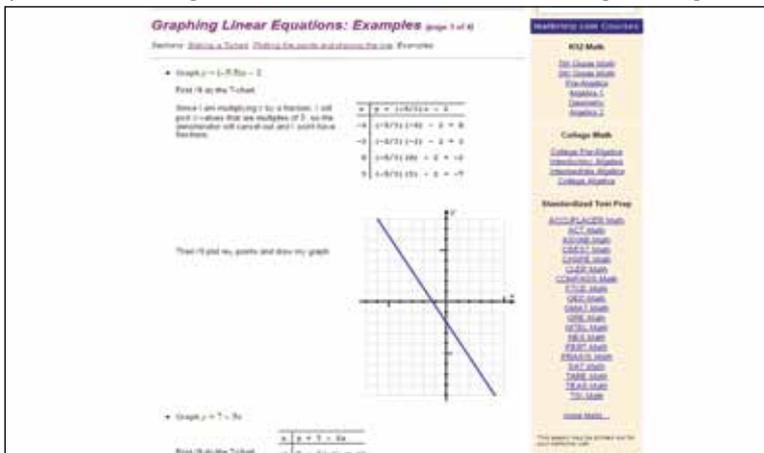
Fig. 3.1.3 : An OER-integrated lesson plan

Student teachers mentioned that; *"…we mostly use OER Commons, MERLOT, Learning space, websites to find extra subject matter as well..."*

 Many teachers accepted and appreciated that the PowerPoint presentations available as OER were suitable to be used in our local curriculum:
"…through this it was possible to obtain Power Points presentations which are appropriate for the curriculum/syllabus…"

Further, all teachers highly accepted that they introduced many creative activities to the students through the use of OER, rather than using the traditional textbooks.
"…it was also possible to introduce creative activities to students other than only using the text books…"

All of these words of teachers clearly reflect the need to integrate in OER to their lessons. We can now assume that if we motivate teachers they will be encouraged to improve their professional life. OER should be introduced to the schools island-wide while providing infrastructure facilities for schools. This is of course an investment and not an unnecessary expenditure.

Teachers showed these ideas in their second versions of concept maps and two examples are given in Fig. 3.1.4:
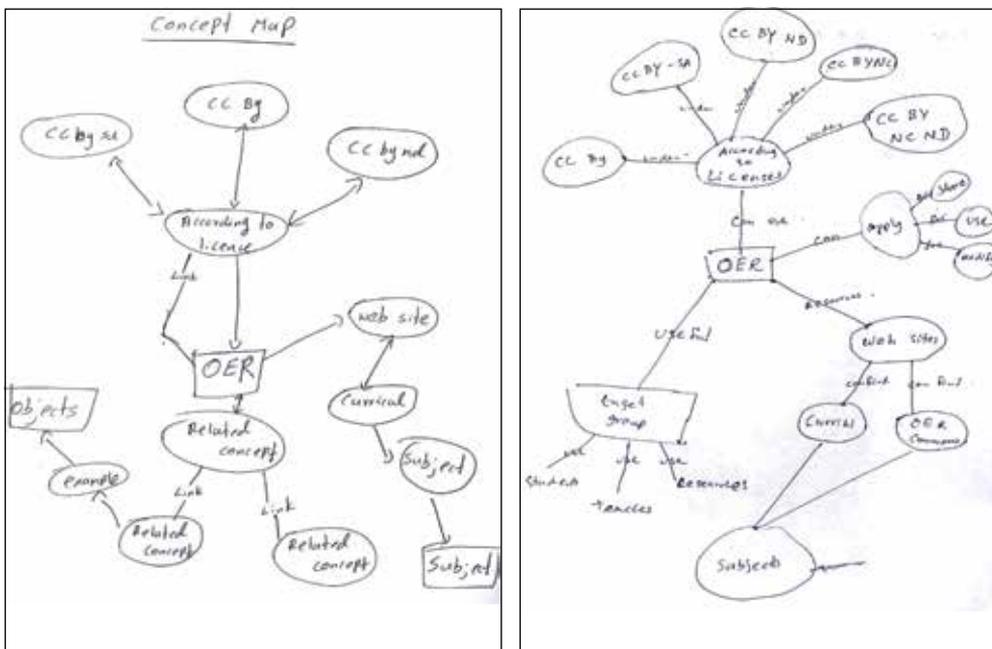
Fig. 3.1.4: Sample Concept Maps – Version 2

Challenges/Frustrations

Following are some of our students' thoughts and experiences on challenges and frustrations they faced during this project. As they were working in different schools in Badulla, the facilities of the schools also varied depending on the type of schools. Considering all these facts, the challenges can be summarized as follows:

- Except the IT teachers, for the other subject teachers the opportunity to use computers in schools are very rare.
- Teachers of core subjects have a very busy and tight schedule; for instance, 6-7 periods per day out of 8 periods, and therefore, it is very difficult to manage the time.
- Lengthy time taken to access the internet through the school's system (School Net).
- Computers and internet facilities are not available in every school.
- Most teachers are reluctant to move away from the traditional mindset.
- Most of the schools have minimal physical resources.
- Inability to use the teaching-learning aids which are found through the internet due to lack of facilities in the schools such as Multimedia projectors, computer etc.
- Many teachers and students have no computer/internet facilities in their homes.

Even though we worked with a group of enthusiastic teachers, owing to the above barriers many teachers had dropped out from our project. While the first workshop was conducted with 25 student teachers, at the evaluation workshop there were only 2 student teachers as participants. It was very challenging for us, the researchers too. While owing to various challenges faced by them, the number of participant had drastically decreased, the two teachers who remained were motivated to continue.

Achievements/successes

All members of the group accepted that their lessons were very successful after integrating OER. They believed that they were able to reactivate the internet usage: *"…it was possible to reactivate the usage of internet which was abandoned in the past…"*

There are many new technological approaches in the field of education, so participants were now motivated to use the technology as well.

Some members had found important diagrams, which were required in some subjects:

One teacher student stated: *"…I was able to find different diagrams such as Polygons, e- photos, Tessellations etc. for teaching difficult topics very easily…"*

All teachers had understood about the different licenses available on OER. Thereafter they had encouraged their students to participate in this process.The teachers accepted that their teaching learning process has changed and it has become more attractive now.

Teachers were happy to be engaged in such a teaching-learning process. It results in job satisfaction and also helps in time management. With Government support, and by providing necessary facilities, teachers could use their after school time to find more OER to make their lessons more successful.

Good practices

Teachers in the group stated that many skills have been enhanced in them, while using and incorporating OER to their lessons. They had also accepted that while involving in this process, they could easily find much information within a very short period of time.
"…it was possible to find necessary facts within very short periods by being engaged in this very frequently…"

On the other hand, teachers have encouraged students to search OER material related to their subjects.
".. Our students were motivated to search for OER related to subject matter…"

Teachers thought this provided a good opportunity to encourage students for self-learning.

They also shared links of OER which they found with other members. Following statements are evidence of this:
"…it was easy to find facts by sharing the OER links which were shared by other members…it is easy and possible to share and exchange information among each other…"

Through sharing it has been easy for teachers to obtain many subject matter-related information and resources through different websites, and they identified OER which are under different open licenses. It has been easy and useful for their time management, because it was possible to find necessary information within a short time period.

If teachers can manage their time well, they can encode more information to their students. Above facts clearly explain that they were able to manage the time by using OER. On the other hand when they share materials, the latest information is passed to all schools, and again, saves time in finding resources. Teachers of the group have mentioned this in their reflective journals.

Impacts on teaching and learning

Our student teachers gave different reasons on how OER influenced their teaching learning process. Everyone in the group accepted that their teaching-learning process has become more attractive; "…teaching learning process became more attractive than previously…"

We categorized the other reasons as follows:
- Could develop new lesson plans in a modern way using new facts
- Attractive, appropriate and correct teaching aids could be found instead of making an effort to make them.
- Knowledge was updated as it was shared with others.
- Students were motivated to search for new information.
- Ability to understand the new creative activities such as number games, magic squares… etc.
- Usage of computer that was abandoned in the past was revived.

Our teachers stated these facts based on observing the increase in the assignment marks of students. In addition, teachers have mentioned their feelings through final concept maps.

Future plans

Our student teachers are planning to perform the facilitative role of a teacher in a fruitful manner by using more resources and by engaging in this programme throughout. They wanted to increase their knowledge on OER more and more. They also wanted to raise awareness and educate other members of their staff about OER.
"…we need to educate the other members of the staff as well as the other teacher friends about this programme."

They said that then they could share and exchange knowledge and resources with all. They thought that they can update the knowledge through frequent usage of OER. They also believed that if teachers can perform their role with such new technology, it will be more productive for students as well. These teachers have identified a large number of OER sources used to fulfill their above goal, as evidence.

In the future they plan to get information for assessments and evaluation of students as well as to exchange knowledge through OER and therefore they need more websites through which OER is available. They will take such steps to promote OER, because these are the groups who are really interested and motivated. They also need to write and publish books etc to disseminate their knowledge. Their continuous involvement in seeking and sharing knowledge through OER will be a good trend that will contribute to a positive future of school education.

Badulla
Invincible

Our first perceptions

As teachers we are used to searching different websites and internet to get new information to use in our classroom teaching. When we heard about OER for the first time we were very happy and thought it would be a very interesting activity. OER was a new concept and we had a curiosity to learn about it. In addition we thought it would be a very useful opportunity for us to update knowledge to share with our students and teachers with the support of this process. During the first OER workshop we understood that it will be a very useful concept to engage in the teaching-learning process in an interesting manner.

At the end of the first workshop we were very happy that we could take part in it. It broadened our understanding, of how to improve our knowledge in different ways by using OERs, and make some changes in our teaching- learning process to improve its quality and productivity.

In addition, we recognized another important aspect – sharing of knowledge. For instance, teachers could exchange teaching-learning aids and facts related to subject matters with other teachers who are engaging this process. At the end of the first workshop we felt that OERs are really important for the future teaching-learning activities.

Fig. 3.3.1 shows one initial concept map that was created at the 1st workshop.
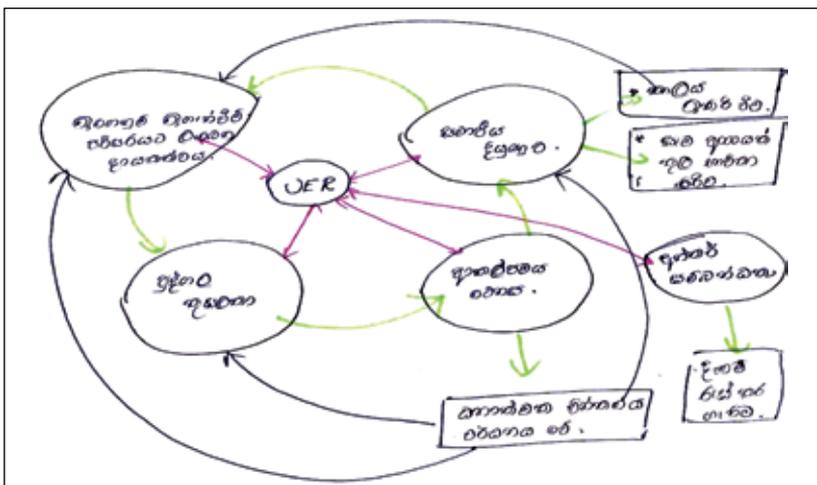
Fig. 3.2.1: An initial concept map

Starting point

We could understand about the OER concept and their different licenses with the symbols, and how to identify and find them. Basically we could improve our skills to search OERs in different ways and to find most relevant subject matter within a short period of time. We gained a broad understanding during first workshop, by engaging in the activities, viewing the videos and referring to printed materials.

Adaptation/integration of OER

It was important to consider about adaptation and integration of the OERs in to our teaching-learning process. We had faced many difficulties when we worked with copyrighted resources like photos, diagram etc. taken from the internet, before we got an understanding of the OER concept. After having a better understanding about this concept and process, we could easily incorporate diagrams, photos etc. into the daily lesson plans, without worrying about copyright issues.

The OER sites provided were basically used to search for extra subject matter content. Especially we would like to mention about the PowerPoint Presentations we found which are highly relevant to the syllabuses. As a result, we could present creative activities to our students other than the content from the traditional text books.

Challenges and frustrations

We had to face a lot of difficulties such as limited opportunities to use computers available in schools, limited time, English language barrier, low speed and access to internet, while engaging in this process. Almost all the teachers have to teach 6 to 7 periods (out of eight periods) per day. So, it was really difficult to find an extra time to work on OER- related activities at the school.

Mostly, schools use the 'School Net' to access the internet. It takes a lot of time to search for materials in the School Net system as the internet speed is very slow.
Owing to lack of facilities (multi-media, computers, sound systems etc.) in the schools it is really difficult to integrate OERs in classroom teaching-learning situations. It could be a reason for many teachers in Badulla Centre not to continue with the project, because there are many rural schools in our province facing all the above mentioned difficulties, when compared with other provinces.

Also we like to mention that, many teachers are confined to traditional mindframes and do not like to move forward. So changing their mind-sets is a big challenge. We introduced this concept to our students, and let students find facts through OERs and led them to discuss about the usefulness of OERs with their other teachers.

Achievements /successes

Even though we too faced a lot of difficulties as mentioned above, we could gain a lot with this new experience and activities at the workshops. Earlier we were reluctant to use the internet in teaching and learning. As a result of engaging in the OER-related activities we began to use the internet more effectively and efficiently in our teaching- learning process. We have found many important and freely available resourceful OER web sites from the internet.

Through the activities we could also broaden our knowledge about the Creative Commons (CC) license and its types. We incorporated novel activities into the teaching- learning process with OER.As a result of OER integration, students' active participation in the lessons increased and teaching-learning activities became more interesting than before. As teachers we understood that finding and incorporating OERs into the lessons is an essential novel concept for a productive teaching-learning process.

Good/best practices

We achieved all of the above with many difficulties, but we are happy that we have gained many good experiences during the process. Now we can find relevant OER from the internet within a short time and we can easily incorporate relevant resources into the teaching-learning process.

Some of our students have also started to use OERs for their learning activities. As a result of that some of them were able to find information about lessons even before we taught it.

Developing a "sharing culture" is another good practice we gained, in the process. We started sharing resources among school teachers through the internet and other data storage devices like CD, DVD, pen-drives etc.

Impact on teaching and learning

The impact of integrating OER on the teaching-learning process, is varied. It has changed our practices as now we browse the internet in an interesting manner to search for OERs to support our teaching-learning process.

We could easily find relevant and attractive teaching-learning aids and useful activities from OERs web sites. In order to provide better learning experiences for our students, OER is valuable. It also saves time.

Further, the culture of 'sharing' has paved the way to find valuable resources to facilitate our teaching-learning process.

A letter of appreciation that was issued by a principal is an indication of the support It is an indication of the support of the school management in these activities, and it is a motivation for us to move forward.

Future plans/ where to now?

We need to think about the future activities, what we can do for the further development of this process and continue even after these series of workshops.
Firstly, we can continue searching and incorporating OERs into our daily lesson plans. It will help us, the teachers to play a very productive role in the school as we can update our knowledge with modern technology, while saving time.

Secondly, we could create awareness about this process among the other teachers in our school system. We can start this process from our own school and later expand it to nearby schools through friends. Social media could be used to spread it to other areas.

Thirdly, we should develop our own resources as OER and share with the others. It is important as we can create these resources in any language for our convenience and to meet the needs of our students.

Fourthly, we can motivate and facilitate our students to work with OERs continuously.

Finally, we appreciate that we have learned about something innovative and very useful for the betterment of our future.

Centre:	*Badulla Regional Centre, OUSL*
Team:	*Invincible*
Team Members:	*D.I.N Ranasinghe*
	A.L.N. Gayani
Writer:	*D.I.N. Ranasinghe*
Translators/Editors:	*T.D.T.L. Dhanapala*
	M.L.S. Sudarshana

4 Case Study
Batticaloa

Singing Fish

Sashikala Kugamoorthy, M. Rajini and K. Gnaneratnem

4.1

The Batticaloa Regional Center is located in the Eastern part of the country. Batticaloa is famous for its hospitality, culture and beauty. As it is also very advanced in performing arts, the people from the east are also very creative and active in nature. For the OER project conducted by the Open University of Sri Lanka (OUSL) 40 student teachers following Post Graduate Diploma in Education (PGDE) in 2014/2015 academic year were selected from Batticaloa Regional Centre (BRC). We were very happy to see that the student teachers have shown their active participation throughout the project just like a singing fish. This case study is a good example of experiences of student teachers who participated in the OER project, full of energy and enthusiasm.

Fig. 4.1.1: Student teachers at the first intervention workshop

In March of 2015 the team of researchers and resource persons from OUSL introduced the OER to 40 student teachers who were selected according to the subject they taught with an aim to enhance the quality in their teaching. We discussed the concept OER, its application, uses and benefits for them during the first intervention workshop. Even though the concept of OER was entirely new to the teachers, they seemed to be highly motivated and actively participated in the OER related activities. They came forward and were always ready to 'show their colours'! Further, they expressed that they were not bothered about the licenses of the materials in the internet and did not bother about the copyright matters and used all the resources in the internet without any concern. The workshop on 'Integrating OER in Teaching and Learning' has completely changed student teachers' thoughts on online resources and they expressed that they studied online

ethics from this workshop. They also believed integration of OER will renew their views and ideas about teaching learning resources.

Open Educational Resources provides a platform to all the people to integrate web based materials into the education and to obtain upcoming changes in education from their homes. The OER uplifts and strengthens education reforms such as education for all, lifelong education and open education. Amidst all these beliefs and desires student teachers also faced many challenges namely lack of physical resources, internet connections, lack of support from the management, unavailability of resources in the mother tongue, lack of time etc. However, as the fish singing in the Batticaloa lagoon, the student teachers also continued their OER related activities happily and with more enthusiasm.

As the OER concept was new to the participants, at the beginning, they were not expressing their interest in integrating OER in their teaching learning process. But during the day schools the Research Assistant (RA) motivated the participants and gave reminders to them regarding the importance of OER in teaching and that resulted in sharing resources through Moodle. They started to create and share several OER among their colleagues. Table 4.1.1 summarizes some OER shared by our student teachers.

Table 4.1.1: List of OER found and shared

	Topic
Digestive system - grade 7 science tamil	Grade -4 – Vocabulary for birds
Light microscope	Grade:4 / Unit-6 / lesson-1 – Transport
Electro chemistry for OL science	OER integrated lesson plan – gr-9 English
How do npn transistor work?	Grade 3 Hobbies
GIT- Human Computer Interface	English
ICT and Society	Scheme of Grade-3 English (1st, 2nd, 3rd terms)
Internet	Scheme of Grade-4 English (1st, 2nd, 3rd terms)
Basic ICT	Scheme of Grade-5 English (1st, 2nd, 3rd terms)
Gates	Opposite words list for grade 5
ICT Grade 10	OER site for Teachers
Grade 5- Srilankan festivals	OER site found for English Teaching and learning
Grade -5 - Food and nutrients	Agriculture

We were able to see that student teachers integrated OER in their teaching-learning process through the regular practice and they started to link OER at each step of their teaching-learning process. They used OER for lesson development, group activities, lesson elaboration, discussion and evaluation. Further, they used a variety of OER including PowerPoint presentations, downloaded printed task sheets, online questionnaires, online puzzles and word games, and the multimedia projector with a lot of animations, coloured pictures, 3D animation videos, audio and visual aids. They were able to use the play-way method in teaching as we gained more ideas and support from OER. At this point, student teachers realized that they can save their time to get most updated teaching-learning materials by using OER. This is reflected by them and they stated that OER helped them to broaden their knowledge and supported them to overcome the disadvantages of traditional teacher-centered teaching. They further expressed that they experienced innovative teaching and active learning in their OER integrated class rooms.

To set a standard, with the guidance of the Resource person (RP) and the Research Assistant (RA) they formed an OER committee and held some discussions among them. An OER committee with eight members decided to share their knowledge on OER with others and they planned to integrate OER in the teaching process. Under our guidance and support they planned to conduct an awareness workshop on OER to the previous participants and some new comers too. They set five objectives which included introducing OER to educators, let them realize the importance of OER, get them understand the rules and restrictions on getting educational

resources, enhance their use of OER in planning lessons and educate them to use OER during learning teaching process. The workshop was successfully conducted on 22.12.2015 with 21 participants.
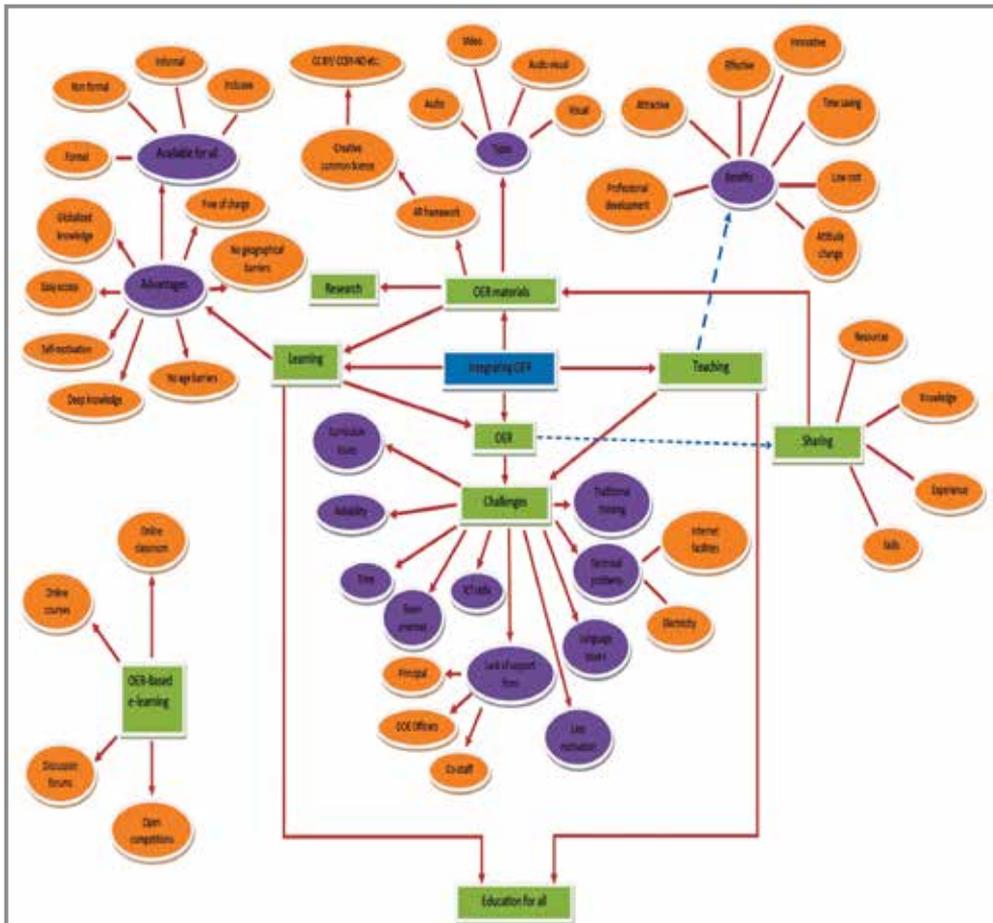
Fig. 4.1.2: Concept map drawn by the group of student teachers

In January 2016 the final workshop was held by the OER Project team where 32 student teachers participated. During this workshop the participants launched a book titled 'Integrating OER in Learning, Teaching Process' (Fig. 4.1.3), which was a great surprise to the OER Project Team and they appreciated that it will be a good resource for school teachers. The first leaf was officially handed over to the RP of BRC.
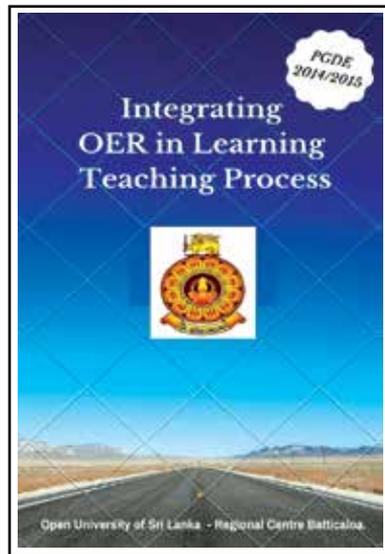
Fig. 4.1.3: Book launched by the group of student teachers

The final evaluation workshop of OER was conducted on the 13th of June 2016 at Anuradapura. The participants of BRC were appreciated for their efforts towards OER integration in the teaching- learning process. More importantly, P. Revasuresh, a participant from BRC received an award for the active participation in OER implementation. The competition was conducted among the regional centers of OUSL.

The participants in the OER project strongly believed that they will use this knowledge in their career and it will enable them to enhance the quality of their teaching learning process. Furthermore, some participants have individually published their brief handouts regarding OER. The above participants are teaching in the schools which are situated in different parts of the Eastern Province of Sri Lanka. They have introduced the concept of OER among other teachers in their school which has also given great inspiration to them.

Batticaloa
Rainbows

The first impression of OER

As teachers in the modern world we use internet for our teaching. From the beginning of our career, we were aware of Google search, however, we were not bothered about the copyrights or licenses of the materials in the internet. We also had a lot of doubts on the credibility of the downloaded documents. So we only used selected resources for teaching which were very limited.

But the workshop on 'Integrating OER in Teaching and Learning' has completely changed our thoughts on online resources. OER was a new concept and lead us to be concerned about copyrights and licenses. We were surprised to know about the licenses and our freedom on using those open educational resources. We were also happy to hear about the facilities to reuse, revise, remix and distribute OER. We were highly attracted by the use of OER and pleased by their benefits in the Education field. The first intervention work shop helped us to broaden our knowledge. Our team member Pramya Revasuresh expressed her thoughts of OER as shown in the concept map in Fig. 4.2.1.
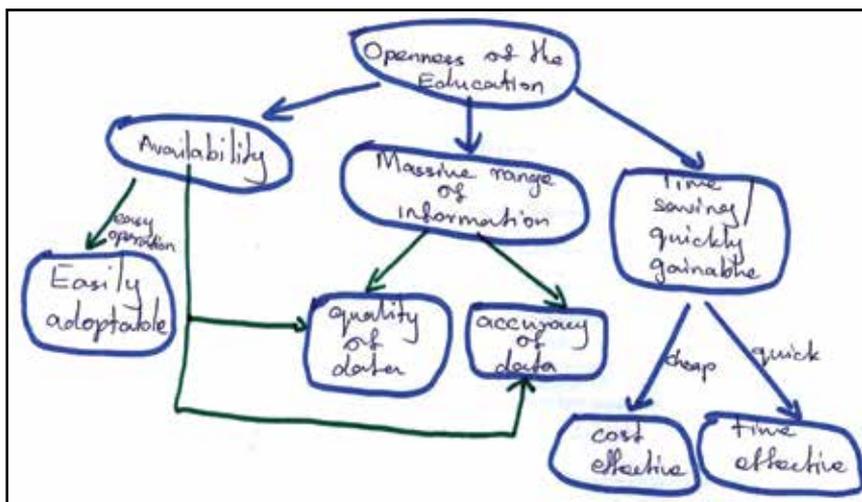
Fig. 4.2.1: An Initial concept map

One of our team members Krishanthy expressed her appreciation in her reflections as follows:

"Today I learnt a new thing- that is Open Educational Resources. It's very useful to me for the teaching-learning process. I learnt things such as what are OER, 4Rs framework, Creative Commons licenses, educational potential of ORE and etc. I am very thankful to the opportunity given to me"

Starting point of OER in our profession

At first we got to know some basic ideas of OER from the introductory workshop. Then we gained the knowledge on open licenses and the 4Rs of those resources. We were also instructed to integrate OER in our teaching learning process. During the discussion with colleagues we realized the importance of OER in education and planned to use the OER in our teaching learning process. We wondered how we can integrate OER in our lessons. We searched for OER relevant to our subject and tried to use them in different steps of our teaching. Finally, we started to integrate the OER in our lesson plans.

How we integrated OER in our teaching - learning process

We integrated OER in our teaching-learning process through the regular practice. We have linked OER at each step of 5E teaching method. We used OER for lesson development, group activities, and elaboration, discussion and evaluation steps. When we used some downloaded OER such as task sheets, activities and supplementary readings, we were able to save our time. Integration of OER helped us to broaden our knowledge, and it supported us to overcome the disadvantages of traditional teacher centered teaching. We experienced an innovative teaching method and an active learning process in our OER-integrated classrooms.

Challenges

When we started to integrate OER in our routine teaching process, we faced many inconvenient situations and struggled with them. Very few schools have facilities to access computers and internet. Inadequate computer lab facility with limited internet connection, poor classroom arrangement, lack of knowledge on computer operations among teachers, unavailability of resources in mother tongue, limited financial allocation and poor infrastructure facilities of schools have been the barriers for adopting OER in learning teaching process. We also faced problems to identify OER and differentiate them from other online resources.

So we requested our Principals to purchase necessary equipment under the Five-year Plan. According to our request, the purchasing requirements for new computers, dongles, multimedia projectors and printers are being included in the Five-Year Plan for school development of 2016. But however the individual resource alloca-

tion for each student is not possible in this year as the funds are limited for each school. Therefore still we have some barriers in the integration of OER in our teaching learning process.

Achievements

The students' school attendance was increased due to the OER integrated, attractive lessons. OER helped us to simplify the teaching process and enhance the interest of students on subjects because the visual presentations and animated videos keep-up their attention on learning. We also discussed with other teachers about OER and shared our knowledge and experience with them. We shared our documents and resources through the LMS. We motivated and helped our colleagues also to use OER for their teaching.

Our good practices

We maintained our regular links for OER searching. So we did a lot of homework and pre-planning on integrating OER in our lesson plans. We hyperlinked some parts with OER links to save time for searching during the teaching learning process. We felt happy using modern technology to enhance the quality of our teaching. We shared the OER we identified or developed with our friends. We also uploaded our OER integrated lesson plans for the comments from other teachers. We strongly believed that sharing of knowledge will enhance the quality of education.

Impacts on teaching and learning

OER helped us to upgrade the quality of our teaching. After starting to integrate OER in our teaching-learning process, we often used PowerPoint presentations, downloaded printed task sheets, online questionnaires, online puzzles, word games and multimedia with a lot of animations, colour pictures, 3D animation videos, audio and visual aids. It helped us to reduce the violation of copy-write rules in classrooms and spend more time on teaching in an active and an effective manner. We were able to use the play-way method in teaching as we gained more ideas and support from open educational resources. This made our teaching interesting and attractive and therefore students' involvement in classroom activities was dramatically increased.

We also shared our own PPT presentations with other teachers through the LMS. And also we were able to access, use, adopt and redistribute the OER which we have downloaded and prepared. All these activities enabled us to enhance the quality of our teaching as well as our colleagues' teaching.

Our future plans

We enjoyed many comforts with the help of OER in our teaching learning process. Our future plans on using OER in teaching learning process are:

- Expanding our knowledge on OER by participating in workshops and trainings.
- Share our knowledge about integrating OER in teaching learning process with our school teachers.
- Enlighten the school management to give importance to adopt new technology in the teaching learning process.
- Gain financial support from the school management to purchase more computers and to access internet.
- Train the students to use OER for their self-learning.
- Conduct workshops to raise awareness on OER among teachers at the zonal level.
- Create OER in our mother tongue (Tamil) and share them with others.

Centre:	*Batticaloa Regional Center, OUSL*
Team:	*Rainbows*
Participants:	*P.Revasuresh*
	N.Satheeskumar
	N.Chrison
	S. Kruschanthy
	S. Ahilan
	M.M.Mohamed Jazeel
Writer:	*Pramya Revasuresh*
Editors:	*Sashikala Kugamoorthy*
	K. Gnanaratnem
	M. Rajini

Batticaloa

Salmons

The first impression on OER

One day, at the end of our day school, we were informed about the project on OER and the opportunity to participate and get experiences in integrating OER in our teaching learning process. At that time OER was entirely a new concept and we were not aware of the OER and OEP until the first workshop conducted at the Batticaloa Regional Centre of OUSL. But we obtained a clear idea on OER through this workshop and came to know about 4Rs, Licenses, Copyright matters etc. Up to this time we did not bother about the copyright matters and used all the resources in the internet without any concern.

The first intervention workshop significantly changed our views on web based teaching learning materials. We created concept maps about OER. The initial concept map drawn by our colleague Thibakaran is given in Fig. 4.3.1.

Fig. 4.3.1: An initial concept map on OER

By the end of the workshop, we realized the importance of using OER for educational purposes and their positive impacts on the effectiveness of teaching learning process. Our team member Suheethana shared her thoughts as follows:
"It was a new and most exciting experience to me. I got many new and innovative ideas on getting information by using open resource. And at very first time I heard about OER. I didn't expect such a good facilities it has. Today I fully used this and make me to improve in OER. I would like to continue using OER in my teaching process."

Starting point of OER in our profession

During our first intervention workshop we were guided to search OER relevant to our subject. Initially we faced many difficulties to find OER sites and identifying relevant OER. We also had some problems in differentiating OER from non-OER. But the instructions and guidelines given by our resource persons encouraged us to continue with our efforts towards OER. At the beginning it was very difficult to understand the ways to find OER and the internet was also not supportive to us. However, we identified some OER with the help of our resource persons and felt confident regarding the use of OER for our classroom activities. Then, we were instructed to integrate the OER in our classroom teaching. Initially, we had no clear ideas regarding this integration process, but with the support of our resource persons we successfully integrated OER in our teaching practices.

How we integrated OER in our teaching-learning process

We searched some suitable OER sites such as Curiki, OER Commons and found materials which were relevant for English and Physical Education. As we found many websites which contained a lot of activities for English language, we tried to integrate OER in our teaching learning process. It was very interesting to integrate OER such as texts, lecture notes, projects, audio, video, animation, assignments and tests in our teaching learning process as we felt that these OER could reduce our work load and help to provide better learning for students. We integrated them in different steps of our teaching for engagement, exploration, evaluation etc. We used them as teaching aids as well as learning materials.

Challenges

When we tried to integrate OER in our regular lessons, we faced many challenges. Firstly, OER is entirely a new concept and we were not familiar with OER. Therefore, we were unable to find appropriate OER and ways to integrate them. Further, we did not have any support at our schools as our colleagues were not aware of OER

and did not motivate or support us at the beginning. As we teach in rural schools we were unable to get necessary facilities and resources including computers, electricity, internet connection etc. Even after long searches, we were unable to find OER relevant to our subject matter. Some sites were not available. Because of this we wasted most of our time in searching. We felt frustrated and discouraged due to all these challenges. Our colleague Amirthanathan expressed his feelings in the reflective journal as follows:

07.08.2015
"The site was not working for two weeks. Anyway, the mid intervention workshop was rewarding and we were able to update the knowledge rather than before. Dr.Kugamoorthy and Miss Rajini conducted the workshop very well. It was interesting to complete the work. We were encouraged by both of them and i thought of working on OER rather than logging in to Face book, unfortunately, I was discouraged for two weeks by the Moodle site not responding…"

All these experiences resulted in many frustrated situations. But, we managed all these barriers and tried alternative ways to overcome them. Finally, we achieved our goals and conducted OER integrated lessons.

Achievements

We are proud to say that, we were the pioneers in OER integrated teaching. As we integrated OER in our lessons teaching and learning became interesting. We successfully used OER materials for teaching, learning and evaluation. We were able to adopt different teaching methods and approaches in our teaching. We used OER in different forms such as animations, images and activities which motivated and inspired the students to a great level. Further, we shared the resources with our colleagues and felt confident. We realized that after the integration of OER teaching became more meaningful.

Our best practices

Earlier we didn't intend to use much teaching-learning materials, but mostly we used the lecture method. After following the PGDE programme we started to use teaching aids. We spent a lot of time for the preparation of teaching aids. But OER helped us to spend less time to make our teaching interesting. We were able to identify and use varieties of teaching learning materials from OER which made our teaching productive and effective. We also shared these materials with our colleagues and encouraged them to use OER for their teaching too.

We shared our experiences on OER with them too. And now we were also happy to see some of our friends using OER for their teaching learning process.

Impacts on teaching and learning

When we integrated OER in our teaching-learning process, we were able to provide meaningful learning experiences to our students. Our teaching became effective and students actively involved in the learning. Further, students' self- learning skills were also improved by the use of OER. With the help of OER we were able to enhance the quality of our teaching. We felt proud when our teaching was appreciated by our senior teachers and supervisors. We reused, remixed, revised and redistributed the OER and shared them with our colleagues. Thus, we were able to enhance the quality of their teaching also.

Our future plans

As we realize the benefits of OER, we have some plans to share our knowledge on OER with others in the future by the following ways.
1. Conduct school level workshops to introduce OER to other teachers as well as to our students.
2. Create and upload new OER relevant to our subject, our curriculum as well as in our mother tongue.
3. Continue our search and find various types of OER and enhance our teaching by the integration of OER.
4. Encourage school administration to develop computer facilities, internet connections etc required for OER integrated teaching.
5. Conduct zonal level workshops to raise awareness on OER among the education community.

Centre:	*Batticaloa Regional Center, OUSL*
Team:	*Salmons*
Participants:	*S.Thibakaran*
	T.Amirthanathan
	S.Sutharsan
	B.Suhethana
	G.Umakanthan
Writer:	*S.Thibakaran*
Editors:	*Sashikala Kugamoorthy*
	K. Gnanaratnem
	M. Rajini

Batticaloa

Dolphins

Our first perceptions of OER

When we heard the news that we have been selected for a project on OER conducted by the Open University of Sri Lanka we felt we were fortunate. We learnt of the OER concept at the first workshop which was held on 28.03.2015. We came to know that the Open Educational Resources (OER) are freely accessible, openly licensed documents and media that are useful for teaching, learning, assessing as well as for research purposes. From the presentation on OER we knew about the license categories and the rules and regulations of using those resources. We realized the quality and trustworthiness of OER and their importance in Education. We got a very good impression on OER and we thought of integrating OER in our teaching and learning process. (Fig. 4.4.1)

Fig. 4.4.1: Student teachers doing activities during the workshop

We obtained a great experience from the OER workshop. Our colleagues shared their experience about the importance and significance of the workshop and wrote their reflection in the LMS. The following is a reflection written by one of our team members, Krishnaruban.

"I am very happy to join this workshop. I think this OER programme is developing my own knowledge and also important to our classroom teaching."

We obtained a basic knowledge on OER from the first intervention workshop. The concept map in figure 4.4.2, drawn by our team member Revasuresh illustrates our initial views of OER.
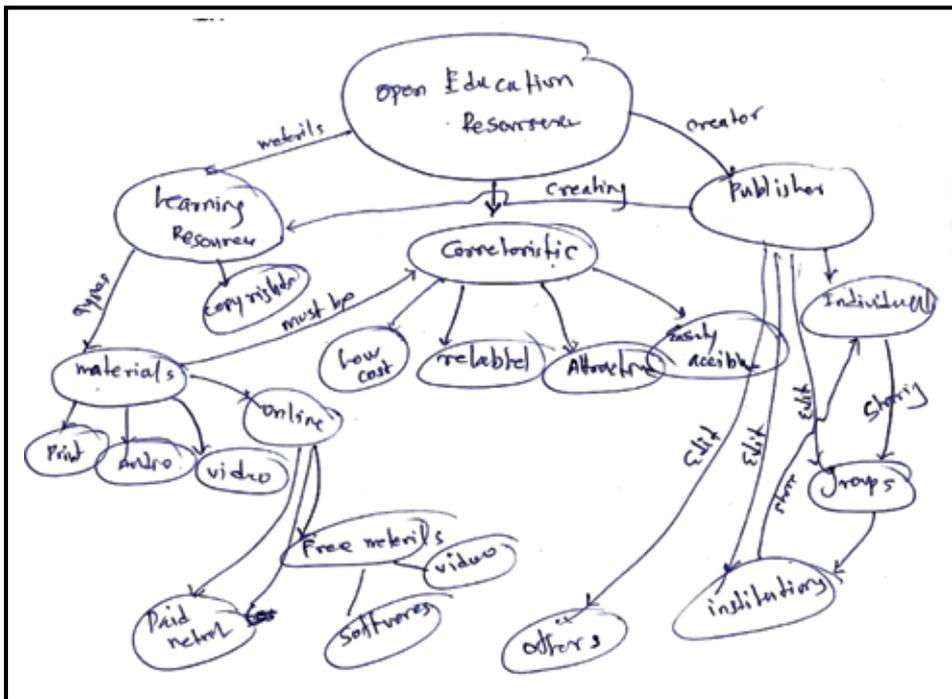
Fig. 4.4.2: An Initial Concept map

Starting point of OER in our profession

The first intervention workshop changed our mindsets regarding the web based teaching aids and created great interest on OER. At first we got the theoretical knowledge of OER from this workshop. We got the knowledge on online ethics. We used facilities in the NAC centre at the Batticaloa Regional center of the OUSL to learn more on OER and further practice. We searched OER relevant to our subjects and were surprised to see the unlimited resources available for teaching. We were instructed and guided to integrate them in our teaching learning processes. So we started to integrate OER in our PGDE teaching practices along with our lesson plans. We successfully conducted workshops and delivered a presentation for O/L students with the help of OER.

Adoption process

With the guidance of our resource persons, we tried to conduct OER integrated teaching. At first we identified relevant OER and started to prepare our lesson plans with the integration of OER. We used downloaded worksheets from OER. We integrated OER in our lesson plans to enhance the quality of our teaching learning

process. We used OER at various steps of our lessons for different purposes. We used them for engagement, elaboration and evaluation. Further, we used different forms of OER such as videos, animations, presentations and reading materials. We were able to integrate OER in our teaching learning process in a productive way. We were happy to see that our teaching became effective after the integration of OER.

Challenges and frustrations

We moved along the way towards OER integrated teaching learning with great enthusiasm. But, due to various reasons we faced many challenges in using and integrating OER in our teaching learning process. Some of the main challenges were:
1. Sudden electricity drops and power failures
2. Unavailability of access and problems in network connections
3. Lack of support from the school management.
4. Difficulties in differentiating OER from other copyrighted materials.
5. Unavailability of OER in some subjects such as Religion, History etc.

Amidst the above frustrating situations, we continued to search OER and try to integrate them in our teaching learning process.

Achievements

After the continuous journey towards OER we experienced many good things that happened in the implementation of OER integrated in teaching learning process, and we achieved some benefits which are:
1. To find easily, educational resources such as OER to integrate in our teaching-learning process.
2. Students' motivation on learning has increased due to the integration of OER in teaching learning process.
3. The stress and workload of the teachers have been reduced due to the use of OER as teaching learning resources and sharing such resources among them.
4. Teaching learning process became interesting and productive.
5. As teachers we perceived ourselves as good professionals and felt proud.

These achievements motivated our efforts on OER and we realized the value of OER in education.

Our team was very proud and happy to hear that our team member Mr. A. Revasuresh received the "Most active participant" award for his achievements in this project. We proved that we are the achievers of OER integrated teaching and learning. (Fig. 4.4.3)

Fig. 4.4.3: The "Most Active Participant" receives his award from the Co-Lead Researchers

Good practices

We integrated OER in our teaching and learning process in an effective and efficient manner.

1. We used OER such as video and animated resources in the engagement step of 5E method to enhance the interest of the students. We used OER such as task sheets and evaluation questionnaires in the evaluation step to monitor and evaluate students' performance.
2. We were able to give notes through OER such as presentations and word documents. This saved the time and the students got a clear idea on the particular topics.
3. We helped to promote the quality of the teaching of our colleagues by sharing our knowledge on OER with them.
4. We also shared the OER we created and found with others.
   These practices motivated us in our career and enhanced our prestige among our colleagues.

Impacts on teaching and learning

When we integrated OER in the teaching-learning process we were able to see some positive changes.

1. OER increased the creativity and innovative thinking of teachers as well as students
2. Enhanced the habit of sharing knowledge and team spirit among teachers.
3. Enabled us to get familiar with modern technology and helped to collaborate with the modern teaching society

4. Students' interest and involvement in learning was increased when we used OER during teaching.
5. OER helped the students to gain a wide knowledge on subject matter and to enhance their self learning habits.
6. The teaching learning process became simple and easy by the use of OER in teaching.
7. Students were able to understand the themes easily with the help of OER. (Example: Teaching about the Wave Actions)

Future plans

Our future plans on using Open Educational Resources in the teaching learning process are as follows:
1. Encourage other PGDE student teachers to integrate OER in their teaching practices.
2. Implement OER integrated teaching and learning in the school environment.
3. Create and upload materials in our native language (Tamil) and share them with others
4. Promoting OER through the social media such as Facebook and WhatsApp.
5. Make available relevant self- learning materials from OER to the students.
6. Integrate OER such as quizzes and games in teaching to enhance student involvement.

Centre: Batticaloa Regional Center, OUSL
Team: Dolphins
Participants: A.Revasuresh
B.Krishnaruban
M.Pashanth
A.Risliya
S.Parthipachuthan
P.Mirunalini
N.Kajenthini
Writer: A.Revasuresh
Editors: Sashikala Kugamoorthy
K. Gnanaratnem
M. Rajini

Batticaloa

Groupers

Our first impression on OER

The term OER was entirely new and exciting when we heard it from our lecturer. But we were amazed to know its values and uses in the first workshop. OER intervention workshop was an unforgettable experience to us, which empowered our views and ideas about teaching learning resources from OER. Earlier we had no idea about OER. Once we heard the term OER we wondered about it. We did not have any practical knowledge at all. We did not have any ideas about the license categories, rules and regulations at all.

As we came to know all these in the workshop we thought and reflected on the copying activities we have done earlier. We gained a sound knowledge regarding remix, revise, reuse and redistribution of OER. We were surprised to know the varieties of Creative Commons license types and their legal importance. The idea to share and upload resources was completely new to us. However, we felt happy because we got acquired much knowledge about OER.

First impression on OER is expressed by the concept map drawn by our team member Riyas. (Fig. 4.5.1)
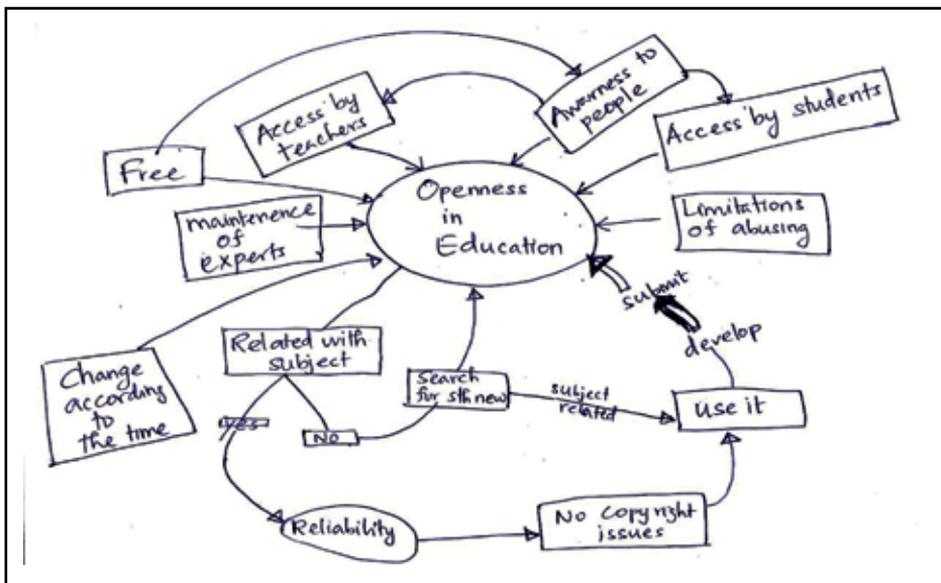
Fig. 4.5.1: A Concept map - Version 1

We expected that the use of OER in our teaching learning process will make it effective and productive. This desire is expressed by our team member Sarveswaran's reflective note as follows:

"It is a new experience to me and today's activity encourages me to do my teaching very effectively. I think I can do my teaching best, if I use OER at my classroom…"

Another member Kavitha Gopi wrote her views as follows:
"Most important one for the teaching practice. This site is more teaching materials are given. Today work shop is very useful to us."

Starting point of OER in our profession

Our journey towards OER started from the first intervention workshop held at the OUSL, Batticaloa Regional Centre. All the participants in the workshop were eager to identify the use of OER in our profession. We were able to grasp much information about OER and we felt so happy. First we got the theoretical knowledge about OER. Next we created own user name with individual password to the LMS. We studied the online ethics, with the help of our facilitators. We were divided into subject-wise groups. We searched for OER relevant to our subject. We felt surprised and happy when we accessed many OER which are free of cost and very useful to our subject.

Then clear instructions were given by our resource persons on how these OER can be integrated in our teaching practices. We were also guided and encouraged to integrate OER in our teaching. This motivated us and we started our efforts towards OER integrated teaching learning process.

Integration of OER

OER created new opportunities for us to share knowledge. Further, it was very easy to edit and use them. As you know, nowadays teachers have a heavy workload, and they need to be prepared for their teaching with sufficient resources. OER very easily reduces the workload of teachers. Teachers can get many educational resources from OER such as book chapters, documents, research articles, online quizzes, self-assessments, image text, videos, Audios, Wikipedia, worksheet, lesson plans… etc. So it makes our teaching -learning process more effective.

We used OER for attractive engagement and meaningful elaboration in our teaching learning process. We obtained the materials in English and some in Tamil, and integrated OER such as Maths worksheets, problems, models for Maths Quiz and new Maths world. We used them at different stages of our teaching and harvested their benefits.

Challenges

On the other hand, we faced some barriers and challenges in the integration of OER too. It was very difficult to identify OER and to find out relevant materials for some topics. Some sites required registration and required much effort to access them. We had to spend more time to access OER. Poor internet connection was another barrier. However, we continued our effort as we realized the importance of OER in Education.

Achievements

As Mathematics teachers we achieved many benefits in our teaching career after the usage of OER. For instance, OER made our teaching more effective. It helped us to keep learners' motivation in mathematics. We received expected learning out comes very easily from our students as OER helped us to explain mathematical concepts in an effective way. We were able to use new teaching methods and strategies in Maths to maintain students' attention. OER helped us to develop many skills among the students and to reduce the learning difficulties of the students. OER created an attractive environment in which teaching became an interesting task. We worked collaboratively and succeeded in the planning and implementation of OER integrated teaching and learning.

Our good practices

After the OER workshop we got some good ideas about OER and promoted our teaching approaches in Mathematics by integrating OER.

We felt proud to publish a magazine on OER titled 'Integrating OER in Learning Teaching Process'. It was released on 08-01-2016 at Batticaloa Regional Centre, Open University of Sri Lanka.

We organized and conducted a workshop on OER for the new members selected from our PGDE batch mates and we served as the resource persons for this workshop.

We remixed and revised some OER in mathematics and created new OER relevant to our educational context and shared them with our colleagues.

Impacts on teaching and learning

OER is the tool which changed our teaching and learning more effectively. OER helped to improve our creativity and to enhance the attitude of sharing knowledge. OER built up good relationship with our colleagues. Through the integration of OER we were able to provide meaningful learning experiences for our students. We are motivated and helped our colleagues to integrate OER in their lessons also.

After the integration of OER teaching became interesting and students actively involved in their learning. Nowadays we are able to play our role as a good teacher by the integration of OER in our teaching and learning process in a productive way.

Our future plans

As teachers it is our duty to hand over the new things we learned to our learning society. In this manner we should do something new in the future for OER. So we planned to introduce OER and implement OER-integrated teaching and learning in our schools.

We also have a plan to develop OER in our subject and upload them in our own language – Tamil. We also have a plan to share the materials with others. Further, we should promote OER through social media such as Facebook and WhatsApp in future. As Maths teachers we can conduct online Maths Quizzes, Math Games using OER. We have planned to integrate OER in our daily teaching and make our teaching carrier successful.

Centre:	*Batticaloa Regional Center, OUSL*
Team:	*Groupers*
Participants:	*P.Sarveswaran*
	K.Gopi
	S.Thinesh
	M.A.M.Royas
	S.M.Sathath
Writer:	*P.Sarveswaran*
Translators/Editors:	*Sashikala Kugamoorthy*
	K. Gnanaratnem
	M. Rajini

5 Case Study
Colombo

Not a Dream Anymore

5.1

Anoma Ariyaratne and Sasheeka Karunanayake

For most of the participant teachers, OER had little or no meaning in the early days. But with the enthusiasm about being better teachers and with inquisitive minds, on 23rd day of March 2015 they joined the OER team of Faculty of Education, the Open University of Sri Lanka.

"At the very beginning of the 1st workshop we were wondering about what is happening since we didn't know about even the meaning of OER. We wondered if we would get either any benefit in learning about OER or is there any relationship with the Postgraduate Diploma programme we followed and OER at all. We felt little bit comfortable when we realized that majority in the group were clueless about OER "

"When we were notified about the workshop we thought it is something about the subject Educational Technology that we have in our PGDE course".

This is how they expressed their initial feelings and understandings on OER at the beginning of the workshop series towards integrating OER into teaching-learning process.

A mixed group

It was interesting to see that even though the majority of them were General Science, Maths, ICT and Commerce teachers, there were some language teachers and a few Biology, Physics, Chemistry, Religion and Aesthetic teachers also among the Colombo group. It was mostly a group of young teachers, a majority with five years or less than five years experience and some with ten years experience except only one teacher who had more than twenty years of experience. None of them had experiences in curriculum development, and twenty three of them were poor LMS users. It was surprising to hear that only seven of them have heard of OER and only three of them have used any OER before. Only one has stated that she has heard of OER Initiatives and four have mentioned they have heard about Open textbooks only one student has heard of OER multimedia and open access journals.

Their sharing habits

Sharing notes and resources was a habit some of them already had. They were practicing sharing the teaching learning materials and their teaching aids among

their colleagues in the same grade, subject teachers of their own schools, as well as with their colleagues working in other schools too. We understood that when they realized that the OER concept is about sharing resources, and those resources are ready to be shared, they became more comfortable with the new experience and realized the worth of OER.

They also began to compare the online activities they already engaged in, such as using many online resources such as e-text books and many other online materials and realized that they would have used OER materials without knowing them as OER. Thus, the resource persons felt that there is no need to take that much of an effort to inculcate the sharing culture among these teachers. Video materials, audio materials, print materials many internet-based materials are among the resources they were already sharing.

Changing perceptions: Identifying pertinent resources

When identifying and selecting suitable resources they had given attention to the relevancy, reliability as well as easy availability of the materials. However, some have been considering features such as re-usability, free accessibility, cost effectiveness, attractiveness, easy adaptability and flexibility in using when selecting resources. They have given the least attention to copyrights when selecting resources, especially from the internet.

Creative Commons licenses was a completely new concept for them. Their faces reflected the initial disappointment on that as until then they were under the impression that they can use any online resources as they wished. The following statements in their stories reflect their limited understanding on authenticity and the fair use of resources.

"We were clueless. We thought what is available in internet can be unlimitedly reused, revised or remixed without any legal restriction".

"Although different materials have been used from different websites regardless of authenticity, we were not at all aware about the license type of materials which we had been using".

"We are not new to the internet use and we were still using that regardless of any concern about its fair use until the first day of OER workshop".

Workshops: A magnificent experience

This is how the participants have expressed their views on the OER integration workshops in their group story:

"After attending the first workshop, we felt that it was truly a new and wonderful experience to us as teacher, and we are fortunate to have such a great opportunity to be guided by our lecturers".

"The workshop leader gradually explained the term OER and we were all given a broad description about OER, and Creative Commons and different CC licenses, and that we can obtain vast amount of information available in the Web. Because of this amazing experience we felt that knowing about OER we had discovered a gold mine of information relevant to teaching and learning process".

"This workshop led us to learn more about copyrighted materials and creative commons. It was the first time we eagerly started our research about these concepts where we understood that any time we use a copyrighted work, we must have permission from the owner of the work".

The initial activity, just after the introductory session for students, was to prepare a concept map and to respond to an online questionnaire and submit it. Completing and submitting an online questionnaire and concept map development were first time experiences for many of them. Those activities helped them to get understanding on concept "OER" and Creative Commons license, and Terms of use etc. Also they were introduced to Moodle LMS, the online teaching –learning platform. Students' views on these activities are as follows:

"Even without a proper knowledge we were able to complete the concept map as requested. And then little by little we were instructed how these OER can be accessed with the support of Moodle LMS. Later we were given an opportunity to sign up by providing user accounts through which the materials can be accessed and shared. Moodle became a platform for us to go ahead with what we were to do. Through that we were sent updates from our OER Research team".

During the activity it was found that some of them were not only unaware of the OER concept, but also they were clueless about concept maps. It was the first time that they learn to draw a concept map. The following two concepts maps drawn by two of them just after the introduction session of the first workshop; shows how they had gained some understanding on OER. (Fig. 5.1.1)
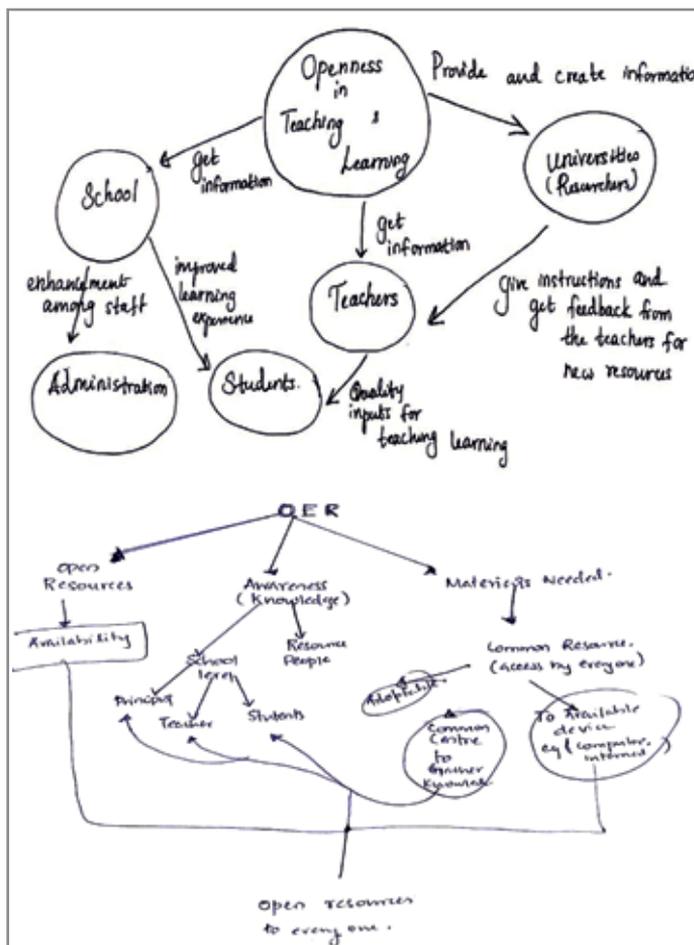
Fig. 5.1.1: Two Concepts Maps drawn by two participants just after the introductory session

Students were engaged with finding OER with the help of some of the OER repositories introduced during the workshop. They faced challenges such as their limited understanding in using computers and online access, slow functioning of LMS system they were using and unavailability of computer and internet facilities at home and schools where they were working.

Reflective journal writing was another new experience for them. This is how two students have reflected on their first day experiences through their first journal entry:

"This program helped me to improve my knowledge of using OER facilities. I want to gather more knowledge on use of this to find more details on different subjects. Thank you for giving us this opportunity to identify our potential".

"We were introduced to method of preparation of "Concept Maps". We were given User ID and Password to access OER sites. We were given an introduction for the concept of OER and explanation about various licenses pertaining to OER. I realised that it is going to be helpful for me to use OER in my teaching. I was happy that I was introduced to this new concept of OER".

One of the very active students of the Colombo group inspired by the first workshop, with excessive motivation cited her experiences, excitement, and gratefulness to the resource panel in her first online journal entry in the following manner:

"Before I joined this project, I was clueless about the materials (whether copy-righted or allowed to use) I was using as supporting materials for my teaching. Al-though i have already used different materials from different websites regardless of authenticity, i was not at all aware about the license type of materials which I had been using. After attending the first workshop, It was truly a new and wonderful experience to me as a teacher since I felt that I am fortunate to have such a great opportunity to be guided by our lecturers. I developed confidence myself in integrating OER in teaching as I have a thought that my lecturers are always there for me to guide. Not only that I also feel glad to have a Moodle account to access the resources recommended by our community. It is a good platform for us to share the OER among us which paves us the way to work together for our national educational development using the technology in comfortable way".

Even though the students were motivated through the activities of the first workshop, only seven students participated in the second workshop that was conducted after four months. The reason for this was not only their personal problems but also duty- related matters. That is, on the same day the Science teachers were asked to participate at a Science workshop conducted by the Ministry of Education which was compulsory. Although we, the research team members were a little bit disappointed about this, the seven participants showed their high enthusiasm over the second workshop too. Not only their participation but journal writing also was not much effective due to their personal reasons such as time constraints and lack of computer and internet facilities in their homes.

In spite of their enthusiasm, their involvement on activities during the period of three months after the first workshop was not at a very satisfactory level. As evident by their logins in the LMS the active use of OER was 46%, sharing of found OER among the group members were only 3%, and only 6% had updated the reflections in the journal. According to them personal reasons, job related factors and problems related to technology including breakdown of internet facilities and limited internet facilities and access opportunities at work place and unavailabili-ty of internet facilities in their homes were major factors which affected their low

participation on expected activities.

Majority of the participants who were active and participated in the second workshop were those who possessed internet facilities at home or any other personal facilities. Thus, a technology problem seems to be a major factor that discouraged the participants to progress well.

The very active student of the Colombo Centre who has put her first journal entry regarding her experiences reported the problems she had faced with technology in the following manner, but still managed to continue with the same interest and motivation later on.

"I underwent a big issue in my laptop for about six, seven months…and as a result, I couldn't get back up. Even I lost my password and all the OER materials I had been searching and saving so then was lost. I couldn't spend time in repairing it as I had to prepare for the PGDE final exam. Anyway, that's gone. Once I got the notification that we are about to have our evaluation session, I tried my best to share as many OER I could find as possible. I am sure that I can go ahead with this. Thanks a lot for giving such an opportunity by paving the way to enjoy a fruitful experience.".

Motivated teachers: their versions and actions

"I can see I do not need to take pain to develop my lesson materials, there are lot of lessons, videos, PowerPoint presentations, online exercises   as OER materials and most of them are free to change, remix and reuse. This is a very great thing for teachers like us".

This is a statement of the most active student teacher, who had identified many useful resources related to mathematics despite all the barriers they have faced. Not only for Mathematics, she was able to find OER related to many other subjects as well. Figure 5.1.2 indicates samples of such OER materials she has posted to the LMS during the intervention period.
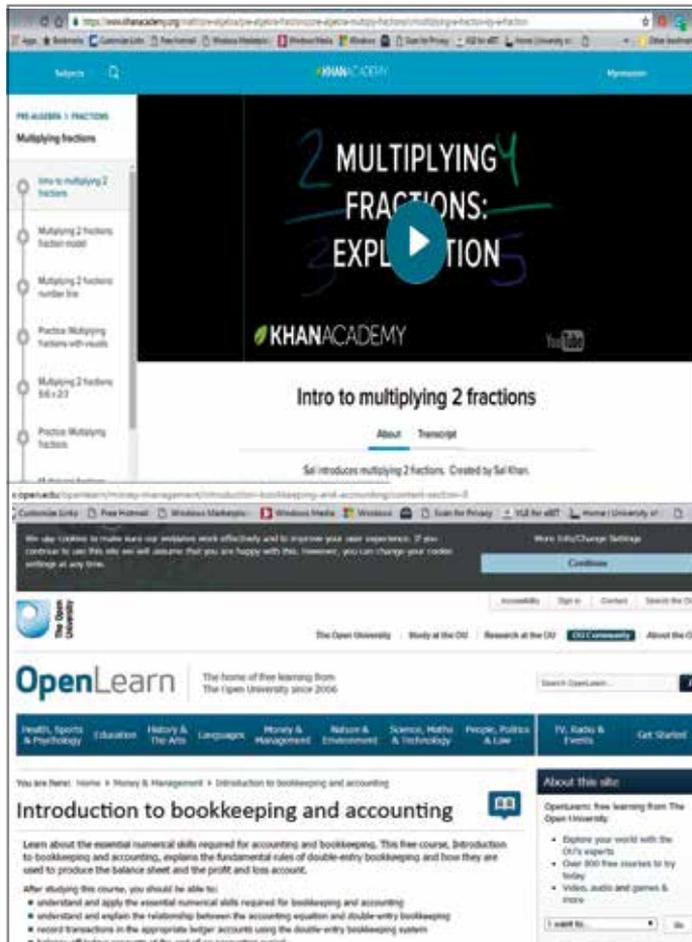
Fig. 5.1.2: OER materials posted to the LMS

Some students have not only developed their own OER materials and shared with the others but they have conducted workshops for students on finding OER and use them to enhance subject knowledge. Also they have plans to distribute their knowledge with peers in the near future.

A concept map drawn by a student at the final workshop (Fig.5.1.3) is evidence about the knowledge and understanding gained through the workshops on OER. The student has included many new concepts they learnt, such as licenses, sharing, use of OER in lesson notes, use in mobile phones and many other new aspects not included in the first version of the concept maps.
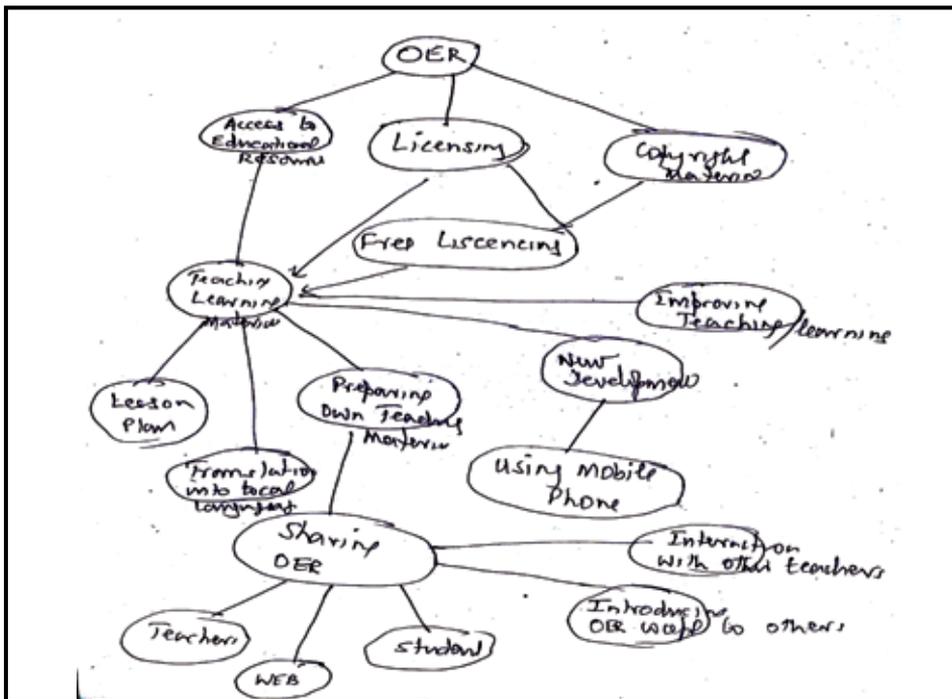
Fig. 5.1.3: A concept map drawn by a student at the final workshop

Hardships and challenges

Even though the participants had achieved a lot and they talk about the importance and worth of knowing about OER they had faced many difficulties during this Journey. In their stories they have mentioned these challenges.

The main issues / challenges they had to face can be categorized as school related, peer teachers related, curriculum related and students related issues and personal limitations when they started to practice it. In addition, there were;
- Time constraints
- Workload
- Need to be online always
- Additional cost – printing, electricity, internet usage cost and
- Breakdowns and technical failures that kept the OER work away from them.

Not discouraged but succeeded

It was strange! Despite the challenges and issues they have succeeded in many ways. For instance, the very active participant had conducted workshops to Grade 11, 12 students regarding how to access OER to develop programming skills in

Computing. The students were also introduced to subject-related OER videos that were useful to enhance their learning via WhatsApp through smart phones. Parents were made aware of it.

It was not the end of her effort but she had met other teachers, the parents and students including past pupils and made them aware about OER and sharing OER emphasizing on their best use and also discussed with them how to utilize the available multimedia resources and how to obtain the necessary resources. In addition she has initiated to share the clips she had created as OER through smart phones, blogs, writing CDs and share with the students.

They were benefited…

"Although integrating OER in teaching is time consuming, later it made the teaching and planning lesson easy once it is properly done, I also was able to reuse it and share with it the parallel teachers. OER enhanced the learning of students as well since the students that showed positive feedbacks after sharing some useful interactive video materials to do further self-learning" (as cited in one of their stories).

This is the end of a successful journey. *…For them OER is no more a dream. They will share their experiences in the near future with their peer teachers to wake up the whole country and make the dream of OER come true…*

Colombo

Initiators

5.2

Our perceptions prior to the workshop

During our college days, we were using the internet as a source of educational re-sources and unlimitedly reused, revised or remixed thinking it was without any legal restriction (but actually not). As teachers the same pattern of internet use is contin-ued in the classroom teaching process. In fact, we are not new to the internet use and we were still using that regardless of any concern about its fair use until the first day of OER workshop. Fortunately, the PGDE programme at OUSL provided us a great opportunity to take part in an OER workshop with no cost under com-mitted, very supportive and with a well experienced panel of lecturers headed by Prof. Shironica Karunanayaka.

At the beginning

Before joining in this project initiated on 15.03.2015, we were clueless about copy-rights or permission to use the educational resources available in the internet. Al-though different materials have been used from different websites regardless of authenticity, we were not at all aware about the license type of materials which we have been using (because the best option to access the needed information was internet rather than the library).

Initially, we were asked to prepare a concept map and then there were question-naires to complete and submit soon after the presentation and discussion with our Professor and the team. Such activities gave us a picture of what we understood about the concept 'OER' and Creative Commons license, and Terms of uses etc. Even without a proper knowledge we were able to complete the concept map as re-quested. And then little by little we were instructed how these OER can be accessed with the support of Moodle LMS. Later we were given an opportunity to sign up by providing user accounts through which the materials can be accessed and shared. Moodle became a platform for us to go ahead with what we were to do. Through that we were sent updates from our OER team especially from Prof. Shironica and Dr. Anoma.

After attending the first workshop, it was truly a new and wonderful experience to us as teachers, since it was felt that we are fortunate to have such a great opportu-nity to be guided by our lecturers. We developed confidence in integrating OER in teaching as we had the thought that our lecturers are always there for us, to guide us.

Further, we also felt glad to have a Moodle account to access the resources recommended by our community. It is a good platform for us to share the OER among us which paved us the way to work together for our national educational development using the technology in a comfortable way. The notifications updated by our Professor encouraged us in finding OER and sharing with others. With time we understood that she was expecting from us more than just sharing. But unfortunately the technical barriers limited our massive interest but still we were trying our best.

The second workshop led us to learn more about copyrighted materials and Creative Commons licenses. It was the first time we eagerly started our research about these concepts where we understood that any time we use a copyrighted work, we must have permission from the owner of the work. The author or creator of the work may not be the owner of the work, so we must be careful in determining the true owner of the work. Most of the time, to use their work we must have written permission to do so. Using copyrighted material can be effective in our work, as long as we obtain the appropriate permissions in advance and respect the rights of the owner of the work. Whenever we search something in Internet, then onwards we tend to be so particular about this.

In addition, the great advantage we had on the other hand is, the solution for this problem. i. e. the awareness about OER and the Creative Commons licenses and its use. At that point we came to know that the certain common educational resources we were familiar with such as Khan Academy, Wikipedia are published as OER under the Creative Commons license. We also understood the different types of Creative Commons licenses with different permissions as follows:

CC BY which lets others distribute, remix, tweak, and build upon your work, even commercially, as long as they credit you for the original creation.
CC BY-SA which lets others remix, tweak, and build upon your work even for commercial purposes, as long as they credit you and license their new creations under the identical terms.
CC BY-ND which allows for redistribution, commercial and non-commercial, as long as it is passed along unchanged and in whole, with credit to you.
CC BY-NC which lets others remix, tweak, and build upon your work non-commercially.
CC BY-NC-SA which lets others remix, tweak, and build upon your work non-commercially with the identical terms.
CC BY-NC-ND as the most restrictive of our six main licenses, only allowing others to download your works and share them with others.

We also understood that we can create our own educational material as OER under any of the attributions mentioned above for others to make use of it.

Searching, adopting and integrating OER

Soon after the workshop, we started entering the world of OER to make ourselves as dynamic Sri Lankan teachers and we were proud to be the ones who know about it whereas others were still aliens in this.

We started exploring the OER just typing in Google search engine and it displayed millions of results. Then I just started with some familiar sites such as OER commons, Khan Academy, OpenLearn. (Figure 5.2.1)

Being understood and having learned about OER concept, we started searching for the educational material available under the Creative Commons attribution to our teaching purposes. Firstly It was truly time consuming and a little tedious task in making sure about the relevance, standard, quality and checking whether they are updated since we had to spend considerable time (as we were initially using Facebook during our campus life)
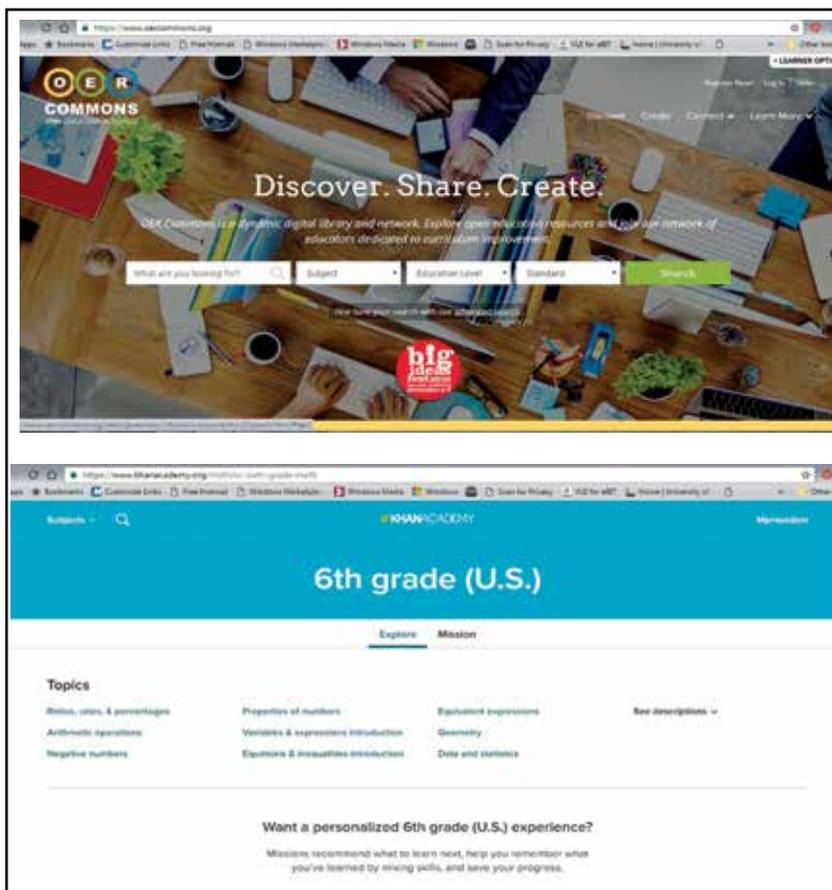

Fig. 5.2.1: OER repositories used by us

After several days and attempts we were able to find OER from different websites that consisted of lots of interactive resources, printable worksheets and download-able presentation / multimedia resources from sites such as www.uen.org/oer, OER commons, OpenLearn, Saylor.org etc. This created a great interest to find more compatible resources further. Apart from this, YouTube provided plenty of video re-sources with open licenses that can be used in greater extent with the permissions mentioned above.

Our first and foremost attempt was initiated in Teaching Practice stage 1 of our PGDE programme, as there were some quality inputs found as OER (such as videos, worksheets, presentations, study notes...etc.) which were useful for preparing and designing the lesson plans.

Once we started using them, within the available time we were able to integrate some of OER in our lessons in ICT and Mathematics. With the time we started shar-ing the OER found with other participants through the forum in Moodle LMS. *My first post, was https://learn.saylor.org/course/bus103 (in Accounting) and I started following other participants posts as well before I Google searched for any OER.*

After the Mid intervention workshop we had on 23.7.2015, we were feeling more comfortable in finding OER and started recommending about it as I found them more useful and effective to go ahead with what I have been working on. I hope to make use of OER better, comfortably, and wish to go ahead by remixing and redis-tributing OER too. The next step I must focus on is remixing the resources effectively (which is also crucial but let's see) following the guidance provided by our lecturers in this workshop. Thank you Prof. Shironica and the team!

At the end we were requested to share whatever the knowledge we gained in the OER workshop with others in the school through different means whichever possi-ble. One of us was able to remix some OER in mathematics lesson in fraction, area, decimals, number line, etc. In fact we were also was able to share them with the students for their repeated learning.

Challenges faced

Although we gained knowledge about the Integration of OER, there were several issues / challenges we had to face. These are categorized as school related, peer teachers related, curriculum related and student related issues and personal limitations when we started to practice it.

School-related
- Lack of facilities
    - o Although the lessons are prepared with interactive learning aids, the lack of multimedia facility, breakdowns of multimedia and improper maintenance hindered the implementation of such learning experience.
    - o Computers with slow internet connections

- Unavailability of required resources
  - Lack of audio visual labs, printing facilities to print worksheets
- Unawareness and no interest
  - Sometimes the school administration does not encourage such learning experience as they have a perception that such novel concepts are unnecessary.
- Language barriers – Most OER are in English where we teach in Sinhala and / or Tamil medium in government schools
- Space – the schools with shed classrooms

Peer teacher-related
- Lack of Interest and Unawareness – Some teachers are not at all interested
- Lack of IT knowledge - Some of them are backward in IT knowledge
- Time constraints and workload - With the regular school work, no body is willing to do extra effort in designing different learning experiences
- Lack of computer facility with internet - The school cannot afford as there are only few computers and maintenance problems
- Some attitudes of teachers – highly depend on manual work, not much interested in technology use in designing learning experience
- Language barriers - Most of the OER are in English, as a result they are reluctant to use it.

Apart from the above mentioned challenges, following are some personal difficulties that we have come across so far.
- Time constraints
- Workload
- Need to be online always
- Additional cost – printing, electricity, internet usage cost
- Breakdowns and technical failures (keep the OER work away from us)

Successful practices and our responsibility

One of us got an opportunity to conduct workshops to Grade 11, 12 students regarding how to access OER to develop programming skills in Computing. Also Mathematics for Grade 7 and 8 and ICT for Grade 10 and 11 lessons were conducted integrating OER, using multimedia facilities available in the school. In addition, the students were introduced subject-related videos that are useful to enhance their learning via WhatsApp through smart phones and the parents were made aware of it. She has used OER from spokentutotial.org from IIT Mumbai to teach about Email in ICT lesson for Grade 11 students. (Fig. 5.2.2)

Some of us discussed with other teachers, parents, past pupils, and students about sharing OER and emphasized the best use and need to know how. Also we discussed with them how to utilize the available multimedia resources in the school and how to obtain the necessary resources from external / interested parties. One teacher has also initiated to share the clips that she has created with students through devices such as smart phones, blogs and CDs.

One teacher revealed that *"from the day I have started using OER in my teaching after the second workshop, the teaching experience became interesting and challenging. It enhances the subject knowledge before teaching and paves the way to choose the best possible teaching methodology and learning aid such as video clips in Youtube, Khan Academy".* She has found OER lessons on Mathematics for Grade 8 topics such as fraction, decimals, ratio, finding area. She has conducted her lesson using OER from website https://www.saddleback.edu/faculty/lperez/al-gebra2go/prealgebra/ with the video clips. (Fig. 5.2.2)

Fig. 5.2.2: Conducting an OER Workshop for Students

Although integrating OER in teaching is time consuming, later it made the teaching and lesson planning easy once it was properly done. One of us were able to reuse them and share with the parallel teachers. We found that use of OER enhanced the learning of students as well. The students showed interest and gave positive feedback after sharing some useful interactive video materials to do further self-learning.

Now we agree that we can reuse, revise, remix and redistribute OER material (according to the license) with the knowledge and the experiences we gained throughout the workshops.

We, as pioneers, have the great responsibility to take this innovative activity forward to our education community in an effective manner where everyone can enjoy the benefit of it.

For this purpose, further, we need to prepare an OER Resource guide, conduct awareness programmes, take initiatives in translating OER, creating OER as videos, worksheets, and share the created OERs with Creative Commons attribution. There is an idea to create a blog and upload them for the open access. Working with the stakeholders of the schools and to approach the parents and donors, well wishers to support us in this regard is another plan.

Also we would like to submit proposals to implement OER integration at the National level through Authorized government body (eg. through teachers' professional development programmes regularly conducted at zonal level).

Centre:	*Colombo*
Group Name:	*Initiators*
Participants:	*Himaza Hamzadeen*
	O.J. Priyangani
Writer:	*Himaza Hamzadeen*
Editors:	*Anoma Ariyarathne*
	Sasheeka Karunanayake

Colombo

Creators

5.3

Background

On the invitation of the Faculty of Education, The Open University of Sri Lanka, in March 2015, we attended the introductory workshop on a research project on Integrating Open Educational Resources (OER) in Teaching and Learning. Majority of us thought that it was something related to Postgraduate Diploma in Education programme which we were following.

At the very beginning of the workshop we were asked to develop our own concept map on 'Openness in Education'. It sounded like mumbo jumbo to us! Most of us did not have even a slightest idea about concept maps. Not only that, we were uneasy with the introduction of a new concept "Openness in Education" about which we had no clue at all and wondered how it was connected with our PGDE programme. We were also wondering why we were selected as participants for this specialized programme. However, when we realized that the majority in the group were also clueless about OER our apprehension subsided.

Starting point

The Project Leader introduced the term OER to us and we were all given a broad description about OER and Creative Commons licenses that allow us to obtain vast amounts of free information available on the Web. Then she introduced us to a new concept with a video 'Copying is not theft' and explained the meaning of OER and about sharing of resources.

Just after the introductory session we were asked to represent our understanding on OER and related concepts in a concept map. An initial concept map created by one of our group members is given below (Fig. 5.3.1). It shows our little understanding on OER at the beginning of the workshop.

Slowly we began to understand the concept of Open Educational Resources. At the end of the first workshop we realized the usefulness of OER and its relevance to the teaching and learning process. With an enhanced understanding of the concept OER, we felt that we had discovered a gold mine of information and materials relevant and useful to our teaching and learning process.
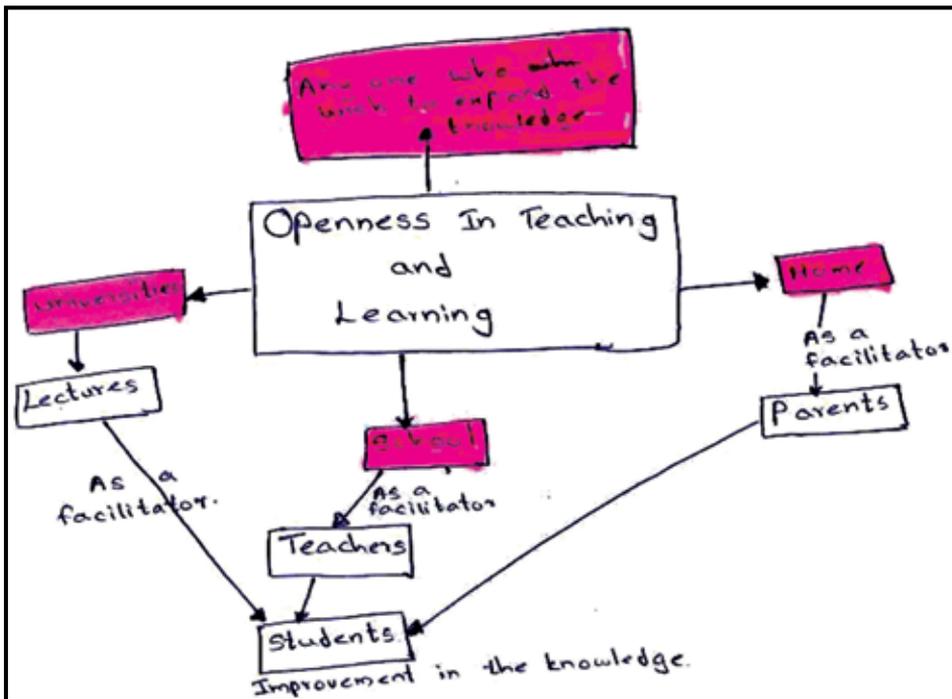
Fig. 5.3.1: An Initial Concept Map

In the second part of the session we were taken to the computer lab and were given a firsthand experience in accessing web sites with OER materials in the LMS specially prepared by the Open University for the benefit of the participants.

Adoption / integration of OER

During the first workshop we realized, understood and learnt about OER. With help and guidance received during the workshop we accessed educational material available under the different Creative Commons licenses (in many websites, you tube etc.) and selected the relevant information to assist in our teaching. We realized that there were vast amounts of material available at the click of a button for very minimal cost (or no cost with WIFI facility). It was a wonderful experience for us.

Some of our colleagues were able to download very useful and interesting videos under the Creative Commons license and they have used them with the students, for example, for Grade 6 and 7 Mathematics lessons on Ratio and Volume. Children enjoyed the identified learning materials and it was helpful for us as teachers to deliver the required information pertaining to the subject matter effortlessly. It was a novel experience for us too.

We had subsequent follow up workshops which were also very useful although the number of participants gradually dropped due to their personal reasons. We, who continued with the workshops, found that the workshops were very helpful in meeting up with others to discuss our successes and failures and also to get feedback and new knowledge from the experts who conducted the workshops.

Challenges and frustrations

We realized that an enormous invaluable knowledge can be obtained by using OER relevant to different subject areas. However, all of us agreed that we had to spend a considerable amount of time to browse the internet and select the relevant materials. We also realized the constraints faced by some of the participants due to the lack of computer and internet facilities at schools and also the lack of computer literacy among teachers. Because of these reasons we had to spend a considerable amount of time struggling with the equipment (computers). Non availability of a specific place for multimedia presentation in the school also was another challenge that all of the group members suffered with. During this period we were also concerned about time constraints, as we had to prepare for the PGDE final examinations.

Lack of interaction between participants due to the long gaps between the relevant workshops was one of the frustrations we experienced. If there were more workshops in between we could have shared our experiences and gained new knowledge and skills and minimize our doubts on OER.

However, at the last workshop we decided that we should popularize OER among our colleagues and we decided to meet to share and improve on what we have learnt and practiced with relevance to OER from time to time during the series of workshops we participated in. Also we believed that it is high time that school authorities should start developing information technology related resources with the assistance of the public / private sectors.

Our achievements and successes

While progressing with the activities, our understanding on the concept of OER and Creative Commons licenses improved and we were determined to access OER to find resources relevant to teaching -learning process. Also the activities enabled us to select the best teaching methods to assist children in the learning process.

We started telling other teachers about this immense resource 'OER' and availability of information with the click of a button with minimal cost to our colleagues at schools and to the Heads of the schools. Further, we tried to make them aware that OER are a must to develop teaching-learning process in a novel

and useful way. The other staff members too were interested to know further about OER.

Good / best practices

We realized and identified the immense benefits of OER in developing teaching / learning processes. It is amazing to find out that world class information pertaining to teaching / learning is available at a very minimal cost and at your finger tips at any time of the day.

Sharing relevant information and learning from others will develop a positive and healthy relationship among all stake holders of national education.

We must endeavor to translate relevant and suitable information into Sinhala / Tamil and also to change and revise materials to suit local needs on many occasions.

Opportunities to use Video clips / activity sheets available as OER relevant to learning will definitely make teaching/learning process exciting and enjoyable one.

When you consider the fact that education is a right of everyone *"Materials for a World class education is available at your fingertips".*

Impacts on teaching and learning

Especially, due to the accessibility to world class information we realized that, OER are cost effective valuable resources to be used for the teaching-learning process. Also we realized that some real time learning would help the children to understand difficult areas in learning and also would provide amazing experiences for our students.

In addition, the availability of lesson plans and video clips related to some of our lessons helped us organize our teaching-learning process, in an organized manner and enhanced motivation among children in learning new topics. Students' commented on a video see Fig. 4 (which was an OER integrated in to a lesson) show ing their motiration. This Iindicates how teachers can effectively use OER to enhance the quality and novelty to the teaching-learning process, increasing student motivation and interest in learning.

We believe that if we can integrate OER in a productive manner in our teaching-learning process the need for private tuition classes would be reduced drastically. Thus with OER we can anticipate to provide a world class education for our children.

Future plans

We realized the worth of the wonderful resources that are freely available and decided to popularize this valuable concept among other staff member with the help of the OUSL resource persons. We requested them to carry out similar workshops for our staff members, but we were advised that such workshops should be conducted by us in our schools and we were highly motivated. We planned to develop such workshops in our schools in future. However, we believe that by conducting regular seminars by OUSL resource staff to discuss successes and difficulties we could move forward to develop and popularize this concept further.

Regional Centre:	*Colombo*
Group Name:	*Creators*
Participants:	*Kingston S. Sivapragasam*
	M.D.D.C. Gunewardena
Writer :	*Kingston S. Sivapragasam*
Editors:	*Anoma Ariyaratne*
	Sasheeka Karunanayake

6

Case Study

Jaffna

Opening up Minds

Sasikala Kugamoorthy and M. Rajini

6.1

Under the post-war context, the Northern part of the country is slowly but steadily moving forward with the hope of regaining their past glory. People in the capital of Northern Region, Jaffna, are now raising their voices in order to safeguard their human rights as well as their right to education and development. Teachers play an integral role in shaping the next generation of any country and Sri Lanka is not an exception. In order to maintain and develop the effectiveness of classroom processes, the education and professional development of every teacher, should be seen as a lifelong task, and be structured and resourced accordingly.

Now we are living in a knowledge explosion era; where people have become knowledge workers and the citizens of 'knowledge society'. We need to help our children to develop appropriate knowledge, skills, attitudes and perspective to live in this age of information technology. Provision of technologically enhanced education is essential to face the demands of this "technology world". Nowadays OER are considered as innovative teaching-learning resources and research materials which make education significantly more accessible to all children.

Fig. 6.1.1: Jaffna District in Northern Province of Sri Lanka

This is the case study from the Jaffna Regional Centre, which is located in the Northern part of the country (Fig. 6.1.1). This is an excellent example of experiences of a group of teachers who were exposed to the use of Open Educational Resources (OER) in their teaching and learning process. In addition, this would be a collection of reflections of people who were affected by the thirty years' civil war and lost the fruitful experiences of new technology and modern approaches in their education and very recently got an opportunity to use, create and share OER in their teaching and learning process.

We ourselves came to know the concept of OER at a workshop on "Capacity development in ICT and OER Integration" conducted for academics of the Faculty of Education in 2013. Initially we wondered about the term OER and its uses. However after a series of workshops we became familiar with OER and realized the importance of OER and Open Education Practices (OEP) in education. We felt the need for the introduction of OER to our student teachers and started to wait for an appropriate opportunity.

In 2014 we were surprised and happy to hear the news about the ROER4D project from Prof. Shironica Karunanayaka. From our experience with the previous capacity development programme, we realized the benefits and importance of OER to academics and we expected that it will be more beneficial to our student teachers who are following the Post Graduate Diploma in Education (PGDE) programme, and that they can play the roles as torch-bearers to school children. We expected that the introduction of OER to our student teachers will make a positive impact on their teaching and learning processes.

With all these expectations and surprises we began to work as a team under the guidance of the project leaders Prof. Som Naidu and Prof. Shironica. According to their instructions and guidance we selected participants from the student teachers following PGDE in the 2014/2015 academic year at the nine Regional Centres of the Open University of Sri Lanka (OUSL).

At the Jaffna Regional Centre (JRC) of the OUSL, the term OER was first introduced to the group of 155 student teachers at the end of a day school. Its benefits were discussed. Importance was explained. A brief description about the ROER4D project was given. When the student teachers were informed about the chance to participate in this project they were happy and expressed their willingness. At the end of this discussion consent letters for participation were issued to the student teachers.

Around 50 student teachers submitted their consent letters in the following day school. From among them, 38 student teachers were selected based on the subjects they teach, gender, first degree etc. Among the student teachers 24 were males and

14 were females. All of them were young and had less than 10 years of teaching experience. 13 teachers taught Science, 13 Maths, 8 ICT, 2 Civics, 1 Health Science and I who taught Music. Further, 12 of them taught in urban schools whereas the others taught at rural and semi urban schools. 3 of them were from private schools. Therefore, we felt, that it was a great opportunity to share the knowledge of the OER to the whole Northern region and to people from different socio-economic backgrounds. The student teachers selected for this project felt lucky and expressed their happiness. They seemed to be motivated and enthusiastic towards the first intervention workshop.

The first intervention workshop was held on 30th March 2015. On that day 38 participants were present and involved in the activities with great motivation. They got involved in the activities with the guidance provided by the Project leaders, Resource Persons (RP's) and Research Assistants and (RAs). However, most of the participants were unable to log into LMS due to the poor internet connection in the NAC centre. They seemed to be disappointed because of this situation. Hence, they shared the computers and logged in one by one. Then they engaged in OER - related activities such as searching and uploading OER relevant to their subjects. This activity motivated them to a great extent. They were also instructed to upload their reflections and concept maps. We noticed that they were amazed to know about licenses, Copyrights, 4Rs etc. Initially they seemed to be afraid of using modern technology. However, later on they became more active and motivated towards OER-related activities. Their ideas about online resources were entirely changed after attending the workshop. They expressed their surprise and said *"it was the first turning point in obtaining resources through the internet".*

After attending the first workshop students were motivated to log into LMS, add OER, got involved in discussion forums and participate in other OER-related activities. But the situation changed later. They were less involved in OER-related activities. Their motivation was seemed to decline.

At this point, the project leaders decided to conduct a mid-intervention workshop to motivate the participants. Two of us, as the Resource Person (RP) and the Research Assistant (RA) for Jaffna, conducted this workshop on the 8th of August 2015 at Jaffna. 32 student teachers participated in the workshop. We motivated them and facilitated them to search and integrate OER in their lesson plans. They were also guided by the project leaders through video conferencing. They were requested to write reflections and to draw concept maps.

However, on the day of this workshop although an internet connection was available, LMS was not working and therefore the student teachers were unable to login and upload their concept maps and reflections. However, the hard copies of those documents were collected and the participants were instructed to upload them lat-

er. At the end of this workshop they felt satisfied and promised to improve their OER related activities.(Fig. 6.1.2)

Fig. 6.1.2: Students engaging in activities at the Mid-Intervention Workshop

After the mid intervention workshop the participants got motivated and tried to get involved in the OER-related activities to a greater extent. Unfortunately, LMS had not been available for a long period after the workshop and the participants got de-motivated again. As soon as LMS came back to normal, the RA called all the participants and instructed them to continue with their activities, and guided them to integrate OER in their teaching learning process. As a result, three student teachers conducted OER integrated lessons during their teaching practice stage I. Consequently, seven student teachers conducted OER-integrated lessons and all these were recorded on video. Student teachers who conducted OER-integrated lessons were satisfied and happy. They seemed to be very active and enthusiastic. School children were also active and performed well in the classroom.

These OER-integrated lessons were conducted from September 2015 to November 2015. Among these, nine lessons were conducted for Science topics including Cell structure, Electricity, Refraction of light, Changes of matter, Plant diversity, Animal diversity etc. Further, some topics in Mathematics namely Lines, Probability, Solids were also taught by two teachers. One lesson was conducted for ICT on the topic 'Functions'. All these lessons were conducted for secondary classes. These lessons were observed by the RP and recorded on video. Some photos of the lessons are given in Fig. 6.1.3.

The student teachers successfully integrated OER in Engagement (E1), Exploration (E2), Elaboration (E4) and Evaluation (E5) steps of their lessons. Further, they used different forms of OER such as animations, diagrams, videos, activity cards, coloured pictures, presentations etc. Through the integration of OER they realized the

benefits of OER and expressed that it helped to actively involve the students in their learning and to lower the cost that students pay for their education. Teaching became interesting and students' motivation and involvement in learning increased.
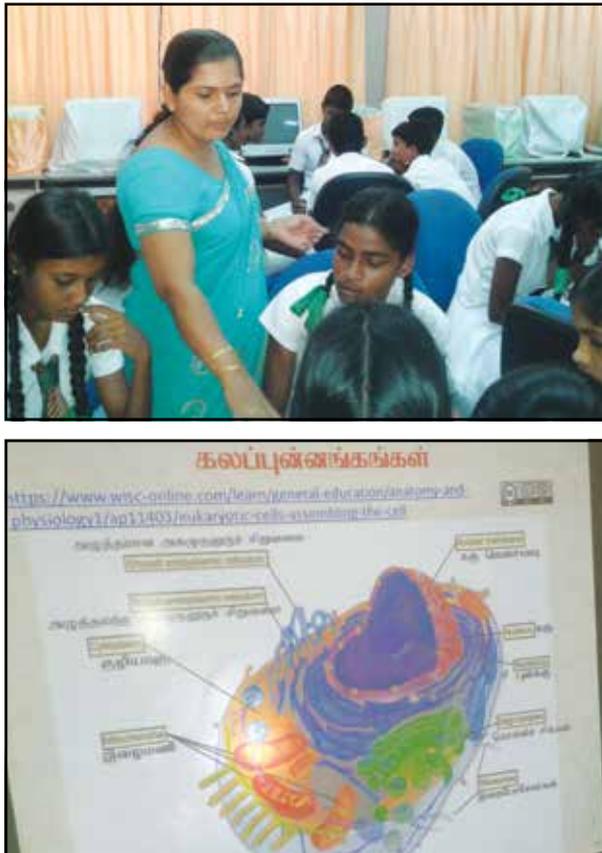
Fig. 6.1.3 : Integration of OER in an observed teaching session

However, we were able to see that the student teachers faced many challenges. As most of them were teaching in schools in war-affected and remote areas, they suffered from a lack of electricity, lack of physical resources and poor internet connections. Others also had some problems in recognizing OER from other online materials, interruptions in the access of LMS, unavailability of OER for certain subjects, lack of time, heavy work load etc. But, they managed to face all these challenges and continued with their journey in a successful manner.

As the agents of knowledge transfer and socialization, student teachers made some initiatives to share their experiences with others. ROER4D participants from JRC successfully conducted the first awareness work shop at J/St. Patricks College, Jaffna

on the 29thof December 2015. A total of 50 people including the Rector, Principal, Sectional Heads and teachers participated in this work shop. Under the guidance of Co-lead researcher, RP and RA our JRC student teachers conducted this workshop (Fig. 6.1.4).

Fig. 6.1.4: Awareness raising workshop conducted by the participant teachers

With the support of RA, Rev. Fr. Edwinathan led the team of resource persons at this event. Initially a brief introduction on OER was given. Then a presentation was made on Copyrights, finding OER, their importance, uses, 4Rs, Creative Commons licenses etc. A small video clip was shown to illustrate how OER can be integrated in teaching and learning. A clear demonstration for searching of OER was given. Some OER were searched and found by the participants using two laptops.

At the end of the workshop a questioning time was given which paved the path to a fruitful discussion with the participants. Finally, some reflective writings were collected from the participants. Rector and teachers of that school highly appreciated the workshop and extended their thanks to OUSL. We felt that we had done a good job. But the student teachers felt, that it will be more effective if they were given more time. Some handouts on OER should have been also issued to the participants. The student teachers who conducted the workshop felt very satisfied and for having the opportunity to be participants in the OER project of OUSL.

In addition to this, student teachers shared the OER they found and created with their colleagues and friends some uploaded OER in Tamil. One of the participants created and shared an OER on relative density. They felt happy to help their friends through these good practices.

On 3rd January 2016, the evaluation workshop was conducted, with the participation of 24 student teachers. (Fig. 6.1.5) They seemed to be motivated and actively participated in the workshop activities. They launched a publication named "We found OER" which was a collection of OER for different subjects .

Participants drew concept maps and wrote reflections. They expressed that they will continue with their OER-related activities and share their experiences with their colleagues.

Fig. 6.1.5: Student teachers engaged in activities in the Evaluation Workshop

As our student teachers promised, another milestone in this journey was achieved by the JRC participants on the 19th of February 2016, when the student teachers conducted another awareness workshop at V/ Kanagarayankulam Maha Vidyalayam, and shared their knowledge with the teachers in Vavuniya district. Three of our student teachers joined as a team of resource persons and conducted the workshop successfully. Fifteen teachers from that school participated in that workshop. A brief introduction on OER was given and they were guided to search and integrate OER in their teaching learning process. This was highly appreciated by the school society and stated their desire to conduct another workshop very soon.

During the final evaluation workshop, to identify the impact of using OER, all group leaders were asked to create a concept map representing the collective ideas of the group members. Fig. 6.1.6 illustrates a group concept map drawn by the participants showing their present understanding about OER and impact of the OER integrated teaching-learning process.
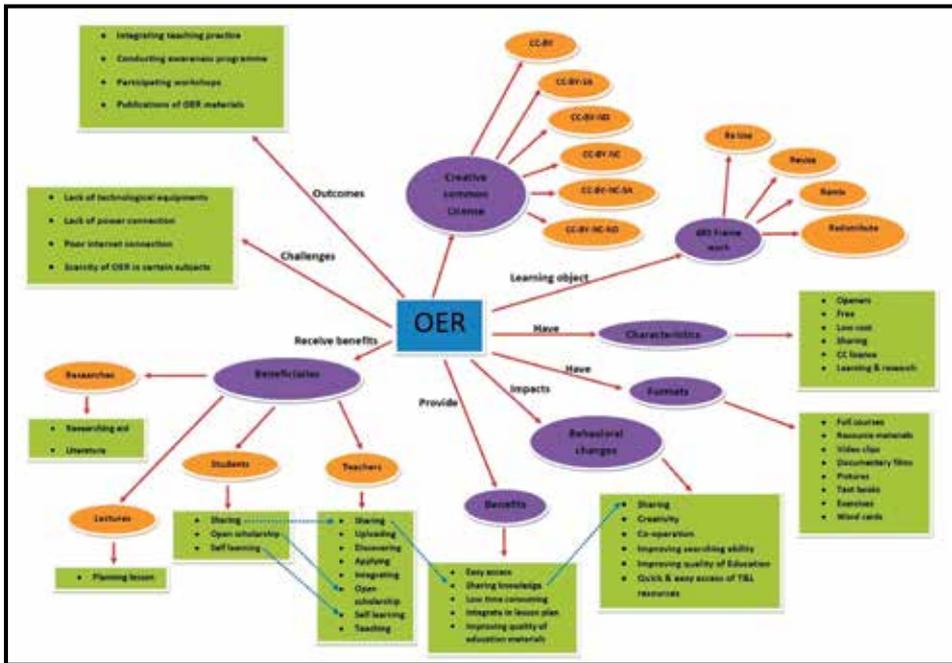
Fig. 6.1.6: A Group Concept map drawn by student teachers in the final evaluation workshop

When the concept OER was introduced to Jaffna student teachers, initially they seemed to be less interested, less motivated and discouraged. They were reluctant to break their barriers. They were not ready to come out of the cocoon of fear formed around them by the civil war and to open-up themselves to the technically advanced world. But the OER project provided opportunities for them to overcome their obstacles, become enthusiastic participants in the advancement of education and to open their minds to join the progress of the modern world using the knowledge they obtained about OER. Their active involvement in OER -related activities is a great achievement. Jaffna Regional Centre proved its talent by obtaining the "Best Centre" award in this project.

In the following month student groups got together at the centre, and wrote their group stories in relation to their project related activities. The stories were full of their experiences and feelings. These were compiled to get a holistic view. We are very happy to see that, most of the teachers are continuing with OER-integrated teaching and involving in OER-related activities.

Jaffna

Achievers

Our first impressions on OER

OER was completely a new concept to us at the early stages of this project. We didn't bother about license matters when using educational resources, until our participation in the OER intervention workshop. When we were informed about this project really we were curious to know this entirely new concept. However we were also rather scared about some difficulties we had such as; lack of English knowledge, lack of IT skills and scarcity of resources. But with the help of our resource persons we had a great opportunity to understand and use OER. Luckily we got a clear idea about OER at the first workshop held on March 30th 2015. We were amazed to know about open licenses, copyright, 4Rs… etc at the first workshop. We expanded our knowledge and ideas through group work and activities.

One of our team members Ilamaran reflected his thoughts as follows:
30 March 2015: *"What I feel is this OER workshop is very much helpful for my teaching in the future. I came to know a lot of new things regarding OER. I hope it will help me and my students…"*

As a result of this workshop we realized the importance of OER in teaching-learning activities. But we couldn't continue to involve in any OER-related activities after the workshop because of the internet problems and unavailability of LMS in Jaffna.

Starting point of OER in our profession

During the workshop we realized the importance of OER and the benefits we obtain by using them in our teaching-learning process. We were very happy to know that we can access a variety of OER without any cost and reuse, revise, remix and redis
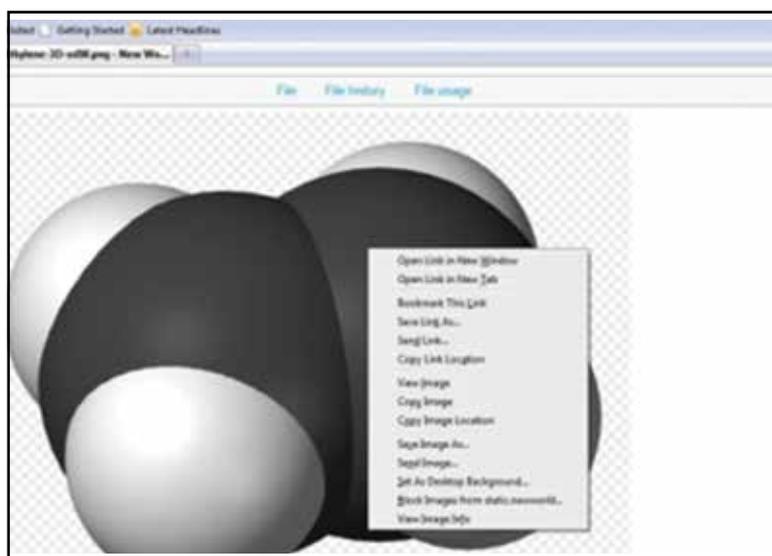
Fig. 6.2.1: An OER found and shared by a team member

tribute them according to their license types and our purposes. After the workshop we had discussions with our colleagues and the coordinator of the Jaffna Regional Center, we decided to integrate OER in our teaching-learning process. We searched for OER relevant to Science subjects and initially felt that it was a difficult task. However, later we found several OER using a variety of search engines and OER sites (Fig. 6.2.1).

Some of us successfully integrated OER in our lessons during teaching practice Stage -1, and it motivated the others as well. But we found difficulties in spending a lot of time to search and integrate OER initially. However, we were attracted by the use of OER and continued with our effort. Finally, we identified useful OER related to our subject and tried to integrate them in our teaching learning process. Table 6.2.1 shows some OER identified and shared by our team members.

Table. 6.2.1: Some OER found and shared

Topic	License Type	URL	Description
Bacterial Transformation	cc BY NC ND	http://www.oercommons.org/ courses/bacterial-transformation -2/view	This OER helps a student to learn how a bacterial transformation takes place - for A/ Level student.
Genetics	cc BY NC SA	https://www.oercommons. org/courses/genetics	This material helps to teach about DNA, as the basic genetic material - for Grade 10 and A/ Level students
Chemistry	cc BY NC SA	http://www.open.edu/openlearn/ science-maths-technology/science/ chemistry/ the-molecular-world/ content-section-0	This can be used to elaborate about molecules and their structure - for Grade 10 students.
Eutrophication	cc BY NC SA	http://www.open.edu/openlearn/ science-maths-technology/science/ environmental-science/ eutrophication/content-section-0	Suitable material for teaching eutrophication - for GCE O/L students
Galaxies and stars	cc BY NC SA	http://www.open.edu/openlearn/ science-maths-technology/science/ physics-and-astronomy/ galaxies-stars-and-planets/ content-section-0	This resource is suitable for Grade 9 Science
Using a balance	cc BY NC SA	http://ocw.mit.edu/resources/ res-5-0001-digital-lab-techniques- manual-spring-2007/videos/ using-a-balance/	This material is suitable to intro- duce the basic skills of using a balance to measure the mass accu- rately -for A/ Level students

Integration of OER in our teaching practices

Today, the class rooms have become more challenging and filled with diverse learn- ers with different learning needs, interests, abilities and achievement levels. Teach- ers should use appropriate teaching methods, teaching aids and assessment tools to address the learning needs of these learners and to provide a rich learning en- vironment. OER can be used as teaching aids, learning resources, assessment tools and supplementary materials in our diverse classrooms.

When we searched for OER in Google, we identified many OER suitable to our class room teaching. Then we integrated OER in our regular teaching practice. We have linked OER at every step of our lesson especially at engagement, elaboration and evaluation (Table 6.2.2) We also used different forms of OER such as animations, diagrams, activities, video clips….etc. We felt that we have refreshed our teaching learning process through the integration of OER. Our teaching became interesting and students were actively engaged in their learning after the integration of OER.

Table 6.2.2: Some OER links found and shared

Name of the member	Grade	Lesson topic	The way OER was integrated
Ms. J.L Anne Starina	10 Sc	Cell Structure	E1- Used OER as diagrams to introduce the basic structure of the cell E4- Used diagrams from OER to illustrate organelles
Ms. J.L Anne Starina	6 Sc	Electricity	E1- Used diagrams of electronic devices such as LED, Diode from OER along with a demonstration
Ms. J.L Anne Starina	9 Sc	Refraction of Light	E1- Used photos from OER to show the effects of refraction of light along with a demonstration E4- Used diagrams from OER to illustrate some incidents of refraction of light.
Mr. A. Ilamaran	10 Sc	Changes of matter	E4- Used some photos from OER to elaborate some observations of physical/ chemical changes after students' practical in E2&E3.
Mr. A. Ilamaran	8 Sc	Light	E4- Used some photos from OER to illustrate some examples for luminous and non- luminous materials.
Ms. T. Reeka	7 Sc	Simple machines	E1- Used photos, diagrams and animations from OER to show some simple machines. E4 Used photos, diagrams and animations from OER to show three types of levers and examples, and integrated them in her explanation and added notes.
Ms. T. Reeka	9 Sc	Light	E1- Used photos and diagrams from OER to show some characteristics of light rays. E4 Used photos and diagrams from OER to show the refraction of light and integrated them in her explanation and added notes.
Ms.M.Thanushiya	Gr 6 Sc	Heat	E1- Used photos and diagrams from OER to illustrate effects of heat.
Ms.M.Thanushiya	Gr 9 Sc	Light	E1- Used photos to illustrate the importance of light for vision. E4- Used some photos and diagrams from OER to explain the refraction of light and the effects of refraction.

Challenges we faced

The journey towards OER-integrated teaching was not an easy task and we faced many challenges and a lot of frustration at many instances. Most of our team members are teaching in remote areas where resettlement is still in progress after the war. When we started to integrate OER in our regular teaching-learning process, we struggled and faced many challenging situations such as a lack of computers and faulty internet facilities at schools, technical issues in the computer lab and internet connections etc. We were de-motivated at many instances due to these deficiencies. Further, we were disappointed as we couldn't access LMS in the early stages of this project.

Another issue was the language. As many OER were in English, we had to translate them to Tamil because the medium of instruction in our schools was Tamil. Initially

we felt discouraged as it took a lot of time. But as science teachers we think innovatively and continued with our efforts and succeeded. We always tried to overcome these barriers with great enthusiasm as we had a great interest in OER. We tried many alternative measures and finally achieved our goal.

Our achievements

We were able to gather a larger amount of updated and reliable information from OER. It is an attractive, easy, low cost, and freely available resource. We used OER as better resources to explain difficult concepts to our students in a different as well as in an easy way. We felt OER helped us to promote our confidence and professional skills. Students seemed to be actively engaged and highly motivated during the whole lesson when we integrate OER. And we were amazed to identify OER relevant to our subject matter which increased the students' interest. We were able to realize that our classroom teaching has become interesting and productive.

Fig. 6.2.2: Anne Starina receives her award from the Co-Lead Researchers

Some of our team members created and shared some OER. All our team members conducted OER-integrated lessons and enjoyed the benefits of OER in teaching learning process. We were extremely happy and proud when we heard that our team member Anne Starina received the "Most active participant" award for her achievements in this project. We proved that we are the achievers of OER integrated teaching and learning.

Our best practices

This project has provided a suitable platform for us to share knowledge and innovative teaching practices with our colleagues as well as the whole education world.

We shared the OER we found with our colleagues and our friends. Our team members found and shared OER in English and Tamil. Anne Starina and T. Mahathevan took part in preparing the publication of the OER hand book which is a good resource for relevant OER links.

They also uploaded OER they created in Tamil on Cell structure, Light Refraction, Electronics, Heat tolerant animals etc. The project participants published a hand book on OER links for selected subjects with the contribution of our team members.

We successfully integrated OER in our teaching-learning process in an attractive manner. Thus we were able to improve the quality of our teaching and learning process to a great extent. One of our team members Anne Starina participated as a resource person and conducted a workshop at J/St Patricks College to raise awareness on OER and motivated the participants to use OER in their teaching-learning process. Her contribution in this workshop was highly appreciated.

She expressed her satisfaction through her reflection as follows:

29.12.2015- "We, five JRC student teachers as resource persons successfully conducted an awareness raising programme at J/ St Patricks College, Jaffna under the leadership of Rev. Father Edwinathan. Teachers participated with great enthusiasm in the workshop conducted by this college. this increased our motivation and involvement in OER. Some questions asked by teachers increased our interest in OER."

We have utilized the knowledge and skills given to us through the workshops and shared them with our friends and colleagues (Fig. 6.2.3). We felt very happy and satisfied through these practices.

Fig. 6.2.3: Conducting an OER awareness workshop for peer teachers

Impacts on teaching and learning

We integrated OER in many forms such as teaching aids, learning materials, assessment tools, reading materials etc. By the use of quality and updated OER we were able to notice many positive impacts in our teaching-learning process. We were able to engage students in the lessons in an easy way and felt teaching was an interesting task after the integration of different OER. Students' motivation significantly increased and they became active and self- regulated learners. Further, we felt proud and happy to help our colleagues by creating OER in Tamil, as well as sharing and using OER with them.

Our future plans

In future we plan to share the knowledge we obtained about OER with others by the following activities.
1. Conduct workshops at other schools and at a Zonal level to raise awareness on OER among teachers and other stakeholders.
2. Train school students to find and use OER for their learning process and to promote their self -learning habits.
3. Share the OER we found and created with our colleagues and teachers to make the teaching profession easier, productive and useful.
4. Create and upload OER in our mother tongue – Tamil

Center:	*Jaffna Regional Centre, OUSL*
Team:	*Achievers*
Participants:	*J. L. Anne Starina*
	S. Reeka
	T. Mahathevan
	A. Illamaran
Writer:	*T. Mahathevan*
Translators/Editors:	*Sashikala Kugamoorthy*
	M. Rajini

Jaffna

Pioneers

Our first impressions on OER

At first the term OER was introduced by our lecturer at a day school and we were informed about the project on OER integrated teaching and learning. We were astonished to hear that we will be given a chance to participate in this innovative project. Earlier we had no idea about OER. We used non-electronic materials, web pages and text books as our teaching aids as we were not aware of OER. Therefore, we expressed our consent to participate in the project. After the first intervention workshop conducted in March 2015 and through the awareness program we got to know about the OER concept.

We were amazed to know that a lot of OER are available without any cost which can be used for teaching and learning easily. We understood that OER are helpful to improve access to learning opportunities by sharing knowledge and learning resources. The OER movement seeks to stimulate, facilitate and increase the growth of the learning resources freely available on the Internet.

One of our team members, Rev. E. Edwinathan appreciated his experience of the first intervention workshop as follows:
30th March 2015 - "It is a very useful programme. Today I could learn about the OER concept. It helps me a lot to my teaching practice. Through this OER, I will plan out better lesson plans in future."

Further, Kingston Sumanraj also expressed his opinion as follows:
30th March 2015- "First and foremost I enjoyed OER programme enthusiastically. I learned a lot of this programme. I hope it helps me to enhance my teaching-learning processes"

After this workshop we wondered how we should integrate OER our teaching in our schools. At the very beginning we were not aware of how to download or integrate OER in our teaching and learning process. However we perceived this as a wonderful experience.

Starting point of OER in our profession

We started to use OER as teaching materials in our classroom activities after the first workshop. With the help of our colleagues we searched OER that are free to

use, adapt, mix and share. We tried to use the OER in our teaching and learning process in numerous ways. Eventually we realized that OER have become a part of our teaching carriers. During our Postgraduate Diploma Teaching Practice period we successfully used OER as teaching-learning aids in our lessons.

We are proud to say that our team leader Rev. Fr. Edwinathan was the pioneer in OER integrated teaching in Jaffna. He successfully integrated an OER, a video to teach the topic "Parliament" for his Civics lesson. It was observed by our lecturer and a master teacher. This experience was shared with other participants and they were also motivated towards OER integrated teaching.

Adoption and integration of OER

We integrated OER at the various steps of our lessons. Especially we used OER in engagement, explanation and evaluation steps. We created PowerPoint presentation with the integration of OER during our class room teaching activities. For example, one member had downloaded the Sri Lankan parliament history from an OER repository and used it to introduce parliament activities with the help of a multimedia projector in the class room. Another member has directed the students to make a cube histogram with the help of OER. We felt that we have developed the skills to use valuable educational material for our students without any cost.

Further, one of our team members Karthika found and shared many useful OER. Some important links shared by her are given in Table 6.3.1.

Challenges and frustrations

After the awareness workshop we were interested in finding OER and tried to use them in our teaching-learning process with great motivation. However, we didn't have enough time to spend in the internet for OER searching. Some of us didn't have enough knowledge of using computers either. We were also affected by the lack of English knowledge. We were unable to find teaching aids or materials as OER for all the subjects. We didn't have a good internet connection most of the time. Further, most of us teach in remote areas where internet facilities are not available at all. We were unable to find OER in Tamil. Because of these experiences, we faced difficulties in integrating OER in our lessons, Most of the time LMS was also not available. We felt frustrated due to these reasons. But our enthusiasm towards the OER and motivation from our lecturers helped us to overcome these challenges and march towards our targets.

Table 6.3.1: Some OER we found and shared

Topic	License Type	URL	Description
Logic Gates	CC BY SA	http://www.toves.org/books/logic/	Uses logic gates to design basic digital circuits and devices.
Normalizati on	CC NC ND	http://www.databasezone.com/techdocs/normalize.html	Normalizes data base schema to improve performance.
Fundamenta ls of Networking	CC BY NC SA	https://www.digitalocean.com/community/tutorials/an-introduction-to-networking-terminology-interfaces-and-protocols	Students should be familiar with some basic networking terminology and be able to understand how different components are able to communicate with each other
Libre Office Base Book	CC BY	https://wiki.documentfoundation.org/images/e/e8/BH40-BaseHandbook.pdf	This book introduces Base, the database component of LibreOffice.
Data Communica tion	CC BY NC SA	http://it4nextgen.com/dcvideo.html	Video Tutorials about data communication

Achievements

When we integrated OER in our teaching, we noticed that students actively participated in the classroom activities. Uses of different OER materials have encouraged the students towards their learning activities. Our colleagues in school appreciated the use of OER and asked us to help them to use OER in their teaching activities too. We continued using OER more and more in our teaching-learning process and enjoyed their effects.

Good practices

We shared our knowledge on OER concept with peers and colleagues in our schools and other schools as well. We were able to integrate OER materials in our Team Teaching activities. We integrated OER in our teaching learning process in various ways.

We shared the OER we found with our peers. We shared or gave other colleagues the materials we have prepared for the lesson plans by remixing and revising OER. We also practiced to use OER through audio-video techniques.

We contributed to a publication of OER, which is a collection of relevant OER links for different subject areas. Our team member Karthika played a key role in this valuable publication.

We conducted some workshops to raise awareness on OER among our colleagues and this was highly appreciated by the school administration. Our team leader Rev. Fr. Edwinathan lead and organized the work shop and conducted it in a successful manner. Once again we proved that we are the pioneers through conducting such a workshop at school level. (Fig 6.3.1)

Fig. 6.3.1 Awareness raising workshop for fellow teachers

Impacts on teaching and learning

When we integrated OER, we were able to observe some positive changes in our teaching -learning process.

These are;

1. Our teaching became more interesting.
2. Students got involved in the learning activities with great enthusiasm
3. We were able to expand the knowledge of the students.
4. We were able to develop our English language skills & technical skills.
5. We shared knowledge through seminars with our colleagues.
6. Most of our co- teachers desired to know more about the OER concept

Future plans

We have some future plans which are as follows:

1. To create and share our OER in Tamil language.
2. To use OER to develop an enhanced curriculum and teaching methodology appropriate for the development of our country.
3. To conduct the OER awareness program for school teachers.
4. To prepare and release the handouts and publications of OER.

Center:	*Jaffna Regional Centre, OUSL*
Team:	*Pioneers*
Participants:	*Rev. E. Edvinathan*
	K.Sathyendran
	Kingston Sumanraj
	V. Nitharsan
	S.Thanenthiran
Writer:	*K.Sathyendran*
Translators/Editors:	*Sashikala Kugamoorthy*
	M. Rajini

Jaffna

Innovators

First perceptions on OER

Even though we already had the interest to find resources via internet, we had no proper idea about the licenses of those resources. We just searched and found the materials suitable for the local curriculum and used them in the classroom without any consideration about their copyrights or licenses. For the first time we heard about OER at a day school before the first intervention workshop. At that time, OER was just a new word to us and it didn't make an impression on many of us. Therefore, only 55 gave their consent from the 150 student teachers present on the particular day school. But, the first intervention workshop entirely changed our misconceptions and fears. The introductory workshop, conducted by OUSL for the PGDE student teachers on "Integrating Open Educational Resources in teaching and learning" was the first turning point in obtaining free resources as OER through the internet (Fig. 6.4.1).

Fig. 6.4.1: 1st Introductory workshop

After the first workshop we changed our previous practices and decided to find and use OER suitable for teaching-learning process with Creative Commons license. As these OER are freely accessible, reliable and easily usable in the classrooms we thought that they were relevant for our Sri Lankan educational context. Our colleague Kowsalya Thivakaran reflected on her experience at the first intervention workshop as follows:

30.03.2015- *"When entered into the workshop, I completely didn't know anything about the OER. The whole sessions were interesting and useful. This workshop gave us a nice opportunity to manipulate the resources legally. I would like to thank the resources persons to provide us an initial knowledge patiently about OER."*

Starting point of OER in our career

We were surprised to know about the full frame of theoretical basis of OER at the first intervention workshop. We got to know about the CC licenses, 4Rs and the advantages of the OER other than the usual copyrighted © materials. The workshop was conducted at the NAC center at Jaffna Regional Center of OUSL, which provided us with the practical touch of searching OER materials. It was such an interesting experience to search materials with CC license to use them in classroom activities. We were very pleased to find OER which can be very useful to our teaching and learning process (Fig. 6.4.2).

Fig. 6.4.2: An OER showing Red blood cells, found and shared by us

We were happy to see many OER available in different forms that can be used for a variety of purposes. However, initially we also faced some difficulties in identifying OER and their license types. But with the support from our resource persons we became familiar with OER very soon and started our journey towards OER integrated teaching.

OER integrated teaching: The dream came true

At first, we tried to identify OER relevant to Science subjects. We were surprised and motivated to see the vast amount of OER available for Science which can be easily

integrated in our teaching practices. Integration of OER was carried out according to the local curriculum, level of students, age group, physical resources available, number of the students and time.

Table 6.4.1 illustrates the topics used by Kamalaventhan for his OER-integrated teaching.

Table 6.4.1: OER integrated lessons conducted by a team member

Date	Grade	Lesson topic	The way OER integrated
16.10.2015	9 Sc	Animal diversity	E1- Used photos from OER to show some species which are extinct. E4- Used photos of animals from OER and integrated them in his explanation and added notes.
16.10.2015	8 Sc	Plant diversity	E1- Used photos from OER to show some modifications of the stem and asked questions. E4- Used photos of modifications of the stem from OER and integrated them in his explanation and added notes.

We used OER such as video clips, short notes and activity cards etc. and integrated them in our teaching learning process. Those were used in the introduction of the concepts, elaboration of the concepts, evaluation, preparation of the question papers and making activity cards for group activities. During this we felt happy and satisfied as the students seemed to be very motivated. Our team member Kavitha Rajeswaran stated her surprise on OER as follows:

08.08.2015 - "I am Science teacher. Therefore, OER helps many ways such as animations, paper materials, figures, models, quizzes patterns. In our case, ready & prepared presentations of subject topics"

In addition to this, our team members searched and identified several OER for different science topics. Further, they contributed to a publication on an OER link made by our Jaffna regional student teachers. Table 6.4.2 shows some of the OER identified and shared by our team members.

Table 6.4.2:OER found and shared

Topic	License Type	URL	Description
Eutrophication		http://www.open.edu/openlearn/science-maths-technology/science/environmental-science/eutrophication/content-section-0	Suitable material for teaching eutrophication for GCE O/L students.
Genetics		https://www.oercommons.org/courses/genetics	This OER is based on Genetics. This material helps to teach about DNA, as the basic genetic material for Grade 10 and Advanced Level.
Galaxies and stars		http://www.open.edu/openlearn/science-maths-technology/science/physics-and-astronomy/galaxies-stars-and-planets/content-section-0	This piece is suitable for Grade 9 Science - Unit 2.3

Challenges and frustrations we faced

We faced many challenges in the integration of OER in the teaching-learning process because of the following reasons:

1. Lack of internet facilities both at school and home.
2. Unable to get relevant materials to suit the requirements of our students.
3. Lack of time due to heavy work load at school and family responsibilities.
4. Power failures in our areas which are still under development in the post war context.
5. Difficulties in downloading the material.
6. Lack of physical resources in the school such as computers, printers etc.
7. Lack of support from the school management
8. Difficulties in uploading the materials.

The team members get discouraged due to these barriers. Our colleague Kowsalya expressed her frustration as follows:

15.05.2015 - *"It is too much time consuming process, that searching for a relevant OER for integrating in the teaching process. But there are many OER in many websites with CC. Because of the language problem it is difficult to integrate in the teaching - learning process. However I'm trying to create suitable OER in Tamil. I'll try my level best in this attempt that to create some useful resources."*

However, amidst these challenges we continued with our efforts to integrate OER in our teaching-learning process with the support of our resource persons, colleagues and friends.

Successes of OER

Surpassing all the obstructions and challenges all our team members successfully conducted OER-integrated teaching. We were pleased to observe that these OER materials enhanced the interest and attention of the students throughout the classroom sessions. It helped the teachers for a better classroom management. It paved an easy way to explain the concepts properly and to avoid misconceptions. It helped in the self evaluation of the students and to decrease the frustration of the teachers due to the work stress.

Further, we shared many OER relevant to our subject with our colleagues and they expressed their happiness to know a new concept and to use OER in their day to day teaching. We shared our experiences at school level quality circles and motivated other teachers to use OER in their teaching. Kowsalya Thivakaran designed an OER in our mother tongue-Tamil and uploaded it to the LMS. She proudly stated as follows:

08.08.2015 - *"Today we gathered at JRC for mid-intervention programme of OER integration in teaching-learning process. After this workshop I just tried to design an OER page on 'tamil.wikipedia'. I edited a new page there about "Relative Density" for Grade 7 Tamil medium students. That source can be used during the exploration part of the learning activity. I shared the URL of above page in our OER platform also."*

Good practices

The integration of OER has taken place effectively and efficiently in the teaching-learning process, as follows:
- Video and GIF materials of OER were used in the Engagement part of the Teaching learning process to induce the curiosity of the students to learn. For example, we used OER to teach "Types of plant stems for Grade 8 Science" and "Slide preparation for A/L Biology".
- We prepared and uploaded OER materials in our mother tongue. We felt proud when one of our members, K. Thivakaran, designed and uploaded an OER in Tamil on Relative Density for Grade 7 Science.
- K. Thivakaran and S Kamalaventhan contributed to the Publication of collection of OER by sharing many OER links.
- Many PowerPoint presentations were prepared and used by us. For example, Magnets for Grade 7 Science and Light refraction for Grade 9 Science. We uploaded them in the LMS in order to share them with our friends.

- We conducted OER awareness workshops at selected schools and were happy to be appriciatedby the school society. Our team members S. Kamalaventhan participated as a resource person in the awareness workshop conducted at V/Kanagarayankulam MV. Further, R. Kavitha also participated at the workshop held in J/St Patricks College, Jaffna.

Fig. 6.4.3: OER Awareness workshop conducted by a student teacher

Kowsalya Thivakaran actively participated in the publication of our book titled "we found OER".

We were happy to be involved in OER related activities and enjoyed the results obtained after the integration of OER. We are proud to be innovative teachers and using OER in our teaching practices.

Impacts on teaching-learning process

Usages of the OER in the classrooms have impacted the teaching-learning process in many ways. Some are listed below:
- Made the teaching learning process easier, interesting and innovative.
- Motivated self -learning of the students as well as the teachers.
- Helped to update the knowledge, skills and attitudes.
- Helped to exchange ideas among teachers and share knowledge.
- Students became active and motivated.
- As teachers we were able to get a good image in society by the use of new technology and felt proud.

We found that teaching became interesting and productive by the integration of OER.

Future plans

We planned to continue the practice of using OER in the future in the following ways.

- Continue with the integration of OER in the classroom activities.
- Revise and remix the available OER according to the requirements of the local curriculum.
- Introduce the concept of OER to our colleagues.
- Design an LMS for OER, that is suitable for the quizzes, particularly for self-evaluation
- Prepare and upload OER in local language – Tamil.

Center:	*Jaffna Regional Centre, OUSL*
Team:	*Innovators*
Participants:	*K.Thivakaran*
	M.Kamalaventhan
	C.P.J.M.Nilani
	R.Kavitha
Writer:	*K.Thivakaran*
Translators/Editors:	*Sashikala Kugamoorthy*
	M. Rajini

Jaffna

Sprinters

The first impression of OER

We have known about educational resources on the web and not having to worry about copyrights or licenses. Yet, We had doubts on the trustworthiness of the materials from the web. Earlier we used downloaded materials for our teaching. Our ideas related to online resources are changed entirely after attending the workshop on 'Integrating OER in Teaching and Learning.' OER was a new concept for us. We thought that it will facilitate our teaching learning process. We were amazed to know about the licenses. We were amazed by the use and importance of OER in Education.

Some reflections made by some of our colleagues at the end of first introduction workshop are as follows:
 "This is the first time, I heard about OER. I hope I will be able to use OER in my teaching and make it effective".
 "I feel lucky to be a part of this project as I came to know about OER and its importance. I think it will be very useful to improve my teaching practices".

Our team member Dharshan stated his experiences of this workshop as follows:
30.4.2015- *"This is great effort. This LMS will help all of us in the knowledge-based society. Thank You OUSL Education Faculty – Prof. and other staff."*

Starting point of OER in our profession

During the first OER workshop we got to know some basic elements of OER. Now we have the knowledge of open educational resources and their licenses. We were able to learn some concepts on how to identify and use OER in our teaching-learning process. Then we discussed with other teachers and our lecturers regarding the use of OER in the teaching-learning process. Then we started to integrate OER in our lesson plans.

Integration of OER in the teaching learning process

*I*nitially we tried to identify the OER relevant to our subject. We were surprised to know the amount of OER available for our subject and tried to use them in our

teaching-learning processes. During the second stage of the teaching practice we integrated OER in our teaching learning processes. One of our team members, S. Sathiyan successfully integrated OER in an ICT lesson under the Topic of 'Numbering Systems'. We found many OER using Google and embedded them in our lesson plans. We shared OER resources with our colleagues. We shared the lesson plan through OUSL-LMS to other colleagues. We used OER to illustrate difficult and unknown concepts to our children in an effective way (Fig. 6.5.1).

Find the approximate area of the circle.

$r = 16.8$ ft

$A = \pi \cdot r^2 \approx (3.14) \cdot (16.8 \text{ ft.})^2 \approx (3.14) \cdot (282.24 \text{ sq. ft.}) \approx 888.23 \text{ sq. ft.}$
The area of this circle is approximately 886.23 sq. ft.
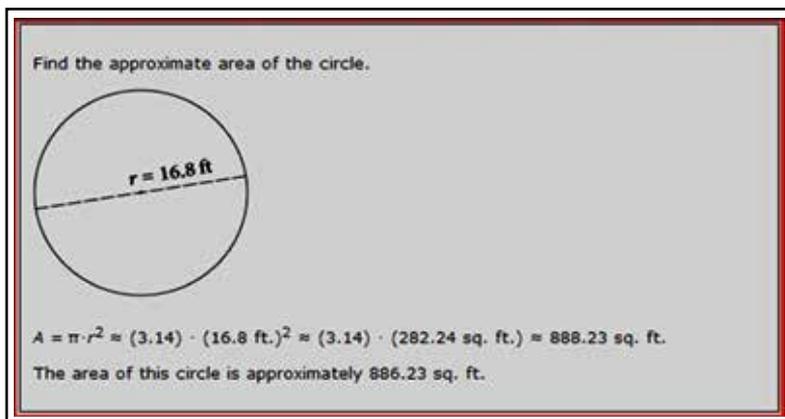
Fig. 6.5.1: An OER found and shared by us

Our team members T. Sutharsan and S. Sathiyan successfully conducted OER-integrated lessons. The OER helped us to broaden our knowledge. Logic Gates and Truth tables in ICT were difficult to demonstrate to the students but OER gave a better way to explain the subject. It provided free sharing and collaborative opportunities within the educational realm. We linked OER with various steps of 5E lesson plan. It was very useful to save our time in making some written documents. We were able to use OER to replace traditional text books, dramatically lowering the cost that students pay for their education. OER enabled us to actively engage our students in their learning. Table 6.5.1 indicates some examples of OER integrated by us.

Challenges

We faced many challenges in identifying and recognizing OER materials. Earlier we had little knowledge of OER and their licenses. Availability of OER materials for the region and local languages were also very few. We faced difficulties to get internet. When we integrated OER in our teaching practices we had to struggle with many inconvenient situations. Lack of internet facilities, inadequate laboratory facilities of schools were some of the barriers to adopt OER in teaching-learning process.

Most of the OER materials were available only in English language. It was also very difficult to find OER in our mother tongue. Using OER required more preparation than using traditional materials. These barriers de-motivated us at many instances. However we managed them and continued with our efforts towards OER integrated teaching.

Table 6.5.1: OER integrated and used by our team members

Gr	Concept	Lisence	URL	Description
			Some OER integrated and used by ICT teachers	
12	Logic Gates	CC- BY- SA	http://www.toves.org/books/logic/	Uses logic gates to design basic Digital circuits and devices.
12	E-Business	CC-BY -NC-SA	http://futureu.com/shared_resources/e-business_what_is_it.pdf	About E -Business (pdf file)
13	Normalizati on	CC-NC- ND	http://www.databasezone.com/techdocs/normalize.html	Normalizes data base schema to improve performance.
13	Data Communica tion	CC-BY-NC-SA	http://it4nextgen.com/dcvideo.html	Video Tutorials about data communication
13	Fundamenta ls of Networking	CC-BY-NC-SA	https://www.digitalocean.com/community/tutorials/an-introduction-to-networking-terminology-interfaces-and-protocols	Some basic networking terminology and different components to communicate with each other
13	Programmin g	CC-BY -SA	http://www.swaroopch.com/notes/python/	Guide or tutorial to the Python programming language.
10	Word Processing	CC-BY-NC-SA	https://www.edu.xunta.es/espazoAbalar/sites/espazoAbalar/files/datos/1426170347/contido/LibreOffice%20Writer/Writer%20-%20Carpeta%20autocontenida/writer/index.html	Students are able to use Libre Office Writer

Our successes in the path towards OER

Integration of OER made our teaching attractive and more effective. OER supported our collaborative teaching and gave opportunities for peer reviews from educators. It reduced educational costs, and enabled us to access updated OER materials. OER helped children to study by themselves. OER saved students the cost of textbooks

and offered an exciting selection of content. We shared our abilities and experience of OER with our friends. Students seemed to be highly motivated and attracted by the visual presentations and animated videos. OER increased the students' interest and their motivation. Initially our team did not show much interest in OER-related activities, but after some time we accelerated our efforts and as *Sprinters* we achieved our goals very fast.

Our good practices

As a teacher, it is essential to plan and prepare our teaching. We maintained OER searching regularly. We spent most of the time incorporating OER in our lesson plans. We shared our OER-integrated lessons with other colleagues to get their feedback. We were able to identify some OER links to integrate and teach effectively within a short time. Thus we were able to save the students' time as well. We participated as resource persons in awareness workshops conducted for teachers of other schools and shared our knowledge on OER with them (Fig. 6.5.2). Sharing and collaborative opportunities within the educational realm enhanced the quality of education.

Our colleague Dharshan participated as a resource person for the awareness raising workshop conducted as J/St Patricks College. He wrote his satisfaction of sharing OER in the reflective journal as follows.

29.12.2015- *"I participated in a workshop as a resource person at St. Paticks College, Jaffna. This Workshop was arranged by our teacher trainer. Thanks for all our supportive persons"*

Fig. 6.5.2: Conducting awareness raising workshops at schools

Another team member; Mr.B.Sajiruban led the team of resource persons and conducted the OER awareness seminar at V/Kanakarayankulam M.V on February 19th 2016. Our contribution to this workshop was highly appreciated by the school community. We felt proud and productive at our achievement.

Further, our team members Sajiruban and Dharshan contributed for the OER book and published valuable OER links relevant for ICT. teaching.

Impacts on teaching and learning

Using OER facilitated our teaching-learning process and was helpful to deal with computers, coloured pictures, videos, audio and visual aids, presentations, printed task sheets, online puzzles and games and projector. OER supported us to uplift our teaching practices. It helped make our teaching, attractive and interesting. Use of OER encouraged the students and increased their interest. We were able to get different innovative ideas from OER materials. We shared our own electronic presentations with other colleagues through LMS and redistributed the resources we identified.

Future plans

We were glad to integrate OER in our teaching learning process. Our future plans on using OER in teaching learning process are:
• To expand the knowledge about integrating OER in teaching learning process among the school teachers.
• To introduce OER to our school students as self -learning materials.
• To prepare and upload OER in our language.
• To raise awareness among the principals and teachers regarding OER.

Regional Center :	*OUSL – Jaffna*
Name of the team:	*Sprinters*
Participants :	*B.Sajiruban*
	G.Dharsan
	K.Tharsan
	T.Sutharsan
	S.Sathiyan
	K.Nishath
Translators/Editors:	*Sashikala Kugamoorthy*
	M. Rajini

Jaffna

Amblers

The first impression on OER

One Day, after our Post Graduate Diploma day school, our Coordinator discussed with us about OER and told us about the advantages and the opportunities we can gain through them. That was the first time we heard about OER and we were eager to know about it. Then we filled the consent forms and submitted them. After a few days we were informed that we have been selected for the OER program. We were eagerly waiting to know what OER meant with lots of questions and expectations in our minds.

We were called for the first workshop on 30.03.2015. We had a chance to meet professionals in the educational technology field and to share our time with them in OER related activities. After participating, we got the answers for our questions and identified that OER means Open Educational Resources which can be freely used in the teaching-learning process. OER are freely accessible, openly licensed documents and media that are useful for teaching learning and assessing as well as for research purposes. This was the first occasion we came to know about OER and their uses. Till then we used several resources available on the internet without any concern regarding their license, copyright and reliability. We were able to get a clear concept on OER from the knowledge we gained from the first intervention workshop. Fig. 6.6.1 is an example of such concepts represented by a simple concept map created by one of our team members Sujeekaran.

But the first intervention workshop entirely changed our practices and we accepted the importance of using OER in education. Professionals in the research team motivated us to search and identify OER relevant to our subject and our students.
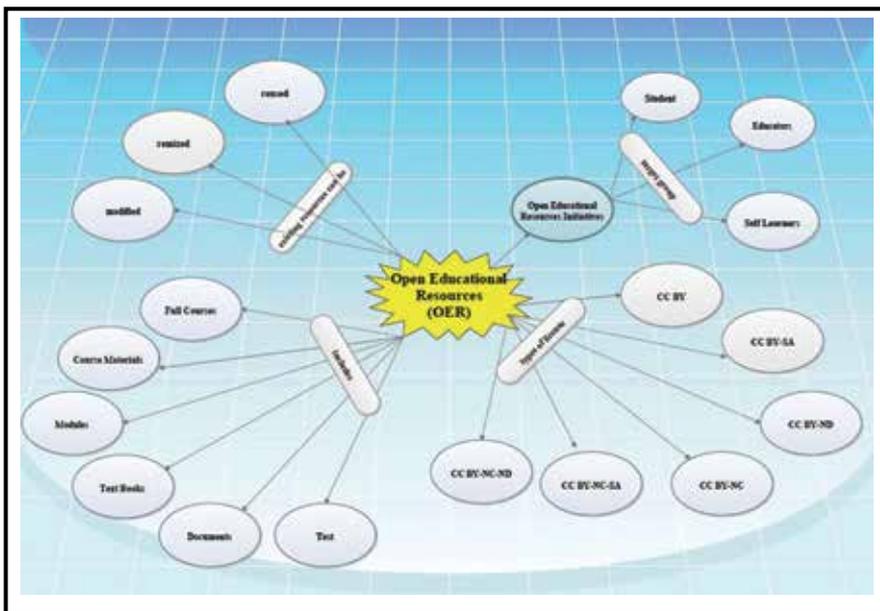
Fig.

6.6.1: An Initial concept map

Initiating the use of OER in our profession

In our first workshop we were guided individually to open our personal accounts in LMS and log onto it. We got to know 4Rs Framework of OER and the Creative Commons Licenses and their limitations. We searched for OER related to our subject in many websites such as Wikipedia, OER Commons, Merlot etc. We were able to identify many OER related to our subject and shared them with our colleagues.
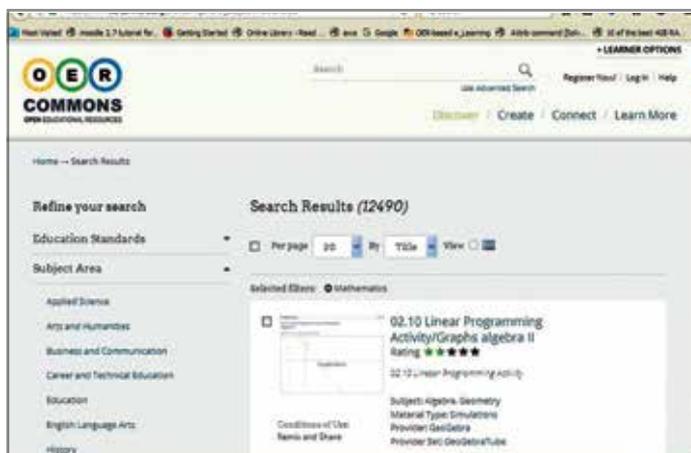
Fig. 6.6.2: Some OER repositories used by us

Further, we were guided to integrate OER in our teaching-learning process, share OER and to create and upload them in LMS. At the end of the workshop we realized the importance of OER in education and got an idea to use them in our teaching.

First, we tried to search and identify OER related to Mathematics. Initially we had some problems in identifying OER from other internet resources. However, with the guidance of our resource persons we were able to identify them very soon. We were amazed to see the vast amount of OER available for different areas of Mathematics. We looked for opportunities to integrate them in our teaching-learning processes.

One of our team members, Jeyananthan, wrote his feelings in the reflective journal as follows:
08/08/2015 - *"I got to know about OER in the first workshop. After that I have tried to enter but most of the time I can't enter it because of the LMS was inactive. I usually use the Google web page to solve my needs. But at today's workshop I got the knowledge about uploading lesson plans and use of OER materials. It was a most useful workshop. Thanking for all resource persons."*

How we integrated OER in our teaching-learning process

Nowadays we have been encouraged to teach in the 5E method. It is an activity-based process. We need activities, reading materials and many other resources to make our teaching effective. We realized OER can be successfully used as teaching aids and learning resources. We used OER in each step such as engagement, group work, explanation, elaborating the facts and finally in the evaluation stages.

We were able to change and modify OER according to our purposes in our teaching learning process. We used different types of OER such as activities, videos, animations and pictures. We were happy to see the motivation of students in the OER integrated classrooms. We shared and distributed the OER we used among our colleagues and encouraged them to use OER in their classes too.

Challenges and frustrations

We faced so many challenges during the implementation of OER integrated teaching- learning process. We were keen to use OER but had to struggle several times. War affected areas in the Northern region of the Sri Lanka are not fully developed and have many deficiencies. Fourof us teaching in schools in such areas, which have many problems such as a lack of computer labs, internet connection and electricity. Therefore, we faced many challenges due to these deficiencies. Further, we also

faced challenges with time constraints and failure in finding the proper OER for certain units in Mathematics. We had to spend lots of time to search for OER which have appropriate licenses. Further, the LMS was also not available for a long period. We got frustrated due to these barriers. But we tried to overcome these barriers and continued with our journey in OER integration.

Achievements and successes

Amidst of all the challenges and barriers we continued our effort and finally conducted OER integrated lessons at our schools. We were able to notice difference in student's participation and performance. OER increased students' attention and motivated them to learn with much interest. Teachers were able to handle the complex sections in an easy way. For example, we were able to show three dimensional figures such as Tetrahedron, Octahedron, Isocahedron etc... when teaching the unit Solids in an effective manner using OER. One of our team members shared OER related to Maths concepts including Sets, Prime Numbers and Circle in the LMS.Our colleague Sujeekaran contributed in the OER publication and shared OER in Mathematics in this book.

With the help of OER we were able to change our ways of teaching from traditional methods to more student-centered approaches. We also shared the facts we got to know about OER with our colleagues and encouraged them to use OER in their teaching too. Interestingly we also felt some sort of changes in our personality through OER integrated teaching practices. As *Amblers* we enjoyed our slow but steady improvement in OER integrated activities.

Our good practices

After getting to know about OER we integrated those materials in our lessons. We spent a lot of time to search for proper OER materials. We implemented our teaching learning process efficiently and effectively by the integration of OER. We helped our colleagues to know about OER, and teaching of our colleagues was also improved by sharing lessons. It increased the quality of education. Our team members shared the OER found with others, and Table 6.6.1 indicates some of the OER found and shared.

Table 6.6.1: Some OER links found and shared

Topic	License Type	URL	Description
Binomial Expressions	CC BY NC SA	https://www.boundless.com/algebra/textbooks/boundless-algebra-textbook/sequences-series-and-combinatorics-8/the-binomial-theorem-58/binomial-expansions-and-pascal-s-triangle-242-11092/	The binomial theorem, which uses Pascal's triangles to determine the topic (Brief lesson)
Fractions	CC BY SA	https://www.boundless.com/algebra/textbooks/boundless-algebra-textbook/sequences-series-and-combinatorics-8/geometric-sequences-and-series-55/summing-the-first-n-terms-in-a-geometric-sequence-233-5877/	Summing the first n terms in a geometric sequence (Brief lesson)
Pythagoras' Theorem	CC BY NC ND	http://www.mathcentre.ac.uk/resources/uploaded/trig-anim-1.mp4	Animation Video clip
Angles of a Polygon	CC BY NC ND	http://www.piping-designer.com/Polygon	How to find Polygon's angle, side length, perimeter & area. also typesof regular polygons (Brief lesson)
Percentage	CC BY NC	https://www.wisc-online.com/learn/formal-science/mathematics/abm1301/conversions-fractions-decimals--percents	Fractions – Decimals – Percent (Presentation Slide)
Order of Operations (BODMAS)	CC BY NC	https://www.wisc-online.com/learn/formal-science/mathematics/abm101/order-of-operations	Order of Operations (Presentation Slide)

We conducted workshops to raise awareness on OER among school teachers (Fig. 6.6.3). One of our team members, S.S.S.D. Dilojana participated and conducted an awareness program at V/ Kanagarajankulam M. V in February 19th 2016. Her contribution in this workshop was greatly appreciated by the principal and staff of that school.

Fig. 6.6.3: OER awareness workshop conducted by a student teacher

By these practices we felt that we have offered a valuable contribution for the development of our education field.

Impacts on teaching and learning

We were able to select and provide facts in a simple and an interesting manner from uploaded OER. It made our teaching more effective and attractive. Students became more active, motivated and interested. Teacher-student and student-student interactions increased in the OER integrated classrooms.

We have promoted our teaching-learning process with the aid of OER and also have helped the students to understand the facts easily. We were able to increase the achievement level of slow learners with the help of OER.

We were able to adapt to modern technology such as web browsing, power point, online learning, online games, multimedia usage, 3D animations etc. We changed our way of thinking and got familiar with the modern technology and new trends in education. It helped us to improve the quality of our teaching.

Our future plans

In future we have some plans to do the following:
•	Raise awareness about OER in schools.
•	Conduct subject-wise workshops on OER
•	Let the students involve in searching relevant OER.

- Get the facilities which we need to integrate OER in our lessons.
- Upload OER in our mother tongue (Tamil).
- Share the facts which we got to know with our colleagues.

Center:	*Jaffna Regional Centre, OUSL*
Team:	*Amblers*
Participants:	*R.Sujeekaran*
	M.Jeyananthan
	R.Ragubalan
	V.Navarathiny
	S.S.S.D.Dilojana
	T.Tharani
Writer:	*S.S.S.D.Dilojana*
Translators/Editors:	*Sashikala Kugamoorthy*
	M. Rajini

7 — Case Study
Kandy

Looking through a new window

T.D.T.L Dhanapala and W.M. Shaminda Wanasinghe

7.1

Introduction

Kandy was the last capital of the ancient kings' era of Sri Lanka. During our journey seeking OER, the Kandy Regional Centre of the Open University of Sri Lanka, which is situated in the up country kingdom was also selected as one of the prominent centres. For this purpose, a sample of student teachers were included from 2014/2015 PGDE programme. When selecting, the priority was given to secondary level teachers and majority consisted of Mathematics, Science, English and ICT teachers. After informing them about the OER Project during day schools, applications were provided to those who were interested. More than 40 student teachers applied at the beginning.

However, 28 students participated in the inaugural session, including two Buddhist monks. The participant distribution according to the subjects they taught is given in Table 7.1.1.

Table 7.1.1 : Participants according to the subjects taught

Subject	Number
Mathematics	09
Sceince	05
ICT	02
Buddhism	01
Sinhala Language	05
Geography	01
Home Science	05
Total	28

Our future minds

When increasing the number of students to every programme in the future, all academics of the University needs to equip well with different strategies on how to collect new information and how to deliver the information to the students of the University. Universities spend resources to produce a course, and then spent

additional resources to reproduce the course, and send it to students. Therefore, while it still costs a university time and money to produce a course, technology has made reproduction and distribution costs almost non-existent. The new information of every programme can be sent electronically, or placed online, and any number of students can access the material. This marked decrease in costs has significant implications and allows distance educators to play an important role in the fulfillment of the promise of the right to universal education.

However, the Faculty of Education of the Open University of Sri Lanka educated all PGDE student teachers to link session to the different OER, and other web resources for further information. We came to know that open educational resources include full courses, course material, modules, textbooks, videos, tests, software, and any other tools materials, or techniques used to support access to knowledge. We were highly motivated to search OER resources related to our subjects.

First perception/ impressions

It was noted that no teacher of their group had any idea about OER at the very beginning. Some of them had not even heard about the term of OER. Their reflections are good evidence, and shown as in the following example.

Name	Date	Reflection
G.K.A.S. Lakmali	22.03. 2015	*I learned a lot of things about Open Educational Resources (OER). Now I can use them for my Educational activities. They are very useful to me. I had not heard the word "OER" before this workshop.* *My subjects are IT and I like to use new technology. This workshop is very useful to me to find new teaching aids. This workshop also helped me for my Postgraduate Diploma.* *And I also like to say, refreshments and lunch was very good. All professors and lecturers helped us kindly…* *Thank you....*

"I didn't have any idea about OER…" one student said.

"….I never heard about OER concept before this project…" another one mentioned.

This means that the entire group had no idea about OER, and they confused OER with other web resources.

Another student who has ICT knowledge but no idea about OER stated that; …*' with my subject I was interested to join this project, because I have the knowledge about ICT…"*

Many members of the group were happy to learn about the concept of OER.

All members of the Kandy group accepted that obtaining necessary educational information from OER sources is very easy to the teaching process, even though there are many barriers.

"With the difficulties that arise when it is necessary to get required educational information through the internet, it is very convenient to get information through OER sources…" many students were saying.

Some other students accepted that it was easy to get any information related to teaching learning process through OER.

"….it is easy to get any required information related to teaching learning process…." they stated.

The students also believed that this is a very good opportunity to share their knowledge even at an international level.They stated; many chances exist to exchange and share our new ideas and knowledge at an international level…"

Their first concept maps (Fig. 7.1.1) are good evidence to prove the above statements.

First step

The first orientation workshop was the remarkable turning point for the students and we encouraged them to search and use OER. Therefore, the first orientation workshop can be considered as the starting point.

Many students were saying that; *"… we searched and found many OER, in the orientation workshop…"* and another one responded similarly, saying that *"… we started to use OER after the first orientation workshop…"* and so on.
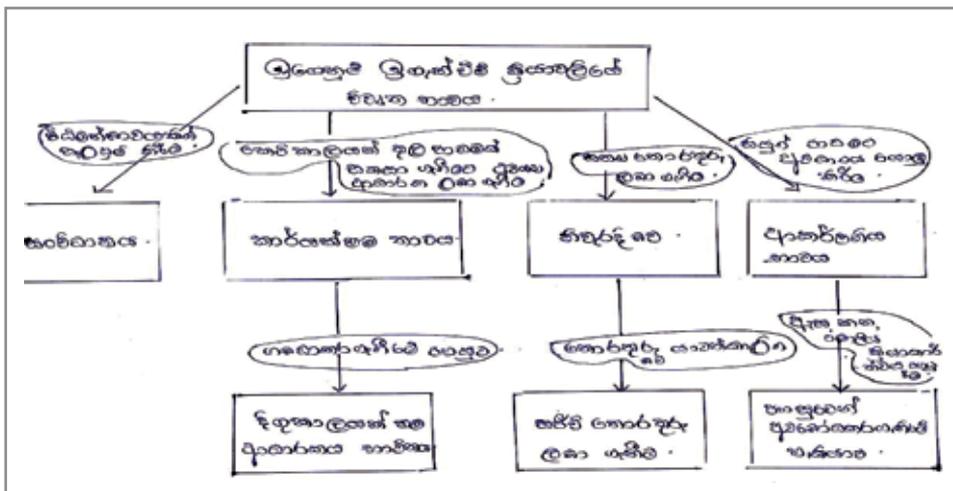
Fig. 7.1.1.: First Versions of Concept maps

This means that all students had been motivated to search and find the relevant OER for their subjects after the first orientation workshop. The following are some evidence of OER found by students related to different subjects.

English
1. http://collegeopentextbooks.org/textbook-listings/textbooks-by-subject/englishandcomposition
2. https://learn.saylor.org/course/index.php?categoryid=11
3. http://www.clrn.org/browse/index.cfm/online-courses/english-language-arts

Geography
1. https://en.wikibooks.org/wiki/Subject:Geography
2. http://geowiki.ucdavis.edu/

Health Science
1. http://collegeopentextbooks.org/textbook-listings/textbooks-by-subject/healthandnursing
2. https://en.wikibooks.org/wiki/Subject:Health_sciences
3. http://florida.theorangegrove.org/og/hierarchy.do?topic=d31a1f31-7c08-f740-e415-958ac26fb0c3&page=1

History
1. http://collegeopentextbooks.org/textbook-listings/textbooks-by-subject/history
2. http://www.clrn.org/browse/index.cfm/online-courses/history-social-science
3. https://learn.saylor.org/course/index.php?categoryid=12
4. https://en.wikibooks.org/wiki/Subject:History

Students have indicated many different web sources that they searched and gave evidence.

Adaptation/ integration of OER

Students had employed many different modes to explain how and why they integrated OER to their teaching learning process. We observed that students have integrated OER into their lesson plans.

However many of them were encouraged to integrate OER during their PGDE teaching practice period.

"…used OER in my lesson plans during my teaching practice period…" stated few students.

In addition, they had mentioned the following topics in which they had used OER;
- Prime numbers (games)
- Measuring angles using protractor (videos)
- HTML (language (presentations)

At the previous workshops we encouraged them to make CDs with OER for many purposes in the teaching -learning process.Some student teachers who were working in upper level classes, such as Grade 6 to Grade 13, had prepared separate CDs with different OER to use offline.
One student had made a CD set for Computer Teaching with OER for her PGDE compulsory project.

"…for the PGDE Project, I made a CD set with Computer teaching resources of OER for Grade 6 to Grade 13…"

Then they could use these resources at any time in relevant lessons.

The student teachers' comments are as follows;

 "…it is easy to find OER related to our subjects and make our teaching learning processeasier…" stated few students.

"…, we were able to equip ourselves with new knowledge,which made us successful in our teaching learning process…"

Other students stated that; *"when exploring new areas of knowledge, the children in our classroom also sought different modes to get them, and this is one good way to do so…"*

Similarly, a few students stated that; *"…the children are well armed with new knowledge, and therefore it is easy to show the correct path when conducting classes…"*

The second versions of their concept maps were provided as evidence.

Challenges/frustrations (emotional conditions)

The following are the students' thoughts and experiences of the challenges and frustrations they faced during this project. As they are working in different schools in Kandy, the facilities of the schools also varied. The facilities of schools depend on the type of school. On the other hand, many of them completed their primary, secondary and tertiary education in their mother tongue, Sinhala, and therefore, language was a key barrier when searching for OER. However, all these facts can be categorized as challenges as follows.

- **Lack of participation**

Even though 40 students had applied to participate in the project, only 28 participated in the first workshop. Only 8 participated in mid intervention workshop and 11 participated in the final evaluation workshop. In order to maintain this level, we had to motivate them frequently.

- **Low rate of logging**

While the number of participants decreased, the number logging into their OER web sites were also decreasing.
.
- **Lack of OER found**

The number of OER found and shared by students were observed to be low.

- **Technical problems**

Sometimes it was difficult to log in to the LMS,due to technical problems of the system.Therefore, we missed many chances to send feedback and motivate them. Moreover, thedifficulty in accessing the web pages prevented us from making observations and communicating with the students via the discussion forums.
Students had also mentioned different problems from their point of view, such as follows.

- Lack of facilities in schools
- No main electricity power
- No internet connection
- No computers
- Language barrier
- Low interestin new technology and approaches
- Some OER related to different subjects are more complicated
- Difficult to connect OER easily when necessary
- The negative attitudes of Principals and other staff members of schools
- Difficulties that could be faced when obtaining internet facilities

Victories

All students have accepted that their lessons were very successful after integrating OER into them.

They stated that they are *"…able to conduct the teaching-learning process more successfully with the support of new technology instead of traditional methods".* One added that, *"…planning and developing learning objectives are also easy…"*

Some reflections of the students are given below;

Few of the students further stated that; *"… OER supported to improve the knowledge personally…"*

Some have mentioned about the management skills. *"… Time management could be properly applied…"*

Few other students stated *"….teaching learning material could be managed in a useful way…"* also *"… able to achieve direct fruitful experiences as well…"*

One student stated *"…my Maths and ICT lessons weresuccessful thanks to OER…"*

In addition, she further stated that; *"… I taught some of my colleagues about OER and how to find them…".*

Few other colleagues stated that they had *"….successfully completed my PGDE projects using OER…"*

Good /best practices

All students accepted that they have enhanced their skills as a result of incorporating OER to their lessons. Some skills they enhanced are given below.

- Enhanced teaching skills
- Enhanced language skills
- Shared teaching resources
- Shared knowledge about OER and new technology
- Capability of releasing anyone's personal knowledge to the internet through OER.
- Easy access to OER
- Easy to update knowledge
- Shared knowledge among peers/colleagues

Members of the group have already mentioned about this in their reflective journals, and Master Teachers' reflective notes.

Impacts on teaching and learning

According to the students OER have had different impacts on their teaching learning process. A few of such impacts are listed below;

- Increase teaching skills
- Enhanced the knowledge about new teaching methods
- Enhanced knowledge on subjects

One teacher stated that these facts are based on the increase in the assignments marks of students. In addition, students have mentioned their thoughts through their final concept maps as well.

All of them have different views regarding the influence that OER has had on their teaching-learning process.

- Attention of students in our classrooms could be drawn through the teaching learning process.

- Different materials could be created using software such as Power Point presentations.

- Ability to add audio visual tapes through OER

- Exchange and share the knowledge.

Teacher students stated these facts based on the increase in the marks gained for assignments of students.

Future steps

However, a few teachers in the group have meaningful and reliable plans.

One teacher stated that she has a plan to publish a book about OER. "*…I would like to make a book about OER...*" she mentioned.

Another one wants to increase the knowledge of OER among others. She stated that "*…I would like to introduce OER to other teachers…*"

These members have given a large number of OER as evidence.

Everyone accepted that they found OER to be very useful. They also mentioned that they can design and implement awareness raising programmes to introduce OER to other staff members in their own schools and other schools as well. They are alsointerested in creating and add OER in their mother tongue.

These teachers appreciate that this is very good opportunity for them to join as a member of the OER group in the faculty of education in the Open University of Sri Lanka.

Last milepost

As the final event an evaluation workshop was held in the Kandy Regional Centre. During this workshop, the students were given an opportunity to write stories regarding their journey of this OER programme. Eleven students participated in this workshop and they were divided into two groups to write the stories. The participation certificates were also distributed to the participants.

This project is only the first step of introducing a new concept of Open Educational Resources for the teachers to enhance their teaching-learning process. We hope that the participants will gain more knowledge and skills in relation to OER and that theywill be further motivated to integrate them into their teaching-learning process. Finally, we wish all teachers success in this endeavour of creating, sharing and integrating OER into the teaching learning process in order to share them with their future custodians.

Kandy

Inspired

Insights – imitating

Education means changing different concepts and thoughts; ideas are introduced everyday and teachers will receive all of them a little later, as we are standing at grass rootlevel. However,we did not have any idea about OER before we attended the first workshop. Many of our members had never even heard about this term. Our first concept maps provide evidence to it.
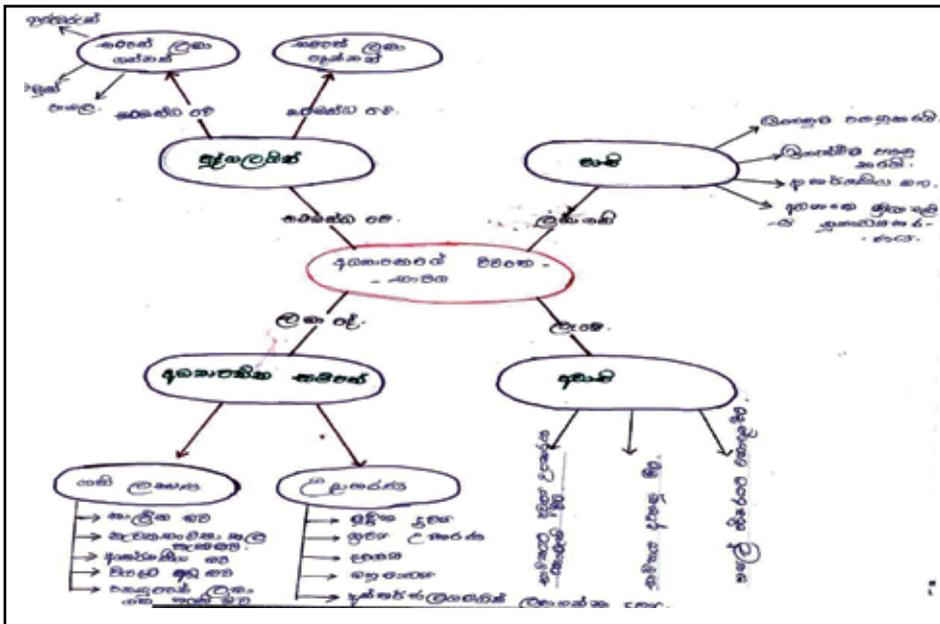
Fig. 7.2.1: Concept Map- Version 1

We were interested in joining this OERprogramme, considering the usefulness of it in our teaching. In addition, the members who had IT knowledge were very much interested to join in. We think it is very useful for our teaching practices as well. This was definitely a new experience for all of us.

We now understand that there are many freely available resources called 'OER' for our teaching-learning process.

First step

Our starting point was the first orientation workshop. After the orientation, all of us started to search for OER. We found many OER on the very first day. We also learnt

about different license systems of OER. Our group members individually searched for OER materials subject wise and this process was very interesting.

Taking up OER – integrating OER

Many of our team members started using and integrating OER in their lesson plans during the teaching practice period for the PGDE programme.
A member of our team had made a set of DVDs as her PGDE project with resources for Computer Teaching for Grade 6 and she had used OER to create those resources.
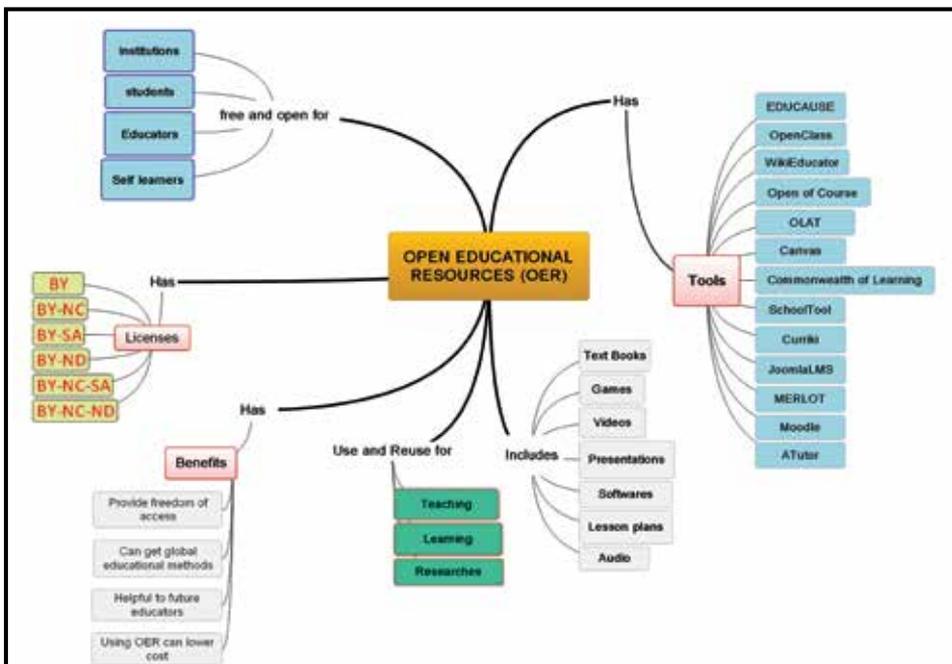
Fig. 7.2.2: Concept Map- Version 2

This DVD set included games, lesson plans, presentations, videos, images, text books and audio lessons too. It had one DVD for each subject. Those subjects are Sinhala , Mathematics, English, Science, Geography , History , Health Science , Dancing , Art , Buddhism , Music and PTS.

Our second concept maps show our increased understandings about OER.

Disappointments

Some members had some problems such as unavailability of internet facilities in their schools, language problems, curriculum differences etc. Sometimes it had taken a long time to log in to our LMS due to poor internet connection. On the other hand, for a few members there was no difficulty in adjusting to the new technology.

Curriculum-related issues were stated by one member; *"some subject matter are deeper and different than the local syllabus…"* Evidence is given in reflective journals.

As an example, one of our participants stated; *"When we searched for educational materials for Grade 7, we found materials suitable Grade 10 or 11 in the local syllabus. So we revised and sometimes remixed OER and integrated it according to our local syllabus..."*

Winning path

OER supported us to prepare quality lesson plans for our lessons in all subjects. Then we were able to incorporate new techniques in our teaching-learning process. Our lesson evaluators (external & internal) and colleagues highly appreciated OER incorporated lessons. It was very easy to get students' attention and it helped to create a better learning environment.

One member commented that her Mathematics lessons were very successful and therefore she was encouraged to raise awareness about OER and how to find OER to other teachers in her school. She further commented that her PGDE project was very successful because of OER integration.

Advantages and best practices

Finding and incorporating OER to our lesson provided many advantages to us, such as;

- Enhanced teaching skills

"Using OER, I improved my skills as a teacher. Earlier I used only traditional methods to write lesson plans. But after I became a member of this project I got new skills to write lesson plans creatively. My master teacher also appreciated my new teaching methods."

- Enhanced language skills

"On the very first day, I only used Sinhala language to find educational resources. Now my English language skills have improved."

- Ability to share our teaching resources and OER knowledge

"I shared my OER knowledge with my school teachers by organizing a workshop. I created more than 30 OER and uploaded to LMS and also found more than 50 lessons related to different subjects."

- Shared new technological knowledge

In a lesson on numbers inGrade 7, a teacher had incorporated an OER game and she has realized that all students had actively participated in the entire lesson.

Impacts on teaching and learning

All our team members agreed that they were able to motivate the students in every lesson when they incorporated OER. While incorporating OER, our teaching skills also improved. We believe that because of our teaching skills, the assignment marks of students also increased.

We also found new teaching methods, and it was a very good advantage for our career. Some of our members stated that incorporating OER means incorporating new technology to our lessons. Sharing OER we created with our peers can also be considered as an impact of this project.

Future plans

The experience gained through this project, helps us to introduce OER to our colleagues and all other teachers. For instance, one member wrote a booklet in Sinhala about OER for teachers and any others who are interested in this concept (Fig. 7.2.3). She has an idea to further develop and publish it in the future.
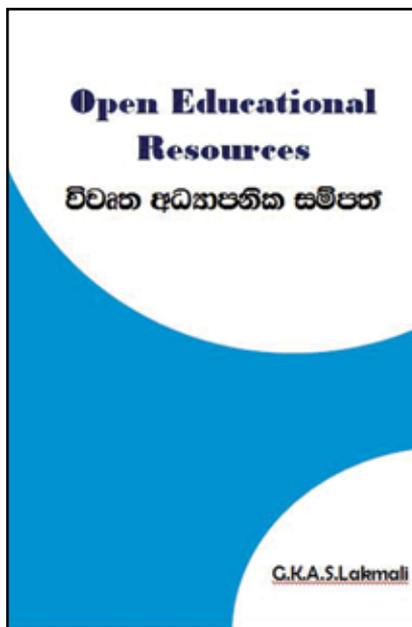
Fig. 7.2.3: A booklet about OER created by a student teacher

Another impact was creating new OER and sharing with our colleagues. Fig: 7.2.4 shows an example of an OER in the developing stage. It is being created for GCE O/L ICT subject. Students are given 10 Multiple Choice questions and they should tick the correct answer. After the answers are given, this software corrects these

answers automatically and give marks. It conatins questions and answers for all the lessons. It has nearly 200 Multiple Choice questions.
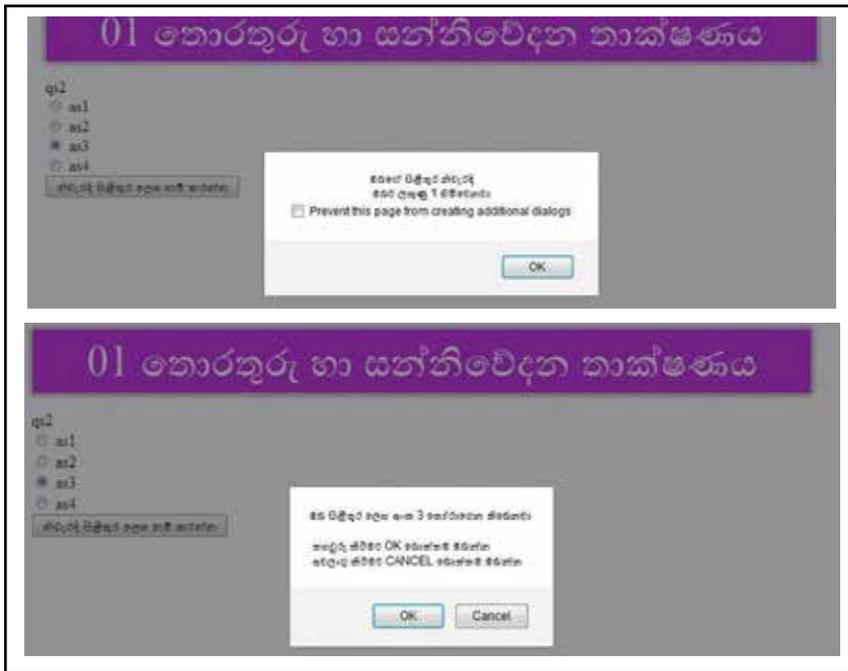
Fig. 7.2.4: A software-OER created by a student teacher

We thank OUSL for introducing this new concept to us.It is very important for our career development. We also request to continue with the support. This is what we really need to develop our teaching-learning process.

Centre:	*Kandy Regional Centre, OUSL*
Team:	*Inspired*
Participants:	*G.K.A.S. Lakmali*
	W.L. Witharana
	A.M.I.S. Kumari
	R.T.T. Rajapaksa
	G.A.S. Gamlath
	U.G.A.S. Kumara
Writer:	*G.K.A.S. Lakmali*
Translators/Editors:	*T.D.T.L. Dhanapala*
	W.M.ShamindaWanasinghe

Kandy
Realistic

7.3

Kandyan sensitivity

Majority of teachers always visit and search the internet to seek new knowledge to share with their students. They read web sources, and at the same time obtain new information relevant to their every day lessons. However, we only realized about OER after participating in the programme conducted by the Faculty of Education of the OUSL. Also we understood that many opportunities can be found through the Internet. We managed to find these opportunities even though we have had the English language problem as well as the difficulty of handling the internet. We also realized that the teaching process could be madeeasier by using these resources; finding detailed information about any topic, creating new resources and sharing them with the others was also possible. We are fortunate to have the opportunity to share our creations internationally through this project.

Unveiling a new pathway

For the first time we got a basic knowledge about OER only after participating in the first workshop which was held on 22.03.2015. What are the educational opportunities of OER, how to recognize them, different types of licenses, and the way to find OER through the internet was explained to us with practical exercises. In addition to this,we were guided on writing reflections in connection with our experiences, frequently and continuously. Therefore our colleagues uploaded their initial reflections. This is one example.

2015/05/16: According to my personal point of view, OER is good for all teachers…

We prepared concept maps showing our initial understanding.

We gained further knowledge on OER by using the LMS especially prepared for this programme.

Fig. 7.3.1: An initial concept map

Moving on and integration of OER into our teaching

All members of our team understood that OER is an important pathway to face the new world, because our lessons could be created using OER, with modifications, and perhaps improvements. The exact ways in which we adapt OER when students compile them will vary with the subjects.

Due to the ability of finding OER for any subject, easily and very quickly, all members accepted that this is very useful. It was possible to adjust OER as we wish, through methods such as reuse, revise, remix etc. The following advantages have been identified by our members about OER.

- Saving our time and work, by mixing OER with our own material to make it richer
- Inserting culture-specific references to make a concept easier to understand by students
- Translating it into another language – ex. Sinhala/Tamil
- Keep the OER material up to date by adding the latest discoveries or theories

- Adapt it for a different audience
- Use the OER as the basis for a face to face lesson
- Use the OER for wider purposes by adding-in other information
- Adapt it for different teaching situations

The teaching-learning process in the classroom could be presented to the students with new approaches and integrating OER. Because of OER, we were able to find new knowledge without being restricted only to activities in the Teacher Guides and text books. We can motivate students by integrating more OER games and puzzles into the lessons. Of course, translating OER into Sinhala and Tamil will make it easy for the teaching-learning process in the classroom.

Hurdles on the way

Some difficulties and barriers arise when using OER even though it is an easy approach. Main difficulty is the lack of internet and computer facilities in our schools and classrooms. In certain areas in our Province, there is still no internet facility. In addition, good knowledge of English counts a lot.

Time management according to the school time table is also another problem that arises when using internet and finding OER. The attitudes of Principals, other teachers were also another problem that we faced. Speed of the internet connection is another problem that was faced by us when we were finding OER.

Here are some hurdles that have to be cleared in order to drive on the correct path.

Some Principals do not want to adapt to the new technology.One colleague stated that *"…I talked with my Principal to introduce OER to our teachers, but he discouraged me and said now it is difficult, continue your work as it is, and see in the future, the possibilities if any…"*

Many teachers do not like to change their traditional teaching methods.

Another reason was that most of the computers and their technology was very old and the speed was very slow, and these are the challenges arising in many schools in our country.

Accomplishments within our track

Instead of the old traditional teaching-learning process, integrating OER by using the new technology it was possible to make the process more interesting and satisfactory. Through this, the children show more interest towards their studies.

This enables students to do their studies by themselves. There is a possibility of organizing the teaching-learning process easily and also it is possible to make this process more satisfactory through time management. Making use of these educational resources toprovideinnovative learning experiences to students was another victory that we got through this project.

Fruitfulness of exercises

Sharing knowledge through the internet and the ability to access OER easily were the main good practices that we gained through this project. In addition, we shared the OER we found with other staff members in our schools. This was also discussed in staff meetings, and also shared with other friends informally. It was very important that we could update our knowledge and it helped us to become more distinguished characters in the school.

Impacts on teaching and learning

Now we are able to maintain a more child-centred teaching-learning approach than before. Multiple Intelligence theory suggests that there is no one set of teaching strategies that will work best for all students all the time. Because of such differences in individual learning styles, teachers are best advised to use a broad range of teaching strategies with their students. There are many OER which suitsthe above theory and therefore will fit with the key features of this child-centred teaching-learning strategy that it is immediately recognized by the students to be relevant and meaningful.

Similarly, we can easily gain children's attention through the use of OER and it also helps to achieve the lesson objectives. Using PowerPoint presentations, games and puzzles, we were able to introduce the lessons in a new and fresh way. The video clips that were found through OER were used as teaching aids. It was possible to improve students' learning capacity by giving them OER related home work.

Potential expectations

We expect to further improve and develop our knowledge that wasgainedthrough this project. Members in our group have an idea to create OER using the mother tongue and then to release it to the internet, and to translate OER in to Sinhala and Tamil in the future.

Another aspect is stated as follows:

"…there is some shortage of OER in Buddhism, especially in Sinhala, and therefore I have an idea to create and share such OER in Sinhala in future…"

We hope to be with this current OER programme at OUSL for a long time and further update our knowledge of OER and to use it for the success of our teaching-learning process.

Centre:	*Kandy Regional Centre, OUSL*
Team:	*Realistic*
Participants:	*Rev. J. Gnanvisuddhi Thero*
	Rasika Varuni Dayarathna
	H.G.P.T. Jayarathna
	H.M.M. Wasanthi Kumari
Writer:	*Rev. J. Gnanvisuddhi Thero*
Translators/Editors:	*T.D.T.L. Dhanapala*
	W.M. Shaminda Wanasinghe

8 Case Study
Kurunegala

The Hop, Stop and Jump

L. Ranjan Gonsalkorale and N.M. Rasika Navaratne

The take off

A group of teachers who were students of the PGDE programme attached to the Kurunegala Regional Centre assembled at the centre on a pre informed date. The purpose of the assembly was to participate in the project of integrating OER in the teaching learning process in school education. The project intended to build their capacities to integrate OER into the teaching- learning process and through them to expand the use of OER in that field. Although we the project team members have requested for volunteers for the project, we did not expect many student teachers to participate as already they were musing about too much work not only from the programme but from their school work as well as their family commitments etc. However, we were pleasantly surprised to see that about 25 of them were present on that initial day which actually surpassed our expectations.

That day, one of the first things we found out was that all the participants were almost blank about the concept of OER let alone their integration. After the introduction was given coupled with a presentation by a co-leader of the project and a showing of a brief video titled 'copying is not theft' we asked them to draw concept maps to illustrate their perceptions and knowledge regarding OER. Those initial perceptions of OER can be illustrated with a sample of the concept maps they drew on that very first day.

As the first workshop progressed the group participated in many activities related to OER. One main activity was the logging to the Moodle course designed especially for the project. Through those activities they gained knowledge of OER and other related concepts and also skills in searching for OER relevant to the subjects they teach. Gradually we noticed the diminishing of their doubts and increasing enthusiasm about what they are learning, by doing. By the end of the day we could observethe satisfaction of most of them in gaining knowledge and skills about the new concepts and their readiness to start integrating OER into their teaching –learning processes.
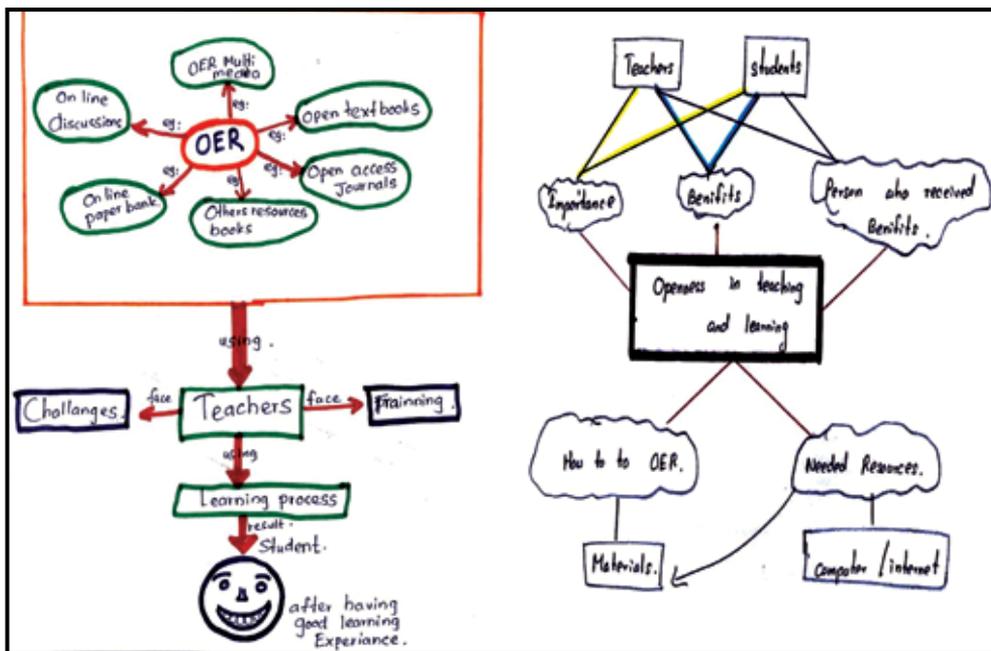
Fig. 8.1.1.: Two examples of the initial concept maps

At the initial workshop one other activity they had to do was to write their reflections about how they comprehended 'OER' and their change of mind sets due to the workshop. Generally almost all of them reflected on their initial misgivings they had about the project. After that they had written about the changes that occurred in them regarding OER. Some examples of such reflections are given below.

"When I came here I was not aware about this term OER but gradually I have updated my knowledge and I am now having much more interest to use this in my lesson planning"

The positive changes that occurred in them by the end of the first workshop was apparent from the reflections written by them at the end of the day. The following are a couple of examples of those reflections.

"Today I have clearly identified how to integrate OER into our teaching- learning process"
"I think this work shop was very successful for us. As a teacher new knowledge and practices are very important to make our teaching learning process innovative".

At a standstill

After the first workshop the participants were supposed to search for suitable OER appropriate for their subjects and integrate them in their lesson plans. In addition, they had to apply reuse, remix and revise options available with the OER according to their license types in integrating them into their lessons. Also they needed to translate resources found in English language to Sinhala language so that they would better suit the students in the Sinhala medium. However to our chagrin what we expected did not happen. The logging in to the Moodle was minimal and completing other activities was also the same. For instance, out of the 28 students, by the end of first quarter only 19 (50.9%) had logged in to the LMS use OER, and by the end of 4th quarter, it has reduced to 4 (14.3%). This very unsatisfactory situation depicted the students' presence in the Moodle platform on which the course Integrating OER into the teaching – learning process was launched on.

Of course, there is no need to say that we were very disappointed about the state of affairs prevailing. We were very doubtful about whether we would be able to continue successfully with the project at the Kurunegala centre. However we put in our maximum effort to ensure at least some active participation for the planned Mid Intervention workshop which was due to be conducted in July 2015.

During that period we used many strategies such as giving them telephone calls, sending text messages and e mails etc reminding and attempting to motivate them to continue their participation. Also in order to further motivate them the project team planned competitions to select best students in each centre and the best centre in integrating OER. Finally the date for the mid intervention workshop dawned and the project team left for Kurunegala with mild expectations that that there would be a sufficient number of participants so that the workshop can be conducted successfully. Alas! There was not a single participant. Actually the OER project which commenced with such promise had come to a 'STOP' or to a standstill. After giving some telephone calls one student turned up. So after the failure of the Mid-Intervention workshop, the project team which was crestfallen started discussing whether to scrap the Kurunegala centre from the project. However the project team continued to contact the students and kept on motivating them.

Jumping back

In January 2016, the final evaluation workshop was conducted and for this workshop we were able to attract four students who although absent for the Mid-Intervention Workshop and whose presence in the Moodle platform was not felt, had been actively engaged in integrating OER in their teaching and learning processes in their schools. Although the participant numbers had drastically decreased, it was

heartening to find that those who were present for that final workshop had been active throughout in the project activities. Those four students had conducted their lessons in their schools integrating OER. During this workshop, the project team had given the participants the opportunity to express and share their ideas and experience with peers in the group. In this session group members explained their views as follows;

Participant 1: *"I got a new experience in my teaching life. Before this I did not have any idea about OER. Through this practical experience I was able to develop my teaching abilities. I acknowledged new ways which can help to develop my subject knowledge"*

Participant 2: *"I integrated OER to my business studies lesson in grade 12, it was a very productive one and students were very happy and I was able to complete the lesson very easily"*

An example of OER integration into a lesson by a participant teacher is indicated in Fig. 8.1.2.
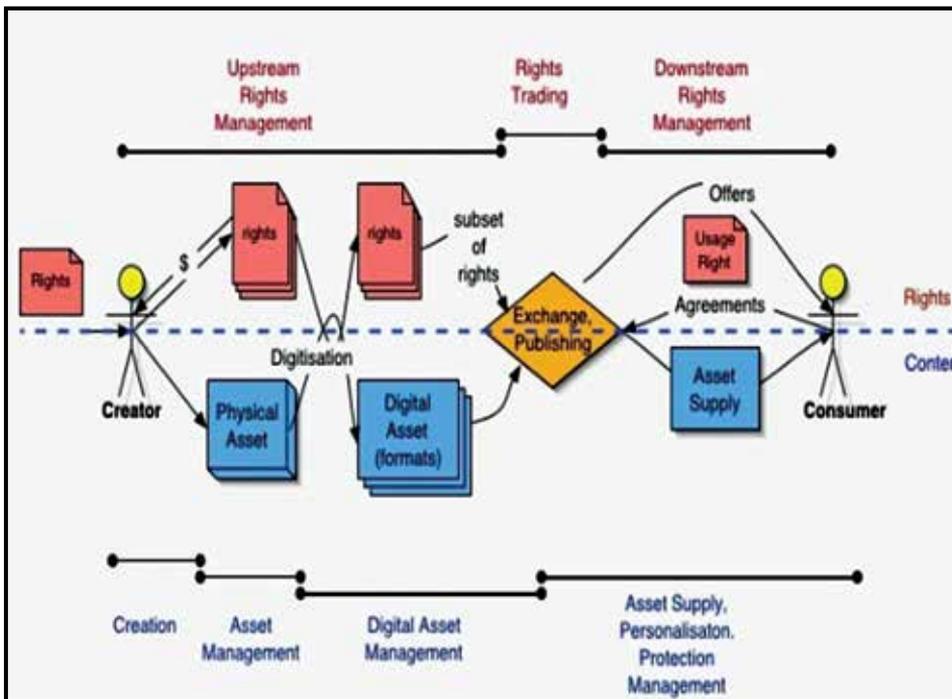
Fig. 8.1.2: An example of integrating OER into a lesson

The concept maps the participants created at the end of the evaluation workshop also demonstrated their enhanced knowledge and their integration of OER into the teaching-learning process. (Fig. 8.1.3)
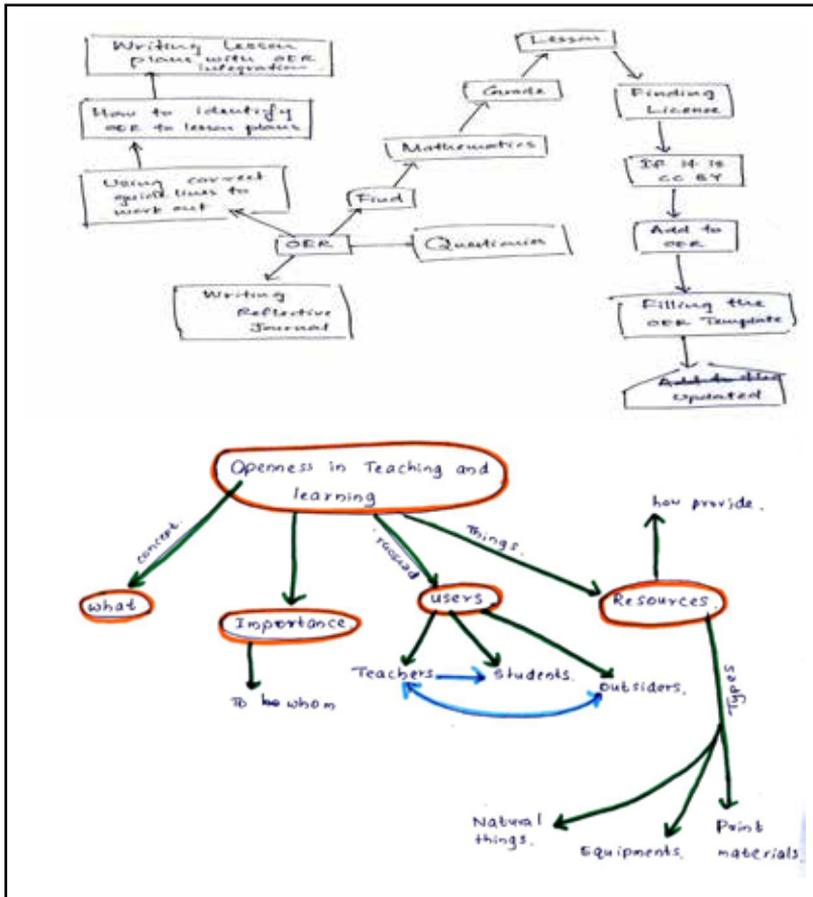
Fig. 8.1.3: Two examples of the final concept maps

Similarly, the final group concept map (Fig. 8.1.4) created at the evaluation work-shop illustrate their enhanced thinking as a group.
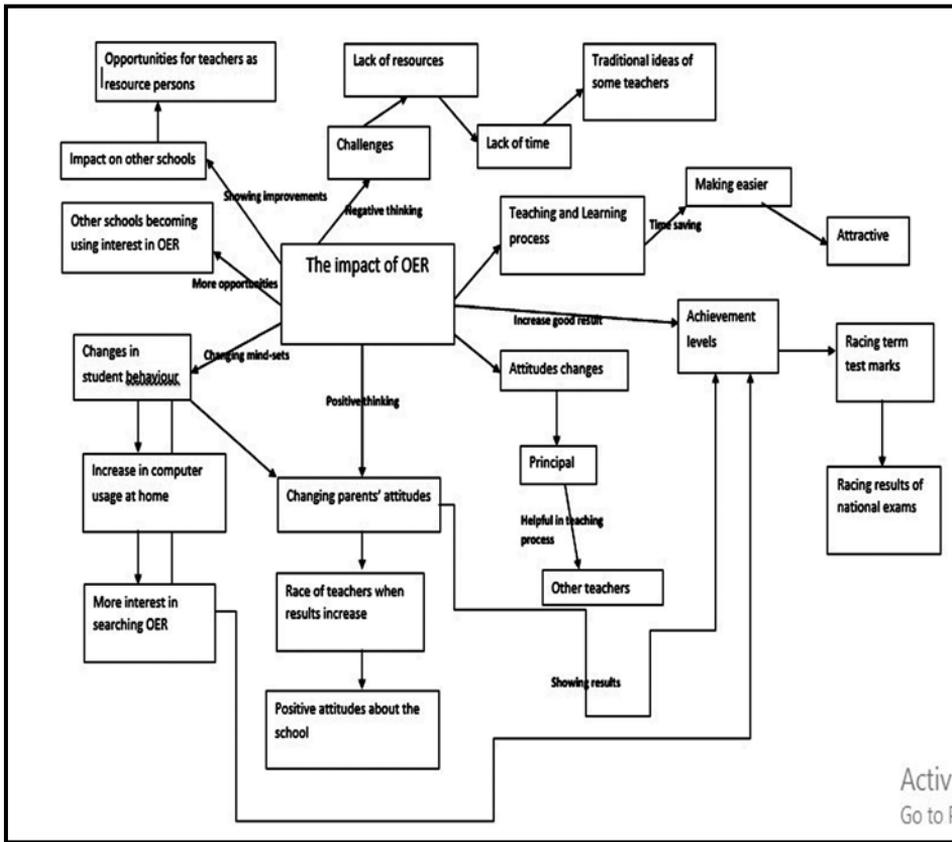
Fig. 8.1.4: The final group concept map

At the evaluation workshop, each group of participants was asked to write their experiences as a story. The groups commenced writing their stories on the same day itself. The stories were to become an important outcome of the project and for them to showcase their development.

Kurunegala

Discoverers

First Impressions

In March 2015 the Open University held an awareness programme and a workshop on OER at the Kurunegala Regional Centre of the University. At that time we had no idea about OER at all. Our limited awareness about OER can be understood from the first concept maps drawn at that first workshop. Two examples of those initial concept maps are presented in Fig. 8.2.1.

Starting point

At the workshop mentioned earlier about 25 of us participated. All of us were eager and curious about this new concept. We had the desire to learn about the concept and also how it would further facilitate the teaching-learning processes. At the start of the workshop itself we were made to understand that OER could be integrated into the teaching learning process. Our participation in the workshop helped us to satisfy our curiosity and solved the doubts and misgivings we had before the workshop about OER. However, still we were feeling anxious due to our understanding that integrating OER into the teaching and learning process requires fluency in English as well as ICT skills.

After the initial briefings about OER we were allowed to search for OER relevant to our subjects. In that exercise, it was rather difficult to find relevant OER at the beginning. We were trying hard to find OER and ultimately we became frustrated. However some of us were quite lucky to find suitable OER for their particular subjects without spending too much time. One such subject in which OER were found rather easily was Mathematics. Anyway, after learning about many more search engines and with some more practice almost all participants managed to find suitable OER related to their individual subjects.

By the end of the first workshop, some of us were quite hooked to the concept of OER and its integration into the teaching-learning process. Therefore even after returning to our homes, those of us with computers and Internet facilities continued to search for appropriate OER for lessons we had to conduct in our classrooms. The training we had obtained at the workshop had provided us with the necessary knowledge and skills in order for us to continue on our own. The practice a few of us received by searching for OER during our leisure time made us more skilled in finding suitable OER which could be integrated to particular lessons we had to teach in our schools without wasting time.

Fig. 8.2.1: Samples of initial concept maps

Adoption

When teaching Mathematics or other subjects to students we used OER such as Mathematical graphs and diagrams to make it easier for students to understand complex subject content. We were also able to make the lessons more interesting to the students by integrating different kinds of OER such as activities, quizzes, videos and animations. Not only that even for assessment we were able to find OER which had diverse assessment techniques and when they were integrated appropriately in the lessons, students were much more motivated to complete assessment components in lessons. Some of the assessment techniques we found were different from the traditional assessment methods and in doing them students had to engage in many practical activities. By engaging in such assessment activities students' understanding and skills related to the subject content gradually increased.

Challenges

The process of integrating OER into the teaching learning process was not devoid of frustrations, setbacks and challenges. When we look back, we can say that some of those challenges made our journey more interesting. The lack of ICT and English knowledge of teachers as well as the lacks of required technological equipments in our schools were two of the major challenges. As we, the teachers, who were involved in the project, are also involved in many co-curricular activities in the schools, the time factor and its management also became a challenge. In addition tightly designed schedules and a lack of flexibility of school authorities further posed challenges in OER integration to the teaching and learning process. These challenges coupled with heavy family commitments resulted in some of those who participated in the initial workshop dropping out of the project halfway through.

Successes

The integration of OER into the lessons taught in the classrooms proved to be a success due to the following reasons. Students engaged in the lessons more actively and more enthusiastically, and the students were able to remember the facts better. Particularly for Mathematics the integration of OER and ICT into the lessons had quite a significant change in student mindsets. Some students who earlier disliked the subject became more interested in learning Mathematics and showed progress in successfully doing assessments. Some parents told us about an improved interest in learning seen in their children, particularly regarding Mathematics, due to the

new methods introduced with the integration of OER and ICT. This indicated positive changes in the teaching-learning process.

On our part as teachers, rather than continuing to teach in the same manner year after year, we were able to brush up our knowledge and skills on using various different techniques of teaching and of using different resources.   This made our lessons more effective and our relationships with our students and their parents also improved. Therefore we had the satisfaction of being teachers who are not innovative but changing with the times and the new technology.

The sharing of our experiences with other teachers who are teaching the same subjects contributed to a general improvement in the teaching-learning process of our schools. It also enhanced the awareness of latest technological developments that could be adapted to the teaching – learning process.

Good practices

Seeing the manner in which we carried out our teaching methods after the OER workshop, other teachers also showed an interest to integrate OER and ICT in their lessons. After sharing our knowledge on OER with them, they were also able to acquire the necessary subject matter from OER. It also proved to be helpful in explaining complex and difficult areas to students in a simple manner.

Impact on learning and teaching

When we taught students using various OER into the lessons, the class became more pleasant and the students were quite attentive as they were quite captivated by the different teaching methods and techniques. OER proved to be quite helpful when teaching Mathematics as they helped to erase the negative attitudes that are generally present in many students towards the subject. It was also effective in explaining complex concepts in a simple manner to students. An OER used for a lesson in Business Studies is shown in Fig. 8.2.2.
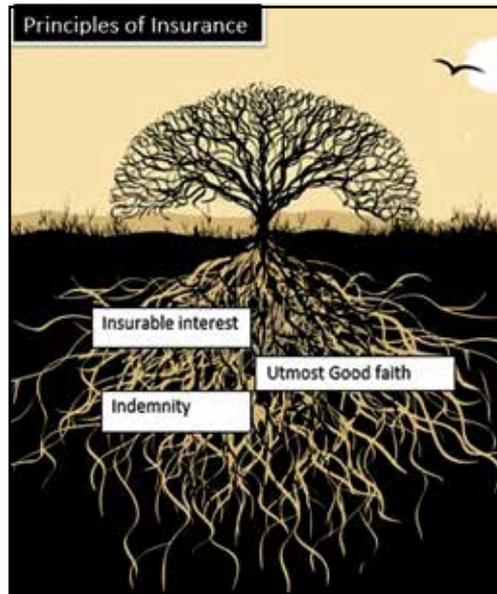
Fig. 8.2.2: OER integration in a lesson

A diagram developed and translated for the subject of Business studies of grade 12 by remixing OER are reproduced in Fig. 8.2.3.
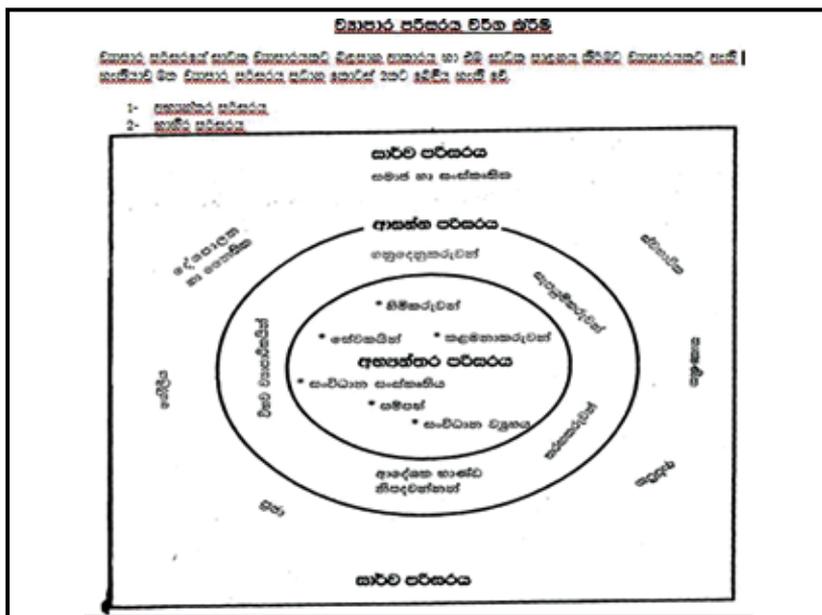
Fig. 8.2.3: A Sample OER Created by a teacher

Future plans

Due to our own studies and extra work we were unable to focus on OER integration at a satisfactory level. In the near future we hope to expand the concept of OER and Open Educational Practices to other teachers of our own schools. Eventually hope to incorporate OER a lot more in our teaching methods in the future. As it also proved to be successful, we are planning to inform our Principal and staff members about this and spread this within all grades in our school.

Centre:	*Kurunegala Regional Centre, OUSL*
Team:	*Discoverers*
Participants:	*S.M.G.U.S. Bandara*
	M.N. Galaboda
Writer:	*S.M.G.U.S. Bandara*
Translators/Editors:	*L. Ranjan Gonsalkorala*
	N.M. Rasika K. Navarathne

Kurunegala

Thinkers

First impressions/ perceptions

We had not heard the term 'Open Educational Resources' before and had no idea about any resources being 'open'. When the PGDE student teacher group at Kurunegala was told about this concept of OER and that a workshop was to be held we became curious. We were curious to know something about this new concept. Because of that curiosity and the desire to learn something new we gave our consent for the workshop.

However we were rather scared also. It was because of the doubts such as 'will this be suitable in our context?', 'would the facilities available in our schools be sufficient for this?' etc. There were other issues such as language and ICT knowledge etc. We had no idea whether our limited knowledge of ICT and English would be adequate to participate in the project of integrating OER and ICT in the teaching – learning process and successfully complete it. However even with those fears and misgivings, our curiosity and the need to learn something new got the better of those doubts and fears, and we decided to participate in the project.

Starting point

The initial workshop conducted at the Open University Kurunegala Centre was the starting point in the journey with OER. It was held in March 2015 and a group of academics from the Education Faculty of the OUSL conducted the workshop. One of the first things we did at the workshop was drawing concept maps on OER. Two of those concept maps are shown in Fig. 8.3.1.

In that workshop the concept of OER was explained clearly by the Professor who led the team. The related information such as copyrights, CC licensing and different types of license were also explained to us. And at the end of the day our doubts and suspicions about this new concept disappeared. We understood the importance of OER and the benefits we can obtain by using them.

We were very happy to learn that we can use OER freely without making any payment and according to the license type we are allowed even to change, add or modify the resource materials as we wish. Although many teachers used to download material for their lessons from the internet we learnt it is not correct to do so as the authors have their copyrights. We never gave any thought to copyrights

until then and we clearly understood that if we use OER instead of other materials from the internet we would not be doing anything wrong.
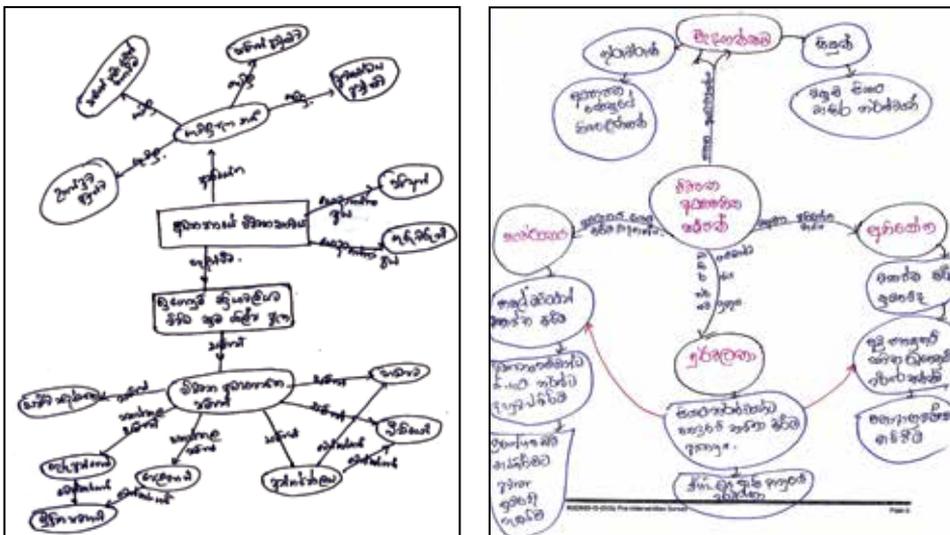
Fig. 8.3.1: Initial Concept maps

Although we had doubts about whether we can learn and understand about OER due to the lack of knowledge of ICT and English we were guided as to how we can overcome those difficulties at the workshop. At the workshop we searched for OER available for our subject Mathematics. Although at first it was difficult we gradually managed to find suitable OER by making use of search engines and software introduced to us.

We also learnt how we can obtain useful subject matter from various resources and that we also can mix them to produce new OER which are more suitable in our context and to our culture. The realization that we are sharing what others have produced and that what we produce can be shared with others made us very happy.

Adoption / integration of OER

Students in a class are of different intelligence levels. Their abilities of recalling are also at different levels. Similarly their span of attention also differs from one another. Therefore especially when a lesson contains rather difficult subject matter a teacher has to make a great effort to achieve the objectives of the lesson. Therefore, even when teaching a lesson which is not difficult, the use of a variety of OER becomes very important.

Similarly when using OER as learning aids for lessons the students have the opportunity to actively participate in the lesson and when new technology is involved students take a great interest in the lessons.

Challenges/ frustrations

During the period of learning about OER and integrating OER into the teaching-learning process we had to face many challenges. Among them the following challenges stand out as major challenges.

In most of our schools, particularly in rural areas, there is a scarcity of computers and other computer accessories. The generally poor environment of class rooms was another challenge which caused frustration among us. The large number of students in secondary classrooms, which was over 40 most of the time, caused problems in the usage of technology.

There were students who were not accustomed to use computers and therefore were scared to use them. Then the students who were comfortable with computers wanted to do activities by themselves individually. This situation also was a challenge, as a group of students did not actively participate in the lesson. The help provided by OER to explain difficult concepts was one achievement.

The sharing of knowledge about OER with other teachers and students was practiced and as a result they also started using OER to collect information for the teaching –learning process. Especially teachers were motivated to use OER in conducting lessons. A seminar conducted with the teachers revealed this (see Fig. 8.3.2)

Fig. 8.3.2: Conduct of an OER workshop for student teachers

The interest to use computers and other technological equipment among students also increased as a result of OER integration.Learning became more pleasant for students and there was a decrease in the negative attitudes of students regarding learning. For example, the lesson on Photosynthesis for grade 6 class became very interesting to students with the use of OER.

Good practices

Some of the good practices are teachers using OER for many lessons, using resources in a legitimate manner and teachers engaging in sharing what useful resources they find among each other.

Impacts on teaching and learning

Teaching has become more effective and a satisfactory experience for teachers while learning has become more attractive to students. And students' attention at lessons has increased. There were changes in the negative attitudes of some students about learning Mathematics and the performance of students has improved.

Future plans

We plan to engage in the following in the future:
- Spreading the practice of using OER to other teachers in the school and to teachers of other schools in the area.
- Preparation of new OER in Sinhala and to share them with other teachers.
- Using the knowledge and experience from the project, motivating teachers to make use of OER in all subjects in the schools.

Centre:	*Kurunegala Regional Centre, OUSL*
Team:	*Thinkers*
Participants:	*H. P. Sanath Priyashantha*
	H. D. Niroshini Hewawasam
Writer:	*H. P. Sanath Priyashantha*
Translators/Editors:	*L. Ranjan Gonsalkorala*
	N.M.Rasika K. Navarathne

9 Case Study

Matara

Pioneering Change

M.N. Chandana Fernando and L. Ranjan Gonsalkorale

9.1

FIRST, the fear of the unknown workload was a mask of suspicion with them. How can we avoid this difficulty- Would it have been their first impression at the time of selecting the student teachers for the project? All what they told us was just a testimony of them being hesitant due to heavy work schedules. Very few volunteered at the very beginning, and others joined later at our request, may be because of their obligation to participate in the project, being Post Graduate students of the Faculty. Going from class to class, it was somewhat difficult to gather the target number of students for the first awareness raising workshop. Having around twenty five students at the orientation was not an indicator of their voluntary participation, but a result of hard work of the team to start the project at the OUSL Matara Regional Center.
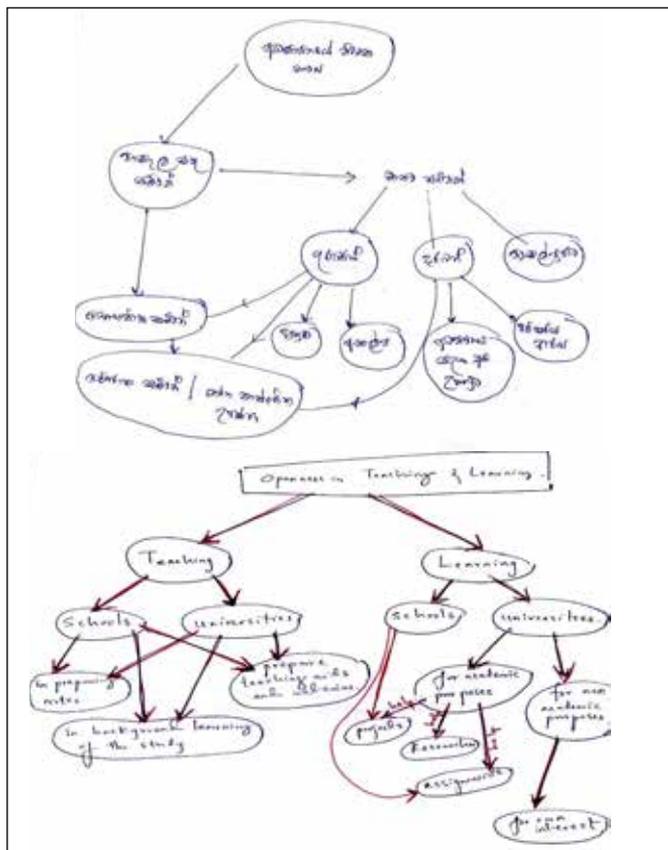
Fig. 9.1.1.a & 9.1.1.b: Samples of first versions of Concept Maps

The marks of exclamation visible on their faces signaled what we were talking about was totally new to them. They were still trapped in the conventional thinking of teaching and learning. The first concept maps drawn by them (Fig. 9.1.1) indicated their initial thinking on "Openness" in education.

This group of 'passive listeners' was gradually exposed to a new world of thinking where the innovativeness may have been caught in their minds. However, the short video titled "Copying is not theft" converted the context upside down, and was the trigger for them to change their mindsets. 'Yes!! There is a way of relief' was shown on their faces. One participant commented on this effect as;

I have already used teaching materials which are available on the internet without checking the license agreement. But today I got a real idea about the license agreement of the resources.

And, further;

Today's session is really a new experience in my teaching career. The meanings on copyright issues, openness in education are really good concepts which I haven't come across earlier.

By tea time of the Orientation Session, we were able to make them ready to join our planned journey.

NEXT, all relevant concepts with the widths and breadths of limits were gradually introduced by opening them to the repositories of Open Educational Resources (OER), where they understood that the treasure of resources had to be dug out. What was implied through all their gestures was, '*Wow, what a surprise, a giant ocean of resources is ahead of us. We knew nothing, so far'.* It was the beginning for them to understand the importance of OER and the benefits of their use, sometimes more than even we thought.

They understood that;

  ''Openness is the possibility to have education for anyone at any rate''

as well as,

  ''Anyone can receive education at any time at any age or any level without any bond.''

Further,

  ''Other than being dependent on a teacher, the student can become a self-learner who is searching for the knowledge they need.''

By the end of the day, all the teachers were talking about nothing else, other than the importance and the benefits of using OER. We were fascinated by their apparent readiness to search, use, create and share OER in their lesson planning process of the practical teaching component of their post graduate diploma that they had already started at OUSL. We were very optimistic to see a collection of resource-rich lessons implemented by them, and a collection of resources upload-ed as a result of this intervention, by the end of the project. Our intentions were intensified with their subsequent online reflections.

One participant explained her experience just after the orientation workshop as;
> *"Today was an important day in my teaching profession…I learned about OER for the first time in my life. Before this I have used Google to find information for teaching and learning. Hope OER will help me a lot in my career in the future."*

.
At the same time,
> *''Today I could learn about 4Rs (Reuse, Revise,Remix, Redistribute).I got an idea about OER and I'll use OER for teaching learning process and I want to create OER and share it with others."*

And,
> *"The program conducted about OER is really important. It gave me motivation as well as new knowledge of OER. I have a great belief that I can conduct my teaching learning using OER. It helps me to manage time in my busy schedule. It will also be helpful to design my lesson plans and do my teaching well,providing valuable knowledge to students."*

After a month's time, we understood that our expectations were being diminished, and only a couple of participants had even logged in to the learning platform. We understood that many were not with us in our journey any longer. The next hurdle in front of us was gathering them for the mid- intervention workshop. As the moni-toring evidence signaled, a majority had dropped out due to various challenges and only seven of the participants arrived.

This group of seven was the cream of the group who had the need, interest and desire to work with OER and are, interestingly, the ones who have effectively inte-grated OER into their lessons and experienced the benefits of using OER.

According to one of the participants;
> *After getting an idea about the OER, I always tried to search OER for my lesson plans. I could teach my students in a very attractive way by using OER and I could improve my knowledge and share OER with my students and friends.*

Some examples of the OER they had integrated in their lessons by the time of mid-intervention workshop are as given in Table 9.1.1.

Table 9.1.1 : Some OER found by the participants

Chemistry Grade 12/13
Rutherford Gold foil experiment and other scientist atomic experiment
http://www.schools.utah.gov/CURR/science/OER.aspx

Physical properties of alcohols- Grade 13
http://catalog.flatworldknowledge.com/bookhub/reader/2547?e=gob-ch14_s03#
http://chemwiki.ucdavis.edu/Organic_Chemistry/Phenols/Properties_of_Phenols/Physical_Properties_of_Phenol
Solar System- Grade 7
Text Document www.school.utah.gov/CURR/science/OER/Grade6Rs.aspx

Information and Communication Technology- Grade 10
Computer Input Devices
https://en.wikibooks.org/wiki/A-level_Computing/AQA/Computer_Components,_The_Stored_Program_Concept_and_the_Internet/Hardware_Devices/Input_and_output_devices

Physics - grade 12 (Bio Section)
Velocity / Speed / Relevant Graphs for velocity, speed and time graphs - Text documents.
www.schools.utah.gov/CURR/science/OER/PhysicsRS.aspx

Mathematics- Grade 11
Text type resource for volume
https://mitpress.mit.edu/sites/default/files/titles/free_download/9780262514293_Street_Fighting_Mathematics.pdf

Information Communication Technology- Grade 10
Ports of the computer
https://ist94.wikispaces.com/Ports
http://www.utilizewindows.com/pc-fundamentals/devices/316-parallel-interface
https://en.wikipedia.org/wiki/Serial_port

They found the importance of the mid intervention workshop as;

''The workshop conducted today was very important because it refreshed our thoughts and activities in OER.I had used text and videos in my teaching learning process after the first day. I'd especially like to thank OER because it helped me in modelling, physics model papers and also to get the model papers in various provinces which was a great help to all my students, and it also helped me to plan the lessons.''

They were further motivated from the viewpoint of their own professional develop-ment. It was visible through the second set of concept maps (Fig. 9.1.2) that their ways of thinking about OER had significantly changed over time.
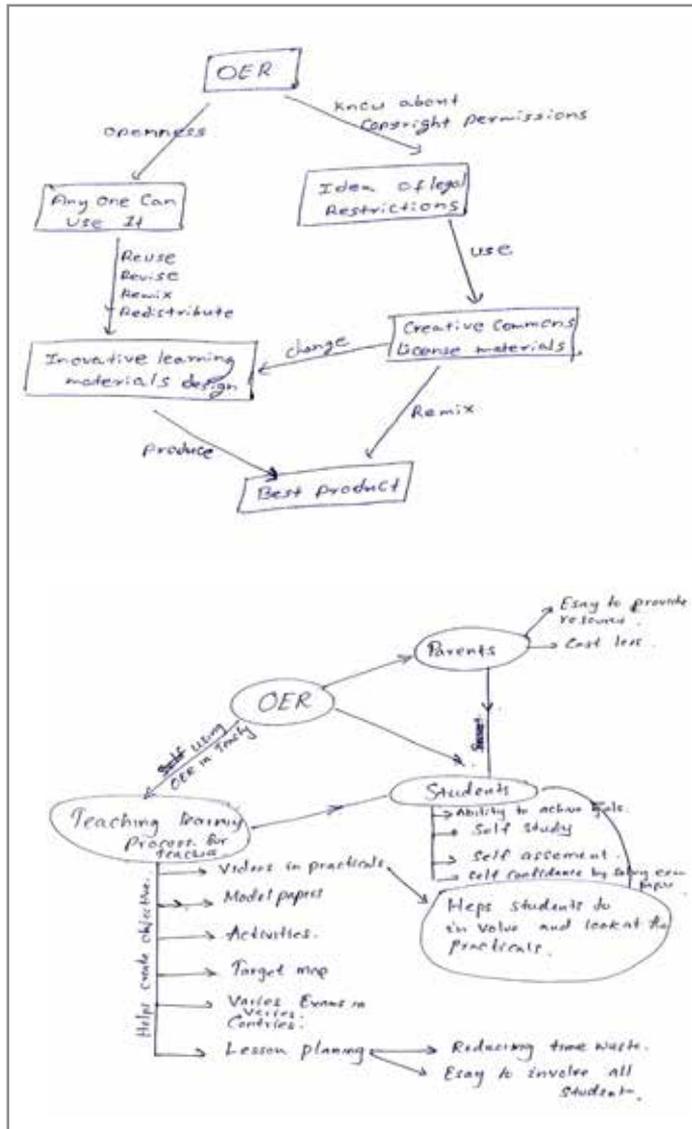
Fig. 9.1.2: Samples of the second versions of Concept Maps

THEN, it was seen that the participants who were actually interested were now grouped together. It was evident that they had the objective of the project, as well as the objective of their involvement in their mind.

Their continuous involvement, though a little mild, was observed from then on, and the use of OER in their teaching learning process was monitored and observed with evidence. They claimed that they had shared whatever resources they have found among themselves, as well as with other teachers who are interested in changing the classroom climate with innovative methods. The final versions of concept maps (Fig. 9.1.3) gave evidence to their enhanced thinking around OER about related concepts.
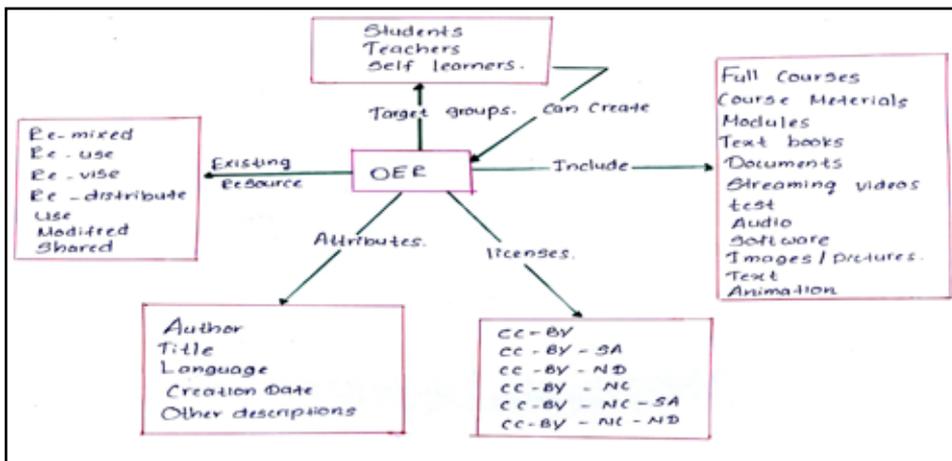
Fig. 9.1.3: Final version of a Concept Map

NOW, their mindsets about OER have been changed considerably. They are very positive about OER and, have thoroughly understood the importance and benefits of using OER. They are continuously valuing the significance of OER for an effective teaching-learning process, and are impatient to see a national implementation. They have the experiences of sharing the use of OER with other teachers at the school level, and claim an apparent request from schools for such an awareness for the other teachers in the system. They already have plans and hopes in their minds about a national implementation and their possible contributions for such an occasion.

Matara

Pathfinders

9.2

Our first perceptions

At the very beginning, we were very curious about the totally new experience we were going to encounter; our enthusiasm was very high to face a novel experience. We were totally unaware about the concept of OER. However, knowing that it was something related to technology, it made us feel that it was worth the effort to experience and see. Further, we got to know that this opportunity was given only to a selected group of PGDE students. We were highly encouraged by being selected for this opportunity, and even though we were slightly hesitant, we had the desire to learn about such a new trend in the modern world.

Starting point

The very attractive video clip titled "Copying is not theft" that was presented to us on 02.04.2015 at the very first workshop held at the Matara Regional Centre, enhanced our enthusiasm at being exposed to this novel concept, OER. It was a wonderful creation which gave a total insight to OER in a very short period of time. Sessions followed by the video presentation gave us a full-fledged readiness to identify and use OER.

Drawing concept maps gave us an opportunity to think about "openness in education". Two of our first concept maps are given in Fig. 9.2.1.

During the workshop, we engaged in various other activities as well, starting with logging in to the Moodle online learning platform. We were supported by the facilitators in various ways. We understood the importance of OER, the 4R concept (Reuse, Revise, Remix and Redistribute), Creative Common license types (CC-BY, CC-BY-SA, CC-BY-ND, CC-BY-NC, and CC-BY-NC-SA), various types of OER and their characteristics, and the effective use of OER. All new concepts were practically experienced by going through existing OER available in various repositories.
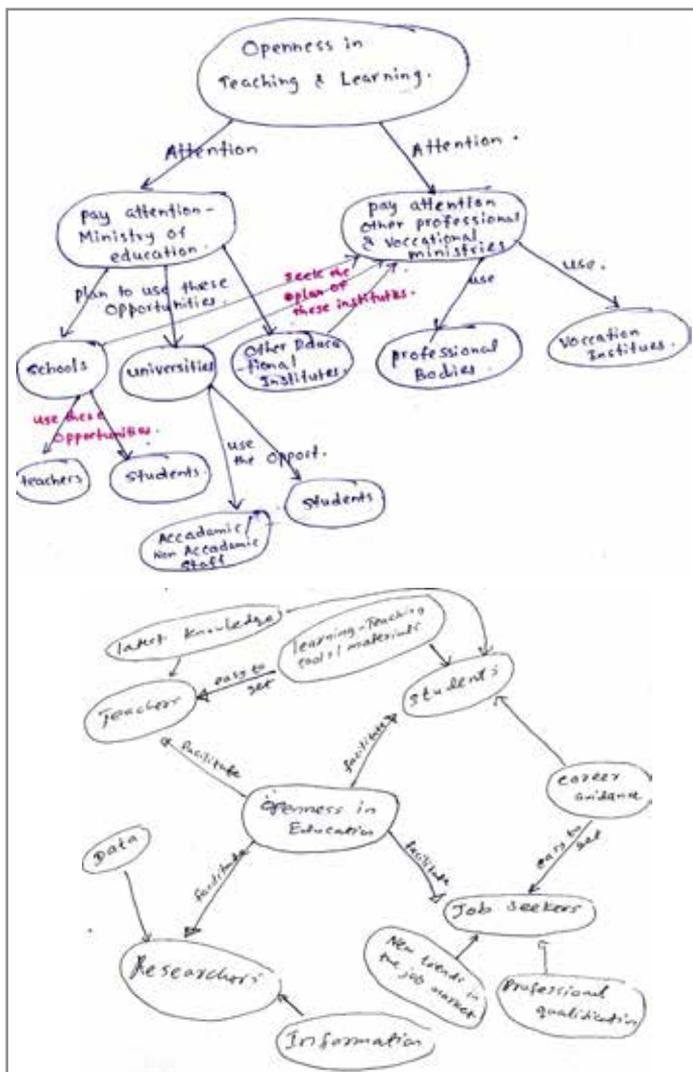
Fig. 9.2.1: Concept maps – Version 1

Adoption/integration of OER

We were self-motivated to look for OER related to the subjects we teach in the school. Our knowledge in ICT and, the ability to search for various types of online publications were improved by this. We were able to enrich all the steps in our lessons- engagement in the lesson, development of the lesson...etc., by using OER and even evaluation was made more meaningful when OER materials were used. Our usual practice of using teaching-learning resources in the hard copy form that was

limited to various types of boards and paper materials was shifted to multimedia materials and online activities.

For example, teaching about the solar system using an OER video clip and experiencing colour changes in chemical reactions using acid-based indicators were very enjoyable lessons and easy for the students to understand. (Fig. 9.2.2)
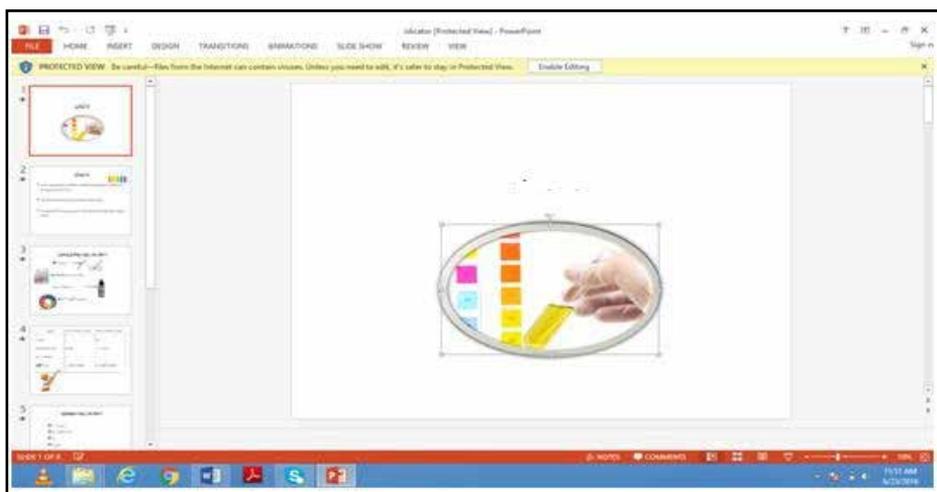
Fig. 9.2.2: Using OER for lessons

OER were very useful for students to visualize the concepts related to various situations such as things that cannot be reached practically and things that are not commonly available. Some such examples are; the three dimensional view of chromosome, various species in the deep sea, types of minerals available in various parts on the earth.

Further, OER helped us to plan and implement very attractive lessons. Here the teachers, as well as students, were encouraged to look for new knowledge. This created an opportunity for us to share subject related resources such as activities, assessments, video clips etc.

Our thinking enhanced in relation to the OER concept, as indicated by the second versions of our concept maps (Fig. 9.2.3)
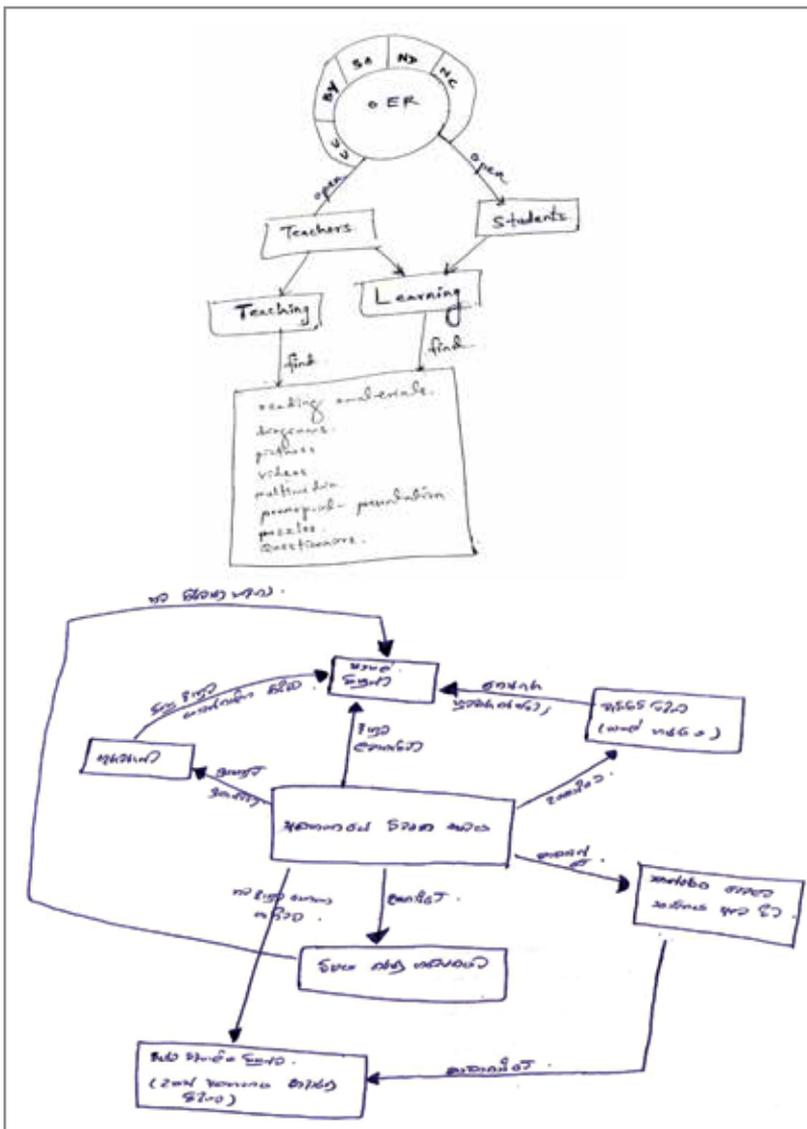
Fig. 9.2.3: Concept maps - Version 2

Challenges and frustrations

Language difficulties, both English and technical words in various software and lack of resources such as hardware and relevant software were the major limitations faced by us. As a solution to the language issue, Google translation could be used. Also, at the beginning it was difficult to locate suitable OER related to the subject content in some lessons.

Time became a major constraint as a result of the provincial/zonal requirements as well as examination-oriented teaching-learning system in schools. Due to the pressure from provincial/zonal departments, teachers are under stress to cover the content of the syllabus and therefore they practise conventional teaching-learning methodologies. Hence teachers face a lot of difficulties to implement these novel strategies in classrooms.

Other teachers in the school system are not aware of OER and their use. This can be rectified through implementing various projects in schools. Still, the majority of teacher and students are not familiar with the internet facility and its use. The importance of the support of resource persons is immeasurable in this regard. Lack of proper support and guidance from school administration was one of the hurdles which always isolated us in implementing this task.

Achievements and successes

Students' attention towards lessons and their motivation to be engaged in related activities increased when different OER were used. Their sole engagement in the discussions of live phenomenon such as predator-prey interactions in the life-cycle, complex models of blood circulation, served as testimonies to that.

Wasting time in libraries for mere fact finding was remarkably reduced because of the free good quality resources easily available online. With OER, we were able to present concepts very easily and in a very short period of time during the implementation of lessons, without which, a huge effort and a long period of time would have been required. Teaching natural phenomena that happen during natural disasters such as Tsunami, and earth slips, modern hydroponic cultivations and greenhouse effect took only a few minutes to explain with the use of OER, whereas otherwise it would have taken hours to explain such content. It was seen that teachers who were teaching technology-related subjects were more motivated to use OER, when compared with the others.

Students were also self-motivated to share what they have found with others. They even attempted to develop and upload whatever they had found-videos, audio and information-to the internet. Whenever possible we translated some OER into Sinhala, and those were shared with others in addition to the OER created by us in Sinhala language.

This exercise further paved the way to manipulate students' interests in modern technology and their talents in mining whatever they need in the web for an effective and fruitful task. We, with our students, attempted to always check for the

originality and the accuracy of the resources, and in consequence, this benefited us in our personal lives as well.

Good practices

Use of OER is a very good way to share our knowledge with others. Instead of wasting our time and energy to create learning-teaching resources for each and every lesson, now we can share and even adapt others' resources. A variety of resources can be used at various steps in lessons, and in this way the lessons can be diversified.

In general, with OER we were able to use resources created by others, without breaking copyright laws. We were also encouraged to create our own collection of resources while contributing to a sharing society. In such a society, all are encouraged to be a partner who is specifically checking for the accuracy and validity of the available resources.

Impacts on teaching and learning

With innovations in mind, we were able to create very fruitful lesson plans. In those lessons, even the learners got the opportunity to explore OER learning materials. All steps in a lesson were enriched and implemented with ease, success and in an attractive manner. This use of technology, as a result of using OER in electronic mode, facilitated to present lessons in an attractive manner in a considerably short period of time.

We were able to adopt the project method, in lessons where learners needed to explore whatever the subject matter they were in need of. As both teachers and learners are exploring knowledge, subject knowledge can be updated and shared.

Future plans

We are waiting to contribute to expand this innovation throughout the entire school system with the support of the Faculty of Education of the Open University, so that training workshops can be organized at Zonal and school levels. This can be incorporated as an essential component in the in-service teacher training programmes organized by the Zonal Education Offices to update teachers in their annual work plans. Support of Subject Directors and In-service Advisors can be taken for this endeavour. Teachers need to be encouraged to create OER and school level competitions can be organized to select the best OER. Even recommendations can be introduced to maintain the quality of those attempts.

Teachers can be encouraged to use OER in their planning of lessons. Under the guidance of the school principal, this concept can be shared with the other teachers, and show them the benefits of using OER in their teaching learning process. It can be shown, not only for learners, but even for the teachers who are in need of doing various projects, that the use of OER would be highly economical.

Use of OER can be made a learning habit of students if the concept is incorporated in to the school curriculum, especially for IT. Further, the project method can be adopted as a major teaching-learning methodology where students are facilitated for self-learning as well as using OER. Students also can be encouraged to create OER and school level competitions can be organized to select best students' OER.

Centre:	*Matara Regional Centre, OUSL*
Team:	*Pathfinders*
Participants:	*K.H.R. Maheshika*
	K.W.K. Ruwanthi
	D.D. Nawarathna
Writer:	*D.D. Nawarathna*
Translators/Editors:	*L. Ranjan Gonsalkorala*
	M.N. Chandana Fernando

Matara

Go-getters

Our first impressions/perceptions

At first, we did not have any idea about open educational resources and we had never even heard the term. As teachers, we used to download whatever relevant material from the web as we thought those were freely and easily available. Therefore, when we came to know about OER, we wondered what OER was for. However, we had a curiosity to find out more about it and also to discover its importance.

The requirement to draw initial concept maps on our thinking about "Openness in Education" during the orientation session motivated us to think further on this concept (Fig. 9.3.1).
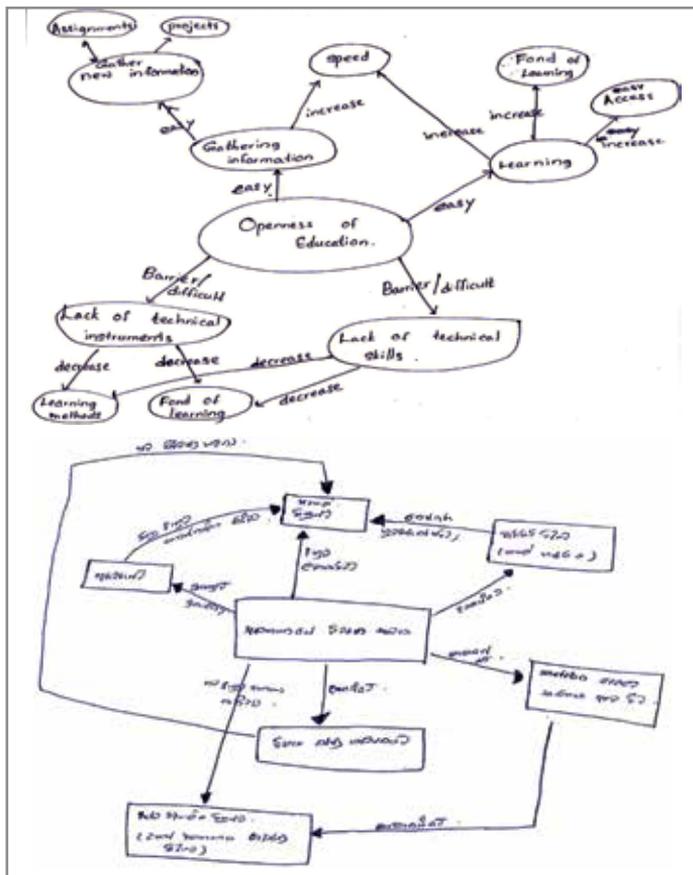
Figure 9.3.1: Our initial concept maps

Starting point

We first came to know about OER by participating in the initial workshop on OER conducted at the Matara Regional centre on 02nd April 2015 by a team of academics from the Faculty of Education of the Open University. In the workshop we had the opportunity to view a short video titled 'Copying is not theft'.   It was an entertaining video with cartoon-like characters but it gave a broad idea which we understood gradually.   The video explained the sharing concept of OER very attractively, which would have otherwise involved a lengthy explanation. The video also explained the other concepts in OER such as Remix, Reuse, Revise and Redistribute.

After that, the workshop sessions conducted by the OUSL staff enabled us to get a clear idea about the OER concept through hands-on experiences. Also we realized as a result of learning about OER, that our habit of downloading and using materials from the Internet without acknowledgement is a wrong practice.   This led us to find and use resources without violating copyrights of others.

Adoption/integration of OER

After learning about the concept of OER, we realized that these can be used for the improvement of the quality and attraction of the teaching –learning process. We started searching for good quality OER available on the web with the expectation that we would be able to create our own resources in the form of images, texts, and animations etc in the future. We integrated the OER found in our teaching materials.

We also downloaded videos, images and other OER from the Internet and translated them to Sinhala and sometimes combined OER with our creations to make new OER and used them for the teaching – learning process (Fig. 9.3.2).
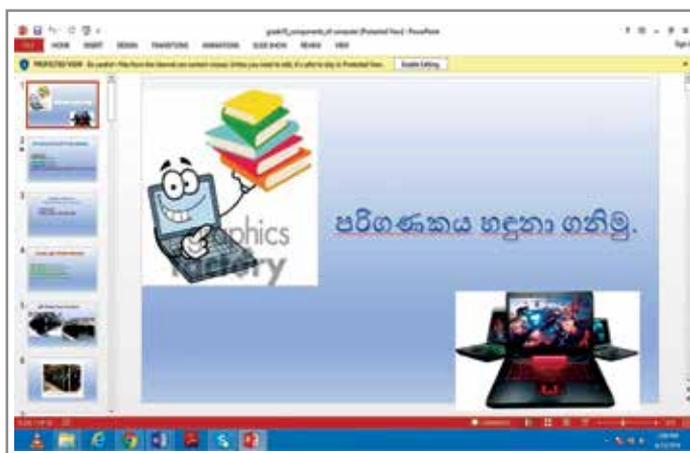
Fig.9.3.2: Creating OER in Sinhala

When we prepared lesson plans, we included OER learning materials in our lessons. We integrated different OER at various points of the lesson such as at the engagement, exploration, elaboration, evaluation and assessment. Often, by integrating OER such as images and video clips at the engagement stage it was possible to draw the attention of students for the lessons.

Similarly, the use of OER such as pictures and video clips made it very easy for us to explain difficult subject matter. Furthermore, on such occasions we could do more work in a short time as time was saved. OER enabled us to further develop our knowledge as teachers and also provided opportunities for us to get involved in self-studies.

Challenges/frustrations

A challenge faced by us particularly during the initial stages was to find the most suitable learning resources for relevant subjects and topics, specifically for a given lesson. Another problem was that even though very relevant OER were found, sometimes they were found to be unsuitable in our cultural context. Due to that issue such OER could not be used for lessons.

A lot of time was spent on searching for the most appropriate resources. Another challenge was the unavailability of OER in local languages as most of them are in English. Some other challenges with regard to the use of OER are the lack of technological equipment to browse the Internet, lack of ICT knowledge, inability to access Internet whenever needed, unavailability of an adequate bandwidth to download OER etc.

How to overcome the challenges

On occasions when it is difficult to find the exactly relevant OER for a lesson, we could find a somewhat suitable OER and according to the CC license type, and if it is possible, to modify it and make it appropriate for the lesson. The other option is to find the required information and create an OER of our own for the lesson. When it is difficult to browse the web to find OER due to a lack of knowledge and skills, we need to obtain assistance from those who are more skilled in the use of ICT.

OER in English language can be translated to Sinhala using Google translator, and it may provide a solution to some extent to the language problem. If we create new OER in Sinhala, then they can be shared with other teachers and it will increase the number of OER available in the Sinhala language. When there is a lack of equipment to connect with the Internet, teachers can obtain these facilities from state agencies such as 'Nenasala' which provide such facilities free of charge.

Achievements/successes

By using OER for the teaching-learning process, we can develop knowledge and skills of applying new technology. Furthermore, by using high quality resources, we will have increased self-confidence and self-satisfaction in teaching. Another achievement is the deviation from the traditional teaching-learning methods to a new form of educational process. We can also get involved in creating new learning resources and sharing them with other teachers. This in essence has developed and enhanced a sharing culture among us, the teachers.

Further, if students are made aware of OER and different CC license types, they themselves will be able to select good and useful learning resources. This in turn facilitates the development of their self-learning abilities and has the potential to transform them to life-long learning. The use of OER in the form of images, video clips etc in a lesson enable the students to understand the subject matter in a short period of time without much effort. The lesson also becomes interesting to them and captures their attention.

Good practices

One good practice is sharing OER materials prepared or used for a class for a particular subject with teachers of other parallel classes in the same grade. When reusing OER there is always the opportunities to further develop them. That is also a good practice.

Similarly, creating a new OER which is more appropriate for a particular lesson and richer in quality by combining material obtained from several available OER can be mentioned as another good practice we were involved in. An example for this is the preparation of a presentation for the lesson 'application of ICT in the field of Health' in ICT for Grade 10, by collecting and putting together pictures and details of CAT, MRI scanner, ECG, EEG, heart diseases, blood sugar testing machines and blood pressure testing machines obtained from OER found in the Internet.

We created our own OER and shared them with other teachers and students. Those were copied to pen drives so that other teachers could use them for their lessons. We also shared those OER with teachers of other schools in the area through email. Another good practice is releasing OER specially those in Sinhala language to the Internet so that any other teacher in whatever part of the country can make use of them. Therefore it enables the sharing of created OER with a large number of people. The knowledge that OER material is freely available would motivate teachers to make use of them for every lesson they teach. Building up a sharing culture in this manner is the best practice with no doubt.

Impacts on learning and teaching

Our knowledge as teachers improved as a result of using OER. Therefore we were able to engage in our duties with self-confidence and self-satisfaction. Due to the use of OER, it was possible to organize lessons in an attractive manner to students and to retain their attention. The use of OER makes it possible to bring new technology to the classroom and to utilize the students' interest in new technology to the teaching –learning process. As OER makes teaching of the difficult subject areas much easier through the use of pictures, and videos, classroom time can be saved and as a result more work can be done in the classroom.

Through the integration of OER, as teachers, we have got the opportunity to "think out of the box" and release ourselves from the traditional teachers' role. The creations of our own OER, enhances our thinking capabilities and contribute to the development of our personalities as well. Finally we can become teachers who are more suitable for the 21st century.

Future plans

We hope to introduce this concept of OER to many other teachers as possible and encourage and enable them to use OER in their teaching- learning process. The concept of OER would be further introduced not only to teachers but to students as well. As students are more comfortable with ICT, they, especially those in higher grades would be motivated to create OER by themselves.

Another plan is to create as many OER as possible for different subjects and different lessons and upload them to the Internet. Special attention would be given to the creation of OER in Sinhala.   In addition, existing OER, if allowed by the license type, would be modified and changed so that they become more culturally appropriate for our context, with enhanced quality.

A part of the plan is to change the mindsets of teachers who make use of learning resources available in the Internet without any consideration of the copyrights of authors so that they would use OER in a legitimate manner.

The plan to take the message of the concept of OER to as many teachers as possible and to make them active practitioners of OER could be implemented in stages. We would start in our own schools with the support of the Principals and then it could be expanded to the other schools in the education division. For this, support from the In Service Advisors (ISAs) and Directors of Divisional Education offices would be obtained. In the next stage, the activities would be further expanded to the Zonal

level of education. Here again, the services of ISAs would be required and in addition the assistance of the Zonal Director of Education would be sought.

Centre:	*Matara Regional Centre, OUSL*
Team:	*Go-getters*
Participants:	*L.G.S.Wijesekara*
	P.H.Sirani
	K.K.R.Dimuthu
Writer	*L.G.S.Wijesekara*
Translators/Editors:	*L. Ranjan Gonsalkorala*
	M.N.C. Fernando

10 Case Study

Ratnapura

Sound of Gems

Sasheeka Karunanayake and Anoma Ariyaratne

The use of OER didn't come easily to student teachers in the Ratnapura centre. "OER" is a new concept introduced to Ratnapura teachers, which was a new concept for almost all. Like searching for Blue Belle by digging deeper, OER is a concept where they dig deeper by questioning the existing practices. This included a series of workshops and individual contacts which provided guidance to improve their professional practices as teachers. The series of workshops has been scheduled to conduct in line with the teaching practice period of the PGDE students. Due to that, the student teachers were motivated in attending this workshop as they wanted to enhance their skills in practicing teaching in different ways. We feel that we conducted the series of workshops on OER in the best time frame because these workshops focused on integrating OER into teaching and capacity building among teachers.

We were aware that, though many teachers had computer literacy, they were not highly competent in incorporating different resources into the teaching-learning process. Further, almost all of them were aware of basics in lesson planning and teaching-learning process, some of them were lacking in their skill in designing lesson plans and incorporating resources into lesson planning. Due to that we felt it was a challenge to work with them.

The selected group of teachers was a combination of teachers who taught different subjects in their schools. Almost all of them had English knowledge up to some extent. The introductory workshop commenced bilingually which made student teachers more comfortable and confident. After the introduction to OER, the students were asked to write a reflection based on the guidelines provided. They were happy that they were allowed to find free software where they could type in their native language and post their reflections onto an online platform. As the student teachers were able to write in their native language, this helped us to find their reflective ideas in detail with regards to OER.

Participants expressed their views on OER in their reflections which are given below;

20.03.2015 - OER was a new concept to me. It's very creative. Searching for OER supports my lesson planning. Today was the first time. So it's difficult, but I know I can do that. I know how to write creative lesson plans now.

The above reflective entry stands for how Ratnapura teachers laid their stepping stone on OER and how they have identified their status in this regard. Further, one

ICT teacher has stated as follows:

2015.03.20- *I'm glad that I could participate in this research because I find it very useful to my profession. I usually search the internet in search of proper information and lesson materials for my lessons. But I always had difficulties in using them publicly due to the legal framework. And OER solved my problem because today I got to know about the license types and what I can do with them. It helped me in selecting more appropriate course material for my students. Thank you"*

The above reflection shows how this teacher was enthusiastic and motivated in engaging with OER.

At the workshop, the teachers were guided to develop a concept map illustrating their understanding about OER and related concepts. Though the concept, "OER" was new, the teachers were able to illustrate their understanding on "Openness in Education" by developing concept maps. An initial concept map developed by one participant is shown in Fig. 10.1.1.
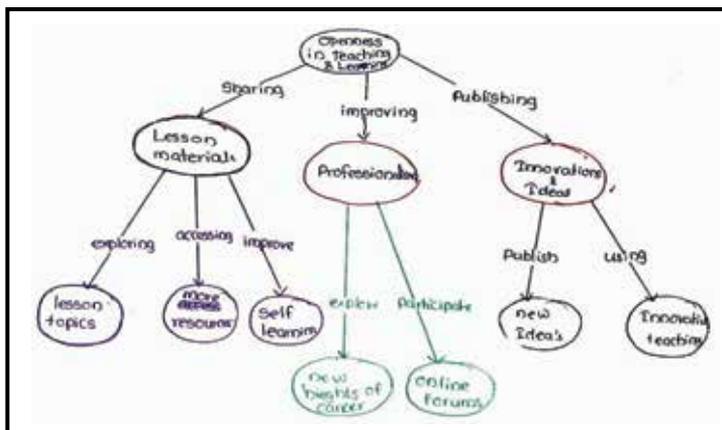
Fig. 10.1.1: An Initial Concept Map

The next task was to introduce a mechanism in searching for OER in different websites and repositories. The teachers who have the chance to use the computers in day to day work quickly identified strategies to search for relevant OER from relevant websites. We noticed that those who were lacking skills in using computers faced a difficulty in searching. For such students, we helped in person by explaining the whole process. It was a hard task in explaining the whole process from scratch. We were tired of explaining the same process over and over again. But it made us happy when they tried and were able to search and find relevant OER after some time.

During the workshop, the students were instructed to develop lesson plans by integrating OER. As it was their Teaching Practice period, the teachers were motivated in searching for OER materials and develop their lesson plans in a creative manner. We noticed that the student teachers were not able to develop the whole lesson plan by integrating OER. But they managed to develop the first three steps in the lesson plan by incorporating OER. As they couldn't complete the whole lesson plan we decided to evaluate the lesson plans developed by the student teachers in the next day school, when we would attend to conduct day schools at the Ratnapura Study Centre. Teachers of Physics and Chemistry were overjoyed as they have found many useful OER materials which could be used in their teaching process.

Further, they have shared the OER found with their colleagues. After a month, at a day school, we monitored the lesson plans developed by the student teachers. Before commencing the day school the participants exchanged the ideas based on their experiences by attending the workshop. The teachers who couldn't attend the workshop wanted to dig deeper about this new concept. They showed their willingness to join the group inquiring whether they can join the workshop by attending in another center. As there was no such possibility, we explained the basics with regard to OER and encouraged them to dig deeper with the help of those who participated in the workshop. It was nice to see that one ICT teacher gave her consent to help those who were interested in searching OER.

When observing lesson plans it was identified that one teacher has followed a new strategy to find new OER. She has created awareness on OER among students and instructed students in identifying relevant OER materials relevant in their learning process. This process had been done in two days consecutively. This strategy has helped students to engage in the learning process with a different learning experience. Further, she has identified that the students were motivated to search for and engage with OER.

A teacher has mentioned her experience as follows: ''*… OER at school was used to describe a complex subject matter in the classroom and it turned out to be a new experience for most of our students in a traditional classroom. Students gave many good comments about the lesson and their twinkling eyes were evidence to the fact that they loved the lesson. One student commented as 'Oh, I wish that I could learn this subject and this subject only'. As teachers, we also found that it eased the workload, increased our professionalism and increased our knowledge. After that lesson many of us shared the news among others there were so many early attendances to our classes later on.''*

Moreover, teachers were instructed to develop OER by themselves in their mother tongue. One of the active participants has created an OER in their native language (Sinhala) to teach on how to work with Microsoft Paint. Her PPT has been uploaded

to the site and a screen capture of her PPT is shown below in fig. 10.1.2. As she has uploaded her creation to the OER site, the resource could be shared with others who teach the same topic in other schools.

Fig. 10.1.2: An OER created by a student teacher

Though some of the teachers were happy to engage in finding and incorporating OER into the teaching-learning process, some found it difficult to find OER relevant to their subject content. This made them frustrated and it was mentioned in their reflective entries as given below;

2015/3/20 - *Actually this course is better for Science and Mathematics. Some materials can be used directly for learning purposes, but some materials we have to edit and use therefore OER concept is more advantageous to Science and Maths teachers…*

The above reflection states that student teachers were able to change what they found and adapted to their teaching process accordingly. On the other hand, some of the Social Science teachers have faced problems related to finding appropriate OER to their subjects. The following reflective entry expresses their difficulty and frustration.

2015/07/14 - *The Science materials can be obtained immediately. When we look at the other subject material for identifying lesson we have to spend most of time for grade 6 ,7,8 due to basic concept can't find easily in OER"…*

While working with the teachers we identified that they got frustrated when they were unable to find OER. When they can't find OER easily they were ready to give-up and complain about the difficulty. Very few of the teachers were motivated in creating OER and sharing with others. We had to take a great effort in convincing and motivating them in this regard.

Due to some of such negative constraints, it was decided to conduct a workshop with the Centre Coordinators and Research Assistants to examine what we could do to help student teachers who are involved with the project. By attending this workshop, we realized that all countries face similar problems such as a lack of motivation, language barriers, lack of computer literacy, etc. In order to help our student teachers, we decided to conduct Mid-Intervention workshops.

Thirteen members were expected to participate in the workshop in Ratnapura Centre. However, out of 13, only 09 participants turned up. A majority of them were teachers who teach the subjects Science, Maths and ICT in their respective schools. We identified that some of them had logged in to the platform in a random manner. Those who had logged in, had used and shared OER which have been uploaded by others. It was further revealed that some of the participants had neglected the activities related to this project, due to various challenges. But we identified that they had the interest and desired to continue with the activities after attending the second workshop. We gave the fullest support for them to recall what happened at the first workshop and continue with the process from where they had stopped. While they continued to work, we noticed that after logging in to the Moodle LMS, they were able to catch-up with the process. In addition, it was also observed that the participants searched for what other teachers in other centers had done and based on that they too started develop their work in a creative manner. We felt that the Mid-Intervention workshop was really useful because it navigated the student teachers back onto the track.

Six months after the introductory workshop was conducted, the Evaluation Workshops were conducted to identify the impact made by the introduction of OER in to the student teachers in line with their teaching practice period. Photograph given in Fig. 10.1.3 shows how the final group engaged with the work.

Fig. 10.1.3: The Evaluation Workshop

At the evaluation workshop the student teachers reflected on their experience with OER integration. When they expressed their views on OER, we realized that they were happy to identify OER as very useful resources because they had faced problems with copyright law when using materials from the internet. They have made many efforts to use resources by not violating copyright law. When they identified OER they were thrilled as it gave them the chance to change the original resource according to their requirements.

Further, we found that the student teachers attached to the Ratnapura study centers have formed a student group as "Self-Learners" based on the OER concept. We feel this is a great impact made on students' learning process, because these activities will definitely enhance their higher order cognitive skills. We were really happy to hear that student teachers were motivated to share not only the resources related to teaching their own subjects but they also searched materials related to other subject in the PGDE programme. But it was sad that they have not uploaded those to the LMS, but have posted the links on Facebook to share among their peers. Further, both teachers and students were connected via Facebook to share the free resources they found. By sharing OER, student teachers have minimized the time they spent on developing new resources and they were able to find quality resources relevant to ICT and Chemistry.

While working with the group we were able to identify the challenges and constraints faced by them when they tried to incorporate OER into the teaching-learning process. It was revealed that some of the student teachers were worried about covering the syllabus while they engage in searching for OER and conducting lessons with integration of them. In addition, some of their colleagues who continue with traditional teaching methods have negatively commented on the OER used. Further, they were frustrated by the inability to find the license in some OER.

In addition, the common problems such as lack of physical resources, facing power cuts, were also mentioned.

Their future plans mentioned by the student teachers during the Evaluation Workshop are as follows:
- Develop a manual on how to search OER
- Create a booklet mentioning OER links to different subject areas, according to the Grades
- Conduct workshops for other teachers in their schools on how to search, incorporate and use OER
- Create awareness among other teachers as a "Pyramid System". This will create awareness among many people with less effort.

It was a great pleasure for us to be team members of such an innovative project. As coordinators and research assistants it was a great challenge to motivate student teachers to remain in the project continually. Though we really wanted to keep in touch with the students all the time, we faced some hiccups in the process due to personal and official activities and time constraints. Though the situation was such, we were fortunate to have several self-motivated students. We were really happy to observe that they were able to engage in the activities provided, with the guidance provided. After the Mid-Intervention workshop, we have to have a close monitoring of the activities done by the students. When we visited the center, we were able to monitor the activities carried out by the student teachers in line with the OER project. Further, we noticed that they were ready to standup confidently in front of their colleagues, and explain their engagement with OER. We realized those who actively participated in the online activities as well as other OER-related activities have truly benefitted and enhanced their teaching-learning process.

Ratnapura
Rubies

First impressions

When we were informed about the OER research project at our PGDE day school, at first, OER was just a word to us. Even though it was an open invitation, only a few were interested. One sunny morning in year 2015 we had gathered at the Ratnapura Regional Center to embark on our journey to explore new heights of professionalism with OER Research project hoping for a change in our teaching-learning process.

At the workshop we were overjoyed to discover a way to have access to quality material with minimum legal limitations of copyrights. At first we thought it was only presentation material and narrowed our search to that type only. The second workshop of OER cleared our doubts and widened our search.

The concept mapping was a new experience to most of us which provided an easy way to summarize our thinking and findings in relation to the OER concepts throughout our activities. This new knowledge made us special among our friends in the PGDE programme. A concept map drawn by a team member illustrating the features of OER, is given in Fig. 10.2.1.
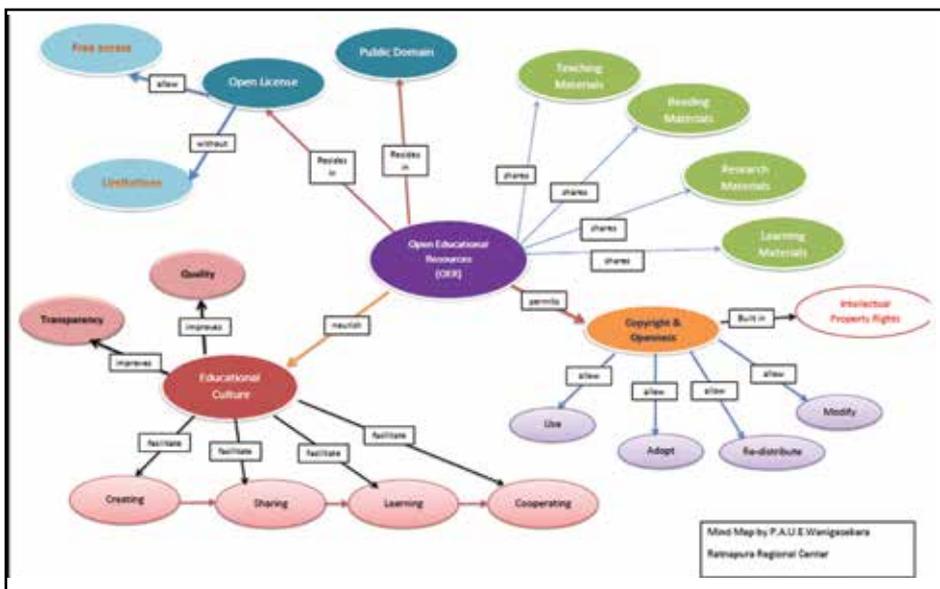

Fig. 10.2.1: Concept map 1

Our starting point

There is no doubt that we had embarked on a new way toward OER at the first introductory workshop. We discovered new ways to reach our goal with the continuous support of our lecturers. Some of us had uploaded our creative work and made them available in the platform to share with the others.

It was clearly visible that many of us tried to find ways relevant to the subjects we are teaching hoping to ease the workload of the career. We continued with our search for OER at home too, despite many personal barriers, to feed our curiosity. After the first workshop a member has written the following reflective journal entry, proving its success.

"2015.03.20 - I'm glad that I could participate in this research project because I find it more useful to my profession. I usually surf the internet in search of proper information and lesson materials for my lessons. But always had difficulties in using them publicly due to legal framework. And OER almost solved my problem because today I got to know about the licenses and what I can do with them. It helped me in selecting more appropriate course material for my students. Thank you"

Using OER in the teaching-learning process is a novel experience for us as well as students. Students gave many good comments about the lesson and their twinkling eyes were evidence to the fact that they loved the lesson. One of the students commented as follows: "Oh I wish that I could learn this subject and this subject only". As teachers we also found that it had eased the workload, increased our professionalism as well as heights of knowledge. After integration of OER in to our teaching process it was revealed that students turned up to the class early.

One of our team members explained how she started a new society called "Future Minds" gathering young innovative students and motivated teachers. She also shared the knowledge of OER and motivated them to be self-learners in interested fields. The results of this initiative were brilliant such as winning the 2nd place in the Young Computer Scientist competition (All-island), with many other provincial level winners as well.

Finally, all of us had used OER to create lesson materials to be used at second stage of our teaching practice which is a compulsory assessment in the PGDE programme. We could face this with confidence because we always knew the results achieved will be the best with the help of OER. The lessons we created for this assessment were based on some quality OER materials we found and those consisted so many new things to learn. Some examples are shown in Fig. 10.2.2.

Fig. 10.2.2: Screen shots of presentations with OER integration

Adaptations / integration of OER

After we learned the usefulness of OER, we used it in many ways.

- Initially it was the best choice to teach complex subject matter because we could explore many ways to teach it with the help of OER in the form of a lesson plan, presentation, video lesson or suitable examples. We also had the benefit of explaining subject matter with minimum effort and reaching the lesson goals easily.

- We could use OER in almost every part of the lesson plan. Many adopted OER in the Engagement stage of the lesson and got a higher student motivation and attention. The OER may be a video related to the subject matter they have previously learned or an animated clip related to the present lesson.

- OER were also highly integrated in elaborating the lesson. Some of us had used it as the main tool for that purpose. Videos, presentations, fact sheets got the highest demands in this. One such instance is describing the structure of SP3

concept in Science to the students which has always been a time consuming and difficult task. With the use of OER we could provide a 3D presentation for students to learn it in a more attractive manner.

- Many of us had shared the facts about OER with our students and also included it in their home work to ensure that they will practice at home: One such instance is teaching Python Programming to Advanced Level ICT students; there we could guide them to learn and practice it just by giving the instructions and materials. It also helped students to discover many things about Python and share them at school increasing their motivation towards self-learning.

- Finding of OER's related to other subjects and sharing them with the teachers who teach that subject. This act had increased our popularity in the school and some of our colleagues had become practitioners of OER.

Challenges / frustrations

The first challenge was the unavailability or the limitations of the internet facility at schools. Many schools had limited internet facilities which are not sufficient even for a single PC, while some other schools did not have any facility at all. So the members of OER team had to use their residential internet facility to proceed further. Few months later a circular had been issued approving the purchase and maintenance of an Internet Dongle for schools, providing a golden opportunity for OER practitioners.

Second one was the language issue. Most of the OER were published in English and to use that in school we always had to translate it into Sinhala. Since all the members did not have the same English literacy level it caused a lot of problems as some material had to be left out.

Third challenge was unsuitability of some material to Sri Lankan school syllabus. Due to this reason we always had to revise and remix the OER's to make it suitable for our class rooms. In the adaptation/ integration process of OER the tasks of translating, revising, remixing as well as surfing in search of material needed more leisure time than the teachers had. This cause often limited adoption of OER to the teaching process.

Fourth barrier came due to legal aspects. Because, in some web sites they have hidden the Creative Common license under Terms and Conditions, and the team members had to do a lot of reading and spend time to discover the Creative Commons license type, which was not practical due to the present workload of teachers.

Even when we managed all the above four issues and prepared material, we always had to face technical issues in the form of electricity breakdowns, equipment failure, un-supportive software formats, downloading issues…etc., and thus we realized that pre-planning of the lesson is a must.

Then came the social issues. Many senior teachers did not respond well with the new concept of OER due to fear to change, and some even harshly commented that it was a waste of time. When this attitude was passed to students and parents most of us had to face questions raised regarding completing the required competency levels within the given time in the current exam-centered learning environment in schools. So much of effort was needed to explain the concept and prove its advantages to them.

Even though we had spread the news about the OER concept among our colleagues in the school, it was clearly seen that only individuals with some technical background like Science, Mathematics, English teachers came forward to try out the concept while people who teach traditional subjects like Sinhala, Art, Music, Life Skills…etc just ignored it. This was one of the major issues in passing the concept to students through teachers.

Good practices

Following are some good practices that we identified:
- The OER concept had given teachers a suitable platform to share knowledge with their community as well as with the world. By this it has also formed the good habit of sharing materials with others which will improve the quality of teaching in the entire school system.
- OER supports to build prototypes of certain topics which will benefit in teaching as well as learning.
- Its helps to improve the quality of teaching – learning process providing the best outcome to the students.
- OER practitioners always tend to search for new ideas which will update their knowledge frequently.
- It has also improved the teacher-teacher; teacher-student and student-student inter- relationships in many ways.
- We could plan good projects for the Annual School Plan which will be beneficial to the whole school system.

Impacts on the teaching-learning process

Initially it was all about creating and using quality updated lesson materials than before. Practitioners could prepare them in lesser time, remix, and redistribute them.

We could use them over and over again with less effort. It also benefitted personally by forming the habit of pre-planning everything.

Then it also improved our professionalism. By pre-planning and with the updated materials and knowledge we could face the students with more confidence. Many teachers received good comments and feedback about their teaching skills from students, supervisors as well as observers. By now most of them always expect the best from us, and this experience helped us to improve our personality as a teacher and a researcher among the community.

At the classroom we could observe an increased interest and motivation towards the lessons we taught. Students were enthusiastic to experience the lesson rather than just sitting, observing and writing notes, because OER made us capable of using many different active teaching-learning methods and techniques in the classroom. We could also maintain the student motivation, attention and increase their participation to a higher level.

Another benefit was that with such OER-integrated lessons, we could reach all types of learners with less effort, increasing the productivity of the learning process. We could expect good ranks in the National level examinations from our students. One of our members was fortunate to have taught students who ranked as island first in 2015 Advanced level examination providing good evidence for this.

Achievements and successes

By practicing using OER we could achieve a lot, such as:
In the class room;
- Reduce the time in creating lesson materials. Because I could manage the time well with presentations and videos and reach every type of learner.
- Always come up with quality updated lesson materials and knowledge. We could create quality materials to some extent but updated knowledge is always needed. By studying OER we could gather new knowledge needed.
- Increased confidence and professionalism as teachers by pre preparation
- Increased student motivation towards learning process
- Increased productivity in teaching because we could deliver our work accurately and efficiently.
- Higher student attention and participation throughout the lessons
- Provide many ways to experience the lessons through simulators, animated interactive lessons

In extracurricular activities/ personally;

- Forming a group of self-learners and inventors who could achieve national level standards such as winning island level and district level places at Young Computer Scientist, Code-feast competitions.
- Improved activities in quality circles
- Increase motivation among colleagues to experiment with OER
- Improving self-learning capabilities as well as skill to create concept maps. The 2nd concept map created by a member is given in Fig. 10.2.3.
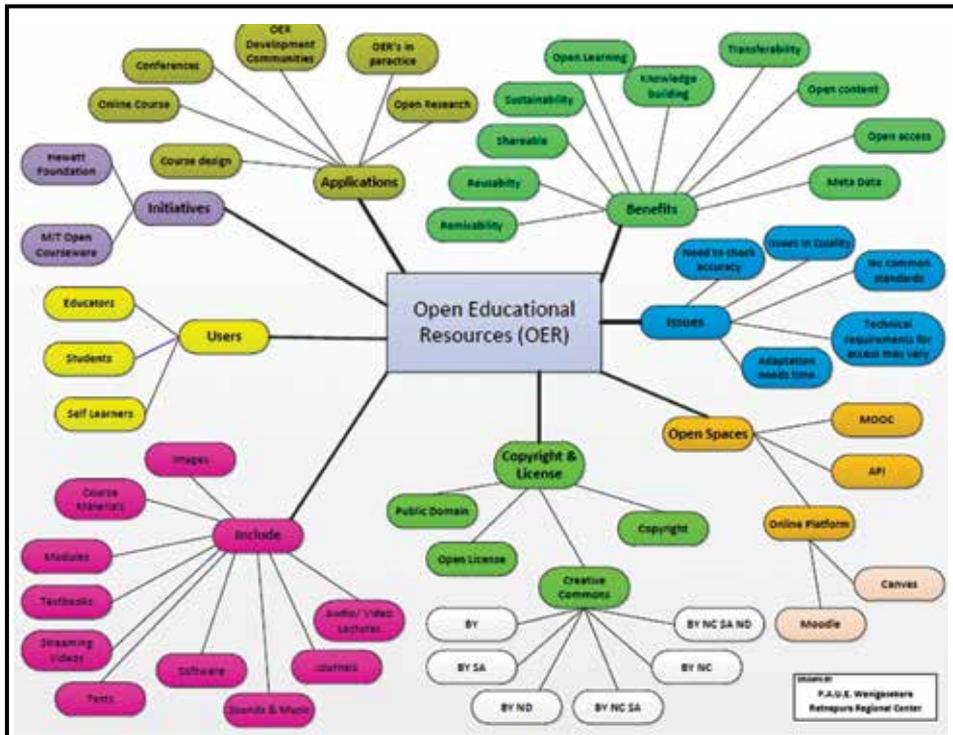
Fig. 10.2.3: Concept map Version 2

- Explore new heights of professionalism
- Improved creativeness on every aspect of life.

Future plans

Since we had earned and learned so much with OER, we always had future planning with it. In person we are planning to continue and broaden our search on OER for quality and updated materials. Furthermore as practitioners there is a hope to share lesson materials we had created in native language on a more accessible platform for all teacher communities.

At school we hope to do our best to get improved facilities which helps to increase the accessibility to OER such as providing a good internet facility. And we will continue promoting OER among the community in future as well because we experienced lots and lots of benefits from it.

Some of our members had planned to conduct workshops about OER to other teachers and students in higher grades in their community to make them beneficiaries of this concept, while some members are planning to share their knowledge in a 'pyramid method'.

Centre:	*Ratnapura*
Team:	*Rubies*
Participants:	*P.A.U.E. Wanigasekara*
	M.G.A.M.Ranasingha
Writer	*P.A.U.E. Wanigasekara*
Translators/Editors:	*Anoma Ariyaratne*
	Sasheeka Karunanayake

Ratnapura
Sapphiers

Our first impressions

As traditional teachers we were aware of different resources on the internet and we used those resources in the teaching-learning process eg: PPTs, e-books, video clips are the common resources we use in our day to day teaching practice. Further, for our academic purposes we used many different web sites and resources as per the prevailing availability and accessibility. Though we were aware of the copyrights, we were not concerned in finding the copyright policy or any other license for these materials.

Prior to our teaching practice period, during a PGDE day school, it was announced and explained about an OER workshop and we were motivated to attend it as it involved finding new learning resources. Before attending the workshop we were not aware of the OER concept. We thought the workshop will help us to enhance the effectiveness of the electronic resources we already used. Further, we thought that OER was a new tool to search for resources for teaching and learning process. Though we were not clear about the concept we felt that this is something new, innovative and helpful for us to enhance our capacity in the teaching-learning process. Due to that we were motivated in attending the OER workshop.

Starting point

It was a good experience to meet our colleagues in a different forum apart from the day schools at OUSL. The workshop began with a lot of interest. As the workshop proceeded we realized that the OER concept was totally new to us. The new concepts on how to identify OER by searching for its license was complicated. But we realized the importance of having open license resources in the modern world. We understood how these licenses have protected us as users. It was interesting to log in to the LMS by receiving a password, and we felt privileged. When we filled in the preliminary questionnaire we realized that we were not very much aware of the resources licensed as OER.

Before leaving the first workshop we entered our experiences in the reflective journal in the LMS. Following is an example of a first entry which showed how much we were excited and motivated.

20.03.2016- *…From morning to now we have been learning a lot about OER from you. First of all, I would like to thank all of you for conducting such a valuable workshop. We have got a lot of understanding about OER. They will be very advantageous for our teaching learning process. We have got knowledge to use them as much as possible in order to uplift our teaching career.*

After the introduction to OER we were asked to draw concept maps to show our understanding on OER. Our basic understanding on OER is represented by the following concept map (Fig. 10.3.1).
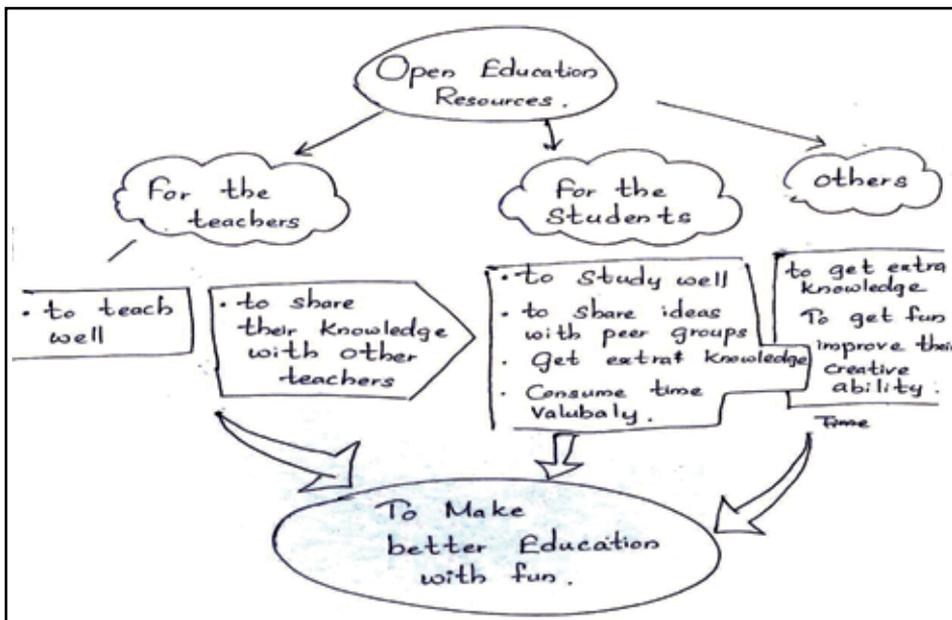
Fig. 10.3.1: Concept map - Version 1

Our self-motivation to use the new technology with new concepts resulted in us searching for more OER relevant to our teaching-learning process when we returned home after the first workshop. A second journal entry given below is an evidence for this.

18.04.2015- *…I navigated the website in search of valuable information to help my teaching. Only now I understand that we have come to the right path of the teaching process. Because these findings are worth that much.*

Further we realized that it is ethical to use resources with proper licenses than downloading whatever resources that are freely available in the internet. It was interesting to incorporate the newly found resources to our teaching process. As

this project took place during our teaching practice period, the designed activities helped us to write notes of lessons by incorporating OER in to the teaching-learning process. This added colour to our activities during teaching practice period. The academics evaluated the lesson plans developed by us by incorporating OER and gave us good feedback. Further, it was interesting and motivating when comments were received from the colleagues with regard to our new approaches with OER. Moreover, we had the opportunity to interact online with other colleagues in finding relevant resources. As some members in other centres too have uploaded some useful materials and web links relevant to our fields we happily found relevant resources to our teaching-learning process.

Challenges and frustrations

Some of our members have faced several challenges in identifying OER relevant to our subject matter. Especially the teachers who taught History and Civics always complained that they failed in finding resources relevant to their subject matter. Further, they faced issues with finding time, though they wished to re-create resources using existing OER.

On the other hand, the language barrier and limited availability of the internet facility and accessibility were also problems. The Social Science teachers faced the problem in finding relevant resources and they were concerned about the accuracy in the subject content and the reliability of the resources found. In some occasions we had to search for hours yet found nothing, and this made us frustrated and de-motivated.

Achievements, successes and good practices

Many teachers, especially the Science teachers were very happy to access OER sites and find resources. They had the opportunity in finding information relevant to many theories with practical examples as they expected.

Further it was identified by the members in our team that those who incorporated OER benefitted when practicing teaching lessons. Their Master teachers and staff have admired their efforts. One team member stated that the use of OER in teaching Graph lessons in Mathematics have helped students by enhancing their understanding and perform better at the tests. Some teachers have introduced the OER concept to their students as well. In addition, the students were benefitted with the OER which were modified by teachers according to lesson topics.

Further some of the members have shared information with their colleagues in searching OER with proper licenses. Searching of OER has led to enhancing the interaction among teachers as well.

Impact on teaching and learning

As teachers it was good to know about the new concept. Based on the concept we were able to identify relevant resources which helped us to enhance the quality of our teaching. We found some resources that could be directly incorporated with the teaching-learning process. This made the process of teaching effective and efficient and with less time consumption. Further, as most of the resources were made targeting the age groups, these resources fitted well with our lessons.

Further some members in our team have found OER resources and have shared with the others. The teacher had led a discussion in the class after they watched an OER video.

Moreover Physics teachers were able to use some OER video clips as it is, as they were based on scientific theorems.

Future plans

We have the following future plans:
- Search for OER (PPTs) relevant for Grades 6-11 and make changes as required
- Search videos relevant to practical tests in Chemistry and Physics.
- Prepare a hand bill or a booklet on available OER web links
- Create awareness among colleagues
- Conduct a workshop for teachers on searching and integrating OER in the teaching-learning process.

Centre:	*Ratnapura*
Team:	*Sapphiers*
Participants:	*K.H.A.M.Madubhashini*
	W.L.Jayaweera
	U.N.I.Priyadarshana
Writer:	*K.H.A.M.Madubhashini*
Translators/Editors:	*Sasheeka Karunanayake*
	Anoma Ariyaratne

Contributors

Contributors :

Commentators:

Samuel Anbahan Ariadurai, *PhD (UMIST), PGDipTech (Moratuwa), BE (Osmania)*, is a Professor in Textile and Apparel Technology at the Open University of Sri Lanka. He is currently the Vice Chancellor of the Open University and has served as the Dean of the Faculty of Engineering Technology and the Head of the Department of Textile and Apparel Technology at the OUSL. He has been serving as an academic at OUSL since 1988. His professional expertise and research interests include Open and Distance Learning, Technical Textiles, Textile Design, Textile Mechanics, and Open Educational Resources.

Chandra Gunawardena, *D.Litt. (OUSL), PhD (La Trobe), MA (Cey.), BA (Cey.),* is Emeritus Professor of Education, The Open University of Sri Lanka. She is the founder Dean of the Faculty of Education, and former Dean of the Faculty of Humanities and Social Sciences at OUSL. She has also served in the University of Colombo and the University of Peradeniya, Sri Lanka. She was the Commonwealth of Learning-UNESCO Chair on Distance Education at OUSL from 2010-2013. She is an Editor of the Sri Lanka Journal of Social Sciences (National Science Foundation) and member of the editorial boards of several local and international journals. Her research interests are gender, higher education, teacher education and distance education.

Research Team Members:

Anoma Ariyaratne, *PhD (New England), MPhil (Colombo), PGDE (Colombo), BSC(Sp) (Peradeniya)*, is a Senior Lecturer in the Department of Secondary and Tertiary Education at the Open University of Sri Lanka. She is the former Head of the Department of Early Childhood and Primary Education at OUSL. She has been serving as an academic at OUSL since 2000. She has 40 years of service in the field of education as a school teacher and a university lecturer. Her professional expertise and research interests include Gifted Education, Educational Psychology, Science Education, and Open and Distance Learning.

T.D.T.L. Dhanapala, *PhD (Lahore), MEd (NIE), Dip. in Sp.Ed. (USA), BSocSc (Sp.Ed.) (Stockholm), BEd (Sp.Ed.) (NIE)* is a senior lecturer in the department of special needs education at the Open University of Sri Lanka. He is the former Head of the Department of Special Needs Education at OUSL and Head of the Special Education section and Principal at the Teachers' College, Maharagama. He has been serving as an academic at OUSL since 2004. His professional expertise and research interests include Inclusive Education, Special Needs Education, parental involvement in children with SEN, visual impairment and teacher education.

M.N. Chandana Fernando, *MA (London), PGDE (Colombo), BSc (Hons.) (OUSL)*, is a lecturer (Probationary) attached to the Department of Secondary and Tertiary Education at the Open University of Sri Lanka, serving since 2010. Formerly, he has served at the National Institute of Education as a curriculum development officer for ten years. His academic and research interests include Primary and Mathematics Education, Assessment and Evaluation in Education and students' learning attitudes.

K. Gnaneratnam, *M.Phil(Eastern), M.Ed (OUSL), PGDE (Colombo), B.Sc(Eastern)* is a lecturer (Probationary) attached to the Department of Secondary and Tertiary Education at the Open University of Sri Lanka, serving since 2010. he has 25 years of service in the field of education as a school Science Graduate teacher. His academic and research interests include Mathematics Education, Measerment and Evaluation in Education , Educational Psychology and Educational Technology .

L. Ranjan Gonsalkorale, *MPhil (OUSL), MA in Dist. Ed, (IGNOU), PGDDE (IGNOU), PGDE (OUSL), BSc (Hons.) (SJP)*, is a Senior Lecturer in the Department of Secondary and Tertiary Education at the Open University of Sri Lanka. He has more than 27 years of working experience in the Open and Distance Learning system. His professional and research interests are in the areas of Open and Distance Learning, Educational Management, Educational Evaluation, and Sexuality Education.

Shironica P. Karunanayaka, *EdD (Wollongong), PGDE (Colombo), BSc(Hons.) (OUSL)*, is Professor in Educational Technology in the Department of Secondary and Tertiary Education at the Open University of Sri Lanka. She is the former Dean of the Faculty of Education and former Head of the Department of Secondary and Tertiary Education at OUSL. She has been serving as an academic at OUSL since 1993. She also has experience as a Science trained teacher at the secondary school system for 10 years. Her professional expertise and research interests include Open and Distance Learning, Educational Technology, Information and Communication Technology in Education, Instructional Design, e-Learning, Open Educational Resources and Open Educational Practices.

Sasheeka Karunanayake, *MEd (Colombo), BEd(Hons.) (Colombo), LLB (OUSL)*, Attorney-at-Law, is a Senior Lecturer attached to the Department of Secondary and Tertiary Education at the Open University of Sri Lanka. She has been serving as an academic at OUSL since 2006. Her research and academic interests include Educational Leadership, Organizational Behavior and Open and Distance Learning.

Sasikala Kugamoorthy, *PhD (Alagappa), MPhil (Jaffna), PGDE (Jaffna), BA(Hons.) (Peradeniya)*, is a Senior Lecturer and is currently serving as the Head of the Department of Secondary and Tertiary Education at the Open University of Sri Lanka. She has 32 years of experience in teaching at the Secondary and Tertiary level education system. She has been serving as an academic at OUSL since 2004. Her professional

expertise and research interests include Educational Psychology, Educational Technology, Teacher Development, Open and Distance Learning, Instructional Design and Open Educational Resources.

Som Naidu, D.Litt *(Honoris Causa) (OUSL), PhD (Concrodia University, Montreal),* Dr. Naidu has spent much of his professional life in the higher education sector, in a variety of roles and in different jurisdictions, to do with enhancing learning and teaching practices, curriculum design and development and online learning and teaching. A distinguishing characteristic of the roles in which he has served throughout his career has been their focus and pivotal location at the confluence of the fields of technology, education and design. Dr. Naidu is the current National President of the Open and Distance Learning Association of Australia (ODLAA), and Executive Editor of its journal *Distance Education*.

N. M. Rasika K. Nawarathne, *MEd (Colombo), BEd(Hons.) (Colombo),* is a Senior Lecturer in the Department of Secondary and Tertiary Education at the Open University of Sri Lanka. She started her career as a teacher and joined the OUSL as a probationary lecturer in 2006. Her research interests are Sociology and Teacher Education.

M. Rajini , *MEd (Jaffna), PGDE (Jaffna), BSc (Hons.) (Jaffna)*, is a lecturer (Probationary) attached to the Department of Secondary and Tertiary Education at the Open University of Sri Lanka, serving since 2012 February. Formerly, she has served as an English Medium Science Teacher in the Secondary level for 7 years. Her academic and research interests include Teacher Education, Educational Psychology and open and distance learning.

M. L. Sudarshana, *MEd (Colombo), BEd(Hons.) (Colombo),* is a Senior Lecturer in the Department of Secondary and Tertiary Education at the Open University of Sri Lanka. He has 7 years of experience as an academic at OUSL. He also has 1 year of work experience as a school teacher, and 1 year experience as a school principal.

W. M. Shaminda Wanasinghe, *PhD (OUSL), MPhil (Peradeniya), PGDE (Peradeniya), Diploma in Teaching (Mahaweli NCOE),* is a Senior Lecturer in the Department of Secondary and Tertiary Education at the Open University of Sri Lanka. He has been serving as an academic at OUSL since 2007. His professional expertise and research interests include Educational Sociology, Teacher Education, Curriculum Theory and Practice, Educational Management, and Educational Research.

W. M. Sunil Weerakoon, *MPhil (Colombo), MEd (Colombo), BEd(Hons.) (Colombo)*, is serving as a Lecturer (Probationary) in the Department of Secondary and Tertiary Education at the Open University of Sri Lanka, since 2012. His academic and research interests are in the areas of Educational Management and Administration and Teacher Education.

Participant Teachers :

Anuradhapura

Rev. N .Indrarathana Thero	- A/Vidyaloka Maha Vidyalaya
W.M Nalika Subashini	- A/Padavi-Parakramapura M.V.
H.G. Mahima Padmachandrani	- A/Kebithigollewa Central College
B.K.I. Dinushani	- A/Kebithigollewa Central College
S.B.Nadeesha Dilani Bandara	- A/Padavi-Parakramapura M.V.
W.G.K.C. Priyadarshani	- A/Mihinthala M.V

Badulla

D.I.N Ranasinghe	- B/ Dharmadutha College- Badulla
A.L.N. Gayani	- B/Viharamahadevi Girls School

Batticaloa

P.Revasuresh	- BT/KK/Vantharumoolai Kannahi M.V.,Chenkalady
N.Satheeskumar	- BT/KK/Korakallimadu S.R.M. V.
N.Chrison	- BT/KK/Kaluwankerney Vivekananda V.
S. Kruschanthy	- BT/PD/Anaikadiyaveli Namahal V.,Mandoor
S. Ahilan	- T/M/ Kiliveddi M.V,Trincomalee
M.M.Mohamed Jazeel	- T/Mu Al Hilal Central College,Muthur
S.Thibakaran	- BT/KK/Chenkalady Central College,Chenkalady
T.Amirthanathan	- Km/Carmal Fatima College,Kalmunai
S.Sutharsan	- KM /KM/R.K.M Boys School, Karaithivu
B.Suhethana	- KM/TK/R.K.M. M.V,AkkaraiPattu
G.Umakanthan	- BT/BT / Methodist Central College,Batticaloa
A.Revasuresh	- BT/KK/Vantharumoolai Vishnu M.V.,Chenkalady
B.Krishnaruban	- BT/BT/Iyankeni Tamil V., Chenkalady
M.Prashanth	- BT/KK Vantharumoolai M.M.V
A.Risliya	- Km/Km/Mohamud Ladies Collage, Kalmunai

S.Parthipachuthan	-	BT/BW/KannanKudha M.V
P.Mirunalini	-	BT/KK Kiran M.V
N.Kajenthini	-	BT/Kannakudah M.V
P.Sarveswaran	-	Km/Carmal Fatima College, Kalmunai
K.Gopi	-	BT/BT/Methodist Central College
S.Thinesh	-	BT/KK/Vamiyadi Vid
M.A.M.Riyas	-	Km.Km/Mohamud Ladies College
S.M.Sathath	-	BT/BC/Palamunai Asraf V.,Palamunai

Colombo

Himaza Hamzadeen	-	Fathima Muslim Ladies' College, Col – 12, Colombo
O.J. Priyangani	-	WP/Ho/Pathahawatta Maha Vidyalaya, Horana, Colombo
Kingston S. Sivapragasam	-	Logos College, Col 6, Colombo
M.D.D.C. Gunewardena	-	St. Clares College, Wellawatte, Col 6, Colombo

Jaffna

J. L. Anne Starina	-	J/St. Charles M.V.
S. Reeka	-	Kn/Poonakary Central College
T. Mahathevan	-	J/Kaithadi Muthukumaraswamy M.V.
A.Illamaran	-	Mu/Mallavi Central College
Rev. E.Edvinathan	-	St.Patrick's College
K.Sathyendran	-	J/Chandrapura Skandavarodaya M.V
Kingston Sumanraj	-	St.Patrick's College
V.Nitharsan	-	Jaffna Central College
S.Thanenthiran	-	KN/Vaddakachchi Central College
K.Thivakaran	-	J/Jaffna Hindu Ladies' College
M.Kamalaventhan	-	Kn/Vempodukeny C.C.T.M.S
C.P.J.M.Nilani	-	Mn/Murunkan M.V
R.Kavitha	-	V/Omanthai Central College

Mr.B.Sajiruban	-	V/Kanagarayankulam M.V.
Mr.G.Dharsan	-	Kn/Poonagary Central College
Mr.K.Tharsan	-	K/Poonakari Central College
Mr.T.Sutharsan	-	J/Chankanai Sivapragasa M.V-Jaffna
Mr.S.Sathiyan	-	Mannar St.Xavier's Boys' College
Mr.K.Nishath	-	Mu/Vallipuram Secondary High School
R.Sujeekaran	-	Mu/Muththuiyankaddu Right Bank M.V.
M.Jeyananthan	-	J/Dr.Thiyakarajha M.M.V, Jaffna
R.Ragubalan	-	Mu/Visuvamadu M.V.
V.Navarathiny	-	Kn/Kilinochchi Maha Vidyalayam, Kilinochchi
S.S.S.D.Dilojana	-	Kn/Kilinochchi M.M.V.
T. Tharani	-	J/Chithambara College

Kandy

Rev. J. Gnanvisuddhi Thero	-	Sri Prakgnasagara Piriwena
Rasika Varuni Dayarathna	-	CP/Wat/Panwila Rajasinghe M.M.V.
H.G.P.T. Jayarathna	-	CP/Wat/ Mahapathana KV , Madullkele
H.M.M. Wasanthi Kumari	-	CP/G/ Rusigama K.V, Pallepola
G.K.A.S. Lakmali	-	CP/Katu Nalanda C.C.
W.L. Witharana	-	CP/Hangu/Diyathilake M.M.V,Hanguranketha
A.M.I.S. Kumari	-	CP/Katu/Nalanda Central College
R.T.T. Rajapaksa	-	CP/TD/Madugalla Maha Vidyalaya
G.A.S. Gamlath	-	CP/Wath/Mahasen M.V, Katugasthota
U.G.A.S. Kumara	-	AM/Maha/Iddapola Vidyalaya

Kurunegala

S.M.G.U.S. Bandara	-	Pu/St. Andrews Central College
M.N. Galaboda	-	Wa/Ma/Keththapahuwa K.Vidyalaya
H. P. Sanath Priyashantha	-	Mahanama M.V., Polpithigama,Kurunegala
H. D. Niroshini Hewawasam	-	Pu/St. Andrews Central College

Matara

K.H.R.Maheshika	-	H/Katuwana National School
K.W.K.Ruwanthi	-	M/R/Kalubovitiyana M.V
D.D.Nawarathna	-	MR/Thalalla South M.V
L.G.S. Wijesekara	-	H/Ranna M.V.
P.H. Sirani	-	MR/Athuraliya M.V.
K.K.R. Dimuthu	-	H/Getamanna Wijaya National School

Ratnapura

P.A.U.E. Wanigasekara	-	Sivali Central College, Ratnapura
M.G.A.M.Ranasingha	-	Ke/Dehe/ Mahabage Girls'.Collage,Kegalle
K.H.A.M.Madubhashini	-	R/Bal Sri Narada Vidyalaya
W.L.Jayaweera	-	R/Ni/ Sri Rathnodaya Maha Vidyalaya
U.N.I.Priyadarshana	-	R/Batuhena M.V.

Language Editor:

Nirmalie Kannangara

Technical Assistants:

Madura Prasadani Perera

Kalindika Karunanayaka

Dreamweaving Open Educational Practices

...dreaming is the first step in building one's capacities. The (this) book...is a novel attempt to re-look at what has been achieved in their attempt to integrate Open Educational Resources (OER) and adopt Open Educational Practices (OEP) by Sri Lankan teachers. I feel enthralled with the titles around which the dreams have been woven too; not only are they novel but suit the localities in which they have been initiated. The authors explain that an attempt was made to develop teachers' competencies to identify, use and create OER innovatively and freely using available teaching-learning materials, and to engage in sharing. The contents of this book represent a realization of the dreams of participating teachers from the Sri Lankan school system. The stories of their journeys that have been captured here are a testament of their thirst for knowledge and the improvement of the lives of their students as well as their own as teachers.

Chandra Gunawardena
Founding Dean/ Faculty of Education, OUSL

Dreamweaving Open Educational Practices narrates the stories from the nine-provinces of Sri Lanka on the experiences of teachers who had attempted to integrate OER and Open Educational Practices (OEP) in their teaching and learning. The editors of this volume have taken nine individual and varied stories of OEP and woven them into this wonderful piece of tapestry that would go a long way in helping teachers in Sri Lanka to learn the experiences of their fellow men and women in the practice of integrating OER and OEP. I am convinced that the experiences shared in this book will help motivate more and more educational practitioners to adopt OER and OEP in their teaching and learning experiences, thus making a greater impact on their students and the world we live in.

Samuel Anbahan Ariadurai
Vice Chancellor, OUSL

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