UNIVERSITÀ DEGLI STUDI DI PARMA

NITHIN LAKSHMANA

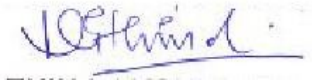
OPEN EDUCATIONAL RESOURCES IN DEVELOPING NATIONS
Lessons from an Open Online Course

Thesis Supervisor: Hans Põldoja

June 2011
International Master in Digital Library Learning
| Institute of Information Studies | Tallinn University |

Declaration

"I certify that all material in this dissertation which is not my own work has been identified and that no material is included for which a degree has previously been conferred upon me."



….....……...….

Nithin Lakshmana

Acknowledgments

I would like to thank my supervisor Hans Põldoja who have been the backbone of this research with his ideas, insights, and valuable comments and my teachers Sirje Virkus and Aira Lepik for their support and help in shaping my research in this exciting field of open educational resources.

I would also like to thank all my DiLL (Digital Library Learning) classmates for all the interesting conversations that I had at various occasions which has been very important to me to understand the world from different perspectives.

I am thankful to Tallinna Ülikooli for being a truly international University. For allowing me to do my internship which enriched my knowledge of multimedia production, learning objects production and evaluation.

I would also like to thank European Commission for Higher Education and Learning for funding the Erasmus Mundus Masters programmes and giving me the opportunity and the exposure to learn new paradigms in information science.

Above all, I am grateful to my wife Katherine Robinson for her love and ceaseless support. My parents for their patience and constant encouragement and their prayers.

Abstract

This thesis starts by introducing Open Educational Resources and ponders searching the decade long history for factors which has made OER a success in some countries and trivial impact in most developing nations. The aim of the thesis is to learn from the success stories of OER movement in the developed nations and to see if that can be replicated in developing nations. The main purpose of this study is to examine the interests, opinions, and thoughts about OER movement and its suitability for elementary education by involving educators from developing nations.

The study's perspective has been to design a short open online course on Wikiversity for educators (primarily targeted towards K-12) from developing nations, which will introduce them to OER movement and record their experience. This online course has followed the action research guidelines and adhered to unobtrusive data collection methods. The participants from different nations were asked to create their own blog/group community blog to submit their comments, assignments, and recommendations to make OER a success in their geographic area. The records collected from the participants were interpreted and analyzed to learn the trends and themes to conclude with recommendations for future OER projects to be implemented in the developing world. The data collected are interpreted in a narrative manner and then evaluated to see if the participants have gained knowledge from the open online course and to recommend for further improvements in OER in developing nations based on the findings from the open online course.

Essential issues in this thesis are to examine the motivation level of K-12 educators from the developing world towards OER adoption, and to provide valuable recommendations to future researchers of OER implementation in the developing world.

The result of the thesis talks about nurturing collaborative spirit among the K-12 stakeholders from the developing world. This collaborative effort could fuel the OER adoption further and help improve the quality of elementary education in the global south.

Key words: Open Educational Resources, action research, developing nations, ICT for development, Open Online Course, Open educational practices.

Table of contents

Chapter 1. Introduction

1.1 Background to Research.....1

1.2 Statement of the Problem.….....2

1.3 Justification of the Research.….....2

1.4 Research Methodology….....3

1.5 Outline of the Study.….....3

1.6 Definitions.….....4

1.7 Limitations of the Study.....5

1.8 Significance.....5

1.9 Summary.....5

Chapter 2. Literature Review

2.1 Promotion and Impact of OER 7

2.2 Challenges of OER.….....10

2.3 Challenges of OER Adoption ….....13

2.4 Towards e-learning 2.0.....14

2.5 OER Projects in Developing World ….....15

2.6 Learning or Collaborative Learning.….....17

2.7 Summary 22

Chapter 3. Research Methodology

3.1 Methodology. 24

3.2 Action Research Method. ….....24

3.3 Advantages of Action Research ….....25

3.4 Identifying Problems ….....25

3.5 Action Planning ….....26

3.6 Implementation ….....27

3.6.1 Data Collection Methodology ….....28

3.6.2 Ethical Consideration ….....29

3.7 Evaluation ….....29

3.7.1 Data Analysis ….....31

3.7.2 Limitations ….....32

3.7.3 Trustworthiness of the Research ….....32

3.8 Reflection.....32

3.9 Summary ….....33
Chapter 4. Research Design
4.1 Design Process (ADDIE Model) ….....35
4.1.1 Analyze.....35
4.1.2 Design ….....41
4.1.3 Develop ….....42
4.1.4 Implement.…..... 44
4.1.5 Evaluate.…..... 45
4.2 Summary..…..... 45
Chapter 5. Data Analysis
5.1 Narrative Analysis…..... 47
5.1.1 Analyzing the Data ….....48
5.1.2 Transcription of Unobtrusive Data ….....48
5.1.3 Identification of Excerpts ….....48
5.1.4 Analysis Procedure ….....49
5.2 Analyzing the Excerpts ….....49
5.2.1 Expectations ….....49
5.2.2 Comprehension ….....53
5.2.3 Exploration ….....58
5.2.4 Application ….....64
5.2.5 Comments ….....70
5.3 Summary ….....75
Chapter 6. Findings & Recommendations
6.1 Research Question 1 ….....77
6.2 Research Question 2 ….....77
6.3 Research Question 3 78
6.4 Policy Recommendations.....78
6.5 Recommendations for Future Research 79
6.6 Implications of the Research 79
6.7 Reflections of the Research 80
References..….....81
Appendix I – List of questions for Participants of Open online course .....….....86
Appendix II - Global Literacy Rate charts from UNESCO 88
Appendix III -Wikiversity Open Online course screen shots 90

List of Figures

Figure 2.1 Openness in OER …..…..... 8
Figure 3.1 Model of Action Research Method ….....25

List of Tables

Table 3.1 Important Dates of the Open online course ….....30
Table 4.1 Course Modules ….....40
Table 4.2 Assignment Questions (Sample) ….....42
Table 4.3 Open online course Objectives 43
Table 4.4 Audience Descriptions ….....43

List of Abbreviations

ADDIE Model – Analysis Design Develop Implement Evaluate Model

BLOSSOMS – Blended Learning Open Source Science and Math Studies

CC – Creative Commons

CERI – Center for Educational Research and Innovation

CORE – Chinese Open Resources for Education

FHSST – Free High School Science Texts

HBCSE – Homi Bhabha Center for Science Education

I-CONSENT – Indian Consortium for Educational Transformation

ICT – Information Communications and Technology

ISD – Instructional System Design

ISKME – Institute for the Study of Knowledge Management in Education

K-12 - Kindergarten to Twelfth grade

K-7- Kindergarten to seventh Grade

LeMill – Learning Mill

LO – Learning Object

MIT – Massachusetts Institute of Technology

MIT LINC - Massachusetts Institute of Technology Learning International Networks Consortium

MKCL – Maharashtra Knowledge Corporation Limited

NGO – Non Governmental Organization

OCW – Open Course Ware

OECD – Organization for Economic and Co-operation and Development

OEP – Open Educational Practices

OER – Open Educational Resource

OER Africa – Open Educational Resource Africa

OER4S – Open Educational Resource For Schools

OKI – Open Knowledge Initiative

OPAL – Open Educational Quality Initiative

OPERA – OPen Educational Resource Assessment

OUNL – Open Universiteit in the Netherlands

TESSA – Teachers Education in Sub Saharan Africa

TIFR – Tata Institute of Fundamental Research

UNESCO – United Nations Educational, Scientific and Cultural Organization

UNICEF – United Nations Children Fund

CHAPTER I

INTRODUCTION

1. INTRODUCTION

This study is focused on educational technologies that have evolved in the last decade and how they are changing teachers' and students' perspectives towards learning. Both learning and teaching has been influenced by the ever growing interest in advances in technologies. Action oriented design experiments are being embedded in the complex situations of real educational settings and these experiments are seen to contain more potential for improving educational processes (Pea, 1997).

Open Educational Resource (here after referred as OER) is the main focus of this study. OER as a concept has been tried and tested by various reputed organizations and educational institutions across the world, and it has been well received. Whereas the impact of OER in higher education is noticeable, the impact of OER in primary and secondary education, especially in the developing world, is not wide spread. This is because people in the developing world less often have access to the technology needed to engage OER. This information gap as we all know is the digital divide. These is hope in the huge increase in mobile phone and internet technology being witnessed across the world, but still a large portion of the developing world remains untouched by ICT developments (Atkins, Brown, & Hammond, 2007). This study is an action research undertaken with dynamism so as to understand the situation in OER adoption in elementary educational setting in developing world.

1.1 Background to the research

The OER movement set forth its journey in 2001 when William and Flora Hewlett and Andrew W. Mellon foundations jointly funded the Massachusetts Institute of Technology's open course-ware (OCW) initiative (Brown & Adler, 2008). Today through this course-ware, one can access almost 2000 courses covering majority of MIT's curriculum. In February 2008, Harvard University's Faculty of Arts and Science surprised the world by adopting a policy that required all faculty members to allow the university to make their scholarly articles available free online. This initiative by Harvard University has encouraged other universities in the United States and around the world to adopt similar policies and more quality learning materials have been made freely available to the developing world (Peters & Britez, 2008).

Though OER concept has been around for a decade it still has not revolutionized the teaching and learning systems in developed countries. The 2007 OER report produced by William and Flora Hewlett foundation mentions seven areas that need more action to make OER movement

popular and widely accepted. One of these seven recommended areas of focus is – to scale-up and deepen the impact of education in developing countries.

William and Flora Hewlett foundation mention that they are funding this movement because they believe,

> *"At the heart of the movement toward Open Educational Resources is the simple and powerful idea that the world's knowledge is a public good and that technology in general and the World Wide Web in particular provide an extraordinary opportunity for everyone to share, use, and reuse knowledge. OERs are the parts of that knowledge that comprise the fundamental components of education—content and tools for teaching, learning, and research."*
>
> (Atkins et al., 2007, p. 5)

1.2 Statement of Problem

This research study will try to address concerns of OER adoption in the developing world especially in the elementary education level. The main aspects that this study will try to address are as follows:

1. To understand and learn from other OER initiatives (in elementary education level) in developed world and to see if that can be replicated in the developing world.
2. To design and develop short open online course for school teachers from developing world to see how they learn and respond to the new ways of learning, sharing and teaching using resources from the web repositories.
3. To understand if the open online course will influence teachers to adopt OER. To learn from the open online course's comments and then to develop possible answers for the forthcoming OER deployments in developing countries.

Through this research, I will try to chalk out basic prerequisites for a successful OER project to be implemented and sustained over a noticeable period of time. After achieving the above mentioned objectives, this study's goal is to provide valuable recommendations learned from this OER open online course so that the future OER projects being deployed in developing countries in the elementary education scenario can learn from this.

1.3 Justification for the research

OER is comparatively new in the developing world with some exceptions like the CORE project initiative in China (http://www.core.org.cn/en/) and the OER Africa's projects in some African countries (http://www.oerafrica.org/). But most OER initiatives in the developing world are

focused on the higher educational premise and not on the K-12 education and there is a ever greater need today to improve the basic or early education quality among the developing world which will help grub the school dropout rates and will help achieve the Unites Nation's Education For All by 2015 goal. There is enough proof of confidence shown by teachers to learn new ICT skills to improve their practice and teaching (Leach, Ahmed, & Makalima, 2005). In spite of this confidence, till date there has been no reputed institutions with major OER projects to the tap this readiness from these teachers to improve the quality of K-12 education in the developing world. Therefore, this study will try to collaborate with its target participants (K-12 teachers from developing world) as its first step to measure their interest and readiness, and then measure their comprehensibility to attain new skills in OER adoption in their teaching.

1.4 Research Methodology

After reading and learning from the exhaustive literature available on OER and its implications and challenges, I will develop a thorough open online course for the school teachers in the developing world to introduce them to the different free educational resources available for them to use and reuse for their teaching and learning. This open online course will be the first step in my action research process. During the open online course, these teachers will provide crucial information as assignments and regular online meetings which will reflect their opinions, suggestions and recommendations to adopt OER as a helpful tool for elementary education system in the developing world.

Using the available resources and literature on the web I have developed an open online course after identifying issues relating to OER adoption and deployment in developing countries, which will be carried out and later evaluated. Thus, this study mainly focuses on the action research cycle as its main qualitative methodology.

1.5 Outline of the study

While identifying answers for promotion and adoption of OER in developing countries in elementary education scenario, this study is organized in the following way:

Chapter 1 - provides introduction to the background of OER and justification for this study, while highlighting the research questions, methodology for the research study and explaining the important definitions in this research area.

Chapter 2 - provides literature review on different OER models and implementation problems of OER in both the developed and developing world. This chapter will as well look into available literature in the area of e-learning and open distance education which is closely related to OER.

Chapter 3 - provides detailed insight into the methodology and justification for choosing this methodology. This chapter also emphasizes the data collection methods.
Chapter 4 – focuses on the research design model and the justification for choosing this particular model to design the open online OER course which is the backbone of this action research.
Chapter 5 – focuses on the data analysis and the descriptive accounts that will arise out of this analysis. This chapter will try to interpret the data collected while trying to answer the main research questions of this study.
Chapter 6 – concluding chapter will reflect upon all the main steps taken to make this action research and summarizes the findings by giving recommendations drawn upon the data analysis trusting these recommendations will be advantageous to the research community in the OER field.

1.6 Definitions

There are various OER definitions put forth by many organizations and individuals. Some of the most frequently used OER definitions are as follows:
William and Flora Hewlett Foundation defines OER as: "teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use or re-purposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge" (Atkins et al., 2007, p. 4).
The definition provided by *OER Commons* is: "teaching and learning materials that are freely available online for everyone to use, whether you are an instructor, student or self-learner. Examples of OER include: full courses, course modules, syllabi, lectures, homework assignments, quizzes, lab and classroom activities, pedagogical materials, games, simulations, and many more resources contained in digital media collections from around the world"(OER Commons, 2009).
The definition of OER by Seth Gurell, that is: “Open Educational Resource(s) (OER) refers to educational resources (lesson plans, quizzes, syllabi, instructional modules, simulations, etc.) that are freely available for use, reuse, adaptation, and sharing”(Gurell, 2008, p. 2) could possibly be the most appropriate meaning of OER. There is certainly no single agreed definition. However the OER community across the world always include terms like content, software, tools, licenses, open and best practices while defining their OER.

Apart from OER definition it is also necessary to understand the definition of a learning objects, cause OERs are made up of numerous learning objects. According to Wiley's (2000) definition - learning objects are “any digital resource that can be reused to support learning” (p. 7).

1.7 Limitations of the study

This study tries to focus on questions related to OER adoption from an action research method by designing an open online OER course. The first hindrance could be the trust worthiness of the participants and the second limitation could be whether all the participants will take the course seriously or will they just do it as another internet short term involvement. The majority of the open online courses available today online have a low participation rate. According to a research conducted by Rita Kop (2011) it is highlighted that "for a networked learning to be successful, people need to have the ability to direct their own learning and to have a level of critical literacies that will ensure they are confident at negotiating the web in order to engage, participate, and get involved with learning activities" (p.34). This factor might affect the recommendations that will be drawn on basics of these participants' opinions and suggestions.

1.8 Significance

OER is seen as a new wave of innovation for teaching and learning. Many reputed universities and educational institutions across the world like Massachusetts Institute of Technology, the Connexions Project by Rice University, UNESCO and many others are the main driving force behind the OER. These institutions are also funding many OER sustainability projects, because one of main challenges of OER projects is sustainability and attracting more interest in the developing world (Downes, 2007). Chinese and African (especially South Africa) educational institutions have shown interest and are on the OER bandwagon. This study's main goal is to record the deterrents and catalysts for the proposed OER open online course that will be a part of this study. Another important goal for this study is to recommend valuable actions for educational institutions to promote creation, use and re-use of online learning objects in developing world.

1.9 Summary

This chapter has provided insight into the introduction of OER and the justification for the research being conducted. Firstly, this chapter talks about the statement of this research study, research methodology, and the outline of the chapters. Secondly, different definitions used in this study, limitations of the study and the significance are discussed.

In the next chapter, the literature available in the OER background and adoption are surveyed and discussed thoroughly.

CHAPTER II

LITERATURE REVIEW

2. LITERATURE REVIEW

In this chapter, I will review the existing literature which talks about different OER projects undertaken across the world and the challenges these projects had to face in promoting, adopting OER. I have tried to find and review the projects/reports/literature which focuses on this topic especially on elementary education based rather than higher education. But there is a lack of available literature on the aspect of OER adaptability in developing nations especially in K-12 education level. So I have expanded my search in OER research literature which talks about the challenges and barriers faced in OER adoption in higher education scenario in both developing and developed world hoping that there is some pretested process which can be replicated in my research. I have also reviewed literature which points out the problems faced by other researchers who have done similar research with open online course.

This chapter is broken down into identifiable significant themes that have emerged after my reading and re-readings of collected literature, which were highlighted through written summaries and and color coded sections while gathering and reading various literature. I have tried my best to include both agreements and disagreements from experts of each identified themes.

The literature searches were conducted on EBSCO electronic journals service, Emerald journals collection, Science Direct. Access to all of these databases was made possible by Tallinn University Academic library. Apart from these databases, I have also used open but reliable peer reviewed journals' online database like Directory of Open Access journals (DOAJ). I have also used the World Wide Web including Google Scholar.

The search terms used to retrieve articles from the databases were "OER," " Open Educational Resources," " Open Educational Resource," "developing nations," "adoption," "challenges," "scenarios," "adaptability," "open education," "developing countries," "developing nations," "elementary schools," "elementary education," "schools," and various combinations of these terms.

2.1 Promotion and Impact of OER

To understand the concept of OER adoption challenges in different scenarios, it is important to look back and analyze when it actually started and how it was promoted. Promotion of a new concept depends on who is promoting it and to what population it has been targeted towards.

Promotion of OER has also seen promotion of equality and social justice by providing access to knowledge generation and application (Carrion, Patricia, Morales, Del Rocio, Pelaez & Elizabeth, 2010).

The Open Educational Resources did get a good start and support from the worlds most renowned educational institution like MIT and organizational support and accompaniment from UNESCO and Williams and Flora Hewlett Foundation and other important players in the education like OECD's CERI (Center for Educational Research and Innovation). The earlier impact of OERs would have been better and bigger with the teachers if the resources were provided with more freedom, that is less restrictive licenses, therefore as Hilton III, Wiley, Stein & Johnson (2010) recognizes the "four Rs that clarify distinctions of what an OER formally permits by its license" (p. 39). The four R's include re-use, redistribute, revise, and remix. Where,

a. re-use - means the most basic level of openness,

b. redistribute - means wherein people can share copies of the work with others,

c. revise – means wherein people can modify, adapt, translate and use,

d. remix – wherein people are allowed to use two or more existing resources and combine them to make their own resources. OER can rapidly spread within any community like teachers, students and self-learners if the last two Rs that is of revise and remix be legalized by a hassle free license (Hilton III, et al., 2010).

The other significant characteristics that every OER should have in order to make a good impact is the factor of discovery. If an free educational resources cannot be easily discovered then there is no use of it. Therefore, the discover-ability of an OER is a critical factor in the life of an OER so that it can be reused. Hilton III, et al., 2010).

In another paper authors Schaffert & Geser (2008) write that "experts who understand OER as a means of leveraging educational practices and outcomes will define OER based on the following core attributes" (p.1). They put forward an elaborate framework describing the core characteristic of OER. The figure below demonstrates

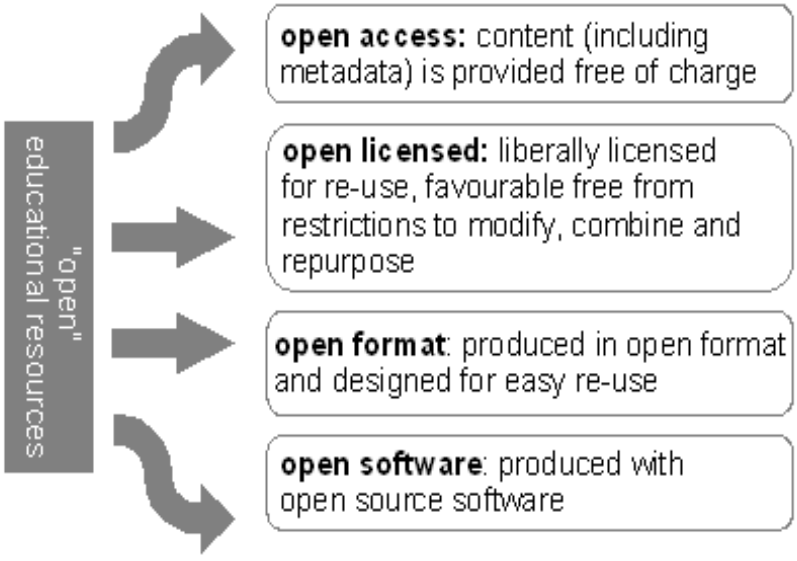


Figure 2.1

the core characteristics of the OER according their framework.

These characteristics exemplifies the Openness in the Open Educational Resources. The figure 2.1 shown is the illustration exemplifies the Open in the Open educational resources (Schaffert & Geser, 2008). However, other authors in their article disagree to the last characteristic which talks about producing resources with open software and recognizing resources that are produced using open software, the authors argue there is clear drawback of merging both legal and technical considerations into a single framework, which the authors assume may discourage individuals from thinking these two issues separately with necessary precision (Hilton III, et al., 2010). Meanwhile they try to draw a clear inter-relationships between the technical and the legal which is talked about in the four Rs + ALMS framework which provides four part framework for understanding the rights (4 Rs of openness) each individual should expect from an OER. Furthermore another four part model for technical issues that should be addressed if an OER is proposed to be localized by the end user is proposed. These frameworks are important considerations that each OER producer if not user, should adhere to because they provide with the framework for creating an effective learning object.

More light has been thrown into the 'ALMS analysis'. According to Wiley (2009) ALMS acronym stands for

- Access to editing tools?
- Level of expertise required to revise or remix?
- Meaningfully editable?
- Source-file access?

ALMS analysis was developed “as a framework for thinking about these technical aspects of localisation” (as cited in Hilton III, et al., 2010, p. 41). These technical aspects are the determining factors for creating or reusing an OER. Before creating or revising an OER people need to ask what software they will use to edit the resource and make sure the software they use to edit is open source and is widely used and accepted. The second technical aspect is level of expertise required to revise or remix, wherein people should use the open source software for revising and remixing which should not require multiple hours of training for effective usage. The OER creator should use the editing software which is simple and widely used. The third and fourth aspect which the authors point out are, whether creators should avoid using scanned PDF documents of written notes which makes others editing very difficult and the making the original source-file available to all which makes the end user understand the basic and encourages others to share the source-file. All these aspects are important from the viewpoint of creating a new OER or revising from an old OER

According to the authors it is very important to decide in advance to what degree the contents need to be open, and I have kept this is in mind while preparing my OER online course. (Hilton III, et al., 2010).

These factors embedded within OERs created by reputed educational institutions has made OER as a concept reach the world as of today. Though the impact of OERs on developing nations has been less compared to the developed world.

2.2 Challenges of OER

In an article on global warming toward OER the authors highlight the birth and need of the OER as compared to the traditional educational system requiring faulty, expensive textbooks. They talk about the parallel world that has forestalled the crisis of the rising textbooks and other learning materials prices, and these materials are open sourced and made public on the web available in low cost printed versions adapted to many backgrounds and learning styles, interactive and translatable into other languages continually up-to-date and corrected and never out of print, also facilitating 24 hrs virtual labs has made OER a strong concept to be considered against the traditional education system (Baraniuk & Burrus, 2008).

More talks about how OERs are increasingly blurring the lines between courses, grade levels, labs and textbooks and the promise to provide each children with his or her own textbook that is tailored to the student's background and learning style is highlighted. OER enables the development of efficient feedback conversations that make students get involved in an interactive learning environments coupled with learning outcomes.

The Baraniuk & Burrus's idea of this OER improvement has seen hindrances which highlight issues like 1. technology fragmentation – wherein they request the OER community to adopt common or compatible content and repository standards to prevent isolated islands of incompatible contents; 2. intellectual property fragmentation – wherein they request OER producers to use licenses which will allow future users to modify, redistribute and benefit from it. They say only if the OER producers use licenses with least restrictions then the popularity of the OER products will soar and there might be chances to make some financial benefit; 3. quality control – authors fear there will be a proliferation of massive amounts of low quality materials that might take over the information environment and prove impossible to navigate. Hence, reputed OER institutional producers are trying to roll out a system of post-publication lenses that are open to an absolute number of third party reviewers and editorial bodies, hoping this will add in less low-quality resources; 4. success models - authors mention there is severe lack of success models in OER to follow and this is due in a large part to technological barriers which will be overcome

slowly. The authors conclude that OERs has the potential to aid in the democratization of the world of knowledge. These reviews from these authors clearly shows the impact the OER has managed to do in its short decade long life while compared to the faulty traditional education system (Baraniuk & Burrus, 2008).

In yet another interesting paper, the authors emphasize on using Open Learning Object model to promote OER to have a wider impact in the developing nations. They recognize three reports on OER movement which agree with the obstacles to the development and challenges of OER as 1. technical difficulties in developing open digital resources; 2. lack of open practices of teaching and learning; 3. lack of experience in supporting communities of practice involved in the development of OER; and 4. scarcity of business models in OER. The authors design and implement project wherein they design Open LO model and they suggest that LOs are not the final OER product but as evolving resources. They develop a Learning Object Management System (LOMS) model based web platform hoping that the teachers will actively collaborate, encourage students to create OERs, and eventually be able to create communities of practice that will adopt Open LO and help in promotion of OERs (Fulantelli, Gentile, Taibi & Allegra, 2008).

The importance of open licenses for defining OER, to keep OER movement active, to tackle challenges of OER widespread can be seen in the article from author Bissell. He starts with giving an example of research methods in Computer Engineering the course which was made available to public through OpenCourseWare initiative, and it was made possible by open licensing. According to him intellectual property and licensing issues top rank among the concerns of people involved in the open education movement . The important factor that the author brings to light is to explain the reasoning and importance of open licensing to teachers, funders and educational policy makers the considerations that make up or known as the building blocks of the global education commons of free learning materials (Bissell, 2009).

The intent of OER and role of copyright is explained best by Bissell with four shared beliefs which are 1. knowledge can and should be free, which he says holds true in more than the economic sense but also in the sense that knowledge should be allowed to evolve and change things in the needs of local needs and culture; 2. Pedagogy and learning should always stay acts of creativity, free of unwanted legal attention which will help spread the educational attainment worldwide; 3. There is a very thin differentiation between the content producers and content users; 4. OER should be allowed to be adapted and improved upon (Bissell, 2009).

By the virtue of being open OER should provide platform for experimentation, localization and novel recombination with other resources. Many have highlighted the drawbacks of copyright focusing on how incompatible copyright is with the principles of sharing, creativity and learner engagement. The copyright does not support the main intent of internet that is to share recent developments and to bring people with common interests together and to facilitate exchange of ideas. The author Bissell highlights how creative works are automatically endowed with all-rights-reserved under the presumption that such protections serves the interest of the creator. It did serve the creator historically, but with the advent of internet, the way in which knowledge is communicated, shared and built upon has changed, having all-rights-reserved is no longer ideal, this is especially true in the education context, hence creators (especially educators) have been embracing the some-rights-reserved and trying to better represent their interests for their works (Bissell, 2009).

In the education field, creators and authors do not have enough time to become experts in copyright law, however it is important for educators should become aware of the copyright laws to comprehend the use of alternative licensing models, that could help them achieve their goal. These issues have given birth to a Creative Commons, GNU and GFDL. These are different schema of licenses providing different levels of sharing opportunities, interoperability and compatibility.

Creative Commons however has different licenses to meet different varying needs of the creators and vary substantially in the permissions granted. Further, the author provides explanation for the main six different types of licenses that a creator can get from Creative Commons. The licenses can be obtained free of charge and requires very little time to understand and to get one which matches ones need. Author also mentions that openness is not a cost, but rather a characteristic that can inspire new ways of collaborating and engaging, especially when more and more people agree that education should be a right and not a privilege. Author says that it is expensive to keep resources closed and protected from sharing and to benefit from it. Bissell says, the suit of Creative Commons licenses as the catalyst of Open Education movement, cause the licenses are recognized worldwide and can exported to 47 different countries, and therefore he calls Creative Commons as the infrastructural glue for the OER movement (Bissell, 2009). Though there is a certain lack of appropriateness in granting certain permissions The author concludes by saying that, open education movement will not succeed or fail on the basis of different protective mechanisms in all the different open licenses, but it will thrive on belief that most uses of OER will be ethical and appropriate.

2.3. Challenges of OER Adoption

The challenges of OER adoption in a K-12 school environment in a developed country can best be examined in authors Richter and his co authors' study. Their study of the German school teachers' opinions and usage of OER in their teaching clearly reveals that the lack of funds in the school drives the teachers to use free learning resources. Teachers mentioned using internet for the ready media materials of information on recent incidences from around the world. These teachers mainly used images and videos from the internet to add value to their lectures. Regarding OER adaptation process, teachers seek support and it is too demanding for the teachers to translate from a foreign language to their own language. Teachers clearly mention the lack of proper equipment in the schools to use and adapt OER in their lessons. Teachers are willing to spend time to remix and create their own learning resources and make it available online, but lack of understanding of licenses and the complexity of creating and making it available online, clearly ascertain a need for a platform wherein all their materials can be easily produced and automatically licensed (Richter & Ehlers, 2010).

In another similar project report on OER opportunities and challenges in India, the authors Deshmukh and Agarkar start by pointing out the old fashioned teaching methods practiced by the majority of teachers in India and how they are ignorant of the recent advances in the teaching process seen by the intervention of science and technological developments. The authors clearly bring to light that they are no supporting resources for the school curriculum and they mention that even if there are supporting resources for teachers, most of them are biased towards developed world and vernacular medium teachers cannot benefit from these resources. In this report authors mainly focus on the important work they have initiated in the field of OER introduction to schools teachers, students and parents. The project OER4S wishes to design Open Educational Resources for Schools which hopes to improve the quality of education in schools (Deshmukh & Agarkar, 2010).

Author D'Antoni talks about the initiatives and issues of OER adoption analyzing various ongoing projects. Though the view of the author is overall and tries to give a general picture of OER initiatives till 2009, what is worth noting is the five issues which he calls should be the priorities of attention, and these five issues are 1. awareness raising and promotion, 2. communities and networking (which is recognized as the main priority to advance the OER movement), 3. capacity building, 4. sustainability (measures to keep OER initiatives in policies, structures and programmes to extend learning and knowledge sharing) and 5. Quality assurance. (D'Antoni, 2009).

The use of OER is an important factor which needs to be studied and analyzed. The study of various OER projects, its uses, users and distribution of users are worth analyzing, one such literature study is conducted by Qing Chen. Chen identifies, various important reports and literature from the main stakeholders of OER and talks about the research which shows most users of OER are self-learners (46%), students (32%) and educators (16%) (Chen, 2010). The MIT's OCW also attracts a major portion (61%) of the users outside the US. Chen points out from the OECD report that there are four main groups of reasons for the individuals who are involved in OER and they are 1. community support reasons, 2. personal non-monetary gain, 3. commercial reasons, and 4. it is not worth an effort keeping the resources closed.

According to Hatakka the 11 factors suppressing re-use of open content in developing nations are 1. language, 2. relevance, 3. access, 4. technical resources, 5. quality, 6. intellectual property, 7. awareness, 8. computer literacy, 9.teaching capacity, 10. teaching practices and traditions and 11. educational rules and restrictions. With all these restrictions, developing countries like India, for example with very diverse educational environment, where improper language, irrelevant learning objects and inadequate technical resources almost makes it impossible for the teachers to learn and take benefit of OER (Hatakka, 2009) . In spite of these hindrances, there are OER initiatives in India like the OER4S (Open Educational Resources For School) which is initiative of Homi Bhabha Centre for Science Education (HBCSE), TIFR, Mumbai, with Maharashtra Knowledge Corporation Limited (MKCL) and Indian Consortium for Educational Transformation (I-CONSENT). The project initiatives are targeted toward the higher education level and are still in the trial version and have not entirely implemented (Deshmukh & Agarkar, 2010).

2.4. Towards e-learning 2.0

E-learning has been around for quite a while and educational institution (higher education institution) across the world are hugely becoming dependent on electronically supported learning and teaching. With the internet boom in the 90's many American Universities jumped on the capitalist model in a desire to make money by selling their intellect through the various internet-based delivery systems. But this soon changed when there was substantial support from the academics for using the web to provide open access to educational resources. Most authors soon realized that it is difficult to make money from royalties of their book, cause most books would go out of print within five years. This is also seen in the faculties who are proud to put their work online and share it. But in 2001, when MIT changed the model by announcing all its course ware is

open and collated and made search-able for the whole world wide web, this changed many things and many other research institutions and Universities followed the same league. (Smith and Casserly, 2006). Author Kumar speaks about the advances that he has been witnessing in the higher educational field after MIT's OCW. MIT's OCW as of 2005 has 1100 courses and have started translating into other languages to increase the reach in numbers. The author talks about the educational promise and strategic underpinnings of OER and how MIT decided to exploit the internet which eventually led to the strategizing to promote innovative teaching and learning, as well as creation of educational commons (Kumar, 2005). Infrastructural initiatives were launched to enable sustainable implementation of these educational programmes, through building technology platforms and facilitating through organizational capacity and alignment strengthening.

Three initiatives important in the area of building OER technology platform are recognized by Kumar are 1. Stellar, by MIT course management System; 2. D space, a project to develop a digital repository of educational resources; and the 3. OKI (Open Knowledge Initiative), for building an open architecture to support the portability and sustainability of educational applications and their easy integration into the learning management systems. The main lesson from this article is to ensure that quality educational contents are being created in MIT and other similar OER projects and to ensure that quality tools are being produced by innovative uses of educational technology (Kumar, 2005) .

2.5. OER projects in Developing World

An interesting research paper by Wolfenden talks about the experience from TESSA, which stands for Teachers Education in Sub Saharan Africa and its main attempt is to bring new educational opportunities to the teachers working in some of the demanding places in developing world. A part of TESSA project also tries to assess teachers opinion or receptivity towards the OER concept. The author mentions that clearly there is no shortage of interest by teachers to adopt technology to enrich their pedagogical toolkit. The main learning from the TESSA experience is that there is a need for stronger modeling, detailed identification of significant training factors and the processes through which decisions about such factors are made (Wolfenden, 2008).

Authors Petrides and Jimes share their learning experience of their case study of the project called FHSST (Free High School Science Texts). Their case study collects observations, survey and interviews results and analysis of project documents during the development of FHSST in South Africa. The main learning from this case study is that an OER project sustainability depends on implementation practices that are mainly collaborative and peer-based and which involves

continuous improvement by local stakeholders. It is important to note that the authors mentions that OER projects in developing nations should adhere to necessities of developing community-centered technologies and processes (Petrides & Jimes, 2008).

Bateman suggests the initial focus for the OER movement in Africa should be concerned with collaboration and sensitization in utilization of OER, and policy development and research. He puts forth some initial suggestions for potential positive impact of OER in higher education in Africa which include, establishing a global research network on OER, to develop a policy keeping in mind the intellectual property rights structure of African Universities, technological infrastructural development, capacity building in the organization, management and financing of OER (Bateman, 2006).

Authors Larson and Murray propose a repository of OER initiative named BLOSSOMS (Blended Learning Open Source Science or Math Studies Initiative) with eight major considerations. These eight considerations goal is to develop richer and deeper skills in the students and to raise these students critical-thinking skills. The main goal is to excite them in learning math, science and engineering courses leading to excellent careers in the ever increasing dominant 'knowledge economy' of the world. They consider the access to quality education as a right rather than a privilege and they see OER playing an trans-formative role (Larson & Murray, 2008). The authors recognize the greatest concern for OER initiatives in the developing world is to work with the teachers to build collaboratively effective OER delivery in the areas where technology and internet bandwidth is limited. They also propose to build low technological threshold, - meaning low tech delivery models which can be adoptable might help production of OER materials from all cultures. They do also mention that many of the hindrances for OER development by teaching staff in developing world are almost same as those in the developed world, lack of capacity, lack of technical infrastructure, lack of incentives and there is lack of understanding about different licensing systems. Time and again BLOSSOMS initiative was suggested to offer training, not only for teachers but also for producers of modules (Larson & Murray, 2008).

Author Venkaiah in his paper on OER in India which is studies attitudes and perceptions of distance teachers tries to find out the extent of awareness of OER among distance teachers in select Indian distance education institutions (2009). He tries to determine the involvement of these teachers in producing OER, to study the extent of institutional support for developing OER, and to understand the perceptions of distance teachers about the OER. He uses the questionnaire

methodology to extract these information from the teachers. His concludes mentioning that though distance teachers' usage of OER is high, he recommends some measures to accelerate the OER movement in India, and these measures are 1. development of user friendly systems and ensuring their quality implementation; 2. promotion of collaboration within institutions; 3. adoption of new and appropriate technologies to match the teaching and learning methods; 4 promote steps which will increase awareness of OER among teaching community; 5. promotion of localization of contents (Venkaiah, 2009).

In an OER article on India's OER development and the initiatives taken by the government to promote OER and OA (Open Access). The author Kumar states the Indian government's National knowledge commission initiative to strengthen the educational system of the country. He mentions couple of projects from reputed Indian Institute of Technology which has created OER repositories targeted towards graduate students who are interested in gaining more skills in computer science, civil engineering, electrical and electronic engineering. These OER projects are produced from science and engineering institutes of repute and produced for science and engineering community (Kumar, 2009). The author emphasizes much about the recommendation put forth by the National Knowledge Commission of India to launch a much needed national e-content and curriculum initiative which represent the push towards the national strategy to spur the creation, adaptation, and utilization of OER. These strategies are also discussed by the author and these board categories as recognized by the author are listed here

1. using of the global OER movement to take advantage of content building within Indian education context,
2. support quality higher educational contents production,
3. undertake and support large scale e curriculum development effort directed toward adoption,
4. strengthen and renew infrastructure for enhancing production distribution, access and use of OER

Hence the author jolts out the recommendations for the effective installation of OER in higher education in India to see a positive change in education quality and enhancement (Kumar, 2009).

2.6. Learning or Collaborative Learning

OECD talks about the emerging trend of OER and compares it with open software movement and open access publishing which are increasingly being seen more and more in the higher educational institutional policies and recognized as a movement. About OER OECD say that “OER is not only a fascinating technological development and potentially a major educational tool.

It accelerates the blurring of formal and informal learning, and of educational and broader cultural activities" (p. 9). OECD (2007) continues to say that OER facilitates "a radically new approach to sharing of knowledge, at a time when effective use of knowledge is seen more and more as the key to economic success, for both individuals and nations" (p. 9). OECD also recognizes the fact that majority of OER being produced are in English language. Translations into non-English language projects are being funded which will cater to greater language diversity and increased use globally. OECD's 'Road map 2012 to OER' recommends all the governments to support OER projects because OER are seen to promote lifelong learning, help bridge the digital divide, will facilitate innovation and developing of new resources, and quality of education improved with minimal spending on content development. OECD recognizes the importance and recommends that academicians' and researchers' product and projects which are fully or largely funded by the government made publicly available under an appropriate open content license (OECD, 2009).

In an interesting research from Schuwer and Mulder's experiment with Dutch Open Universiteit Netherland. This experiment (OpenER) in which OER are used as a tool to bridge the gap between the informal and formal learning. The learning from this three year (2006-2008) experiment is summarized as follows - the experiment started in 2006 and chose educommons content management software to host their open courses. After developing a process/flowchart for publishing a free course and following these processes the website was made available to the public with three free courses. In spite of just three free courses the number of visitors accounted to 25,000 in the initial week, this was believed to have been possible only because of the extensive media attention before the launch of the website. The total number of visitors from Dec 2006 to Jun 2008 numbered to 750,000 of which 90,000 are returning visitors. At the end of the experiment they had 24 free courses which consisted all types of formats like text, audio, visual and pictorial. All the courses were published under CC-NC-SA license unless some of them had other restrictive licenses. The major achievement of this experiment is considered to be the sheer amount (5700) of registered users it has reached. Five courses could be completed by a formal examinations, which leads to an accreditation and about 85 learners applied for a formal examination. Foreign language was seen as a barrier to some learners, read aloud versions using the read speaker was appreciated by some of the visually impaired learners though some pronunciation errors were reported (Schuwer & Mulder, 2009).

During the whole process of developing and implementing of this experiment the majority of faculty opposed the idea of making all the courses available free with reluctance to cooperate because of time constraints, but due to large positive media attention and large number of visitors to

the website on its first week, the attitudes of the faculty changed over the period of two years as the experiment facilitated to discover facts like main subjects areas in the whole school and show how learning can be entertaining. What can be observed and learned from this experiment is from the suggested several future scenarios that could work in the favor of OER development and adoption in higher education; like "Participation through temptation scenario" which represents the continuation of OpenER by increasing the course base by 50% and introducing exhaustive marketing efforts might initiate the informal learners to enroll and become formal learners.
"Spin-off scenario" is seen as a repository of open courses as an asset which will attract groups like secondary school schools to use and adopt in their lectures for students to explain them the future prospects. These schools can use these courses for exploring into a new field of subject.
"Niche scenario" is about using the most intellectually award researchers from the government and requesting them to develop courses in their area of subject. This might attract more formal as well as informal learners to take up open courses. 'New Markets scenario' is about recognizing and collaborating with potential partners like polytechnics and potential employers to create a nationally operated network based on OER. This network will offer free courses to students who will combine their study with their job or other appropriate courses in regular class setting.
"OER expert scenario" is about OUNL portraying itself as an outstanding OER expert in different educational markets like secondary school and polytechnic level which could very well lead to OER adoption spree among the secondary school teachers and their organizations. "Full OER scenario" is a future maybe scenario wherein the OUNL see itself as an organization which is converting all its courses into OER and making to open and available to all. In spite all these positive observations made by the OpenER experiment, the full OER scenario is still not taken shape by the OUNL and they have decided to continue with offering of OER (Schuwer & Mulder, 2009).

Authors Brown and Adler focus on the ever challenging and changing demand from college students is that of not having a fixed single career, instead having a growing curve that is made of multiple careers, meaning we all are bound to continuous knowledge and skills development throughout our life. It is highly unlikely that all resources needed to develop these skills and knowledge will be available in a traditional educational set up. Hence the authors feel the need to build more platforms which will delivery quality educational resources for free to all using the powerful internet as the medium. The authors next talk about the importance of the social learning and how profoundly internet has supported social learning. They explain how our learning and understanding is constructed everyday through social conversations and grounded interactions. The authors also provide examples on how students have shown tremendous increase in grasp of a new

concept through participation in study groups and peer group discussions. Hence they see the setting irrelevant Cartesian Theory 'I think therefore I am' not working and instead promote the social view of learning that is 'We participate therefore we are' (Brown & Adler, 2008).
The other significant aspect of social learning is focused here by the authors mentioning the importance of "learning to be" or participating in a field. Some examples suggested worth noting according to the authors are the strong communities of practice as seen in Linux open source software developing and building a robust product. The same idea of community creating is seen in Wikipedia where everyone who is knowledgeable about a topic can contribute and everyone can see contribution history so editing process is open. This facilitates collaborative learning and helps slowly build a community of practice. The authors promote John Dewey's 'Productive Inquiry' which is the process of learning or seeking new skills when it is needed most in order to carry out a particular task and this is not seen in traditional Cartesian system of education, wherein students spend many years to learn something new after years of exposure to explicit knowledge about a new topic they are then expected to practice as a professional.

The authors mention the importance of social learning online with couple of examples like Terra Incognita Project from the University of Southern Queensland, Australia which has created online learning classroom and community on Second Life and Harvard Extension school's Cyberone: Law in the court of public opinion again students were given the choice of learning on virtual classroom like Second Life and attending the physical classroom.

The other most relevant project applicable and adoptable with the present study is the Digital Study Hall, designed for Indian rural and urban slum school classrooms. In this project the schools are harnessing technology to leverage social learning. This project provides educational videos in DVD formats and these videos are played in the classroom with a moderator who facilitates the interaction in the class by pausing videos and triggering engagements.

To summarize the authors suggests tying the e-sciences, e-humanities and the resources of web 2.0 with OER movement to make way for open participatory learning ecosystems. This open participatory learning ecosystems according to the authors will support passion based learning. (Brown & Adler, 2008).

Creators of LeMill (Learning Mill), an web community for finding, authoring, and sharing educational resources for teachers try to address how the web service design can promote use and creation of OERs? To answer this question the authors first face the designing challenges and choose a methodological design process after which they reach at design solutions and then comparing their design solutions with other similar learning resource repositories to judge if their

design solution can be applied in LeMill.

The main design challenges as recognized by the authors are 1. lack of collaboration and peer production between the teachers; 2. lack of reuse and remixing; 3. limited access and poor usability; 4. multilingualism seen as a barrier; and 5. under use of basic web principles like openness and 'linkedness'. Using research-based design with LeMill as the software as hypothesis, authors recognize the basic scaffolding factors to find solution to their research question. The factors discussed are as follows: 1. Scaffolding collaboration and peer production are witnessed in LeMill with templates for building content resources and building group or individual collections with the option of adding descriptions (teaching or learning stories); 2. Scaffolding reuse and remixing has been made possible for all of its member teachers by providing open license to all the resources created in LeMill. All the resources are Creative Commons Attribution-Share Alike license which allows and promotes reuse and remix; 3. Scaffolding access with minimal metadata was facilitated by simple and minimal elements like language, subject, target group and other essential elements like rights, creation and modification dates etc. It was decided to keep simple metadata because of the fact that teaching communities do not understand and do not have time to learn these terminologies. Hence with these basic access and creation points, one can also tag objects created; 4. Scaffolding multilingual use is another important factor which LeMill has given much importance, because of its target being multilingual. LeMill is a multilingual site which collects all language resources in the same pool. It does have some pros and cons but the teachers have started to provide their languages preference with their profile. So when one searches for some resource, LeMill will rank results with resources in your language first according to its popularity; 5. At last the authors mention about the discover-ability of resources in LeMill which they try to achieve by scaffolding creation of small pieces loosely joined based the basic principles of the web. To make the LeMill repositories more open the resources on LeMill can easily be exported into a SCROM sequences, pdf booklets, or as web file packages which can be easily used by teachers to either import on a web server or a SCROM compatible LMS.

To summarize, in-spite of decent increase in the members and collections by the members in LeMill, the authors chalk out hassles of the LeMill like poor actual collaborative editing effort of the teachers (mentioning - only 5.5 percent of resources were edited by more than one author), none-the-less LeMill has shown positive results proving that it has increased successfully computer supported collaborative learning among teachers which was not heard earlier (Leinonen, Purma, Põldoja & Toikkanen, 2010).

Authors Sumner, Butcher & Wetzler start with the assumption that peer production processes lead to a cycle of continuous betterment. The authors conduct an investigation named OPen Educational Resource Assessments (OPERA) and check to see if OPERA can increase the effectiveness of educators' peer production practices. Authors have designed using complex alogarithms combining machine learning and natural language processing to automatically generate result after analyzing OER along the dimensions of teaching and learning. The main objective of the authors are not just give a yes/no answer to rate the resources that are open, but to give a different strengths and weakness of each resources to help further human judgments. They do by carefully studying the cognitive processes of teachers and by designing software models capable of approximating human judgments of OERs webquest. Also they developed a methodology for identifying and operationalizing potentially useful indicators with the help of empirical studies of human decision making process. The authors are in the path of realizing their OPERA vision and through this study they are trying to demonstrate the feasibility of automatic quality assessments for OERs (Sumner, Butcher, & Wetzler, 2010). What can be learned from these experimentation is the quality of OERs' metadata needs to be improved and quality retrieval of OER is essential in the k-12 educational scenario which aid educators quick search and contribute back to the OER movement. Experiments like these classify indicators for further research in the area of quality OER retrieval.

2.7. Summary

This chapter has tried to gather and review all relevant literature which can be useful to guide this study to answer the research questions asked earlier [see section 1.2]. Through this chapter I have a idea about how the few known OER projects in the developing world had problems, and what measures should be taken to make this research study successful.

CHAPTER III

RESEARCH METHODOLOGY

3. RESEARCH METHODOLOGY

This chapter will centralize on the research methodology process that I have followed in this research and will provide explanation for choosing the methods and how these methods are best suited to answer the research questions raised earlier. The research method used here is action research method. As a part of this action research method, I will discuss the process of designing the online course using the ADDIE model (ADDIE stands for Analysis, Design, Develop, Implement and Evaluate, which is a popular ISD model) in the next chapter (Research Design), which will also look into the research implementation process in detail.

Data collection technique which is part of the online course will be the second in focus in this chapter. The last and most important aspect of this chapter will explain the process of data analysis adhered.

3.1. Methodology

Qualitative research method (in this case action research) is the most suited research method to conduct this study and recommend further improvements to the existing OER adoption challenges in the developing world. After reading more about the methods of executing the action research method and given my comfort level with the Wikiversity, I was convinced to adopt action research method to find answers to earlier asked research questions [see section 1.2].

3.2. Action Research Method

In the words of McNiff and Whitehead (2002), the action research method is a

> *"form of enquiry that enables practitioners everywhere toinvestigate and evaluate their work. They ask,'What am I doing? What do I need to improve? How do I improve it?' Their accounts of practice show how they are trying to improve their own learning, and influence the learning of others. These accounts come to stand as their own practical theories of practice, from which others can learn if they wish"* (p. 8).

To answer the research questions of this study, action research method provides all the essential elements of a methodology and this can be witnessed by this meaning provided above by McNiff and Whitehead.

3.3. Advantages of Action Research Method

The advantages of action research method has shaped my decision to choose this research methodology, the elements like subjects need not be distant or detached from the context is one attributed of action research method. But the most suitable character is, provision for continuous modifications in the implementation process, it allows to start a new story and bring it to life and learn from the process, it allows the researcher to develop a theory rather base on a previous theories (Koshy, 2005).

The action research method in this research is characterized by examining the adoption of OER in developing nations especially in the elementary level education. Next taking steps to improve issues focused on adaptability of OER in developing nations and then analyzing the results of the action. The action research model involves approach that is cyclical or spiral, which follows 5 stages, they are

1. Identifying problems,
2. Action planning,
3. Implementation,
4. Evaluation, and
5. Reflection. (Pickard, 2007)

These steps are represented diagrammatically in *figure 3.1*

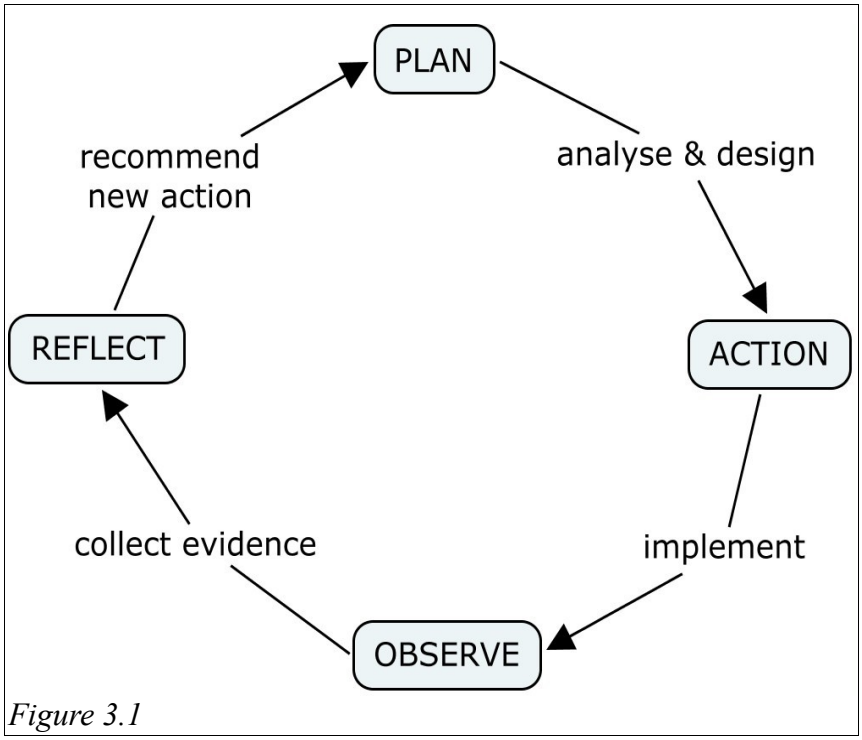


Figure 3.1

3.4. Identifying Problems

OER, since its existence has been adopted exponentially in higher education in the developed world. The developing nations are left so far behind. Despite the fact that OER movement is complemented with a colorful start, the success of OER movement in elementary education level in developing nations is still unequal (Mora, Hassin, Pullin, & Muegge, 2008). Reports from OER experts mention the main reason for the slow progress in OER movement in developing nations is the poor ICT infrastructure. But there is more to OER movement's success than good ICT infrastructure. This is supported by different financial sustainable models put forth and agreed by many OER experts, and additional factors like Organization (technical competencies, training, standardization communities) and policy which promotes openness and which sees openness as a

business model (Downes, 2007).

There are few noteworthy OER projects from the developed world which has gained popularity among K-12 educators and these projects' impact assessment mention the lack of technical skills of these educators and poor availability of proper equipment to implement OER projects (Wolfenden, 2008).

In spite of all these clear evidences from earlier literature, suggested as an essential step of action research, it is highly recommended for researchers to examine the stakeholders' situation and recognize their problems within the research context. It is suggested to present the potential problem to stakeholders and examine their interest in solving this problem and formulate research questions (Berg, 2009). Therefore, I scheduled a web brainstorming session (using Skype) with 5 teachers (K-7) from an urban low cost school in India at early stage of the research.
This school has two desktop computers with internet connection which they use to expose students (grades 3-7) to some of the educational games which the school has acquired as one of its donations. As a part of this brainstorm session, I introduced the teachers to the topic of OER, following mentioned questions were randomly brought up during the session:

1. Do you think there is a need for OER to be used in Indian schools?
2. Do you think you have enough ICT skills to adopt OER in your lessons?
3. Would you appreciate if there is an effort in your school to implement OER?
4. Do you think the students would benefit from your newly gained skills if you were taught to use creative resources in your class?

All the participants in the brainstorming session agreed in unison that OER will benefit them and improve the education quality, though 4 of 5 teachers accepted that they needed to improve their ICT skills to implement and adopt OER in their teaching. They also mentioned that they would have tried to find and use online resources (from the web) if they had adequate skills to access internet at their residence or school.

Therefore, the main issue to focus in this research is to study what aspects of OER will impress/convince the educators to adopt in their classes and lessons and what aspects of OER convince the educational institutions to invest in OER promotion and adoption. The other important aspect is to measure the responsiveness and readiness to OER by the educators.

3.5. Action planning

Action planning is the next vital part of this research. I have followed the ADDIE model to plan all the steps in designing the Wikiversity open online course which is targeted to attract educators (K-12) from the developing world. The ADDIE model is explained in detail in the next

chapter [see section 4.1].

Promotion of the open online course was one of the most important and time consuming part of this research. I used various online promotional tools, like e-mailing school teachers and school owners, teacher training associations, some of them with whom I had worked earlier. Social networking sites like Facebook, Orkut and community specific social networking sites Teachers without Borders, Escuela Nueva Communidad (New School community) helped me find some participants.

I had two weeks time to promote and gather about 20 participants, which was the decided number of participants after which I had decided to commence the open online course classes.

3.6. Implementation

The action implementation (delivery of the open online course) has been carried out using the Wikiversity. It is an online learning and sharing community based on the Wikipedia platform and is primarily a collaborative authoring environment. Wikiversity uses the MediaWiki software, which is known for its reliability, simplicity and familiar structure. Experts say Wikiversity provides flexibility for an e-learning object creator to share, learn and induce new concepts.

The primary objective of Wikiversity satisfies the kind of platform for which I was searching. With the assumption that the open online course participants (mostly teachers from developing nations) will be find Wikiversity's platform easy to navigate and use I prepared two pages (one with main course contents and other with the registration details of the participants) on Wikiversity. The participants/registration page was linked to the main course page, making it a sub-page.

The Wikiversity pages web links are

1. Main course page - http://en.wikiversity.org/wiki/Open_Educational_Resources_for_School_Teachers_from_Developing_Nations
2. Participants course sub-page - http://en.wikiversity.org/wiki/Open_Educational_Resources_for_School_Teachers_from_Developing_Nations/Participants

Apart from using the Wikiversity page, I created a course community blog, to serve as the instructional counterpart for the Wikiversity course page at http://oerforeducators.wordpress.com/

As a part of this open online course participants were required to read articles submit assignments (either on their personal blog or community blog or as an e-mail attachment). They

could also share their opinions and suggestions through the group community blog. As well share share their learning experiences with other participants. Apart from these assignments additional reading materials on OER was made available to the participants through the Wikiversity course page on the course community blog. Since some were not keen to open a blog and wanted to submit their assignments as e-mail attachments, I provided all the participants with an common e-mail address (provided by Wordpress blogging), so when participants sent their assignments to this e-mail address, the assignments would automatically be uploaded as a post in the course community blog at http://oerforeducators.wordpress.com/.

Also to track the progress, comments and participants interaction I registered myself in the EduFeedr (http://www.edufeedr.net/). So EduFeedr is a feed reader for online courses where each participant is using his/her blog to publish assignments, thoughts, inputs, comments and other course related posts (Põldoja, 2010). Hence the idea was to track and assess the social online interactions between participants of this open online course.

3.6.1. Data Collection Methodology

As part from the implementation process, research data was collected from the participants using qualitative methods. The qualitative data collection technique used is - unobtrusive data collection technique. Unobtrusive data provide insight into the social phenomenon that is under investigation without much interfering with the subject/participants. Unobtrusive data are non reactive that means they are not filtered through the perceptions, interpretations, and biases of the research participants (Webb, Campbell, Schwartz, & Sechrest, 2001).

Though there are many different kinds of unobtrusive data, what makes any data unobtrusive is that they are collected without the direct involvement with the research participants. The type of unobtrusive data that this research will collect can be categorized into two types, firstly, personal communications, and secondly, the artifacts. The data that are treated as personal communications are that which research participants submitted through e-mail. The data collected/uploaded by research participants on the course community blog is treated as the artifacts (Hatch, 2002). So these are the two unobtrusive ways the data were collected from the research participants.

These unobtrusive data sets are in the form of textual assignments and personal experiences of the open online course which the participants submitted over the 4 weeks online course. The data submission took place between April 4, 2011 to May 9, 2011, one week after the course was completed. One week extra time was given to those participants who had problems to access internet and who could not submit their assignment for various personal reasons. These unobtrusive data are treated as primary source of data explaining the participants' opinions and which

demonstrates their comprehension and applicability towards a new concept.

Apart from the data collected as online submission, participants were scheduled to have two synchronous meeting (via Skype): one meeting at the start of the course and other was scheduled at the end of the course. Due to technical glitch with the first Skype online synchronous meeting (April 4, 2011) on the first day of the class I could only meet 8 participants and introduce them to OER and various aspects of OER and collect/record their opinions or experiences of this open online course on OER. However, during the time period of the open online course there were six requests from the participants to meet online (Skype meeting). These meetings were not planned as part of the course, but the conversations were recorded (audio recordings). These meetings were arranged as participants had some doubts in the contents of the course. The written notes and recorded information (audio) collected during this online meeting with participants will serve as supplementary data during the data analysis.

3.6.2. Ethical Considerations

All the participants were informed of the usage of their assignments as the primary data source for this project evaluation. All the participants are informed that their answers, quotes, online meeting conversations, and their opinions and experience will be used in the project analysis part. The participants were asked to provide their demo-graphical information in the first assignment, but it was not compulsory. However, all participants are required to provide with their Name, e-mail address and Skype name for registering into the course. The names of the participants are not used in any part of this research.

3.7. Evaluation

As a vital part of the action research execution and data collection, the project needed different web platforms to test and carry out this research and provide research participants with course contents, hence Wikiversity (as course delivery tool) and Wordpress (as additional instructions delivery tool, assignments and comments aggregation tool) were chosen because both are free to anyone who registers.

I choose Wikiversity because it is free and mainly it has a web layout like Wikipedia, which makes it less confusing for the participants from the developing nations to recognize the layout and to get familiar with the course layout fast and to locate information. The other important factor is the licensing issue – wherein all the pages are per-licensed automatically with CC BY SA (Creative Commons Share-Alike License) which is encouraging given the fact that all OERs are mostly CC licensed and allows others to re-use and recreate. This quote is taken from Wikiversity's licensing

agreement which is part of the terms of use -

> "To grow the commons of free knowledge and free culture, all users contributing to Wikimedia projects are required to grant broad permissions to the general public to re-distribute and re-use their contributions freely, as long as the use is attributed and the same freedom to re-use and re-distribute applies to any derivative works. Therefore, for any text you hold the copyright to, by submitting it, you agree to license it under the Creative Commons Attribution/Share-Alike License 3.0 (Unported). For compatibility reasons, you are also required to license it under the GNU Free Documentation License (unversioned, with no invariant sections, front-cover texts, or back-cover texts). Re-users can choose the license(s) they wish to comply with. Please note that these licenses do allow commercial uses of your contributions, as long as such uses are compliant with the terms."

this exhibits the importance of creating, attributing and sharing alike.

Wikiversity has also been adopted by many other open online course providers and it is seen as the online collaboration and publishing platform favoring knowledge creation (Leinonen, Vaden, & Suoranta, 2009).

The Wikiversity online course was open for developing nations to register for two weeks before start of the course (April 4th, 2011) and managed to gather 32 participants from different parts of the world. I kept the online registration open for one extra week after the course started (till April 11, 2011) to see if there was more interest and managed to get 8 more participants. There is enough interest in the teaching community to use and promote OER for their own improvement and to better their teaching skills.

The important dates related to the open online course

Course was made available online for registration - 17th March, 2011.
Commencement of Course - 4th April, 2011.
Course end date - 2nd May, 2011.
Number of participants registered - 32 (17th March - 4th April, 2011)
Number of extra participants registered after the course commencement - 8 (4th April - 11th April)
Total number of participants registered till 11th April, 2011 – 40

Therefore, Wikiversity and Wordpress have been two platforms which has served the purpose of this action research.

3.7.1. Data Analysis

The data collected has been analyzed in the narrative structural form [see section 5.1]. Structural analysis of the data collected was analyzed using the three logical flow of activities, they are data reduction, data display, and conclusion drawing or verification (Miles & Huberman, 1994). This method of interpretation of collected data represents the qualitative research method which best suits this research to understand the challenges faced by the participants of the Wikiversity open online course and to further recommend meaningful measures to make OER adoptable in the developing world. The primary textual data collected from the participants through the medium of e-mail (personal communications) and blog post (both personal blogs and course community blog) were grouped into following 5 themes

1. Expectations,
2. Comprehension,
3. Exploration,
4. Application, and
5. Suggestions/Comments.

The collected data was broken down into above mentioned five categories, after this any area which had repetitions from the three or more participants was excluded. The next step was to display the remaining data and perform narrative structural interpretation. Interpretation the vital part of data analysis is based on the model as recommended by Hatch (2002) which suggests 8 important steps

> "1. Read the data for a sense of the whole;
>
> 2. Review impressions previously recorded in research journals and/or bracketed in protocols and record these in memos;
>
> 3. Read the data, identify impressions, and record impressions in memos;
>
> 4. Study memos for salient interpretations;
>
> 5. Reread data, coding places where interpretations are supported or challenged;
>
> 6. Write a draft summary;
>
> 7. Review interpretations with participants;
>
> 8. Write a revised summary and identify excerpts that support interpretations" (p. 181).

After the data analysis, the narrative interpretations were shared with the participants, but due to lack of time, I have not been able to collected participant's further feedback on these shared interpretations.

3.7.2. Limitations

This action research exploration might have been limited due to the fact that there were only 13 active participants. This is witnessed in the data analysis section [see section 5.1.1]. During the time of participant registration, it was assumed that at least half the registered participants would be active participants and would finish the open online course, but only 13 of the 40 registered participants completed the course.

Another important limitation was faced during the process of data analysis. The process of data analysis employed is narrative structural analysis and according to author Riessman (2005) "...language is treated seriously – an object for close investigation – over and beyond its referential content.." (p. 3). Therefore in this research, majority of the participants are submitting their assignments (data) in a non-native language, this strict examination of syntatic feature within the text and audio is not adhered.

3.7.3. Trustworthiness of the research

The criteria for assessing the data collection are supported by the advantages of using unobtrusive data collection technique [see section 3.6.1] which is believed appropriate to undertake the research questions. The criteria for assessing the data analysis is supported by the steps followed in data reduction to data display and the 8 steps followed during the data interpretation process [see section 3.7.1]. All the interpretations in the data analysis chapter [see section 5.2] are supported by the data collected. Therefore the data analysis procedure is believed to provide coherent research findings.

3.8. Reflection

As part of the reflection process, after the open online course was completed and all the assignments (data) were collected from the participants, I reflected on my experiences about building this online course and how the participants received this course. This was the project report writing part of the action research method. This was made possible after analyzing the data collected from active participants. This report has tried to analyze the learning from the participants and my experience with this project management. I tried to comprehend the potential in this open online course and ascertain if the participants understood the concept of OER and whether they will use OER in their career.

3.9. Summary

This chapter has furnished with the reasons for choosing action research method and the important steps which are the vital part of this research. This chapter explains the data collection strategy and the data analysis procedures. The limitations, ethical considerations and trustworthiness of this research are also discussed in this chapter.

CHAPTER IV

RESEARCH DESIGN

4. RESEARCH DESIGN

This chapter will focus on the design process of the open online course. The open online course is the most vital part of this action research and it postulated to follow the basic principles of instructional design. Therefore, this chapter will furnish all the steps that were adhered in designing the open online course.

4.1 Design Process

This online course tries to provide the basic overview of OER concept to educators (K-12) to the developing world. To make this possible, ADDIE instructional model has been followed to design course. This model is time tested and proved efficient after being compared to many other instructional design strategies. Though ADDIE model is a colloquial term used to describe the systematic approach to instructional development, it has been used by most instructional designers for almost more than two decades. What most instructional design developers agree is that ADDIE is an acronym representing the major processes that make the generic ISD development (Molenda, 2003). This instructional design development tool has helped me to think through course. The ADDIE model procedural steps is take from an instructional technologist website.

The acronym ADDIE stands for

4.1.1. Analysis;

4.1.2. Design;

4.1.3. Development;

4.1.4. Implementation; and

4.1.5. Evaluation.

All the above mentioned five steps has been used as the critical elements throughout this open course contents' design process.

4.1.1. Analyze

In this initial step, I answered for the most basic structural questions of the course,

I. Why this course?

This course is intended to see, map, gauge the level of understanding needed by educators (K-12) in the developing world to adapt OER in his/her educational institutions. Specifically targeted at the elementary level educators.

II. Length of the course: Due to a strict time schedule to design, implement and analyze the result of

this action research based online course, it was decided to conduct a 4 week long course. This 4 week long course was then divided into 4 classes, each requiring about 2-3 hours of study time, requiring the participants to spend not more than 14 hours in the four week long course.

III. Time-line to prepare the course: I let myself to spent 12 days to design this online course. The course designing was supervised by my supervisor who has previously designed such online courses for different audiences from different disciplines.

IV. Other instructions: All major parts of this course design work was carried out by me following the guidance from my supervisor. I have used and borrowed ideas from similar online courses on Wikiversity platform.

V. Audience/Target participants: Educators (K-12) from developing world will make the core participants for this online course. A special focus or effort will be made to attract elementary level educators cause, OER has not been so successfully adapted by elementary level educational institutions in developing world [see section 2.3].

VI. Number of participants planned: From studying the previous similar online courses it is clear that at least more than half of the registered participants will not be active or will drop out by the end of the course. Hence, It was decided to allow interested participants to register in the course for 3 weeks after the course was made available online. I expected 30 participants registration so at least 15 will be active and will finish the course [see section 3.5].

VII. Need to participate in this course: 'Educators (K-12) from the developing nations still use traditional methods to design and deliver their classes and lecture. There is a great need and potential in using online interactive resources and to collaborate with other educators to learn and exchange ideas to deliver lessons in new and creative way' - this message was used to promote my online course to find teachers (K-12) from the developing world.

VIII. Prerequisite to join this course: There is no strict prerequisite to join this course, any interested participant who considers himself/herself as an educator could register and learn. The secondary motive behind this course offering is to see why and how people get motivated by such an online course.

IX. What to learn and what do they already know?

As a part of my first online synchronous class I asked the participants what they know about OER as a concept and what they expect to learn from this course. More than half of the respondents knew or had heard about OER from a friend or while surfing the internet, but had no clear chance to learn further. The remaining participants had not heard about, but heard about OER through my course promotion and were interested to learn more.

X. What to teach?

After analyzing the brainstorming session's result from the 5 volunteer teachers (K-7) it became clear that the participants had heard and thought it was a new concept to learn and hence they saw a necessity to learn this to improve their skill set [see section 3.4].

XI. Types of learning style: This course will focus just one type of learning style and that is the read/write style. All the course contents were made available online as explanatory notes or articles.

XII. Specific learning objectives: The main objective of this online course is for participants should be able to recognize and compose open and free educational resources online by the end of the course. Understand the different license policies, learn how to reuse, create new, remix and share/distribute educational resources and be a member of the OER community and spread the awareness of OER.

XIII. Accreditation: All participants who completes all the assignments will be awarded a certification from the Tallinn University to show their understanding of basics of OER.

XIV. Demonstrating learning abilities: The participants as a part of this course will be given four weekly assignments. These assignments will determine and demonstrate whether they have learned something new and developed/improved their skill-set. These assignments are to be submitted directly via e-mail to the course facilitator or post their assignments onto their personal blog or post it on the group community blog [see section 3.6.1].

XV. Essential skills: It is considered good if the participants are familiar with voice over internet protocol software and knowledge of using web 2.0 based websites and basic technical knowledge wherein participants are expected to download and install some authoring tools.

XVI. Level of learning that will be targeted as learning outcomes: This is divided into 4 areas, which are

a. Knowledge: The participants at the end of this online course are expected to have an understanding and clear knowledge of what OER are and clearly understand the benefits of using OER in their teaching career.

b. Comprehension: The participants should demonstrate clear understanding of the definitions, history and characteristics of OER and different types of authoring tools that are used to produce and remix OER.

c. Application: The participants are expected by the end of the second week lessons to apply their understanding of OER and use OER authoring tools to produce their own educational resources. Participants are required to find resources similar in their subject area and remix them to suit in their teaching modules.

d. Analysis and Evaluation: The participants' learning outputs like assignments, comments,

personal communications and confusions will be analyzed and interpreted to address the adaptability issues of OER with the teachers (K-12) from developing world.

XVII. Identifying Content for the course: Since this online course is based on open educational resources, I have used all copyright free or Creative Commons licensed resources from websites which host such resources like SlideShare, Connexions and others.

XVIII. Need for Copyright clearances (text, images, audio/video): No, During the process of designing this course, I have used all the images that are copyright free or my personnel collection. All the text on the course home page is prepared by me. Texts by other authors have been used as web links and also accredited where necessary.

XIX. Contents of the course: The course contents make the main components of the course as it determines and stirs up the interest among the participants to continue in this course. The main components of the course are described below:

a. Syllabus – The 4 week course syllabus was comprehensible by educators from the developing world. It was not required from them to spend too much time on the internet, considering that all teachers might not have good internet connection and have sporadic electricity.

b. Grading - Each weekly class was followed with assignments, these assignments were not graded but analyzed to see if the participant show apprehension for a concept for that particular week. Since the whole course was planned only for 4 weeks it is not a long enough a course to be graded.

c. Course schedule/calendar – A 4 weeks course schedule/calendar was prepared and it can be seen as a part of the contents of the course.

d. Assignments - Each weekly class is followed with two to four assignments.

e. Audio/video lectures - There are videos that are used to explain – why the education system needs to be changed in countries to prepare our youth for a better tomorrow.

f. Lecture outlines - As a part of online course there was one synchronous class and three asynchronous classes.

g. Instructions included - All the 4 week classes have instructions on what to read, what to write (assignments) and suggested readings applicable to that particular week's lesson.

h. Reading assignments - Apart from the 4 weeks assignments and readings, this course has also extra suggested readings in the area of OER which provide additional insight into that particular weeks' lessons.

i. Locate Web resources - This online course has lot of web resources for participants to

learn more (extra) apart from the prescribed syllabus.

j. Due dates for assignments: Each week there are 2-4 assignments to be completed by the next week classes. So there are 2-4 assignments to be completed in 6 days time.

k. Fee - The entire online course is offered free of charge through the Wikiversity platform. The participants who complete all the assignments will be awarded a certificate from the Tallinn University, Estonia recognizing their completion of this OER course.

XX. Identify Environment & Delivery: The environment for the class delivery will be Wikiversity for the reason that it is easily recognizable and widely used in the developing nations and it has the similar layout as Wikipedia, making it a good option [see section 3.6]

a. Classes delivery method: The classes are delivered in a hybrid fashion, one of the four classes was synchronous and other three were asynchronous.

b. Assignment delivery: The assignments was submitted by the participants to the course facilitator by these various methods - e-mails, personal blog posts, group/community blog posts. To track the participants assignments submission, EduFeedr online platform was used to collate all the submissions on participants personal blogs and the submissions on course community blog [see section 3.6.1].

c. Chat room: In the case of the participants wanting to talk to the course facilitator about some assignment or clarification, he/she could request a Skype meeting by sending an e-mail.

d. Discussion area**:** In case of the participants wanting to discuss a certain topic with their fellow participants, they can do so by sending a direct e-mail to the community blog or write their views as comments in the community blog.

e. URL for Links to External Sites: There are many URLs given at the end of the course page for participants who are interested in further reading and exploration.

XI. Instructional Strategies: Instructional strategies should facilitate different learning styles keeping in mind different types of learners from various parts of the world. A careful selection of combination of learning styles was considered to meet the expected type of participants. The criteria listed below support a reasonable good online course design

a The structure for learning events: This online course intended for educators from the developing nations, hence the lessons will start at very basic and the entire course is broken down into 4 classes (4 weeks). The course starts by introducing them to definitions of OER, history of OER, characteristics of OER and Creative Commons' licenses on the 1st week. By the 2nd week

students will learn about the different Authoring tools to produce OERs and some online authoring platforms. The 3rd week the students will read and learn about remixing and using lesson plans to re-create learning objects and learn about open licensing compatibility issues. By the 4th week, students will read and learn about implementing OER in developing nations and the problems involved in this process.

b. Instructional strategies used: This course requires students to do the course in their own pace, the idea is independent study, where the instructions are provided to the participants at an agreed online platform/s. All the instructions are made available online, but in-case the participants needs additional help or directions, he/she can always reach the course facilitator by e-mail. There is also a community course blog which will provide additional instructions and information apart from the Wikiversity course page instructions. This blog will act as a discussion forum where in participants can add their comments. Some of the strategies are discussed in detail below

c. Provision of examples for students: The participants were re not provided with examples of the lessons on how to find, create and re-mix. Instead, participants are introduced to the concept of OERs and given definitions of the term and concepts. The practical part of creating an OER is left to participants to learn on their own.

d. Organization of learning activities: The learning modules are broken down into 4 classes. It is a recommended practice with online courses to break down classes to smaller units or lessons to make participants learn easily at their own pace. The learning units, assignments and suggested readings for each module is separated and listed to each week hoping that smaller learning units will ease learning and create less confusion on the course page.

All learning modules are sequenced in a logical order, starting with the introduction, historical background, conceptual definitions and introduction to Creative commons licenses and gradually learning more practical lessons like which software/platform can be used to create OER.

All these learning units provide adequate support through in-depth explanation of the concept supported by presentations from the experts in those particular subjects.

e. Interaction: All the course participants discussions are moved to a group community blog. Through this group blog, all the participants can comment and request for additional information and share their new learning outcomes within the OER discipline.

Participants are expected to submit all the four weekly assignments, the involvement of the participant is evaluated by the number of assignments he/she has submitted. Since the participants are from a diverse backgrounds it is difficult for them to get to know other participants online in a

short 4 weeks time.

f. Feedback: Feedback and comments on all the assignments are provided to all the participants by e-mail or as blog comments as and when the assignments are submitted. Individual feedback is provided if the participant has some doubts and requests for some clarification. Skype talk and chat is used to meet with participants whenever they want to talk to the me for some feedback.

g. Assignments: All the 4 weekly assignments are given one week time to submit and there are no group assignments or projects within the participants given their diverse work nature and backgrounds.

h. Assessment Strategies: In this online course the participants are assessed only on their submitted assignments. This is mainly due to the fact that participants come from a diverse background and there is no real sense of a classroom feeling within the participants to judge their interactions on the online platforms. Though I tried to map the participants level of activeness through their interactions by tracking their each others comments using the EduFeedr platform, but this did not work for the reason that only 6 active participants opened and submitted their assignments as blog posts and rest submitted their assignments as e-mail attachments.

4.1.2 Design

The design phase will show a blueprint of the course on paper. I started developing the overall structure of the course, and then developed the content of the course. I then identify dates, topics and resources and assessment strategies. The instructional design is broke down to weekly basis. Each week will carry its own instructions, assignments and suggested readings. Each week has its heading and mention what each week focuses on, which are also the learning modules of the course.

The four weeks learning modules are named as follows:

Table 4.1 Course Module

Week 1 - Introduction to OER
Week 2 - OER Authoring Tools
Week 3 - Re-using OER and Open Content
Week 4 - Implementing OER in developing nations.

I. Structuring the Learning modules: All the instructions, learning objectives, assignments and suggested readings are constructed into each weeks' modules. Since this online course is only 4 classes/4weeks long important aspect of the learning module is designed according to weekly learning and outcomes. These weeks will also have instructions within the assignments sections. Excerpt of the assignment and instructions from week 1:

Table 4.2 Assignment 1 (Questions Sample)

Assignment:

- Create an individual blog or a community blog at wordpress, or at blogger.
- Write one post blog (one or two paragraphs) introducing yourself (who you are and what you teach) and what you are looking forward to learn from this course.
- Read the suggested readings and write one page, introducing OER to a school that you know, which does not use OER.
- Write half a page talking about the main characteristics of OER.
- Watch the clips/short videos on this website and discuss on your blog/common web-space what you think about them.

This above excerpt is week 1 assignments and instructions both provided together. It clearly gives instructions to the participants to create a new personal blog and write one blog post introducing themselves, and what they are looking forward to learn from this course. Since the suggested readings for this week includes notes on characteristics and definitions of OER. There are assignments asking participants to write half a page about the characteristics of OER and then introducing OER to a school near them. Also, the assignment asks to watch couple of video clips online about different educational practices and to comment on these videos.

4.1.3 Develop

After designing the blueprint of the course, the next step I have explained the developing process that I followed in building this online course. All the contents for this online course are educational resources that are creative common licensed and I have credited the name of the author wherever it needs to be attributed.

The course page has very few sections before the actual weekly instructions or classes. I have intentionally kept the welcome section short for the purpose of keeping the whole course page short, this is important because of the fact that the target participants are elementary level teachers from developing nations. These educators will be based in the small towns and cities in the developing

countries with very little and sporadic ICT infrastructure. So it is easier if the course layout has less notes for ease of navigation and be less confusing.

The course begins with following contents,

1. Course objective: The objectives as listed in the course page is shown here below in the table

Table 4.3 Course Objectives

Introductory Open Educational Resources (OER) course is focused mainly for elementary school teachers from developing nations. After this course participants will be able to: • recognize open and free educational resources online • understand the different license policies • learn how to reuse, create new, remix and share/distribute educational resource • be a member of the OER community and spread the awareness of OER

2. Course length and registration: The course length in mentioned in this section, which is 4 classes on 4 consecutive weeks. Starting from April 4th, 2011 to May 2nd, 2011. This section will also have a course registration link for the interested participant, but it will have the web link there till Apr 11th that is one week after the commencement of the course. The participants are not expected to spend more than 12-14 hours of work with the computer.
3. Target audience: The table below clearly shows the audience this course is trying to attract and it also mentions that the course is prepared taking into consideration that not all elementary educators from developing nations will have access to computers with internet connection, but it considers and accepts participants who are interested in learning about OER in their free time by spending time and money to go to public internet center to attend this course.

Table 4.4 Audience Descriptions

Anyone interested to learn the basics of searching, creating, re-using and sharing license free English resources for the purpose of educating the elementary and secondary school students. This course is prepared keeping in mind that all elementary school teachers from developing nations might now have computers and internet access at their homes, but still are willing to learn by finding internet access at an educational institution or internet centers.

4. Participants list: This section provides the web link to the list of participants who are registered as interested participants.
5. Language: This course is focused towards school teachers from developing nations teaching

in English medium schools, hence this course is designed in English language. However, the participants are encouraged and are most welcome to search, remix and re-use educational materials in their native languages that are meant to be re-used and re-distributed.

6. Course assignments: All the weekly assignments' instructions are provided in weekly classes after the class objectives.
7. Class meetings: This online course is designed to meet semi-synchronously (part synchronous and part asynchronous).

I. Review the quality of the course contents: Once the full course was developed with texts, images, texts and other multimedia. I requested my supervisor to check for mistakes, corrections with layout and interface. I cross checked for any typos and incorrect web-links and active resources.

4.1.4. Implement

After the designing and developing of the course contents, it is was then made available to the public online. The course page was made available online for the public for registration from March 17th, 2011 to April 11th, 2011. I started promoting online on various social networking platforms, teachers association sites, educators social networking web platforms like Teachers without borders (http://teacherswithoutborders.org) to attract participants.

The first day of the course was April 4th, 2011 and the class met with 8 participants online on Skype. I introduced to these 8 participants the introduction of OER and basic licensing that goes best with the OERs.

After the first synchronous class, the participants were asked to get familiar with the full course page. Through the group community blog I provided them with additional instructions about first week's assignment. Also through e-mails, I started sending in information when the assignments are due and also clarify some participants doubts.

Through the community blog I started providing additional information which goes along with weeks' class, which I thought would add some additional knowledge to the course. After three weeks of class, I met with 6 participants (who enrolled online to meet) again online via Skype on April 25th, 2011 to collect their problems, feedback, comments and appreciation.

The course end date was May 2nd, 2011.

4.1.5 Evaluate

The online course concluded on May 2nd, 2011. After the course, I have evaluated the assignments that the participants submitted. The evaluation of the assignments and the feedback from the participants has helped to understand if the participants have met the course objectives. The assignments and comments from the participants will be thoroughly evaluated in the data analysis chapter [see section 5. 2] which will address the issues of OER adoption among the K-12 education in the developing world.

4.2 Summary

This chapter has provided the blueprint of all the course contents that has been taken into consideration during the process of design. The instructional elements followed for this course design has been taken from the Raleigh Way's website for the instructional design for ADDIE model (Instructional Design, n.d.). Prior written permission has been taken from the author of the website to use the elements of the ADDIE model in developing this open online course.

CHAPTER V

DATA ANALYSIS

5. DATA ANALYSIS

This chapter will focuses on analyzing process that I have employed in this research. Data gathered from the open online course has been transformed to research findings through narrative structural analysis. This chapter will explain why I have opted narrative analysis as the data analysis method to present my learning from the action research method and will present the challenges faced during the process of narrative analysis. At the finishing stage of Wikiversity open online course there were 13 active participants and their identity has not been revealed due to the privacy restrictions. The participants are represented with numbers so that it is easier for readers of this thesis to follow the analysis. Of all the active participants there were only two female participants, and these two female participants' responses will be denoted by the letter 'w' suffixed to the numbers. All the participants are represented with numbers from 1 to 13. The female participants are number 3 and number 7, so they will referred as participant 3w and participant 7w respectively.

5.1 Narrative Analysis

Widely used interpretations and explanations of narrative analysis are listed here in order to understand the various viewpoints of experts before the data analysis process –

Smith (2000) states that “Narrative analysis both complements, and differs from, content analysis. Whereas there is general agreement about the characteristic of content-analytic method, there is no such agreement about the narrative analysis. Content analysis is derived from mainstream social science and is used primarily in quantitative research, whereas narrative-analytic systems are derived as much from literary and philosophical analysis as from social science and are used predominantly in qualitative research” (p. 327).

“The narratives are characterized by perspective and context” as suggested by Gee (1991) and “*perspective* refers to the fact that a narrative contains a point of view toward what happened, telling us what is significant” whereas “*context* and the related term *frame,* are used variously to refer to (a) external influences on the narrator, (b) ways in which the narrator constructs the narrative, and (c) characteristics of the resulting text. External influences include the historical period, physical surroundings, and culture” (as cited in Smith, 2000, p. 328).

These characteristics and meaning of narrative analysis has influenced me chose this method to analyze the data collected in this research.

5.1.1. Data Analysis Method

Due to the lack of a widely agreed single framework in narrative analysis procedure in relation to the analysis of unobtrusive data, I have used Reissman's (2005) narrative structural analysis framework, because this model asserts "...the *way* a story is told. Although thematic content does not slip away, focus is equally on form – how a teller by selecting particular narrative devices makes a story persuasive" (p.3). Hence this framework best suits my requirement at this stage of research because this model emphasizes the communicative aspect of the participants' stories. This communicative emphasis would have only happened if the participants have understood the open online course's contents.

The narratives have been classified into themes which facilitates the representational strategy. The comprehensive textual recital of these description will support the themes with examples (from participants' assignments) so that the respondents' assignments which are the primary source of data being evaluated will answer the research questions asked earlier.

5.1.2. Transcription of unobtrusive data

The assignments from 13 active participants collected through the four week long open online course were collated and treated as the primary data. The data (assignments) were categorized according to the themes recognized harmonizing to the flow of OER open online course designed to check if the respondents would understand and apply/use it in their daily teaching and learning profile. Apart from the assignments (textual primary data) collected from the participants, I collected discussion transcriptions (audio supplementary data) from 8 of 13 active participants as part of the first introductory class on April 4th, 2011. As well as the online discussion transcriptions from 6 of the 13 active participants with whom I met online (Skype meeting) at different time period of the on-goings of the course to discuss their doubts and opinions.

5.1.3. Identification of Excerpts/stories

All the assignments are treated as individual's lessons which has affected or changed them while they were going through this open online course. The assignments which are part of the open online course are not just questions to which the participants are answering yes or no, but they are learning blocks of each participants who are willing to dedicate a certain amount of time to learn the concept and to induce this in their everyday life/career. This acquisition of new knowledge is shared in the form of assignments textually and online meetings.

5.1.4. Analysis procedure

The assignments collected from the participants are treated as the data excerpts which will serve to analyze the participants experiences from the open online course. To achieve this, the excerpts are classified into five board categories [see section 5.2] which will demonstrate participants learning curve of the OER concept though the Wikiversity open online course. All the data collected (both textual and transcribed audio data) were exported on to a MS Excel spreadsheet with 13 different sheets for every individual participants. These data were read, re-read and highlighted to recognize any emergent themes and repetitions as the first step. These emergent themes are discussed in detail in section 5.2 of this chapter and harmonized into five board themes as recognized from the literature review chapter. During the process of re-reading all the transcriptions, some repetitive subjects from two or more participants are not repeated here as evidence but instead discussed as an accorded topic within the analysis.

5.2. Analyzing the excerpts (Collected data)

The five board categories that are recognized in this chapter are derived based on the steps recommended by author Amos Hatch in his book Doing qualitative research in education settings. (Hatch, 2002) [see section 3.7.1]. The five board categories are

1. Expectations;
2. Comprehension;
3. Exploration;
4. Application; and
5. Comments/suggestions.

5.2.1. Expectations

The open online course which asked its participants to write about their expectations at the start of the 4 week long open online course and introduce themselves was first week's assignment. The expectations from OER in developing nations can be different from different participants' perspectives. The narratives below show how the participants fared and answered the questions intervening about their expectation and comprehension of the fundamentals of OER. All the text from the participants are quoted directly after getting their approval. Since all the participants are writing these assignments in second language (English), the spelling and grammar is not perfect. In the first online class (April 4th, 2011) most of the participants were enthusiastic and were eager to learn new things. This can be seen reflected in first their assignments.

I am expecting to use Open Education Resources (OER) knowledge to improve

on the quality of my classroom instruction. [participant 1]

This excerpt clearly shows the eagerness to learn and improve his skills so that his classroom or his students can benefit from the OER knowledge that will be gained from this online course.

> ...I hope if our school embraces this project then it will be beneficial not only to our teachers but also to the entire school academic performance as it would be easier for our staff to use the internet to find lesson plans, activities worksheets and other classroom teaching and learning resources... [participant 4]

Participant 4 shows such expectation that he is keen to use OER and wants his school to improve education delivery by using OER. He also demonstrates some basic idea of using internet for finding lesson plans, activity worksheets and other teaching resources, this exemplifies that he knows internet can be tapped to improve the quality of teaching in his school and wants to learn how he can achieve that.

> While going through these text in beginning of the course " More people sharing more resources in new ways is the history of civilization." reminded me "research on neuro-economics is showing that freely giving and sharing is a behavior that has had important survival function for human groups since earliest times"(Grimes 2003).... [Participant 5]

Participant 5 describes his understanding with the concept of openness and sharing, this is demonstrated from an research article that he quotes. Participant 5 sites Grimes' 2003 article - which talks about the importance of survival within different human groups being directly dependent on the ways humans' shared their knowledge and learning. This is evident that this participant has shown interest and have read the suggested articles that were part of the course. Grimes 2003 research article was one of the learning objects' reference.

> One of my biggest worries is lack of affordable and accessible training materials (books and software) that could be used in the preparation of lesson materials. Discovering OER will help me access to materials which i could copy, edit and adapt for my lessons without breaking any copyright law. I have been involved in the OER community through Wikieducator.Org and it has really expanded my horizons in terms of access to educational material that are "free to use". Living and working in a developing nation like Nigeria where the cost of books

> and other educational materials is nearly out of the reach of most people, I believe OER is one of the solutions to improving the educational system. The only drawback to OER in a country like ours is Internet access which is still on the high side cost-wise; but on the whole, having freely accessible materials is real helpful.... [participant 6]

This response from participant 6 reflects his concerns about the lack of training materials to empower teachers with materials that could help them in easy delivery of lessons. Participant 6 shows his skill level by mentioning his active involvement in Wikieducator and how it has expanded his knowledge to discover freely available educational resources on the web. This participant highlights about the expensive ICT infrastructure cost, mentioning that could be the barrier to widespread usage of OER in educational institutions.

> I am very interested in this open phenomenon in education field. Although I am working at higher education and not teaching a course, this course would be very helpful for me to learn about basics of OER. [participant 7w]

> Learning is a continuous process. Joining this course, will improve my knowledge on OER hence link me to a lot of OERs. Learning about OERs will boost my professional career as a teacher and improve my teaching skills since OERs are a gateway to teaching/learning resources that improve teaching/learning. [participant 8]

Both participant 7w and 8 have joined the course to bring in some advancement in their career by learning in detail about OER and usage in their career for their advancement. Though participant 8 is a teacher and wants to learn about OER to enhance his teaching skills, participant 7w does not teach but she joined the course to improve her knowledge in the field. She came to know about OER from one of her colleagues and shows interest to learn a new concept for her own improvement. Both participants display enthusiasm towards a new concept which they are affirmative will bring positive change in their career.

> Today with the outburst of scam of fake universities and colleges in India the quality of education rather education itself is in question. The access to higher quality education is limited to students with all the reasons from money to accessibility of colleges to infrastructure to quality education to teachers/lecturers

to lack of funds from the Government and various other reasons... [participant 11]

Participant 11 doubts the quality of education being delivered in Indian higher education, which makes him look for alternative ways of learning and teaching. He is convinced that anyone can acquire the skills taught in the university by self learning. He is not happy with the fact that the population with good economic status get the best of the education and others are left over. His expectation from this OER course is to make him a better all round self learner.

> ...I am a Special Education teacher specializing in the field of learning disabilities and gifted education. Special Education also known as exceptional learner education as well as special needs education, is a specially designed instruction to meet the unique needs of persons with disabilities. The educational needs of people with disabilities are vastly diverse. They have the same needs as everybody else to learn the basic skills of literacy and numeracy to the best of their ability as well as other abilities that are required in the society in which they live. At the same time, they have (by definition), educational needs that others do not have (Often referred to as special educational needs). So I intend to learn how to use the Open Educational Resources to develop myself on how best to help these exceptional and most wonderful individuals take a fuller part in society and also learn how to start OER as relates to Special Needs Education where there seem to be a dearth of information. [participant 12]

Participant 12 wants to learn about OER and use this concept in his special education needs classes and also develop his skills to start OER repository, to fill the gap in the ever increasing needs in educational resources for people with physical disabilities. This depicts his interest in learning a new concept for his career improvement.

> I am looking forward to acquiring knowledge about OERs available on the internet and also sharing and learning from teachers/educators from different parts of the world. [participant 13]

Participant 13 intends to develop network with teachers who are working with OER and learn from them. The basic expectation from this course can been seen here as networking depicting the importance of knowledge sharing and collaboration.

'Expectations' - summary of excerpts

From these textual analysis it is evident that, the participants are desiring to develop their skills to enhance their career, improve their teaching abilities, improve the quality of overall education. Their interest in learning OER is clearly depicted in their reasoning with lack of adequate availability of quality information and to use the web platform to develop network of teachers who can learn, share and distribute OER information relevant to their discipline. OER facilitates collaborative learning and this can be witnessed from their initial expectations from the open online course.

5.2.2. Comprehension

The comprehension part of the open online course will display how the participants understood the fundamentals of OER. To understand and build OERs it is important to know what is OER and its history. This will make the participants more knowledgeable which will help in spreading the concept to other schools and teachers. The participants were asked to read the provided meaning, various definitions from OER experts and write a one page OER introductory letter to a school which does not use OER in their teaching and learning.

The participants' excerpts depicting their comprehension of OER as a domain are listed below

> ... It is ICT friendly because it is offered online. This means it is accessible to all. It is a sort of open education, gives room for partnership and exchange of ideas, - information from people of diverse geographical background thereby resulting to globalization of ideas, authorship aspect of OER enables learners to comply with copyright regulations without possibly restricting information and knowledge, - meant to improve the quality of teaching-learning process. [Participant 1]

Participant 1 addresses that OER is necessarily ICT friendly and helps develops network between like minds from different geographical area. He also recognizing the fact that this networking will result in globalized view of ideas and act as the breeding ground for idea creation, sharing and exchange without having to worry about the copyright issues. Therefore, this participant is positive that OER will eventually help improve the quality of teaching - learning for teachers and students alike.

> ...Accessibility can also be used in the narrower sense of ensuring that OER are accessible to disabled users. Accessibility practices include creating subtitles, providing alternate text for images, audio article transcription, generating high contrast color schemes, verifying that content is accessible at larger font sizes, and

> testing that interfaces are navigable via keyboard and/or alternative devices. [Participant 2]

Participant 2 recognizes the importance of making OER accessible to the physically disabled, such as creating subtitles, alternate text for images, audio article transcriptions and ensuring all these can be accessible using keyboards and other simple interface devices. This participant clearly shows tremendous interest in how he has searched for open online resources which are presentable to the physically challenged and his interest in creating a data base for such resources. But I am not sure whether this aspect can be reflected as his comprehension of OER definitions and history. It is noted that some participants loose track of what they are supposed to concentrate on a particular assignment.

> ...OER: Open Education resource is teaching, learning and research resources that permits their free use or re-purposing by others. It includes full courses, course materials, modules, text books and many other techniques by which we can get access to knowledge... [Participant 3w]

Here the participant shows the understanding that OERs are educational materials created for reuse and for self learners. This participant lists the different types of resources which can be branded OER. It can be observed that this participant does not have an exploratory answer for OER definitions and basics.

> Cost minimization: Open Education Resources are the most common cost free resources; the OER movement generally sets great store in lowering the total cost of ownership, which means that the resources and tools are free as well as the medium of their distribution should not presuppose expensive hardware or software. For example, resources which require high bandwidth might course large internet connection costs in developing countries. The problem is solved by cost shifting away from the consumer. Accessibility: OER are only found on the internet and are offered almost with zero-cost and accessed universally; they are available for public use,without password-protection or registration requirements; there is freedom to study the work and application of the knowledge leading to higher degree of openness. Consumer & Producer relationship: The set of producers are not necessarily limited to or separate from the set of consumers; consumers may also be producers at the same time. Licenses: The licensing of OER is rather wide and includes but extends beyond copyleft and free software.

> Resources which are widely recognized as OER, such as MIT's open courseware, use licenses such as CC-BY-SA-NC (a creative commons license which requires attribution, adherence of modifications to the same license, and restricts to non-commercial use).Other licenses are: GFDL and Public domain. [Participant 4]

Participant 4 shows understanding of basics of OER by mentioning the main characteristics like cost minimization, accessibility factor, consumer and producer relationship and licensing issues. He also argues that a good OER should be produced keeping in mind that not all the users of OER across the world will have high bandwidth. OERs which will require latest software like Adobe Flash player may not work in the developing nations, cause the computers and operating systems which the schools host will be not be recent and the bandwidth in these countries are still low compared to the developed world. This participant highlights that OER databases or websites are registration free and not password - protected, but now more and more OER hosting websites want to control and measure the amount of traffic and hence are requesting users to register on their platform like Connexions, Wikiversity and Wikieducator. He also demonstrates clear understanding of producer and consumer relationship and the various preferred licenses that should be adhered by OER producers.

> ...for developing nations where educational materials are costly to come across and the available ones restricted for adaptation by various copyright statutes, OER is heaven sent. You can download OER content, adapt it to your needs and redistribute it freely. One of the pluses of OER is that materials can be downloaded, edited and if there be need, printed out in hard copy, without need for long copyright application processes. [Participant 6]

Participant 6 mentions and depicts the understanding of OERs redistribution aspect and importance of adhering to the right license while producing OER so that end users can make copies and redistribute without having to take permission from the producers. This participant sees the possibility of using OER as a non-web resource and mentions that it can be converted into paper copies and again distributed in the areas with less ICT infrastructure.

> ... however, we all know that a core value of education is to share accumulated knowledge for free...Opening education also means opening processes of producing educational materials. The underpinning culture of OER, which are

> open knowledge, open source, free sharing and peer collaboration, emphasize consumers can be producers. In other words, students can teach. Students can participate in teaching process. Thus, collaboration in producing educational materials or education itself is the other aspect of OER...Most of OERs use Creative Commons License. ...[Participant 7w]

Participant 7w talks about how students can also become teachers by creating OER if they are computer literate. She mentions that collaboration between peers is the key to keep OER alive in a geographic area or a community with the common agreement of keeping knowledge open and letting other users edit the knowledge.

> Introducing OER to schools in developing nations is really a challenge as most of these schools either suffer from one or all the problems listed below; - Lack of electricity - Poverty - Lack of internet access - Lack of Computers and digital devices - Ignorance or lack of knowledge about OERs - Lack of computer instructors. Poverty is a major barrier to education in Africa. But the question is "Does poverty have to stand in the way of education?" The answer is obviously no. Most African schools are found in typical rural villages that lack electricity, internet access, computer instructors and computers. Computers in such villages are like a dream. A dream that can only come true if students visit the city. Hence Africa is really suffering from the fangs of the digital divide... To introduce OER to our school, we require that we first of all discuss the need and importance of OER with the school authorities such as proprietor and/or head teacher. Upon discussing with the school authorities, I shall then sensitize the teachers about OERs and the importance of OERs in teaching and learning. A workshop can then be organized. The workshop is going to be a 5 day workshop and the aim of the workshop is going to be "To develop, support and use OERs combined with pedagogical approaches in teaching and learning." During the workshop, I shall make sure all participants have internet access and computers and ensure that there is follow-up support for the teachers through visits to their school, discussions, phone calls and e-mail. During our workshop, I shall make sure data is being collected and that teachers share experiences, difficulties, lesson plans and digital resources with each other through a mailing list... This will increase student engagement and understanding of concepts hence overall success in the

> teaching/learning process. Conclusively, the best way to introduce OERs to schools is via a workshop to train teachers and students on OERs. [participant 8]

Like many other OER opponents participant 8 lists the main hindrances of OER development in a developing country those are poverty, lack of electricity, availability of affordable ICT infrastructure and lack of OER knowledge. However after listing these he mentions that poverty does not stand in the way of education, instead the education can be used as a way out of poverty. He states that OER can be one of the important tool to bridge the digital divide. He initiates to volunteer and organize a 5 day workshop in his school for other teachers to teach and exchange ideas on how to adopt and implement OER in their school. He foresees the need to educate the teachers and students alike about the OER to make education more effective in the rural African schools. He stresses on the aspect that the local school administrators need to take decisions to promote OER, he seeks local government participation and policy creation for OER promotion among teachers and students. This participant demonstrates clear understanding of OER adoption within a developing country context though the assignment here was to know his understanding of basics of OER like definitions and origin.

> Open educational resources (OER) "are teaching, learning and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use or re-purposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials or techniques used to support access to knowledge". It encompasses several different types of resources, including learning content (courses, lesson plans and learning objects), tools (software that supports the development, management and re-use of content) and implementation resources (the intellectual property licenses that promote open licensing and other principles of best practice)". [Participant 12]

Participant 12 starts by looking into the definition of OER and mentions different components (formats) and characteristics that make a resource open and educational. He stresses on the licensing issue of OER which qualifies a resource available to all for re-use, re-mix and redistribution.

'Comprehension' - Summary of excerpts

All the participants described and presented good comprehension of characteristics and main functions of OERs. Though 2 of the 13 participants were repeating explanation provided to them as suggested reading as their weekly assignments, others wrote their own explanations showing their understanding towards the fundamentals of OER. One of the participants listed various steps on how to promote OER (like organizing workshop) within his school and his locality, this depicts not just the interest but how teachers with motivation can take OER to the next level.

5.2.3. Exploration

As part of examining participants skill level in exploring, authoring and remixing lesson plans (OER), they were introduced and guided to register in LeMill, an online community mainly focused towards teachers to find, author and share OER. The participants were provided with instructions to use open source authoring tools (to create learning objects) such as exe Learning, Xerte to develop their own educational resources. Similarly they were requested to register with Wikiversity, which is another web platform for authoring and sharing online educational resources. The exploration part of the Wikiversity open online course will examine participants' ability to understand the concept of recognizing the potential web resources, free online educational resources, authoring software and skills, and recognize websites which host OER.

> ...The division of the LeMill web page into content, method, tool, teaching stories and community sections makes it easier for one to locate what one is looking for easily. Also collections have unique addresses (URL) and you can make links to them. If you are using some Learning Management System (LMS) or Virtual Learning Environment (VLE) that handles SCORM or ZIP packages you can export your LeMill content collections as SCORM or ZIP packages and import them in your LMS/VLE. -If you rather work without LMS / VLE you may simply make a collection and send the address (URL) pointing to it by e-mail to your students, or if you have a blog for your course you can have a link to the content in the sidebar of the blog. Naturally you can also put a link referring to the content in LeMill inside a LMS or a VLE. The Tools section is a place to describe different kinds of virtual or physical tools we use or may use in teaching and learning. You'll find tools that other teachers and educators are using. The separation to content, methods and tools may sound artificial, but I believe that it may also help us to think about learning in a new way. If you want to work with

> other people the Community section is where to do that. At first you may just search for groups and see what they are doing. If their work is interesting you may join the group. All the groups are open for anyone to join. The community section is simply listing people, groups, and some contact information. You may use e-mail or instant messaging to contact people. For each group there is a group blog to coordinate and discuss the group's work. Finally in LeMill you can add other people in your contact in this way you will be able to network with people in your field or people having similar interests. [Participant 1]

Participant 1 has thoroughly searched for new resources and websites which hosts OERs, like readingrockets.org and it is evident from his work. His understanding and explanation of different features and functions of LeMill is exhaustive and seem to appreciate this website for its features and user friendliness.

> The eXe project is developed as a freely available Open Source authoring application to assist teachers and academics in the publishing of web content without the need to become proficient in HTML or XML markup. Resources authored in eXe can be exported in IMS Content Package, SCORM 1.2, or IMS Common Cartridge formats or as simple self-contained web pages. The Multimedia Learning Object Authoring tool enables content experts to easily combine video, audio, images and texts into one synchronized learning object. All assets are configured to be played back in a pre-configured order. Users do not need to perform any programming tasks, but rather going through a graphical user interface to generate the learning object....Xerte is a fully-featured e-learning development environment for creating rich interactivity. Xerte is aimed at developers of interactive content who will create sophisticated content with some scripting, and Xerte can be used to extend the capabilities of Xerte Online Tool-kits with new tools for content authors...CamStudio is able to record all screen and audio activity on your computer and create industry-standard AVI video files and using its built-in SWF Producer can turn those AVIs into lean, mean, bandwidth-friendly Streaming Flash videos (SWFs). [Participant 2]

Participant 2 presents good understanding of different features of open source authoring tools used to create learning objects. The participant has studied all the mentioned authoring tools website which was part of the course and his knowledge of apprehension of these software is convincing.

He lists main features of these software which are an integral part in the production process of learning objects. His exploration skills are well noted and praiseworthy.

> ...My favorite authoring tool is eXe which is an e-learning XHTML editor with an an authoring environment which assists teachers and academics in the design, development and publishing of web-based learning and teaching materials without the need to become proficient in HTML or complicated web-publishing applications. It's also a revolutionary tool which presents teachers and learners with a technology that simultaneously provides content and the means to interact. ...http://classtools.net/ & http://hotpot.uvic.ca/ ... [Participant 4]

Participant 4 shows interest and understanding in area of authoring tools like eXe learning. Though the open online course did not talk much about the authoring tools except for introducing a bunch of authoring tools software in a PowerPoint presentation, this participant demonstrates that he has visited these software homepages to explore more. This participant has as well tried to experiment with this software. Apart from that, participant 4 provides examples of two learning objects software hosting websites.

> ...Wikiversity uses wiki software. It is commonly devoted to collaborative learning. It is based on ‘learning by doing' or 'experiential learning'. It is all about participation. It is co-creation of learning resources. It is challenging to traditional method of education delivery. The editing is special characteristic of this model. Wiki university is useful in all types and styles of education from per-school to university. It also covers professional training to informal learning. “A guided tour” or “start editing now” are very useful links for new comers. They cover all required aspects for new comers such as stages of an article, how to develop an article so on.
> OER related sites list http://ocw.mit.edu/about/, www.khanacademy.org, www.gutenberg.org, http://wikieducator.org, http://cnx.org/ [Participant 5]

Participant 5 presents Wikieducator and his understanding of Wikiversity. Unlike other participants, this participant seem to encourage and demonstrate his wiki skills more than the open source authoring software. He depicts his interest with the popular sites which host OER similar to MITs

OCW website. The Gutenberg project which was not mentioned in the online course was mentioned and referred by this participant. He shows how one can learn from the various wiki sites, and mentions the strong aspect of wiki that is, editing feature and he is knowledgeable about the fact that wikis are collaborative creating process.

> ...I enjoy using the Wiki-educator site for my authoring because using Wiki-text gives me a lot of flexibility as I am accustomed to HTML. The availability of the Rich text option also makes Wiki authoring as simple as just preparing a word processing document. One big advantage of using Wikis is that it allows for collaboration with other members of the network. Another advantage is the fact that you can use the revision tab to monitor changes made to pages i.e. accept them to revert back to previous versions at any time. Some available educational resources relevant to my courses of study which i have had the opportunity of gaining from include: http://forrestercomputing.wikispaces.com/Social+Software+26+Internet+Technology (WWW Tutorial). From my findings, the following sites offer a good opportunity for authoring: http://www.issuelab.org/, http://www.oercommons.org/, http://www.wikieducator.org/, http://www.gentoo-wiki.com/, http://www.wikispaces.com/ [Participant 6]

Like previous participant this participant too stresses on the advantages of wiki-educator. Talks about how it has made authoring easy because it is like editing any other MS word document, and he mentions that wiki allows for easy collaborative editing and creation with an added advantage of monitoring the changes made to a page. Participant 6 seem to know a lot about creating and collaboratively creating a resource using wiki-educator. He also lists five good websites where in one can create and share free educational resources. It is evident that he is skillful and this course has been beneficial to him.

> ...General OER search site 1) OER commons: http://www.oercommons.org/,
> 2) Merlot: http://www.merlot.org/
> Free Textbook- 1) Textbook Revolution: http://www.textbookrevolution.com/,
> 2) Intratext: http://www.intratext.com/,
> 3) Many Books: http://www.manybooks.net/
> OCW or video lectures 1) iTunes U: http://apple.com/ and download iTunes

2) TED: http://www.ted.com/ 3) Berkely Univ.: http://webcast.berkely.edu/
4) Academic Earth: http://www.acacdemicearth.org/
if you are Korean 5) KOCW: http://www.kocw.net/
I hope you just explore these websites and feel first before you judge Open Educational Movement. [Participant 7w]

Participant 7w certainly has done enough research to learn about new sites with OERs like http://www.manybooks.net/ and http://www.intratext.com/. The writing above is an excerpt taken to show her interest and exploration in OERs. One very good example is http://www.academicearth.org/ which has a good selection of lectures from various higher education topics from reputed universities. This excerpt is part of the letter where this participant is introducing her teachers to adopt OER and requesting them to share their resources with the world. She also provides one local open course ware web-link for OERs in Korean language.

Open educational resources websites 1. Nixty - www.nixty.com
2. Alison www.alison.com 3. P2PU - www.p2pu.org 4. Wikispace www.wikispaces Nixty is my most favorite authoring tool. Firstly, it is easy to learn how to use Nixty because when you join Nixty, you are free to take the Introduction to Nixty course which drills and trains you on how to work with Nixty. I also like Nixty because you can create a wiki'ed course in which anybody can be an author. I am not to use to other OER websites except Alison and P2PU which I just started learning more about. Because of this reason, I can't say for sure if Nixty is better than them. [Participant 8]

This participant recommends Nixty for its simplicity and its unique features such as creating an article and allowing others to edit (like Wikipedia). He has not spent time to use and evaluate other sites as against Nixty. He does not seem to be interested in learning new web platforms and then compare it to Nixty instead is satisfied with Nixty.

A good site to view video clips of academic lectures on a range of topics is http://www.academicearth.org/. The lectures vary in style and quality, so it is worth browsing. As I am an English teacher I found some good videos on literature. This site has many free lessons in English OER Commons - free to use teachingvand learning resources from around the world at

http://www.oercommons.org/. This site is from the US Education Department consisting of teaching and learning resources from the US Federal government http://www.free.ed.gov/index.cfm This site has many resources of different types in video, photo and written articles. It has many articles on English learning Massachusetts Institute of Technology's (MIT) OpenCourseWare (OCW) http://ocw.mit.edu/OcwWeb/index.htm. this site has many courses in English language and literature. Multimedia Educational Resource for Learning and Online Teaching (MERLOT) http://www.merlot.org/merlot/index.htm
Open access courses from Yale University http://oyc.yale.edu/
[Participant 10]

This participant has listed about six websites which are major recent contributors of educational resources and in promoting OER. He lists the advantages of these six sites to different educational levels. This proves his exploration skills.

...Some examples of OERs and the links where they can be found include:
OER blogs and repositories – http://oerconsortium.org/oer-organizations-and-blogs/. Free images and clipart – http://www.thenounproject.com/
Online courses – http://p2pu.org/
Open textbooks – http://collegeopentextbooks.org/
Authoring tools – http://lemill.net/ ... [Participant 12]

Participant 12 shows different formats within the wide arena of OER like the Noun project which is collection of clip art images which are CC licensed. This participant has shown and discovered a good list of OER from different domains.

.. EshareNet, Citadel, Atutor, Apple Learning Interchange, Google for Educators....Here, teachers will find a teacher's guide to Google Tools for their Classrooms. Examples of innovative ways that other educators are using these tools in their classrooms are also available to spark teachers' imagination. Teachers can sign up for the quarterly Google for Educators newsletter, as well as check out the latest from The Infinite Thinking Machine, a Google-sponsored WestEd-produced blog for educators, by educators. A new community has been launched with the Google for Educators Discussion Group where teachers and

educators can easily communicate. Other OERs are http://www.linkslearning.org/ http://www.eduref.org/index.shtml [Participant 13]

Here participant 13 shows a lot of interest in Google for educators, though he lists some of the other online open educational resources sites, he continues to provide more information on Google for educators. This shows his interest and familiarity with Google for educators. He talks about a blog for teachers designed by educators and its usefulness and its role as OER for educators. He mentions two other sites which does hold a lot of educational resources like lesson plans and lectures which teachers can use in their classes. Though some of them are not CC licensed websites and the resources cannot be used without the permission of website developers, but these websites do facilitate ideas on preparing lesson plans for elementary educators. Therefore, this participant has demonstrated the skill to find new educational resources online.

Exploration - Summary of excerpts

All the participants have shown their interest for exploring and finding diverse types of open and paid educational resources' sites. From the list of sites that the participants have suggested, there are 3 sites which are free and new to me. From this exercise it can be observed that participants have preferences and comfort level with different OER sites, some prefer free tired and tested platforms like Wikiversity and Wikieducator, whereas others like regulated sites like Nixty. However, in spite of different preferences seen with the participants they have spent time to look for new open educational resources.

5.2.4. Application

This section will look into the OER skills application by the participants. The open online course requested all its participants to write and share their opinion on how they would implement OER in their schools and education. They were also asked to write and share their ideas, suggestions and proposals to successfully implement OER in their area. To provide more insight into this exercise, as a part of this course I provided an article by author Sunil Kumar Singh who has developed a learning object in Connexions. This article talks about “A perspective of OER in Developing countries.”

Participant's excerpts:

To implement the OER, it is important to understand how the core functionality of the platform “WWW” works in the dissemination of information and knowledge within the basic elements of an effective education system. The progress of

> implementation is largely dependent on OER understanding and readiness and availability of information technology particularly the Internet because the web-based OER requires availability of sufficient bandwidth.
>
> To implement OER in developing countries and in order to run successfully it is necessary to note the following: Note the available information technology infrastructure; Internet access with adequate data bandwidth; In developing countries, overall, do not have adequate hardware in place; internet penetration and bandwidth in places away from urban areas are a problem. Urban areas like this actually need an environment that can stimulate the implementation of OER. Till the availability of affordable internet with good bandwidth, the OER should focus on institutions of various kinds, ranging from primary school to higher education levels. This means involving governments, institutions and communities in a sustainable manner with the implicit aim to spread OER .
>
> In fact, the total potential users of OER are concentrated more here in the Asian developing countries because of its huge population base. It may be taken into account that these regions actually produce more skilled labor (engineers and doctors), where OER can be a stimulus to improve the quality and standard.
>
> There is a definite need for cooperation between local governments and other institutions including international institutions. The local government must realize that education is one of the instrument which changes and will improve human existence in their country. The government should provide for a higher education infrastructure that can be accessed from anyone with out any discrimination.
>
> In developing countries, education means many things, ranging from the changing sociopolitical equation, the ability to fight discrimination, birth control, increased economic activity, enhanced democratic processes, improved health care and so forth. Next is how OER can play a role to help all these educational tasks.
>
> The implementation of OER should be adjusted to the conditions of developing countries.... [Participant 2]

This participant demonstrates his understanding with possible OER implementation problems in the developing nations with many examples. He discusses the problem of internet penetration in developing nations which is still a big problem given the ICT infrastructure. He mentions that the local and central government in every developing nation should promote OER as one of its educational policies. He mentions the problem of providing all the adequate hardware in the

educational institutions. The other most important policy he stresses is that OER should be included in the developing nations government manifestation so that it will reflect on the educational policy for these countries. Though most of the factors mentioned by participant 2 is worth a try, I assume his implementation problems listed are too exaggerated.

> ... The objective is to spread awareness about OER to have quality education. It is accepted fact that real barrier to OER is on implementation side. All internet users are not aware of OER. The focus is on these users. It is important that user should be aware about the licensing rights. Objectives should be defined. Motivation needs to be addressed. Navigation, content, access and sponsored information should be analytically viewed to determine reliability. Quality resources should be listed. Customization possibility of these resources. To create new materials software (freeware or shareware) are made available. Learning styles inventory is a good choice to assess learning preferences. Rubrics are often used in elementary schools. Formative assessment helps to have effective learning. The inherent superiority of web educational content will help OER to be recognized a move towards quality education. Communication is responsible for fundamental changes in every sector. There is a tremendous increase in production and retrieval of information. It has given birth to net based culture. The net changes everything and it is fast evolving. It is forcing Campus based education to opt it. So pre school education to university education are leaning towards web based educational resources. The developed countries are adapting digital content in better way than developing countries. Cape Town open Education Declaration pointed out that large part of individuals, institutions in developing countries are unaware about OER, because they do not have access to computers with internet. They invited governments, professional societies, unions, policy makers, colleges, universities, publishers, foundations learners, educators trainers, authors foundations and others to work together to remove the barriers of OER. The author of the suggested readings also supported the inherent superiority of web based educational content. He also stated that OER movement needs initiatives to strengthen the basic goal of quality education beginning from the birth of a child. [Participant 5]

This participant mentions a lot of OER implementation factors which will make an impact on

education sector of the developing nations. He agrees with all the factors mentioned by the author Sunil Kumar Singh which was part of the suggested readings. This shows that participant 5 has read and is agreeing with the author on OER implementation steps in developing nations. However, he lacks to provide his own ideas for effective implementation process of OER.

> From my perspective, nations in the developing world stand to benefit the most from a proper implementation of OER. Our educational systems are mostly in dire need of qualitative educational materials which are scarce to find and where available are mostly out of the reach of the average masses. Though most developing nations have problems of electricity supply and internet access which could inhibit the spread the OER, it is still very possible to expand awareness about OER especially within the academic community. Many academics will be willing to create materials that will be published under CC licenses but it will require a more concerted awareness raising effort on the part of the OER community to involve them. Wikieducator.org is already doing a good job at spreading the OER gospel and with time, it is hoped that we will have more OER materials authored and tailored to serve the educational needs of developing nations. To achieve this lofty goal, there is the need to involve governments and educational bodies who hold control over the policies that guide educational material sourcing and production in these countries. For example, if the government of a country subscribes to the ideals of OER, it could provide funding for would-be OER authors and producers and from such materials a whole set of usable materials could be produced to serve the nation's educational needs. From my personal experience, ICT professionals in different fields are usually ready to network on projects and this inherent willingness could be translated into collaborative work on OERs. In the production of OERs, while one person could produce the content, a skilled web author could handle the design and since these materials will be open for remixing and modification, the involvement of more experts will eventually lead to high quality resources being available. Some people always bring up the issue of quality, to me, I have the belief that open works will continue to be fine tuned and added to on a continuous basis, and if I find some contents I disagree with in an OER, I could simply reproduce it with my modifications and publish it back for use. Knowledge is not static, it is always in a process of development and materials released as OER will best serve the

> principles of knowledge by being always in a state of continuous development. [Participant 6]

Participant 6 explains about what could be the main steps of successful implementation of OER in developing nations. He starts first with bringing the problem of severe lack of electricity, and inadequate ICT infrastructure, though he feels that if the academicians are ready to adopt and promote it in their education, then OER will go a long way. He requests the developing nations governments to make policies which will promote and fund academicians with OER adoption. He gives the example that people working in the ICT projects or disciplines usually collaborate and agree to collaborate easily when compared to people from other disciplines. He notes that in an educational institution OER production and promotion should be a group effort, according to him, as first step the content (OER) development is by an academician responsibility and the promotion of this content (OER) to public should be done by the ICT personnel, because they are good at designing and indexing on the web so more people can view it and make use of it. The other most important thing participant 6 mentions in his excerpt is the factor of quality of OERs. He articulates OERs facilitates continuous improvement of quality of OERs because, OERs are made public with the fact that they can be remixed and redistributed, hence when another academician disagrees with a any part of an OER, he/she can alter or modify the resource thus making it better.

> The first step to implementing OERs in Developing Nations is sensitization. A lot of people in Africa and developing nations are ignorant of OERs. People need to know about OERs so that they can maximize the treasures like OERs. Sensitization can be done via workshops, seminars, short courses, conferences etc. I believe if people know what OERs are, then they will make good use of it. The government also has an important role to play when it comes to effectively implementing OERs in developing nations. Governments can improve electricity access, internet access and access to digital devices such as computers. Hence governments should strive hard to bridge the digital divide in their nations in a bid to improve the effective implementation of OERs in their nations. Change begins with you! It begins with you! Individuals and NGOs can take up the challenge to make a change and effectively implement OERs in developing nations. [participant 8]

Participant 8 like other participants again observed that OER needs promotion in educational

institutions and should also be included in the governments' agenda. He articulates that governments from developing nations should at-least provide the basic infrastructure like electricity, affordable internet, and subsidized computer hardware to schools and educational institutions. He mentions that NGOs (UNICEF and UNESCO) should get involved in creation and promotion of OER.

OER can be of immense help in widening the horizons of people in the developing countries. Implementation of OER can help transform lives in the developing countries. The scientific and technological advances have now made it possible to implement OER in developing countries in a very cost-effective and timely manner. However, there are several constraints faced by developing countries. Therefore, we first need to address these hurdles in the path of smooth implementation of the OER. I give below my suggestions to spread OER among the developing countries: 1. Massive OER awareness programs should be launched in the developing world. These campaigns should be carried out by trained and certified faculty and should be conducted for the teacher and volunteers in the education field. These teachers should be given thorough training in the myriad opportunities that OER has for the social, cultural, and knowledge enrichment of the people of the developing world. The faculty should try to impress on the minds of these peoples. The importance of OER and how it can be a tool of empowerment for those sections of society that have not benefited from the boom in world economy and is still marginalized. 2. As most of the material of OER is in digital format and web-based it is imperative to provide the infrastructure required to tap the vast repertoire of resources of OER. However, developing countries might not be able to develop the necessary infrastructure on their own. For many of these developing countries feeding their population is the top priority. The developing countries, it has been found, are also not politically stable. The vitiated political atmosphere in these parts of the world makes it a herculean task to implement the program of OER. These countries have to grapple with several social and political issues. In the light of these circumstances it is therefore the responsibility of developed countries to lend a helping hand in the setting up of required hardware and software facilities to help the people of these nations to take the advantage of OER. 3. The other challenge is to spread computer literacy in these developing economies. The success of the OER

> program hinges on the computer literacy of the targeted population. The advanced nations will have to play a major role in this regards. In a nutshell the success of OER implementation depends on three factors they are computer literacy hardware and software support framework and dissemination of information on OER by trained faculty. [Participant 10]

From the excerpt above this participant, yet again like other participants, emphasises on the OER awareness programs. This participant also mentions that the governments of developing nations are corrupt and providing food for their vast population should be their main criteria and hence he thinks that developed world should lend a helping hand in making a better ICT infrastructure to make OER possible in the educational institutions and provide hardware and software requirements to make OER possible.

Application - Summary of excerpts

Majority of participants have raised the issue of policies that should be initiated from the government to promote and use OER to boost education in developing nations. It can be understood from participants' narrations that inadequate ICT infrastructure is the main hurdle for effective adoption of OERs in schools, but it is evident that in-spite of these inadequacy in ICT these 13 participants have shown interest and are ready to implement in their teachings. It can also be noticed from these excerpts that not all the participants have the ICT skill-set to adopt OER in their teaching and needed some help or more time to learn.

5.2.5. Comments & Suggestions

At the end of the open online course, participants were asked whether they were satisfied with the online course. They were asked to write and share what they have learned from this online course and if they were expecting more or do they have any suggestions on making this course better.

> I have learned greatly from this course (OER) particularly the aspect of authoring and sharing of ideas and information with people of similar interest group. Also important about the copyright aspect which does not necessarily require restriction of information but keeping the information open without violating it.
> The expected knowledge I'll gain from colleagues as a result of this work (OER) would enable me to improve on the quality of my classroom teaching. In other

words, my students stands to benefit in no small way from this course.
[Participant 1]

Participant 1 says that he has learned a new concept and he likes the aspect of sharing in OER. Since sharing is the main characteristic of OER it encourages creators and consumers of OER to use licenses which facilitate remixing and redistributing. Participant 1 likes this idea of OER where in the end user of an OER do not have to think much about its licensing terms before adopting it, because it is understood that anyone one who uses others work has to accredit that he/she has used such a resource to build their resource. Participant 1 also ascertains that his students will benefit from his improved quality and teaching materials.

> ...I would like to thank the course facilitator who have graciously entered into a free online course about this OER. I previously did not know about OER, so this online course is really very useful for me because it can obtain new knowledge that is useful as a teacher or instructor. Then we were introduced to many components that support how the OER can be built, starting from selecting the proper license for OER which is the creative commons license with several variants. Then how to choose the appropriate authoring tool to make learning the material and how to use the previous (remix) educational materials already available to be used again without having to worry about plagiarism because generally OER materials use creative common license which means it can be reused with a certain condition in accordance with the provisions of the licenses.
> And of course the most important is the availability of the Internet access with sufficient bandwidth for OER to be accessed, in developing countries, especially rural areas where population with low educational levels are increasing due to high dropout rate. After receiving this OER course I have an idea of how to increase my teaching method to be better accepted by our students. To get my learning materials, I do not have to start from scratch because there many materials that are CC licensed on OER sites. We just need to make efforts to increase internet penetration, especially to remote areas that are still difficulties with internet access and increase the supply of computer hardware that can be used to access this OER materials. [Participant 2]

From the excerpts of participant 2 it is clear that he has learned about the essentials of the licenses

that a user of OER should keep in mind. He asserts that after the open online course he has become aware of new resources which he can use in his teaching and he is satisfied with the course.

> First of all I would like to thank the course facilitator who has contacted our school correspondent about the training. Without his efforts this would not have been possible. I am very much happy to know about the training given to the teachers like us who have never come out of textbooks. It's a great opportunity for us to learn lots of news thing that can be used in our teaching to make it easier. It provides all kind of information which a teacher requires in their teaching to make it more convenient for the students to understand. [Participant 3w]

Participant 3w clearly agrees to the fact that she never thought of looking for additional educational resources outside the government prescribed textbooks. She is happy with the amount of information that she could get from this open online course, she feels her students will understand her teaching and lessons better with the OERs that she will use in her courses.

> I have gained a great deal of knowledge from this course in the following ways:
> I can now recognize OER online by understanding what they are, their characteristics, where to find them and how to use them. I will use such a knowledge in my day-to-day activities as a teacher to access content relevant to my subject area freely which I will use to educate my learners. Various licenses attributed to OER are no longer a mystery to me and I am able to reuse, create a new content using various free authoring tools, re-mix on content, share and distribute such a knowledge in the atmosphere of OER. Such a knowledge will be very useful to me not only when authoring content to be used by my learners on line but also when I am authoring an using lesson plans. Since I am well endowed with the basic skills in manipulating OER, I can confidently spread the awareness of the availability of OER on line to others who have no idea whether such resources exist. [Participant 4]

Participant 4 shows enthusiasm in learning the new concept of OER and wants to share his newly gained knowledge with his students. He acknowledges he is now able to recognize and distinguish between open and free educational resources versus the other paid services. He has gained confidence in remixing educational resources that he discovered during the course, because he can

now recognize the type of licenses affiliated with these educational resources. Moreover, he is willing to promote the OER concept among this colleagues.

> I am thankful to course facilitator... who is offering me opportunity to visit really fascinating world of Open Educational Resources. I desired to devote more than 12 hours daily to know more about OER. Due to unavoidable personal circumstances I could not use this opportunity to my satisfaction. However I understand license policies, recognize OER online, and become member of OER community to spread the awareness of OER. I feel the need further guidance to learn more about how to reuse, create new, remix and share/distribute educational resources. Also OER makes us teachers creative and I want to learn more about remixing other OER. I am anxiously waiting for another opportunity to join guided course like this to become effective member of OER community. [Participant 5]

Participant 5 says that he is glad to have joined this course and wanted to devote more time to learn but he could not due to unforeseen reasons. He feels that he needs more training and experience when it comes to learning to author and remix OERs. He wants to join similar open online course to gain more knowledge about OER authoring, remixing, sharing and redistributing OERs. This participant recognizes that the whole process of finding, re-using and remixing of OER will make teachers creative.

> Participating in this course has further broadened my knowledge of the OER concept. My readings have allowed me understand the CC licensing system better and further enriched my knowledge of various OER authoring software and web sites that I had not known about before now. With a better understanding of the various tools available for creating OER and a more in-depth knowledge of the CC licensing system, I am hoping to be able to create more training materials on Computer Applications in different freely available formats. This added knowledge will further help me in my future endeavors in the OER community. I am planning on creating a platform for authoring Primary, Secondary and Vocational schools cooks that will be based on local Nigerian content and the knowledge I have gained from this course added to my previously acquired wiki skills from Wikieducator will certainly be of great use in this effort. On the whole,

> it has been a worthwhile experience and I am hoping to be part of future courses whenever they are organized because just as OER is a continuous process, acquisition of the various skills require continually following the innovations and using them. [Participant 6]

Participant 6 mentions that his knowledge of OER has improved and now he has a better understanding of the licensing system that best suits the OERs. He states that after the open online course he is more skilled to develop courses in his discipline effectively. His knowledge of producing OERs in different formats is a new skill that he has gained after this open online course.

> Learning about OERs has taken me to the next level in my professional career.... Learning about CC licenses and OERs has made me to become a knowledge library where people can learn. OERs are a public library of information and knowledge that can be accessed for free. Knowing about this library has made me to become a public librarian who is ready to teach, share and lead everyone to this source of knowledge hence foster education. I must confess that I have learned a lot of concepts about OERs. This new knowledge that I have acquired is going to impact my teaching career and boost my students learning capabilities. [Participant 8]

Participant 8 states that completing this open online course has added value to his professional career. He calls himself as a knowledge library, where others (his colleagues) can learn from him. He asserts OERs as online public library of information and knowledge which can be accessed by anyone and from anywhere. He admits that he has learned a lot and he is positive that his students will surely benefit from his newly gained knowledge.

Comments – Summary of excerpts

From the participants comments it is clear that this course had positive impact on most of them. One participant mentioned the he was not able to spend as much time as the course required from him and then he wants to do a similar course to attain more knowledge in the area of remixing and authoring new OERs. But it is evident that participants were happy with the course contents and they could learn a new concept.

5.3. Summary

Through the previous sections in this chapter I have tried to interpret the assignments (data) that were submitted as a part of the action research based open online course. I used five board themes to segregate my open online course, these five board themes were result of a procedure [see section 5. 2] followed with the available collected data. The next chapter will discuss the revised summary and important steps to design an open online course and recommendations (acquired from this open online course) for OER adoption in K-12 education in the developing world.

CHAPTER VI

FINDINGS & RECOMMENDATIONS

6. FINDINGS AND RECOMMENDATIONS

This chapter will evaluate the overall appropriateness of Wikiversity open online course and summarize the findings from the data analysis. Firstly, this chapter will answer the questions asked earlier in this research [see section 1.2]. Secondly, this chapter will recommend the essential steps for future research and recommend policies for effective OER adoption in the developing world.

6.1. Research Question 1 – Can the current OER initiatives in the developed world be replicated in the elementary education in the developing world?

- The OER trends in elementary education level across the world can be observed in the literature review chapter [see section 2.3]. From this literature, it is evident that there are no major OER promotional projects in elementary education level in the developing world. Most of the OER promotional projects in the developing world are in the higher education like CORE from China and OER Africa from South Africa.
- It is apparent from the literature that the main reason for little or no OER projects in the developing world is the lack of adequate ICT infrastructure. But it is also evident from this open online course that teachers are willing to go distances (to some sort of ICT infrastructure) to learn and develop their skills. Therefore, the OER projects from the developed world can be replicated at least in urban K-12 schools where some ICT infrastructure already exists and where the teachers are motivated.

6.2. Research Question 2 – Are the school teaching faculties are ready to adopt and learn from OER?

- As indicated in the data analysis chapter [see section 5.2.2] the participants have clearly demonstrated their interest to learn more about OER and the participants felt good after finishing the open online course. Some of participants felt their level of ICT skills needed improvement; they were motivated to learn OER and believed that using (finding, creating and remixing) OER frequently would eventually improve their ICT skills.
- The school teachers mentioned in their narrations that they would try their best to look for more OERs in their domain and would include free online educational resources (lesson plans and lessons) in their teaching. Participants expected that there were OER web platforms within their country or from their government so that they could rely on the resources without considering the authenticity of the information and the language.

- From the data analysis chapter [see section 5.2.3] it is noticeable that not all teachers showed enough skill set and ICT capacity to use and adopt OER. Therefore, it is advisable for the K-12 educators (from the developing world) to form collaborative communities to lead OER introductory workshops.

6.3. Research Question 3 – What factors of OER will influence teachers and school owners to adopt OER in their school?

- The main factors of OER which influenced teachers are as follows: 1. when teachers learned about the licensing aspect and learned about CC licenses they were eager to find, reuse and remix materials. Therefore the less hassle it is for the teachers to get and modify resources the more they will experiment with resources found on different websites.
- 2. The discover-ability of OER is another factor which was observed in the course. Most teachers in the course wanted to be provided with websites where they could easily find adoptable OERs. This is mainly because there was no ICT infrastructure within the schools and most of these teachers were using paid internet centers (outside the school infrastructure) to explore and learn about OER, hence it is evident that these teachers did not have time to explore or did not feel comfortable doing this from a public internet environment.
- 3. The other important factor of OER that teachers appreciated is the creativity involved. According to the teachers the process of researching for free educational resources and adopting it to the syllabus and making their students apprehend it makes everyone involved in it more creative.

6.4. Policy Recommendations

Almost all of the participants of this open online course mentioned in their excerpts that their governments should develop policies to implement OER in K-12 education. Therefore, this research suggests that the governments of the developing world to promote OER along with their ICT policies to improve the quality of education.

Apart from making the policy from the government, the schools should have policies to collaborate with likewise schools to built and share educational resources. It is also recommended that instead of creating a competitive environment between schools, the essence of collaborative learning should be promoted. The schools should come together to form communities of practice (that is grouping teachers with same discipline interests) from different schools to work

collaboratively toward OER development and implementation. The idea is to promote collaborative learning to improve quality of education with OER as a facilitating channel.

6.5. Recommendations for future research

It would be interesting to learn from similar research done on a national level in one of the developing nations. It would be good to learn if the participants from the same country agree to the same factors or recommend different factors and policies for successful implementation of OER. The other important experiment that can be conducted is to compare between the urban low cost schools and the rural schools from the developing world.

Another worthwhile research project would be to meet the participants of this course after a year or two and conduct a focus group study or an interview study of their OER implementations within their teaching or school. The other possibility would be to carry out same research with personal interviews with participants after they have completed the course, which could have given different results.

Another interesting project which could be beneficial for K-12 teachers from the developing world would be to implement MobilED which uses mobile phone technology to deliver short as well as long information from its Wiki server to the enquirer (Ford & Leinonen, 2010). A second project that would be interesting to test is MIT's BLOSSOMS project which is a collaborative effort of educational institutions from two developing nations with MIT. This project is building a free repository of video modules for high school math and science (MIT LINC, 2011). With so many possibilities, there is hope and scope for further OER research and implementation in the developing world.

6.6. Implications of the Research

This research study aims to provide meaningful recommendations to help improve the quality of education in the developing world. This study can be informative to educators, librarians and NGOs (working towards quality education) who are the main agents of change and improvement of education in the developing world. The recommendations from this research study can be employed in OER projects implementation in the developing world.

This research hopes to be useful for researchers who wish to adopt action research methodology or researchers who want to learn more about OER adaptability and implementation issues in developing nations.

6.7 Reflections of the Research

There is tremendous desire and motivation within the elementary educators to learn and develop their skills, this is evident as seen from this open online course. Through conducting this open online course I now have a better idea of how to use ICT tools to improve the quality of education in the developing world. The vital lesson from this open online course is to build engaging collaborative communities to learn and adopt a new concept in the K-12 education domain. This study urges the educators, librarians and the education policy makers to actively get involved in using open technology tools like OER to build and share free educational resources to grub the growing illiterate population in the developing world.

References

- Atkins, D. E., Brown, J. S., & Hammond, A. L. (2007). *A Review of the Open Educational Resources (OER) Movement: Achievements, Challenges, and New Opportunities* (p. 79). Retrieved May 10, 2011, from http://www.oerderves.org/wp-content/uploads/2007/03/a-review-of-the-open-educational-resources-oer-movement_final.pdf.
- Baraniuk, R. G., & Burrus, C. S. (2008). Global warming toward open educational resources. *Communications of the ACM*, *51*(9), 30–32. ACM. doi: 10.1145/1378727.
- Bateman, P. (2006). *The AVU Open Educational Resources (OER) Architecture for Higher Education in Africa*. Barcelona: OECD Expert Meeting. Retrieved May 11, 2011, from http://www.oecd.org/dataoecd/5/11/38149047.pdf.
- Berg, B. L. (2009). *Qualitative research methods for the social sciences* (7th ed.) London: Allyn & Bacon.
- Bissell, A. N. (2009). Permission granted: open licensing for educational resources. *Open learning: The journal of open and distance learning*, *24*(1), 97–106. Routledge. doi: 10.1080/02680510802627886.
- Britez, G. R. (2008). OER, Access and Freedom? In M. A. Peters & G. R. Britez (Eds.), *Open Education and Education for Openness* (pp. 33-43). Rotterdam: Sense.
- Brown, J. S., & Adler, R. P. (2008). Minds on fire: Open education, the long tail, and learning 2.0. *Educause review*, *43*(1), 16. Retrieved May 9, 2011, from http://net.educause.edu/ir/library/pdf/ERM0811.pdf.
- Carrion, C., Patricia, S., Morales, R., Del Rocio, G., Pelaez, R., & Elizabeth, A. (2010). OER's production cycle with social authorship and semantic tools. *IEEE EDUCON 2010 Conference* (pp. 121-128). IEEE. doi: 10.1109/EDUCON.2010.5492588.
- Chen, Q. (2010). Use of open educational resources: challenges and strategies. *Hybrid Learning: Lecture Notes in Computer Science* (p. 339–351). Retrieved May 9, 2011, from http://www.springerlink.com/index/L75U014G07014762.pdf.
- Deshmukh, N. D., & Agarkar, S. C. (2010). *Development of Open Educational Resources Opportunities and Challenges*. Homi Bhabha Centre for Science Education. Mumbai. Retrieved May 9, 2011, from http://wikieducator.org/images/e/e2/Narendra_D._Deshmukh.pdf.

- Dholakia, U. M., King, W. J., & Baraniuk, R. (2006). *What Makes an Open Education Program Sustainable? The Case of Connexions*. Paris: OECD. Retrieved May 9, 2011, from http://www.oecd.org/dataoecd/3/6/36781781.pdf.
- Downes, S. (2007). Models for sustainable open educational resources. *Interdisciplinary journal of knowledge and learning objects*, *3*, 29–44. Retrieved June 25, 2011, from http://ijello.org/Volume3/IJKLOv3p029-044Downes.pdf.
- D'Antoni, S. (2009). Open Educational Resources: reviewing initiatives and issues. *Open Learning: The Journal of Open and Distance Learning*, *24*(1), 3-10. doi: 10.1080/02680510802625443.
- Ford, M., & Leinonen, T. (2010). MobilED – Mobile Tools and Services Platform for Formal and Informal Learning. In M. Ally (Ed.), *Mobile Learning: Transforming the Delivery of Education and Training* (pp. 195-214). AU Press. Retrieved May 10, 2011, from http://www.aupress.ca/books/120155/ebook/99Z_Mohamed_Ally_2009-MobileLearning.pdf.
- Fulantelli, G., Gentile, M., Taibi, D., & Allegra, M. (2008). The Open Learning Object model to promote Open Educational Resources. *Journal of Interactive Media in Education*. Retrieved May 10, 2011, from http://jime.open.ac.uk/article/2008-9/343.
- Gurell, S. (2008). *Open Educational Resources Handbook for Educators Version 1.0*. (D. Wiley, Ed.) Center for Open and Sustainable Learning. Retrieved May9, 2011, from http://www.lulu.com/content/3692829.
- Hatakka, M. (2009). Build it and They Will Come? Inhibiting Factors fro Reuse of Open Content in Developing Countries. *The Electronic Journal on Information Systems in Developing Countries.*, *37*(5), 1-16. Retrieved May 9, 2011, from http://www.ejisdc.org/ojs2.../index.php/ejisdc/article/viewFile/545/279.
- Hatch, J. A. (2002). *Doing qualitative research in education settings*. New York: State University of New York Press.
- Instructional Design. (n.d.). In *Instructional Design Using ADDIE Model*. Retrieved from http://raleighway.com/addie/.
- Kop, R. (2011). The Challenges to Connectivist Learning on Open Online Networks : Learning Experiences during a Massive Open Online Course. *International Review of Research in Open and Distance Learning*, *12*(3), 20. Retrieved May 11, 2011, from

http://www.irrodl.org/index.php/irrodl/article/view/882/1689.

- Koshy, V. (2005). *Action Research for improving practice. A practical guide*. Paul Chapman Publishing.
- Kumar, M. S. V. (2005). From open resources to educational opportunity. *Research in Learning Technology, 13(*3), 241- 247.
- Kumar, M. S. V. (2009). Open Educational Resources in India's national development. *Open Learning: The Journal of Open and Distance Learning*, *24*(1), 77-84. doi: 10.1080/02680510802627860.
- Larson, R. C., & Murray, M. E. (2008). Open educational resources for blended learning in high schools: Overcoming impediments in developing countries. *Journal of Asynchronous Learning Networks*, *12*(1), 1–19. Retrieved June 25, 2011, from http://www.distanceandaccesstoeducation.org/contents/JALN_v12n1_Larson.pdf.
- Leach, J., Ahmed, A., Makalima, S., & Power, T. (2005). *DEEP IMPACT: an investigation of the use of information and communication technologies for teacher education in the global south: Researching the issues*. Milton Keynes: Department for International Development (DFID).
- Leinonen, T., Purma, J., Põldoja , H., & Toikkanen, T. (2010). Information Architecture and Design Solutions Scaffolding Authoring of Open Educational Resources. *IEEE Transactions on Learning Technologies*, *3*(2), 116-128. doi: 10.1109/TLT.2010.2.
- Leinonen, T., Vadén, T., & Suoranta, J. (2009). Learning in and with an open wiki project: Wikiversity's potential in global capacity building. *First Monday*, *14*(2), 4. Retrieved from http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/2252/2093.
- McNiff, J., & Whitehead, J. (2006). *All You Need To Know About Action Research*. London: Sage Publications.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: an expanded sourcebook* (2nd ed.). London: Sage Publications.
- MIT LINC. (2011). *BLOSSOMS*. Retrieved from http://blossoms.mit.edu/.
- Molenda, M. (2003). In search of the elusive ADDIE model. *Performance Improvement*, *42*(5), 34-36. doi: 10.1002/pfi.4930420508.
- Mora, M., Hassin, K., Pullin, A., & Muegge, S. (2008). Open Educational Resources and the

Evolving Value Chain of Education in Developing Countries. *ISTAS 2008 IEEE International Symposium on Technology and Society*. New Brunswick. doi: 10.1109/ISTAS.2008.4559783.

- OECD. (2007). *Giving Knowledge for Free: The Emergence of Open Educational Resources*. OECD. Paris. Retrieved May 9, 2011, from http://www.oecd.org/dataoecd/35/7/38654317.pdf.
- OER Commons. (2011). OER Commons WIKI. Retrieved from http://wiki.oercommons.org/mediawiki/index.php/OER_Commons_Wiki:About.
- Pea, R. D. (1997). Learning and Teaching with Educational Technologies. In H. J. Walberg & G. D. Haertel (Eds.), *Science And Technology* (pp. 274-296). McCutchan.
- Petrides, L., & Jimes, C. (2008). Building Open Educational Resources from the Ground Up: South Africa's Free High School Science Texts. *Journal of Interactive Media in Education*. Retrieved May 9, 2011, from http://jime.open.ac.uk/article/2008-7/340.
- Pickard, A. J. (2007). *Research methods in information*. London: Facet.
- Põldoja, H. (2010). EduFeedr: Following and supporting learners in open blog-based courses. In Open ED 2010 Proceedings. Barcelona: UOC, OU, BYU.
- Richter, T., & Ehlers, U. D. (2010). Barriers and Motivators for Using Open Educational Resources in Schools. In Open ED 2010 Proceedings. Barcelona: UOC, OU, BYU.
- Riessman, C. K. (2005). Narrative Analysis. In C. K. Riessman (Ed.), *Narrative, memory and everyday life* (pp. 1-7). Huddersfield: University of Huddersfield. Retrieved June 3, 2011, from http://www2.hud.ac.uk/hhs/nme/books/2005/Chapter_1_-_Catherine_Kohler_Riessman.pdf.
- Schaffert, S., & Geser, G. (2008). Open Educational Resources and Practices. *eLearning Papers*, *7*, 1-9. Retrieved May 10, 2011, from http://elearningpapers.eu/en/article/Open-Educational-Resources-and-Practices.
- Schuwer, R., & Mulder, F. (2009). OpenER, a Dutch initiative in Open Educational Resources. *Open Learning: The Journal of Open and Distance Learning*, *24*(1), 67-76. doi: 10.1080/02680510802627852.
- Smith, C. P. (2000). Content analysis and narrative analysis. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 313-335). Cambridge: Cambridge University Press.

- Smith, M. S., & Casserly, C. M. (2006). The Promise of Open Educational Resources. *Change: The Magazine of Higher Learning*, *38*(5), 8-17. doi: 10.3200/CHNG.38.5.8-17.
- Stephen Downes. (2011). E-Learning 2.0. *eLearn Magazine*. Retrieved May 11, 2011, from http://www.elearnmag.org/subpage.cfm?section=articles&article=29-1.
- Sumner, T., Butcher, K., & Wetzler, P. (2010). Open Educational Resource Assessments (OPERA). In V. Aleven, J. Kay, J. Mostow, T. Sumner, K. Butcher, & P. Wetzler (Eds.), *Intelligent Tutoring Systems: Lecture Notes in Computer Science* (p. 414–416). Springer Berlin/Heidelberg. Retrieved June 25, 2011, from http://dx.doi.org/10.1007/978-3-642-13437-1_88.
- Venkaiah, V. (2009). *Open Educational Resources in India – A Study of Attitudes and Perceptions of Distance Teachers*. Hyderabad. Dr. B.R. Ambedkar Open University.
- Webb, E. J., Campbell, D. E., Schwartz, R. D., & Sechrest, L. (2001). *Unobtrusive Measures* (Revised., p. 241). London: Sage Publications.
- Wiley, D. A. (2000). Connecting learning objects to instructional design theory: A definition, a metaphor, and a taxonomy. (D. A. Wiley, Ed.) *The Instructional Use of Learning Objects.* Association for Instructional Technology & Association for Educational Communications and Technology. doi: 10.1002/stab.200710001.
- Wolfenden, F. (2008). The TESSA OER Experience: Building sustainable models of production and user implementation. *Journal of Interactive Media in Education*, 1-16. Retrieved May 9, 2011, from http://jime.open.ac.uk/2008/03/.

Appendix I

List of Questions (part of the open online course) used to collect the data from the participants.

Week 1 Assignments
Create an individual blog or a community blog at wordpress, or at blogger. • Write one post blog (one or two paragraphs) introducing yourself (who you are and what you teach) and what you are looking forward to learn from this course. • Read the suggested readings and write one page, introducing OER to a school that you know, which does not use OER. • Write half a page talking about the main characteristics of OER. • Watch the clips/short videos on this website and discuss on your blog/common webspace what you think about them.

Week 2 Assignments
Please register yourself in LeMill and Wikiversity. • Find and list at least 4/5 other open educational resources websites like LeMill that are relevant/applicable to your subject area, list these on your blog or group blog. • Write one blog post about your favourite authoring tool and its features, why you think it is better than the others.

Week 3 Assignments
Find at least 5 educational materials that are relevant to your subject and syllabus and submit/post it them on your blog or community web space. • Create your own or re-mix at least 3 free and open educational resource relevant to your subject area. • Read the third suggested reading for this week and write a post on your blog about the different CC licenses.

Week 4 Assignments
Participants are requested to read the suggested readings for this week and write their opinion on blog/group blog about how OER can be implemented successfully in developing countries. • Participants are hereby requested to write one post on your blog/group blog about what they have learnt from this course and how they will use this knowledge in their classes.

Appendix II

The statistics given below are some helpful indication supporting the need for the importunity in improving delivery method of education, & quality of education. The graphs are taken from UNESCO INSTITUTE for STATISTICS (UIS, 2009).

Global Youth Literacy Rate (15-24 years)

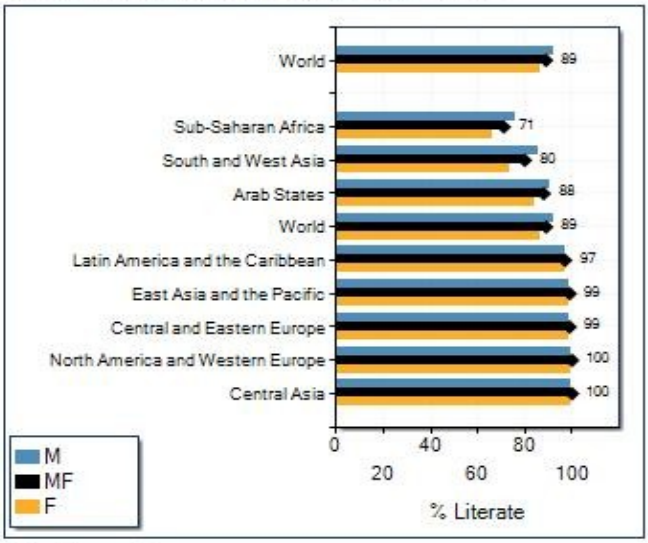
YOUTH LITERACY (15 TO 24 YEARS)

YOUTH LITERACY RATES

Globally, 89% of the youth population is literate. 92% of male youths and 87% of female youths are literate.

Youth literacy rates are lowest in Sub-Saharan Africa, where only 76% of male youths and 66% of female youths are literate.

Youth literacy rates by region and gender, 2005-2009

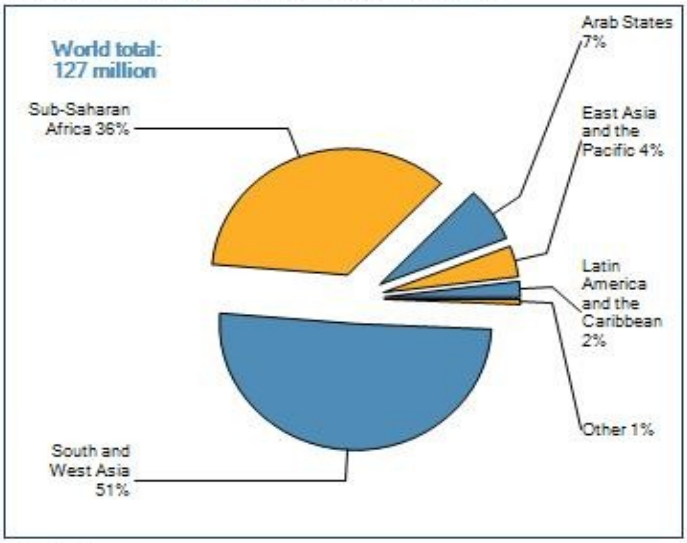


GLOBAL YOUTH ILLITERATE POPULATION

In total, 61% of all illiterate youths are female. 51% of the world's 127 million illiterate youths live in South and West Asia.

India alone accounts for 32% of the world's illiterate youth population.

Global youth illiterate population by region, 2005-2009



Symbols used:

-	Magnitude nil or negligible value
...	Data not available
.	Category not applicable
x	Chart symbol: Data not available

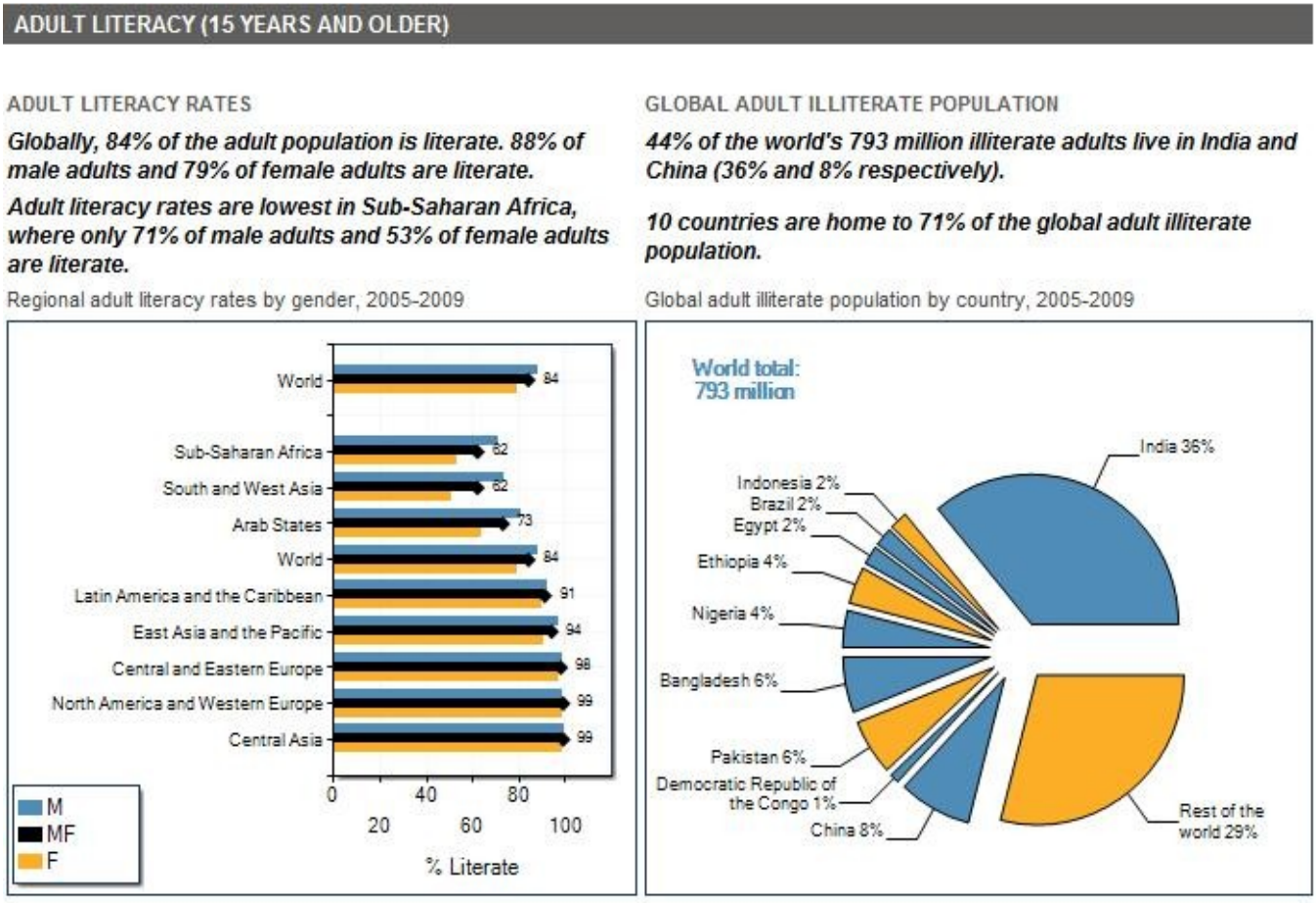
Footnotes:

**	UIS estimation
^	World Bank World Development Indicators

For data sources and references, definitions of literacy and more information, please consult the "Literacy" section of the UIS website.

Graph 1

Global Adult Literacy Rate (15 years and over)



Graph 2

UIS. (2009). In *Global Literacy Profile*. Retrieved from http://stats.uis.unesco.org/unesco/TableViewer/document.aspx?ReportId=364&IF_Language=eng.

Appendix III

The following screenshots are taken from the Wikiversity Open Online course

Resource | Discuss | Read | Edit | View history | Search

Why create a Wikiversity account?

Open Educational Resources for School Teachers from Developing Nations

This course concluded on May 2nd, 2011. A new detailed OER introductory course is being planned for August 2011.

A new course blog has been created. This blog will provide you with instructions to complete your assignments.

OER Logo.

Course objective [edit]

Introductory Open Educational Resources (OER) course is focused mainly for elementary school teachers from developing nations. After this course participants will be able to:

- recognise open and free educational resources online
- understand the different license policies
- learn how to reuse, create new, remix and share/distribute educational resource
- be a member of the OER community and spread the awareness of OER

Contents [hide]

1 Course objective
2 Course length and Registration
3 Target audience
4 Participants
5 Language
6 Course Assignments
7 Class meetings
8 Course Schedule
8.1 Week 1. Introduction to OER (Online synchronous meeting)
8.2 Week 2. OER Authoring Tools (Asynchronous meeting)
8.3 Week 3. Reusing OER and Open Content (Asynchronous meeting)
8.4 Week 4. Implementing OER in developing nations (Online synchronous meeting)
9 Recognition
10 Additional useful links
11 Acknowledgments

Course length and Registration [edit]

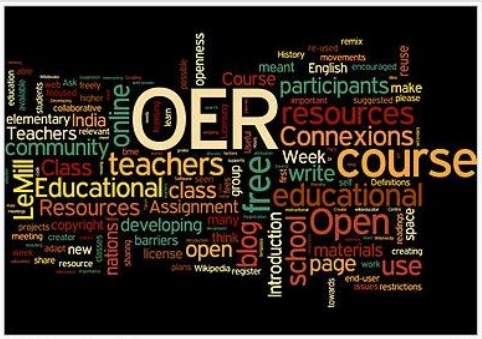
4 weeks (4 classes, each 2 to 3 hrs long. Total - not more than 12 Hours)

Target audience [edit]

Anyone interested to learn the basics of searching, creating, re-using and sharing license free English resources for the purpose of educating the elementary and secondary school students. This course is prepared keeping in mind that all elementary school teachers from developing nations might now have computers and internet access at their homes, but still are willing to learn by finding internet access at an educational institution or internet centres.

Participants [edit]

The course is intended to commence from April 4th, 2011. The course facilitator plans to start the course after there are at least 20 participant registrations. To view a list of registered participants, visit the participants page.



OER Course Tagcloud.

Language [edit]

This course is focused towards school teachers from developing nations teaching in English medium schools, hence this course will be in English language. The participants are encouraged and are most welcome to search, remix and re-use educational materials in other languages that are meant to be re-used and re-distributed.

Course Assignments [edit]

Participants are encouraged to open their own blog or a course community discussion page (common blog space) where in they are expected to submit their assignments and share opinions and comments about the suggested readings. The participants are required to invest at least 2-3 hours of work each week for this course.

Class meetings [edit]

This class will meet semi-synchronously online. This means, the first and fourth weekly class will be synchronous online meeting (skype conference with participants at an agreed time) and the second and third will be asynchronous online meeting (online self study time).

Course Schedule [edit]

Week 1. Introduction to OER (Online synchronous meeting)

Class 1- online synchronous meeting

- What are Open_educational_resources (OER)?
- Brief history of OER.
- Definition of OER.
- Introduction to Creative Commons licenses and understanding Copyright.

Assignment:

ikiversity.org/wiki/File:Wordle_Tagcloud_for_OER_course.jpg

mmunity blog at wordpress, or at blogger.

- Create an individual blog or a community blog at wordpress, or at blogger.
- Write one post blog (one or two paragraphs) introducing yourself (who you are and what you teach) and what you are looking forward to learn from this course.
- Read the suggested readings and write one page, introducing OER to a school that you know, which does not use OER.
- Write half a page talking about the main characteristics of OER.
- Watch the clips/short videos on this website and discuss on your blog/common webspace what you think about them.

students learning about Solar System, Grace Model School, Hyderabad, India.

You can email your answers to the course facilitator or choose to post it on your blog or the community web blog.

Suggested readings:

1. http://wikieducator.org/OER_Handbook/educator
2. Open_educational_resources#Characteristics_of_OER
3. http://www.col.org/SiteCollectionDocuments/Introducing_Copyright_online_edition.pdf - by Julien Hofman and Commonwealth of Learning, 2009.
4. http://creativecommons.org/licenses/

Week 2. OER Authoring Tools (Asynchronous meeting)

Class 2 – asynchronous meeting

- Introduction to OER Authoring tools by Christopher Pappas.
- Introduction to LeMill and Wikiversity.

Assignment:

- Please register yourself in LeMill and Wikiversity.
- Find and list at least 4/5 other open educational resources websites like LeMill that are relevant/applicable to your subject area, list these on your blog or group blog.
- Write one blog post about your favourite authoring tool and its features, why you think it is better than the others.

You can email your answers to the course facilitator or choose to post it on your blog or the community web blog.

Suggested readings:

1. http://lemill.net/content/webpages/overview-of-lemill
2. http://lemill.net/content/webpages/lemill-faq
3. Help:The_original_tour_for_newcomers
4. Wikiversity:Introduction

Week 3. Reusing OER and Open Content (Asynchronous meeting)

Class 3 – asynchronous meeting

- Remixing lesson plans and distributing it.
- How to create and re-use resources in Curriki and LeMill
- Open License compatibility issues, Creative Commons image collections of flickr for use in OER.

Assignment:

- Find at least 5 educational materials that are relevant to your subject and syllabus and submit/post it them on your blog or community web space.
- Create your own or re-mix at least 3 free and open educational resource relevant to your subject area.
- Read the third suggested reading for this week and write a post on your blog about the different CC licenses.

You can email your answers to the course facilitator or choose to post it on your blog or the community web blog.

Suggested readings:

1. http://www.curriki.org/?gclid=CMOJ2PHCuqcCFcYj3god8j78AA
2. http://www.curriki.org/xwiki/bin/view/Coll_Group_OERi-OpenEducationalResourcesintegration/RemixModule3?bc=
3. http://www.oerafrica.org/ResourceDownload.aspx?assetid=317&userid=-1

Week 4. Implementing OER in developing nations (Online synchronous meeting)

Class 4 - online synchronous meeting

- Implementing OER in developing nations.
- Feedback and discussion.

Assignment:

- Participants are requested to read the suggested readings for this week and write their opinion on blog/group blog about how OER can be implemented successfully in developing countries.
- Participants are hereby requested to write one post on your blog/group blog about what they have learnt from this course and how they will use this knowledge in their classes.

Suggested readings:

1. http://cnx.org/content/m14422/latest/ by Sunil Kumar Singh