

# HOW UNIVERSITY TEACHERS IN DEVELOPING COUNTRIES PERCEIVE THE USE OF OPEN EDUCATIONAL RESOURCES IN HIGHER EDUCATION

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## Abstract

This study was conducted to find out how lecturers in developing countries perceive the use of Open Educational Resources (OER). A group of teachers at the Instituto Superior Politécnico José Antonio Echeverría, Facultad de Ingeniería Eléctrica (Havana, Cuba) participated in a course about the use of Learning Management Systems that only used OER. After they had been introduced to the concept they answered a questionnaire with a number of statements about the use and sharing of free material on the internet.

The answers show that the lecturers were positive to the use of free course material and expressed their willingness to make their own material available. The results also confirm the hypothesis that peer recognition is an important reward for the time and effort spent on producing freeware.

The authors assert that extensive use of OER could increase the quality of education, as well as making education more accessible in developing countries. To stimulate the production and dissemination of OER it is recommended that institutions of education worldwide promote the use of OER and encourage lecturers to take part in the free sharing of material on the internet.

Keywords: information and communication technology, e-learning, Open Educational Resources, higher learning institutions, developing countries

## 1 INTRODUCTION

The possibility to utilize Open Educational Resources (OER) on a wide scale in order to improve the quality of tertiary education and make it more accessible to a growing number of students in developing countries is a strong argument in favor of ICT in education [1]. We wanted to investigate the attitudes of a group of lecturers to see if they can be expected to make an effort to start using and possibly contribute to the open educational resources available on the internet.

### 1.1 Open Educational Resources

The term OER is not unambiguous [2] but it seems to be a consensus that “open” in this context includes free online access and unrestricted distribution and re-use for educational purposes [3, 4]. “Educational Resources” refers to full courses, course materials, modules, textbooks, streaming videos, tests, software, or other tools, materials, or techniques used to support access to knowledge [5]. To form a complete education these educational resources would have to be merged with the instructional support, formal evaluation and rewarding of credentials that is commonly associated with education [6].

An abundance of OER for higher education can be found on the internet thanks to a number of institutions as well as individual teachers who have made course material and software for education freely available [5, 7]. It is of particular interest in developing countries if free material on the internet can be utilized to improve the quality of higher education and give more people opportunity to receive a higher education while keeping the total cost for education down [8, 9].

### 1.2 Free Software

A lot of programs that is useful for education is available as Free Open Source Software (FOSS) [10]. There are alternatives to the proprietary operating systems, media players, word processors etc. The term FOSS means that the programs are free to use for non-commercial purposes and that the source

code may be changed and redistributed. As a result the programs tend to evolve over time and long term functionality and reliability of the FOSS programs tend to be more or less equal to that of proprietary software [11]. Software that can be used for education, such as shared documents, discussion board, assessments, grade book and chat rooms may be integrated in a Learning Management System (LMS). There are many free programs available with all these features [12].

### **1.3 Free media files**

To use media files found on the internet as course material in education calls for a lot of caution. The decision to use a file that is not in the public domain might lead to copyright issues as most material cannot be used without restrictions such as “non-commercial use only,” “no derivative works” etc. Terms of use for freely downloadable videos range from “personal, non-commercial use only” to “public domain”, [13] the latter means that there is no copyright and the material can be used without restrictions.

### **1.4 The production and distribution of OER**

The abundance of OER on the internet mostly depends on educational institutions decision to make course material that is used within the institutions freely available and to spend some resources to adapt and distribute the material. A couple of initiatives from institutions stand out as particularly important because they established the principle that free course material should be available at no cost for end users with access to the internet. In 2001 Massachusetts Institute of Technology announced that they would make the materials for most of its courses freely available on the Internet over the next ten years [14]. The William and Flora Hewlett foundation have supported several initiatives aiming at publishing OER on the internet [5, 6].

### **1.5 Barriers to the use of OER**

Practice in any field is a response to design rather than a result of design [15] and it is very important to consider the attitudes of the staff when trying to change the practice in an educational institution [16, 17, 18].

It follows that if the teachers are not positive and prepared to make an effort it will be hard to successfully implement the use of new course material and educational tools, and the beneficial effects from using them will probably be small [19, 20, 21].

### **1.6 The respondents**

In this survey the participants were a group of lecturers at Instituto Superior Politécnico José Antonio Echeverría, Facultad de Ingeniería Eléctrica, Havana, Cuba that took part in a course about the use of a learning management system (LMS). As example the free open source program Moodle was used and it was also used to manage the course. The course was pedagogically designed as problem based learning [22] with the main assignment for each participant to select a course from their practice and adapt existing course material to a LMS and to make plans for the appropriate use of tools such as discussion boards, grade book etc during the course in question. It started with a two weeks introduction in Havana to be followed by three months of distance studies, altogether corresponding to ten weeks of full time studies. During the first two weeks lectures and workshops focused on the practical handling of Moodle [23], the course material consisted of videos available on YouTube™ and other resources freely available on the Internet. To prevent any problems with internet access the material from internet was copied to USB-memories [24].

## 2 METHOD

At the end of the two weeks introduction period together the participants filled out a questionnaire about their attitudes to the use of freeware in their work as lecturers in engineering education. The questionnaire consisted of six statements about the use of freeware that was estimated on a five grade scale, ranging from "I fully agree" to "I do not agree at all" and one open ended question.

### 2.1 Limitations

It should be noted that the respondents in this investigation were lecturers in engineering education and it is reasonable to assume that this group has a more positive attitude to information and communication technology in general than would a group of teachers in another field. It is also possible that this group is more reluctant than teachers in developed countries to build their practice on systems that are sensitive to disturbances in infrastructure such as electricity supply and internet access [25, 26].

### 2.2 The questionnaire (English version)

**Simply mark the number that most accurately reflects your view.**

**Please rate your responses using the following:**

**1= I fully agree, 2= Agree, 3= Neutral, 4= Disagree, 5= I do not agree at all**

1. I think the use of free course material on the internet offers great opportunities to increase the quality of higher education.

1  2  3  4  5

2. I believe free sharing and distribution of course material will play a significant role in the planning and implementation of higher education in the future.

1  2  3  4  5

3. I am willing to make a lot of my course material available as freeware on the internet.

1  2  3  4  5

4. I would like to cooperate with other lecturers in the development of freely available course material.

1  2  3  4  5

5. I think peer recognition is important as a reward for work on freeware.

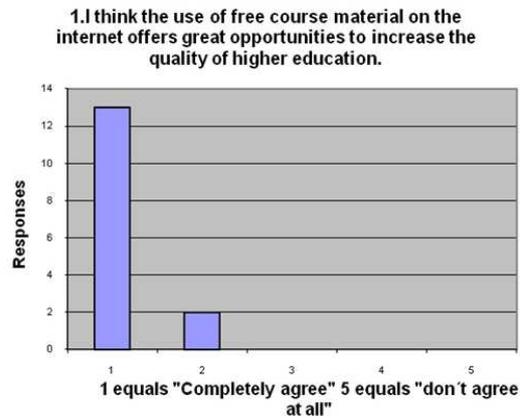
1  2  3  4  5

6. I think cooperation with freeware resources also promotes cooperation in other fields and the creation of informal communities of lecturers on the internet.

1  2  3  4  5

How do you expect internet and the common access to free course material to change your work in the future? (Free text answer)

### 3 RESULTS



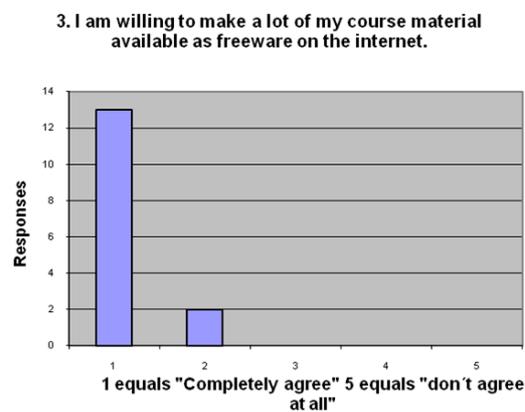
**Fig. 1:** Responses to question 1

Question 1, the group obviously has very high expectations about the possibilities offered by OER.



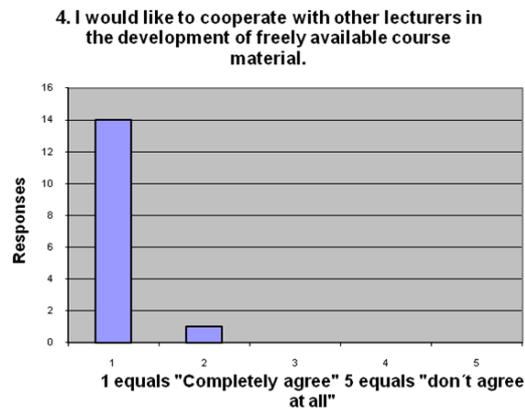
**Figure 2:** Responses to question 2

Question 2, the common opinion seems to be that lecturers can not disregard OER when planning and teaching their courses in the future.



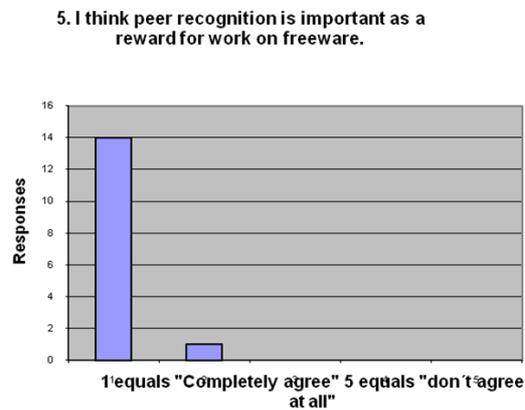
**Figure 3:** Responses to question 3

Question 3, some reluctance to share material is to be expected, we think this group demonstrate a surprisingly positive attitude about making their material available.



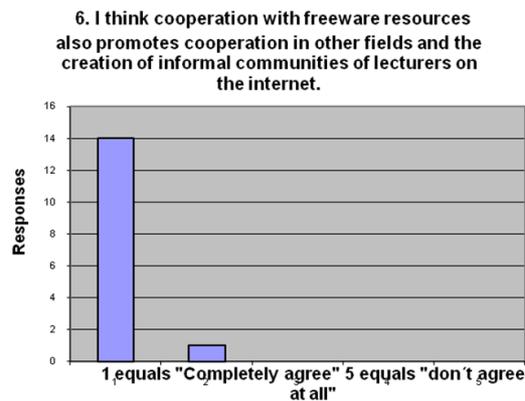
**Figure 4:** Responses to question 4

Question 4, the group show a very positive attitude to develop free material together.



**Figure 5:** Responses to question 5

Question 5, the responses clearly support the opinion that peer recognition is important as a reward for the work on freeware.



**Figure 6:** Responses to question 6

Question 6, the group clearly think that cooperation in this field promote further cooperation.

## **How do you expect internet and the common access to free course material to change your work in the future? (Free text answer)**

The responses to this open ended question confirm the impressions of overwhelmingly positive attitudes and expectations about OER in the group. Most responses focus on the possibilities to improve the quality of education by incorporating new material in courses and the use of free educational software. Many responses clearly indicate that the respondents expect the use of OER to give more flexibility for the lecturers and enhance the learning experience for students.

## **4 DISCUSSION**

Awareness raising and building of communities have been pointed out as the most important issues in the future of OER [27].

It is no doubt that many teachers could find suitable material for their courses freely available on the internet. To use OER and maintain a high quality of education teachers must spend time and effort to investigate the resources and select suitable material, rather than relying on a conventional textbook or producing their own material. That is a significant change in the lecturers practice and the skills they need. It means that most teachers will need encouragement and support to take the step from conventional textbook/classroom education to a teaching practice adapted to a learning environment with free access to information. Educational software is an important part of the OER. The free software includes educational programs ranging from basic training for specific skills such as spelling or typewriting to highly sophisticated programs for educating experts in different fields. A special group of programs are Learning Management Systems (LMS) or Virtual Learning Environments (VLE), this is programs that integrate tools for teaching, evaluation and course administration [28, 29]. OER gives many possible benefits for higher education in developing countries. Enhancing quality in education by access to free courseware and improving access to education by electronically mediated distance learning could make a big difference, but without any major changes in the learning experience. On the other hand, the access to free material is well suited to facilitate student activity and a wide range of pedagogical designs, in particular problem based learning. However, that is a matter of changing the educators practice and such changes are depending on the attitudes of the staff. Therefore, to establish a consensus about the necessity of a change in educational procedures is probably the most important step in the process.

## **5 CONCLUSIONS AND RECOMMENDATIONS**

We find that the use of OER is limited, more by low awareness about the available resources, than any considerations about unwanted effects of its utilization. This investigation clearly demonstrates that lecturers in developing countries have a very positive attitude about using and sharing OER, once the abundance of free material is brought to their attention.

Even if the internet access is far below the level in developed countries, we assert that most universities in developing countries could increase the quality of education as well as making education more accessible by extensive use of free educational resources. We urge educational institutions in developing countries to encourage the use of OER and to support staff development in the field of e-learning, with particular attention to the possibilities of integrating ICT and pedagogical innovation.

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