

INTEGRATED SCIENCE TEACHERS' EDUCATORS
ATTITUDE AND UTILIZATION OF OPEN EDUCATIONAL
RESOURCES IN SOUTH-SOUTH COLLEGES OF EDUCATION
IN NIGERIA

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Abstract

The study examines the attitude and utilization of open educational resources by integrated science teachers' educators in the south-south colleges of education in Nigeria. In order to carry out the study, two research questions were raised. A survey research design was adopted for the study. The sample of the study consisted of sixty (60) lecturers randomly drawn from school of science of each college of education used in the study. A 20 items questionnaire named Attitude and Utilization of Open Educational Resources by Integrated Science Teachers' Educators was used for data collection. The reliability of the instrument was established using test-re-test technique and Pearson Product Moment Correlation Coefficient (PPMCC(r) of the reliability yielded a coefficient of 0.89. The instrument was administered and data collected were analysed using mean and standard deviation statistics. The result revealed that the integrated science teachers' educators' attitude was fairly positive, and the level of utilization of open educational resources was low. Based on the findings it was recommended among others that integrated science teachers' educators should be given appropriate re-orientation on the availability of open educational resources in the global environment.

One of the emerging issues in educational discourse today is the development and use of Open Education Resources (OER) and their potential in expanding access and improving the quality of education, particularly in developing countries where there is a dearth of quality materials. 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. Abelson, (2008)

The Hewlett Foundation Open Educational Resources Initiative seeks to use information technology to help equalize access to knowledge and educational opportunities across the world. The initiative targets educators, students, and self-learners worldwide. Baraniuk; Burus (2008). The nature of these open materials means that anyone can legally and freely copy, use, adapt and re-share them. OERs range from textbooks to curricula, syllabi, lecture notes, assignments, tests, projects, audio, video and animation.

Over decades, UNESCO has helped spur an international movement in support of OERs. The term Open Educational Resources (OER) was coined at a 2002 UNESCO Forum on the Impact of Open Courseware for Higher Education. UNESCO also hosted the Open Training Platform, for comprehensive database and capacity building in a wide variety of disciplines Duffin & Muramatsu (2008). All of UNESCO's OER activities reflect the belief that universal access to high quality education is the key to the building of peace, sustainable social and economic development, and intercultural dialogue. It is also believed that free access to information is a fundamental human right Downes, (2007).

The heart of the open educational resources movement 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 that knowledge" (Smith & Casserly, 2006. In line with this, Wiley (2010) assumes common understanding of the term educational resources, and argues that open is a matter of cost and copyright licensing and related permissions. According to Wiley (2010), open means that a resource is available free of cost and that four permissions (called the "4Rs") are also made available free of cost. These permissions include:

- **Reuse:** the right to reuse the content in its unaltered/verbatim form (e.g., make a backup copy of the content).
- **Revise:** the right to adapt, adjust, modify, or alter the content itself (e.g., translate the content into an- other language)

- **Remix:** the right to combine the original or revised content with other content to create something new (e.g., incorporate the content into a mashup)
- **Redistribute:** The right to share copies of the original content, the revisions, or the remixes with others (e.g., give a copy of the content to a friend) Wenk (2010) repeats the definition put forth by FreedomDefined.org in defining openness:
 - The freedom to use the work and enjoy the benefits of using it.
 - The freedom to study the work and to apply knowledge acquired from it.
 - The freedom to make and redistribute copies, in whole or in part, of the information or expression.
 - The freedom to make changes and improvements, and to distribute derivative works. Both the 4Rs framework established by Wiley and the “Freedom Defined” framework promoted by Wenk focus on granting permissions regulated by copyright. This is the reason many definitions of open educational resources include open licenses as a critical component. For example, Patricia, del Rocio, and Elizabeth (2010) define OER as “resources that provide educational content with an open license that facilitates their use, adaptation and modification”. Tuomi. (2006) takes another approach to defining openness, though one still focused on permissions. Tuomi describes OER as “sources of services” that:
 - provide non-discriminatory access to information and knowledge about the resource (level I openness)
 - the services of which can be enjoyed by anyone with sufficient nondiscriminatory capabilities (level II openness)
 - can be contributed to (level III openness). Because definitions of OER place such an emphasis on copyright permissions and licensing, a basic understanding of the most commonly used open licenses, the Creative Commons licenses, is critical to understanding what OER are.

In practice, an open educational resource is any educational material that uses a Creative Commons license or resides in the public domain (i.e., outside of copyright regulation). Educause (2010) noted that Open Educational Resources materials are generally released under a Creative Commons or similar license that supports open or nearly open use of the content”. The Creative Commons licenses are comprised of several components which can be mixed in a number of ways. The “Attribution” component (BY for short) requires individuals and organizations that use the openly licensed material to give credit to the original creator of the material. The “ShareAlike” component (SA for short) requires .any revised or adapted versions of the material to be licensed under exactly the same Creative Commons license as the original material. The

“Noncommercial” (NC for short) component prohibits individuals and organizations from using the material for commercial purposes. These components can be mixed in a number of ways to make different licenses. The most popular licenses for Open Educational Resources include the BY license, the BY-SA license, and the BY-NC-SA license. Creative Commons also provides a “No Derivatives” component (ND for short) which prohibits individuals or organizations from making any changes to materials, but because revise and remix are critical components of all definitions of Open Educational Resources, the ND clause and licenses containing it are not used by the Open Educational Resources community. The Creative Commons licenses (Lessig, 2003) used for Open Educational Resources guarantee that:

- users will enjoy no-cost (free) access to the materials and that
- users have permission to engage in the 4R activities.

Education institutions have mixed incentives for engaging in open educational resources initiatives (Smith, 2009). Some of these incentives are mission-aligned. Hylen (2006) and D’Antoni (2009) provide good overviews of these mission-aligned motivations for producing and sharing OER, including the public outreach mission of publicly-funded universities to educate the entire public whose funding supports their operation. There are several self-interested reasons institutions and faculties choose to create and share open educational resources that may or may not articulate clearly with the mission of the institution. The majority of the benefit claims in the literature fall into this category. For example, Hylen, (2006); Caudill (2011) claims that access to OER makes the course development process quicker and easier. Hodgkinson-Williams (2010) noted that the significant international attention of OER improved public relations and improved relationships with strategic partners, and improved internal publishing and production capabilities that come from well-publicized OER projects. Mackintosh, McGreal, Taylor (2011), explain from an economic perspective programs can actually increase revenue when use as a marketing channel.

Hylen (2006) stressed that OERs help improve education across the globe. According to Hylen (2006) OER are important for developing countries, where many students may not be able to afford textbooks, where access to classrooms may be limited, and where teacher-training programs may be lacking. Hylen (2006), further pointed out that OER are also important in wealthy industrialized countries, where they can offer significant cost savings. OER allows learners, teachers, administrators and governments to freely access, create and share open document-format educational resources. Following the benefit of OER UNESCO Education Sector adopted OER in their teacher education, HIV and AIDS, literacy and education in post-conflict and post-disaster situations. UNESCO believes that universal access to high quality education is key to the building of peace, sustainable social and economic development, and intercultural dialogue. Open Educational Resources (OER) provide a strategic

opportunity to improve the quality of education as well as facilitate policy dialogue, knowledge sharing and capacity building. The potential of opening up educational resources for use and adaptation by everyone, especially those in resource-poor environments, is a great opportunity to achieve quality education for all. Bossu (2010)

In order for Nigeria to reap the dividend of Science Technology Engineering and Mathematics in the current wave of innovation in education, basic science was introduced as a foundation subject for all would-be science and non science students. Basic science is a revised curriculum from integrated science following the decision of the federal government to introduce the 9-year basic education programme and the need to attain the Millennium Development Goals (MDGs) by 2015. as well as the need to implement the National Economic and Empowerment Development Strategies (NEEDS). The review was necessary in order to incorporate issues such as value-re-orientation, poverty eradication, job creation, wealth generation as well as using education to empower the people. The objectives of the basic science curriculum are to enable the learners to:

- develop interest in science and technology
- acquire basic knowledge and skills in science and technology
- apply their scientific and technological knowledge and skills to meet societal needs
- take advantage of the numerous career opportunities offered by science and technology
- become prepared for further studies in science and technology (NERDC, 2007)

For effective preparation of the teachers to take their responsibilities of teaching for the achievement of these laudable goals, colleges of education were established to train teachers. These teachers on graduation were to be all round in skill acquisition capable of handle any innovations that may arise in their course of duty. Thus exposure of teachers' trainees to open educational resources which is seen as the best global innovation practice could ensure the trainees acquisition of global knowledge, sustainable skills, that will catapult them to be live long learners. However Nigeria, at present is faced with economic dwindling, students over population, lack of quality and quantity texts books and other resource materials, which are the few problems among others, affecting quality education in the country. These problems therefore called for more expose of students to open educational resources. As it is often said “like father like son” teachers often teaches the way they were taught, hence they need to find out the attitude and utilization of OER by integrated science teachers' educators in the preparation of basic science teachers in Nigeria.

Purpose of the Study

The purpose of this study is to find out integrated science teachers' educators attitude and utilization of open educational resources in south-south colleges of education in Nigeria. Specifically the objectives of the study are:

1. To find out the attitude of integrated science teachers' educators towards open educational resources?
2. To find out the level of utilization of open educational resources by integrated science teacher's educators?

Research Questions

Based on the objectives, two research questions were stated as follows:

1. What is the attitude of integrated science teachers' educators towards open educational resources?
2. What is the level of utilization of open educational resources by integrated science teacher's educators?

Methodology

The area of the study was all south-south colleges of education in Nigeria. A survey research design was adopted in carrying out the study. The population of the study consisted of all lecturers in the school of science in the south -south colleges of education. The sample of the study consisted of sixty (60) lecturers randomly selected from four (4) colleges of education in the area of the study. A 20 items questionnaire instrument known as "Attitude and Utilization of Open Educational Resources by Integrated Science Teachers Educators Questionnaires" (AUOERISTEQ) was used to elicit information in the study. The instrument reliability was established by administering it to twenty lecturers who were not part of the study. A test re-test technique and a PPMCC(r) was used to establish the reliability which yielded a coefficient of 0.89. The instrument was administered to the subject and data collected were analyzed using mean and standard deviation statistics.

Result

Research Question 1. What is the attitude of integrated science teachers' educators towards open educational resources?

Table 1. Descriptive statistics of integrated science teachers' educators' attitude towards open educational resources?

Variables	N	X	SD
Positive	60	30.60	2.42
Negative	60	29.50	2.42

Table 1 reveals the mean scores and standard deviation of teacher educator attitude to be 30.60; 2.42 and 29.50; 2.42 respectfully indicating teachers positive and negative attitude. This means that teachers' educators were having a fare positive attitude towards open educational resource. This follows the facts that the mean of the positive attitude was little higher than that of the negative as indicated on the table.

Research Question 2. What is the level of utilization of open educational resources by integrated science teacher's educators?

Table 2. Descriptive statistics of level utilization of open educational resource by integrated science teachers' educators.

Variables	N	X	SD
High	10	22.20	4.37
Low	50	28.60	5.78

Table 2 reveals the mean scores and standard deviation of level of utilization of open educational resource by integrated science teacher educator to be 22.20; 4.37 and 28.60; 5.78 respectfully indicating teachers' low utilization of open educational resource. This means that many integrated science teachers' educators hardly utilize open educational resource in their class.

Discussion of Findings

Admist the benefit of open educational resource, to students and teachers this study reveals that the attitude of teachers' educators was fairly positive as indicated in the table I above. This may be in connection with the fact that the integrated science educators may not be aware of the availability of open educational resource. A times they may be comfortable recycling what they have learnt over the past years with their students without considering trends and the changes that many have taken place globally. This study is in line with Geser (2007), who noted that developing nations were always slow to changes when it comes to innovation in education. Also revealed in this study was the fact of low utilization of open educational resources, the low utilization of OER may be in connection with the challenges associated with OER such as discovery problem, sustainability problem, as well as the quality problem. As noted by Muranmatsu (2008), learning objects that came, OER are difficult to find. The discovery problem relates to the quality problem. According to Geser (2007), who noted that one can easily find OER in Google relating to "sciences", but which of these are high quality? Since it is difficult to find high quality OER, it is difficult to argue persuasively that they exist; computational approaches to automatically assessing the quality of resources, Bethard, Wetzter, Butcher, Martin, & Sumner. 2009. Thus the

educators may not utilize the OER materials because they deem it not fit for use when considering quality wise.

Conclusion

Based on the findings of this study it is concluded that integrated science educators have a fairly positive attitude and low utilization of open educational resource in the teachers' preparation classes.

Recommendations

Based on the finding of this study it is recommended as follows:

1. That integrated science teachers' educators should be given appropriate re-orientation on the availability of open educational resources in the global environment.
2. The necessary challenges such as Discovery and quality problem should be resolved vigorously by an enabling organization such as UNESCO so as to enhance effective utilization of the open educational resource by both teachers and students.

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