

# **Level of Awareness of Faculty Members on Using Open Educational Resources in Jordanian Universities**

**By**

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## **Abstract**

The current study aims to investigate the level of awareness of faculty members on using open educational resources in Jordanian Universities. To achieve the aim of the study, the descriptive approach is used. The study sample consists of (390) faculty members in Jordanian universities, i.e. the University of Jordan, the Middle East University, Yarmouk University, Jerash University, Mutah University, and Aqaba University of Technology. Due to the nature of the study, a questionnaire instrument is developed, and its validity and reliability are verified. In its final electronic form, the questionnaire consisting of (29) items is distributed over (5) domains. The results show that the level of awareness of faculty members on using open educational resources in Jordanian Universities is of a medium level, where the domain of the importance of the open educational resources is ranked first, while the domain of the use of the open educational resources is ranked last. The study also shows that there are no statistically significant differences at the level ( $\alpha \leq 0.05$ ) in the level of awareness of faculty members on using open educational resources in Jordanian universities according to the gender variable. Besides, the study shows that there is a relationship between the number of years of experience and the awareness of faculty members on using open educational resources in Jordanian universities according to the variable of the years of the experience, as the more years of experience are, the greater the awareness of using the open educational resources in universities. The study recommends encouraging public institutions and governments and the private sector to participate in the production of open educational resources and establish an OER platform where the entire teaching members in public and private universities in Jordan can participate.

**Keywords:** Awareness Level, Open Educational Resources, Faculty Members.

## **1. Introduction**

E-learning is a modern trend integrating educational strategies and teaching methods with modern technology, starting from kindergarten (KG) to higher education (Mansour, 2017). The websites spread over the Internet offer various models of open educational resources defined by UNESCO in 2015 as educational resources available to everybody and usable without paying any financial costs or licensing fees by teachers and students. The educational value of OER lies in the idea of using open materials as core components of the curriculum (Cummings, 2020).

Recently, many schools, universities, university colleges, and two-year colleges have integrated their e-learning systems to support their learning and teaching processes. For example, in the United States of America, nearly 5.8 million students have enrolled in online

courses as the number of students enrolled has been increasing annually over the past decade (Magro & Tabaei, 2020). In 2001, a first of its kind, the Massachusetts Institute has shared all of its curricula for free on the Internet, pioneering work in the history of human knowledge. The Massachusetts Institute website, with more than one million visitors per month from all over the world, currently includes more than 2,000 educational courses at the bachelor's and master's levels, including study plans, text and video lectures, references, assessment methods, and others (Abeywardena & Philip, 2019).

Nowadays, open educational resources (OER) are considered part of e-learning (Ismail, 2018). open educational resources (OER) are teaching, learning, and research resources that are publicly available in the common public domain, or released using an intellectual property license, allowing these resources to be distributed, modified, and collaborated with others for reuse (Cummings, 2020). During the 2002 UNESCO Forum on the Impact of “Open Courseware (OCW) on Higher Education in Developing Countries”, the phrase “open educational resources” has been coined, where this forum is convened to consider the possibility for developing countries to benefit from the initiative of the Massachusetts Institute. Open Educational Resources are defined as digital materials that are freely available on the Internet for teachers and students to be used in the educational process, along with the purposes of higher scientific research (Kabugo, 2020).

Given this background, numerous educational institutions begin to take an interest in adopting and developing Open Educational Resources (OER). Open educational resources are learning resources provided either free of charge in digital form or at a very low cost. These sources may also be in the public domain or carry with them the licenses of the necessary Creative Commons (CC) to allow for reuse, review, distribution, retention, and redistribution (Nyamweya, 2018).

The significance of open educational resources as a source of digital resources appears in many higher education institutions due to its advantages, such as ease of access for teachers, ease of sharing through various means of communication, and shortening the time for them to prepare learning materials. Open educational resources are a free and flexible resource for many students and teachers, as they can be a logical alternative in addressing the issue of access to the textbook (Al-Mubarak, 2019).

## **2. Problem of the Study**

Numerous important reasons contribute to spreading the open educational resources, such as the high price of books and textbooks, where students prefer not to buy textbooks and avoid buying them because of their high costs and search for alternative solutions. Also, universities consider open educational resources an alternative solution as they are flexible, free, and quickly accessible resources to deal with, as they can be a solution for students who live in war zones or who have been unable to access their universities (Ikahihifo, Spring, Rosencrans, & Watson, 2017). Open educational resources motivate faculty members to adopt them in teaching students, as one of the most important reasons why faculty members accept them is to reduce costs for students, promote educational equity among them, facilitate the learning process, and help in promoting practices in student learning (Tillinghast, 2020). Many previous studies, such as (Al-Mubarak, 2019; Al-Salmi and Atmezi, 2019; Atmezi and Akka, 2015) recommend working hard to increase the awareness of faculty members in universities,

developing their abilities to use and employing open educational sources to be producers of knowledge.

Importantly, Jordanian universities need open educational resources to support the open learning movement in them, provide educational opportunities for those who want, and remove obstacles for students on the one hand. On the other hand, open educational resources must be made available to students and give everyone educational opportunities. Accordingly, the problem of the study lies in exploring the level of awareness of faculty members on using open educational resources in Jordanian universities.

### **3. Previous Studies and Literature Review**

The literature and previous studies dealing with open educational resources in the Arab world in general and Jordan, in particular, show that few studies have been done on the subject of open educational resources. Zeichner's study (2021) explores the problems teachers face in adopting OER and teachers' attitudes towards OER and their teaching methods. To achieve the objectives of the study, the mixed approach and the instruments of questionnaire and interview are used on a 125-teacher study sample. The results of the study show that the more teachers are aware of open educational resources; they enhance learners' achievement, improve their satisfaction and expand the use of open educational resources. The results show that teachers believe that OER and curriculum-based materials should be easy to use, easily change and edit, and should be up-to-date, thoughtful, easy to use and provide detailed explanations about their use. Also, when planning for OER, the pedagogical autonomy of teachers must be strengthened to enhance their chances of successful implementation.

In the same context, Humphrey & Kolawole's study (2021) investigates the awareness and use of OER among LIS students at the Ignatius Ajuru University of Education in Nigeria. To achieve the objectives of the study, the descriptive approach, where the study population consists of 248 undergraduate and graduate students and data is collected using a questionnaire. The results show that the students have a high level of awareness of the concept of OER and a high level of use of various types of OER. The results also show that there are several problems facing the learning process such as insufficient information literacy skills, poor electricity supply, poor internet connection, lack of library awareness, and lack of support from lecturers on the use of open educational resources.

In another study by (Appiah, Essel & Amankwa, 2020), the assessment of awareness and attitude towards the use of OER by students and faculty at Kumasi Technical University in Ghana have been investigated. To achieve the objectives of the study, questionnaires are given to the study sample of (50) faculty members and (300) students. The results indicate that the majority of the faculty members (83.9%) and students (91.5%) are not familiar with the term OER at Kumasi Technical University and they rarely use these sources. The study also shows that the Faculty members, who learned about OER sources, have used them in their research activities and students, who are also supposed to be direct beneficiaries, do not use educational resources at all.

In this take and give discussion, Al-Hwaiti's study (2020) identifies the reality and obstacles to the use of open education resources by faculty members in the Kingdom of Saudi Arabia. To achieve the objectives of the study, the descriptive survey method is used. The study

instrument is a questionnaire distributed to a study sample of (369) teachers in the schools of the city of Tabuk for the year 2018-2019. The results show that the mean of the total instrument is (2.59 out of 5) with a high level in the following aspects: public education teachers using open educational resources (Shams Platform) in their educational practices with a mean of (2.65 out of 4) and the obstacles of using open sources (Shams Platform) by the education teachers with a mean of (2.53 out of 4), as both are rated with a large level. The results of the study also show that there are statistically significant differences at the level ( $\alpha \leq 0.05$ ) between the sample responses about the reality of public education teachers using the open learning method.

As put by (Arunkumar & Kannan, 2020), the awareness and use of open learning resources among students of the Indian University of Alagappa are identified. To achieve the objectives of the study, the descriptive approach is used. The questionnaire instrument is constructed and its validity and reliability are verified as well, where a total of 200 questionnaires are distributed to university students using Google Forms. The results conclude that students have awareness of OERs and use them by (35.42%) of respondents who open educational resources daily, (47.92%) of respondents open educational resources weekly, 11 (7.64%) of respondents open educational resources twice per week, and 13 (9.03%) open the educational resources per month.

In another work by (Shams, Haq & Waqar, 2020), the study investigates the basic trends of OER use by university students in Pakistan and presents the perceived benefits of OER for academic challenge, collaborative learning, and enrichment of their educational experience. To achieve the objectives of the study, the descriptive approach is adopted, using the questionnaire instrument. The results of the study have concluded that 91% of respondents used OERs, but that the perceived benefits of using OERs vary greatly for students studying at different levels of education and disciplines.

A recent study by (Alissa et al., 2020) evaluates the use of open educational resources at Viterbo University in many disciplines such as nursing, accounting, environmental sciences, religious studies, and finance. To achieve the objectives of the study, 48 participating faculty members and 510 students are qualitatively surveyed regarding their experience in creating and implementing OERs on the course. The results of the study show positive responses to the use of open educational resources in their use in the study, while the majority of students agree with the cost savings of open educational resources, the quality of open educational resources, and the ease of use of open educational resources. The results of the faculty survey, however, conclude that they have a positive experience with OERs, and they believed that there is a significant benefit to students in saving costs while maintaining the quality of learning.

In the same vein, Pounds & Bostock (2019) assess whether teachers and students in the aquaculture sector can use and benefit from OERs. To achieve the objectives of the study, the descriptive approach and online questionnaires for students and teachers are used, as the study sample consists of (45) teachers and (120) students. The results conclude that there is a demand for OERs by both teachers and students who already use online materials for learning and teaching, as students are more likely to enroll and respect OER institutions but are not willing to pay higher tuition fees. It is also concluded that OER initiatives linked to higher education institutions in the areas of aquaculture and fisheries have the potential to support and strengthen the workforce in the sector.

Besides, Nkwenti & Abeywardena (2019) examine the challenges facing the implementation of OERs in Cameroon and explore the possibilities of mainstreaming OERs under the supervision of the Ministries of Basic and Secondary Education. To achieve the objectives of the study, the descriptive approach is used. The study sample includes 393 faculty members, and a questionnaire instrument is prepared. The results show that it is possible to apply open educational resources in Cameroonian schools. However, the most important challenges revealed by the study are the weak infrastructure and the presence of technical obstacles in the application of open educational resources. Accordingly, the current study explores the level of awareness of faculty members on using open educational resources in Jordanian universities.

#### **4. Objective of the Study**

The objectives of the research paper are:

1. Exploring the level of awareness of faculty members on using open educational resources in Jordanian universities.
2. Study whether there are statistically significant differences at the significance level ( $\alpha \leq 0.05$ ) in the level of awareness of faculty members on using open educational resources in Jordanian universities due to the variables of gender and experience?

#### **5. Question of the Study**

The following research questions are formulated to achieve the objectives of the study.

1. What is the level of awareness of faculty members on using open educational resources in Jordanian universities?
2. Are there statistically significant differences at the significance level ( $\alpha \leq 0.05$ ) in the level of awareness of faculty members on using open educational resources in Jordanian universities due to the variables of gender and experience?

#### **6. Significance of the Study**

The significance of this study lies in the novelty of the topic and the lack of studies and research that have dealt with the subject of the study as the topic of technology of education is of great interest to many higher education institutions and researchers at the Arab and Jordanian levels. The theoretical importance of this study stems from the fact that this study contributes to enriching the Arab library and researchers with the subject of OERs by providing the primary data and information they need. Also, the subject of the study emphasizes modern learning trends. Besides, it highlights the significance of open educational resources in their ability to enrich curricula, provide access to information and save it from the time and effort of a faculty member. Practically speaking, this study benefits the Ministries of Education and the Ministry of Higher Education and Scientific Research in building a Jordanian platform that supports the open education movement and helps achieve its goals. This study also draws the attention of faculty members in universities to the importance of using open educational resources.



## 7. Terms of the Study

The following are the terms and definitions of the study.

**Awareness level:** It is defined as “The extent of an individual’s awareness of things and knowledge of them, as it represents a person’s rational relationship with a set of ideas, facts, and information that express a specific topic” (Al-Omari, 2021, p. 25). Procedurally, it is the extent to which faculty members in Jordanian universities are aware of the open educational resources, which appears in the degree of their response to the questionnaire instrument that the researcher has adapted to reach the goal of the study.

**Open Educational Resources (OERs):** They are defined as “Educational resources in any digital medium or other that allow access, use, reuse, and re-appropriation by others without limitations” (UNESCO, 2002, p. 3). Also, they are digital materials that are freely and openly available to educators, students, and self-learners for use and reuse in teaching, learning, and research (Colvard, Watson & Park, 2018). Procedurally, they are digital resources such as text files, multimedia, digital videos, digital repositories, and infographic files that faculty members can access via the Internet free of charge and modify to suit their educational content.

## 8. Methodology of the Study

The study deals with a description of the methodology used, a description of the study participants, a description of the study instrument, methods to verify its validity and reliability, and clarification of the procedures followed during the application of the study, the study’s taxonomic variables, and the statistical processing used to analyze the study’s data and attain its results as detailed in the next sections.

### *Research Approach*

To achieve the objectives of the study, the descriptive-analytical method is used to suit the purposes of the study. It is considered a method to describe the subject to be studied through a correct scientific methodology and depict the results reached on expressive digital forms that can be explained (Al-Haddad, 2019).

### *Study Population*

The study population consists of faculty members in all public and private universities in the Hashemite Kingdom of Jordan, and the number of current faculty members working in these universities is (11394) in the academic year (2020/202) according to the statistical report of the Ministry of Higher Education and Scientific Research (Ministry of Higher Education and Scientific Research, 2020).

### *Study Sample*

Using a random sampling method, the sample of the current study is selected from the faculty members from three regions: The Central Region, South Region, and North Region. A public university and a private university are selected from each region as follows: The University of Jordan and the Middle East University in the Central Region, Mutah University and the Aqaba University of Technology in the South Region, and Yarmouk University and Jerash University in the North Region.

After converting the questionnaire to its electronic form using Google Forms, the questionnaire is distributed to the specified faculty members. The questionnaire is distributed

using social media groups such as Facebook and WhatsApp. In detail, 390 questionnaires are returned and the returned questionnaires are as follows: 190 questionnaires in the Central Region, 100 questionnaires in the South Region, and 100 questionnaires in the North Region.

### ***Study Instrument***

A questionnaire is developed to collect the data and information required from the study sample according to the questionnaires based on some previous literature and studies related to open educational resources such as (Al-Mubarak, 2019; Baas & Admiral, 2019).

### ***The questionnaire is divided into two main sections as follows:***

1. The first section is concerned with collecting data and personal information for the members of the study sample, which includes (gender, teaching experience). The classification is as follows: gender in two categories (male and female) and teaching experience in three categories (less than 5 years, 5-10 years, more than 10 years).
2. The second section is concerned with collecting the answers and responses of the sample members to a set of items dedicated to measuring (29) items distributed over (5) domains of open educational resources as follows:
  - The first domain: The concept of open educational resources with (5) items.
  - The second domain: The importance of open educational resources in the educational process with (5) items.
  - The third domain: Employing open educational resources with (7) items.
  - The fourth domain: The forms of open educational resources with (5) items.
  - The fifth domain: The use of open educational resources with (7) items.

The 5-point Likert Scale is used to determine the way the study members respond because it is the common method in analysing the answers and can provide a numerical scale that visually estimates the closed questions. It also measures the attitudes and extent of the respondents' feelings. The 5-point Likert Scale ranges from (1 to 5) as a five-point scale, (strongly agree, agree, neither agree nor disagree, disagree, strongly disagree), where the value (5) means "strongly agree" and the value (1) means "strongly disagree".

### ***Study Instrument Validity & Reliability***

To verify the validity of the study instrument, it has been presented to a group of (8) validators the faculty members in Jordanian universities specialized in curricula and teaching, technology and education, measurement, and evaluation, alongside faculty members at the School of Educational Sciences to express their views on the validity of the linguistic wording of the items, its degree of clarity, and its relevance to the measured domains, and any observations or modifications or additions they deem appropriate. In light of the validators' opinions, several items are deleted, and some other items are modified based on the Pareto principle of majority agreement (80%).

To verify the reliability of the study instrument, the instrument's reliability coefficient has been used through the internal consistency coefficient (Cronbach's Alpha formula), where the internal consistency of the questionnaire items for each of the domains of the questionnaire and the total score has been calculated. Table (1) shows the values of the reliability coefficients of the study instrument, as follows:

**Table 1** *Internal Consistency Coefficient's Cronbach's Alpha for Study Domains and the Instrument as a Whole*

Domain	Items Number	Alpha Value
The concept of open educational resources.	5	0.718
The importance of open educational resources in the educational process.	5	0.717
Employing open educational resources.	7	0.756
The forms of open educational resources.	5	0.788
The use of open educational resources.	7	0.738
	29	0.753

Table (1) shows that the values of the internal consistency coefficient's Cronbach's alpha for the items of the dimensions and domains of study are acceptable, as they have ranged between (0.717-0.788). All of these values are good and give high internal consistency to the responses of the study sample members to the items of each domain of the study domains, confirming the reliability and internal consistency of the variables within the scale. The value of the alpha for the items of the instrument as a whole is (0.753). Therefore, all values are greater than the recognized scale of reliability of (0.70), and this confirms the consistency between the items of the domains of study, their reliability, and their dependability to conduct the statistical analysis of the study.

## 9. Results and Discussion

This section gives insight into the results and discussion related to the questions of the study as follows:

### 1. *What is the level of awareness of faculty members on using open educational resources in Jordanian universities?*

To answer the first question, arithmetic means and standard deviations of the level of awareness of faculty members on using open educational resources in Jordanian Universities on the domains of the questionnaire as a whole are calculated as shown in Table (1).

**Table 2** *Arithmetic Mean and Standard Deviations of the Domains of the Questionnaire as a Whole*

No.	Item	AM	SD	Rank	Relative Sig.
1	The concept of open educational resources.	3.59	1.09	3	Medium
2	The importance of open educational resources.	3.66	1.01	1	Medium
3	Employing open educational resources.	3.61	1.07	2	Medium
4	The forms of open educational resources.	3.47	0.95	4	Medium
5	The use of open educational resources.	3.44	0.98	5	Medium
	The Instrument as a Whole	3.55	0.87		Medium

Table (2) shows that the relative significance of the domains of the study instrument regarding the level of awareness of faculty members on using the open educational resources is medium. The general arithmetic mean is (3.5) and the standard deviation is (0.87), where the arithmetic mean values of the domains of the level of awareness of faculty members on using open educational resources have ranged between (3.44-3.66). The domain "The importance of open educational resources in the educational process" is ranked first with an arithmetic mean of (3.66) and a standard deviation of (1.01), while the domain "The use of open educational resources" is ranked last with an arithmetic mean of (3.44) and a standard deviation of (0.98).



The results related to the first question of the responses of the sample members to the domains of the study related to the degree of awareness show that the degree of their awareness is medium, where the general arithmetic mean is (3.5) and the standard deviation is (0.87). The arithmetic mean values of the domains of the awareness level of faculty members on using open educational resources have ranged between (3.44-3.66), where the domain “The importance of open educational resources” is ranked first with an arithmetic mean of (3.66).

This result explains that faculty members are aware of the importance of Open Educational Resources (OER). This importance can be attributed to many reasons such as reducing the cost of learning due to the high cost of education in many institutions where many students cannot afford to buy books and textbooks. Open Educational Resources (OERs) is a way to ensure that every student has access to learning materials. Open Educational Resources (OER) also allows faculty members to create materials customized for their classrooms and focus on the strengths of the instructional content and present them in their classrooms.

OER is also an opportunity to improve one's material by allowing the material to be modified by other faculty members around the world. The OER creator has the opportunity to see the material used in other ways as new sections and chapters can be added and enhanced to create an influential learning resource, noting that this kind of collaboration is simply not possible with traditional educational resources on the one hand. On the other hand, OER gives faculty members a variety of materials to use in their classrooms. Also, open educational resources are important because they provide affordable materials to students, allow faculty to enhance their work, and provide faculty with content for classes.

However, the domain “The use of open educational resources” is ranked last with an arithmetic mean of (3.44). This result explains the fact that faculty members face some problems in using open educational resources, as faculty members do not know what they should do with open educational resources due to the difference in technology skills among them. Another obstacle to the widespread use of OER is the lack of technological tools to share and adapt the resources, which leads to poor accessibility and usability of OER. On the other hand, there are no effective tools for assessing and discovering the quality of open educational resources, assisting faculty members in evaluating open educational resources easily and quickly, comparing them with materials of low quality, and determining the best possible sources for certain domains.

More significantly, the following is an overview of the entire domains arranged in descending order.

1. The importance of open educational resources is ranked first with a mean of (3.66). This result can be explained by the fact that the importance of open educational resources is clear, as open educational resources (OERs) provide teachers and students with great benefits. For students, they allow students who use open educational resources to overcome economic and access barriers on the one hand. On the other hand, college enrollment can be much less expensive as using OER in more courses can ease some of the financial burdens students face, reducing the odds that they will drop out of a course or never finish their studies and also help students experience more freedom to learn. Open Educational Resources (OER) allows students to access essential information, as unrestricted access can increase performance in coursework and enhance lifelong learning and participation in education. Additionally, because

these materials allow for continuous improvement and the ability to adapt to student's needs, students can have a more targeted, differentiated, and richer learning experience in courses where teachers use OER.

Referring to the items of the domain, item (1) which states "Open educational resources contribute to the process of enriching students' concepts" is ranked first with a mean of (3.77), and a high degree. This finding is because multimedia materials such as videos that accompany texts in OEMs can help present information in multiple formats, helping students learn the concepts being taught more easily. Using open educational resources brings an entire world of educational resources into the classroom where movies, videos, clips, key source documents, and more are now available. With just one click, all real-life experiences are streamed into the classroom and these resources can be used to enhance the teaching of concepts and to enrich the educational development of more advanced students.

However, item (6), which states "Open educational resources enrich the participatory learning process in university education" is ranked last with a mean of (3.50) and a medium degree. This result can be explained by the fact that the educational values of open materials lie in the idea of using them as core components of the curricula as these materials have the opportunity to share online when they are digitized. OER features a license, often called a Creative Commons license that encourages reuse and adaptation of the material.

The goals and values of the OER are demonstrated by emphasizing that knowledge should be free and open to use and reuse, as people should take credit for contributing to education and collaboration. This should be easy and not difficult, but some faculty members find that the content available on the Internet for teachers does not suit the needs of their students on the one hand. On the other hand, they face difficulty in creating and integrating digital resources in education and publishing them in user-friendly and modifiable formats to support knowledge exchange.

2. The domain of employing open educational resources is ranked second with a mean of (3.61) and a medium degree. This finding explains that faculty members realize that employing OER requires extra effort. OER adoption in the classroom involves additional work on the part of faculty, instructional designers, editors, and digital rights specialists to find, adapt, and modify OER, check for accessibility and any copyright issues, and publishes resources in the institution's learning management system. Just as students benefit from the diversity that OER provides, teachers benefit from creating and using these resources in their courses. An important advantage for faculty members is the ability to reintegrate and edit content as needed to localize and adapt materials to individual and group needs, thus promoting equality and diversity for individuals and learners. Educators can also increase the impact and accessibility of their authored resources by releasing them openly, making content available to anyone anywhere and at any time, thus making it work for most students.

In detail, item (1) which states "Employing the open educational resources requires an infrastructure within the educational institution" is ranked first with a mean of (4.15) and a high degree. This result can be explained that faculty members are aware of the requirements for employing open educational resources, which is the availability of infrastructure in educational institutions represented in the provision of devices and communication in the Internet networks that help them access, adapt, modify and republish open educational resources for students so that they can benefit from them in a good method. For example, some students may have trouble using some OER if their Internet connection is slow or insecure. Other educational

resources require programs that students do not own and may not be able to purchase, which requires educational institutions to provide them to students and faculty members to successfully integrate OER into their learning.

Also, item (4) states “The availability of educational resources and educational evaluation methods” is ranked last, with a mean (3.22) and a medium degree. This result explains that most faculty members may be ignorant of all the possibilities offered by open educational resources, which include educational assessment methods, and this may be due to their lack of use and integration into their educational institutions. Some of them, however, are aware of the presence of these tools, but they do not use them personally, as educational institutions, in general, depend on traditional assessment methods and strategies, which are more honest in the opinion of most of them. Therefore, faculty members do not pay much attention to electronic assessment methods, including assessment methods provided by open educational resources.

3. The domain of the concept of open educational resources is ranked third with a mean of (3.59), and a medium degree. This result explains that some faculty members are aware of the concept of open learning resources, while others are not fully aware of this concept. When answering the items by respondents, it is noticed that some of them do not realize that the open educational resources are in the public domain and free to use and that they are issued under an intellectual property license and some of them do not realize that they could modify these resources to suit their academic work. However, some of them are fully aware of the concept of educational resources, which are free digital materials provided to teachers and students through an open license that allows users to copy, use, adapt, and redistribute for educational and research purposes.

In detail, item (1) which states “OER is in the public domain” is ranked first with a mean of (3.74), and with a high degree. This result explains that the concept of open educational resources is closely related to the concepts of public ownership, so most faculty members are aware that open educational resources are a public domain that can be used easily. The term public domain has a very specific meaning that works that do not enjoy copyright protection, which means that they can be used freely without permission from the author or other rights-holder, and OER is a public domain that can be used by individuals under a Creative Commons license.

Item (4) states “Faculty members can modify these sources to suit their academic work” is ranked last with a mean and a medium degree. This result explains that most faculty members are not aware of the possibilities that open educational resources offer them, as they do not realize that they can modify, adapt and republish open educational resources for their students in proportion to their educational content. This may be due to their lack of use of these resources and their failure to employ them primarily in the educational process, making most of them not realize their capabilities on the one hand. On the other hand, some faculty members find that high-quality OER contributes to supporting the diverse needs of the learner and enhancing the inclusive learning environment through faculty members' ability to customize course content and improve compatibility with learning outcomes.

4. The domain of forms of open educational resources is ranked fourth with a mean of (3.47), and a medium degree. This result can explain that some faculty members, due to their lack of use of these resources, are ignorant of their forms. In other words, some of them believe that the forms of open learning resources are limited to videos, images, and texts, and are

ignorant that they provide learning objects that simplify concepts and presentation files (PowerPoint). They include interactive games and various electronic links that enable students to identify new learning resources, files, and documents shared through social media. Open educational resources are complete courses, course materials, modules, textbooks, streaming videos, tests and assessments, software, courses, and open content, learning modules, open-source software tools, and any other tools and materials used to support teaching or learning to support access to knowledge. They are teaching, learning, and research resources that are in the public domain or are released under an intellectual property license that allows others to freely use or reuse them.

In detail, item (2) which states “Open educational resources include presentation files (PowerPoint)” is ranked first with a mean (4.06) and a high degree. This result explains the popularity of using (PowerPoint) in the educational process, where most of the faculty members when presenting their lectures to students, rely on PowerPoint presentations. For this reason, faculty members are looking for this resource to introduce and explain concepts to students. Through their research, it is realized that OERs provide them with presentation files that they can benefit from in teaching the content of their subjects. Faculty members also realize that OERs can supplement textbooks and lectures where there is a lack of information through the use of presentations.

In detail, item (3), which states "Open educational resources include interactive games" is ranked last with a mean (2.40) and a medium degree. This result can explain that many faculty members do not realize the positive impact of integrating interactive games into the content of their subjects, and therefore they do not care about them or search for them. In other words, they are not aware of the sources of providing these games, which open educational resources are one of the most prominent of these sources, as educational games can increase students' interaction with course resources and enable students to learn in a way that traditional learning sources do not allow.

5. The domain of the use of open educational resources is ranked last with a mean of (3.44) and a medium degree. This result explains that the use of open educational resources is linked to many challenges, such as the faculty member's possession of skills, as the need for distance learning techniques may not be available in some educational institutions on the one hand. On the other hand, students may not own tablets and personal computers, and the use of open educational resources may be limited to some theoretical and practical courses.

However, the use of OER is important as these OER include materials at different levels of detail such as full courses, curricula, course materials, textbooks, lessons, and assessment and simulation software. Moreover, they can have different formats such as web pages, documents, presentations, video streams, images, and podcasts. In the case of full courses, these resources can include several formats that can be used separately. The integration of OER into e-learning environments can support the learning process by taking advantage of the quality inherent in these resources and reducing the costs associated with the process.

In-depth, item (4) which states “Open educational resources can be used through tablets and personal computers” is ranked first with a mean of (4.36) and a high degree. This result explains that most faculty members realize that they can use and view open educational resources through tablets provided by their educational institutions or through personal devices owned by students and teachers. Tablets are the most widely used and traded in educational

institutions on the one hand. On the other hand, personal devices are the most available among students, so this item comes first.

Conversely, item (1) which states "The use of open educational resources requires that the faculty member possess technological skills" is ranked last with a mean of (2.28) and a medium degree. This result explains that faculty members do not have sufficient awareness of the importance of the technology skills that they must possess to use open educational resources, as the technical skills of faculty members constitute a barrier to the use and application of open educational resources. The use of open educational resources requires the teacher to have the technical skills to be able to search for information, download it, modify it, and adapt it to suit his materials, republish it to students, and make it available on the Internet so that other people can use it. To sum up, the current study agrees with the studies of (Appiah et al., 2020; Baas & Admiral, 2019; Kersey, 2019). Yet, it differs from the study of (Flode et al., 2018) in the presence of a high degree of awareness among faculty members when using open educational resources.

2. Are there statistically significant differences at the significance level ( $\alpha \leq 0.05$ ) in the level of awareness of faculty members on using open educational resources in Jordanian universities due to the variables of gender and experience?

To answer the second question, multiple analyses of variance (MANOVA) of the level of awareness of faculty members on using open educational resources in Jordanian universities according to the study variables are used as shown in Table (3).

**Table 3** Arithmetic Mean and Standard Deviations for Using Open Educational Resources

Variable	Categories	Concept		Importance		Employing		Forms		Use	
		AM	SD	AM	SD	AM	SD	AM	SD	AM	SD
<b>Gender</b>	<b>Male</b>	4.34	0.723	4.35	0.718	4.35	0.705	4.33	0.716	4.36	0.704
	<b>Female</b>	4.32	0.676	4.32	0.670	4.33	0.672	4.33	0.672	4.34	0.662
		4.33	0.70	4.34	0.695	4.34	0.689	4.33	0.695	4.35	0.684
<b>Years of Experience</b>	<b>Less than 5 years</b>	3.92	0.857	3.94	0.842	3.95	0.839	3.96	0.842	3.97	0.85
	<b>5-10 years</b>	4.28	0.677	4.31	0.672	4.29	0.673	4.27	0.686	4.30	0.673
	<b>More than 10 years</b>	4.49	0.616	4.49	0.619	4.49	0.601	4.51	0.598	4.51	0.583
		4.33	0.70	4.34	0.695	4.34	0.689	4.33	0.695	4.35	0.684

Table (3) shows that there are apparent differences in the arithmetic means and deviations for the use of open educational resources for the variable years of teaching experience. The table also shows no apparent differences between the arithmetic means and standard deviations of the gender variable. The standard deviation values that are less than 1 also indicate the presence of a weak dispersion and thus agreement among the members of the study sample on these values for the arithmetic means, along with the presence of statistically significant differences. To show the statistical significance of the differences among the arithmetic means, multiple analyses of variance (MANOVA) are used as shown in Table (4).



**Table 4** *Multiple Analyses of Variance (MANOVA) for the Use of Open Educational Resources According to the Study Variable*

Source of Variance	Domains	Sum of squares	Degrees of freedom	Average of squares	F Value	Statistical significance
<b>Gender</b>	Concept	0.923	1	0.92	2.008	0.157
	Importance	1.097	1	1.1	2.410	0.121
	Employing	0.940	1	0.94	2.111	0.147
	Forms	0.692	1	0.70	1.530	0.217
	Use	1.119	1	1.1	2.553	0.111
<b>Years of Experience</b>	Concept	13.742	2	6.871	14.952	0.000*
	Importance	12.885	2	6.443	14.156	0.000*
	Employing	13.010	2	6.505	14.611	0.000*
	Forms	13.568	2	6.784	15.004	0.000*
	Use	13.075	2	6.538	14.920	0.000*
<b>Error</b>	Concept	169.568	369	0.460		
	Importance	167.941	369	0.445		
	Employing	164.279	369	0.445		
	Forms	166.841	369	0.452		
	Use	161.691	369	0.438		
<b>Total</b>	Concept	183.753	374			
	Importance	181.152	374			
	Employing	177.691	374			
	Forms	180.972	374			
	Use	175.193	374			

Table (4) shows that there are statistically significant differences at the level of significance ( $\alpha \leq 0.05$ ) due to the variable years of experience in favor of (concept, importance, employing, forms, and use). In other words, all of their statistical significance values are (0.000), and all of them are statistically significant values at the significance level.

Thoroughly, the results related to the second question show that there are no statistically significant differences at the level ( $\alpha \leq 0.05$ ) in the level of awareness of faculty members on using the open educational resources in Jordanian universities according to gender variable. This result is explained by the faculty members of both genders possessing awareness and attention and realizing the importance of using open educational resources and the mechanism of dealing with them. This result can be explained by the fact that faculty members of both genders are exposed to the same situations and experiences when using open educational resources, as they work in the same educational institutions that have the similar infrastructure and are exposed to the same problems on the one hand. On the other hand, both genders are aware of the functional role that open learning resources play in promoting learning.

Importantly, both genders are aware that OERs are free educational material, freely available, and are suitable not only for higher education but for all levels including primary and secondary education. Open educational resources can also be reused and redirected to suit different needs and can be available in any medium, text, audio, video, and digital. Both genders understand that one of the main differences between OERs and other educational

resources is that OERs have an open license, which allows adaptation and reuse without the need to request the copyright holder.

Regarding the result of the second question related to the variable of experience, it is found that there is a relationship between the number of years of experience and the awareness of faculty members on using open educational resources in Jordanian universities, where the more years of experience, the greater the awareness of the use of open educational resources in universities. This result explains that faculty members who have more experience are more aware and able to understand the reality of education in their institutions. In other words, faculty members with long experience in work go through many situations and experiences that enable them to build a good base of knowledge and information to deal with modern education applications and allowed them to learn about the most prominent modern learning trends, where open learning is one of the most prominent and open educational resources are the largest application of it.

In contrast, this result is attributed to the fact that the faculty members with long work experience can determine the best methods and tools used in education because of the experiences they gained during the different stages of work, including the various educational tasks, as these tasks contribute to forming a body of knowledge that helps them understand the educational system and enable them to take appropriate and effective decisions. The results of the second question related to the variable of experience also agree with the result of the study of (Baas & Admiral, 2019), which shows the high degree of awareness of faculty members concerning the number of years of experience of a faculty member.

## **10. Recommendations and Future Work**

Based on the results and the discussion of the current study, the current research paper recommends promoting awareness of the importance of using open educational resources among faculty members, encouraging the development and adaptation of open educational resources produced in the Arabic language to be used in Arab universities, in particular, providing training programs and workshops to assist in qualifying university faculty members to use and produce open educational resources, and establishing an OER platform in which all faculty members in public and private universities in Jordan participate. The study also suggests future work and studies such as conducting studies on the difficulties facing faculty members in employing and using open educational resources, doing studies on the extent of students' awareness on using educational resources, and providing training programs for faculty members to qualify them to produce, design and use open educational resources.

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## **References**

Abeywardena, I. U., & Philip, F. S. (2019). OER Mainstreaming in Tonga. *International Review of Research in Open and Distributed Learning*, 1(20), 262-278. <http://www.irrodl.org/index.php/irrodl/article/view/3924>

- Alissa L. Jennifer A., Cari, M., Katrina V., & Emily D. (2021). Using Open Educational Resources at Viterbo University: Faculty and Student Feedback. *International Review of Research in Open and Distributed Learning*, 1(22), 79 – 90. DOI: <https://doi.org/10.19173/irrodl.v22i1.4970>
- Al-Hwaiti, M. (2020). The reality and obstacles of public education teachers in the city of Tabuk, Saudi Arabia, using the OER open educational resources. *Journal of Educational and Psychological Sciences*, 17(4), 78-97. DOI: 10.26389/AJSRP.M191119
- Al-Mubarak, R. (2019). Difficulties facing faculty members in universities when using open educational resources (OER) and their relationship to some variables: An exploratory study on Saudi universities. *Journal of the College of Basic Education for Educational and Human Sciences*, 1(43), 197-210. <https://www.iasj.net/iasj/download/e4577fa1131de64>.
- Al-Omari, L. (2021). The degree of awareness of Jordanian university students of the concept of digital citizenship and its relationship to its themes. [Unpublished Master's Thesis]. The Middle East University. Amman.
- Appiah, J., Essel, H., & Amankwa, K. (2020). An Evocative Appraisal of the awareness, attitude and utilization of open educational resources at Kumashi University. *Library Philosophy and Practice (e-journal)*. <https://digitalcommons.unl.edu/libphilprac/3838>
- Arunkumar, K. R., & Kannan, P. (2020). Awareness and use of open education resources (OER) among PG students: A study of Alagappa University. *Advances in Library and Information Science Handbook of Research on Digital Content Management and Development in Modern*, 5,(1)21 – 35. DOI: 10.24071/ijiet.2020.040216
- Atmezi, J, Akka, M. (2015). Attitudes of faculty members towards the use of open educational resources (OER) in university education: A case study of Al-Ahliyya Palestine University. *Cyprion Scientific Journal*, 1(5), 32 - 42.
- Baas, M., & Admiral, W. (2019). Teachers' Adoption of Open Educational Resources in Higher Education. *Journal of Interactive Media in Education*, 1(5), 256 – 269. <https://jime.open.ac.uk/articles/10.5334/jime.510/>
- Baas, M., Admiral, W. F., & Berg, E. (2019). Teachers' adoption of Open Educational Resources in higher education. *Journal of Interactive Media in Education*, 2(1), 1-11.
- Colvard, N., Watson, E., & Park, H. (2018). The Impact of Open Educational Resources on Various Student Success Metrics. *International Journal of Teaching and Learning in Higher Education*, 2(30), 262-276. <https://www.isetl.org/ijtlhe/pdf/IJTLHE3386.pdf>
- Cummings, D. (2020). Impact of OER in Teacher Education. *Open Praxis*, 4(12), 541-554. DOI: <http://doi.org/10.5944/openpraxis.12.4.1112>
- Delgado, H., Delgado, M., & Hilton, H. (2019). On the efficacy of open educational resources: Parametric and nonparametric analyses of a university calculus class. *International Review of Research in Open and Distributed Learning*, 20(1), 125 – 138. DOI: <https://doi.org/10.19173/irrodl.v20i1.3892>
- Flode, O., Ilufoye, T., Awoyemi, I., & Usman, Z., Autmor, R. (2018). Lecturers' Awareness and Readiness towards the Adoption of Open Educational Resources for Teaching in Tertiary Institutions in Niger. *International Journal of Education and Educational Research*, 2(1), 1 – 15. <http://www.smrpi.com/images/journals/IJEER/5.pdf>
- Haddad, N. (2019). The descriptive method and the experimental method. Amman: Message Publishing House.
- Hayman, J. (2018). Open Is an Invitation: Exploring Use of Open Educational Resources with Ontario Post-Secondary Educators. *International Journal of Higher Education*, 4(2), 42-

51. [http://jennihayman.com/wp-content/uploads/2018/12/Dissertation\\_Hayman\\_December2018\\_OpenlyPublished.pdf](http://jennihayman.com/wp-content/uploads/2018/12/Dissertation_Hayman_December2018_OpenlyPublished.pdf)
- Hilton, J. (2019). Open educational resources, student efficacy, and user perceptions: A synthesis of research published between 2015 and 2018. *Education Technology Research and Development*, 68(1), 853–876. <https://link.springer.com/article/10.1007/s11423-019-09700-4>
- Humphrey, W., & Kolawole, F. (2021). Awareness and Use of Open education resources by Library and Information Science Students of Ignatius Ajuru University of Education. *Library Philosophy and Practice*, 5(1), 1 – 19. <https://digitalcommons.unl.edu/libphilprac/5373/>
- Ikahihifo, T.K., Spring, K.J., Rosencrans, J., & Watson, J. (2017). Assessing the savings from open educational resources on student academic goals. *International Review of Research in Open and Distributed Learning*, 18(7), 126–140. DOI: <https://doi.org/10.19173/irrodl.v18i7.2754>
- Ismail, D. (2018). Learning management systems based on open sources and their impact on developing educational software production skills and professional self-efficacy among educational technology students. *College of Education Journal*, 15(5), 325 - 342. DOI: 10.21608/jedu.2018.107657
- Kabugo, D. (2020). Utilizing Open Education Resources to Enhance Students' Learning Outcomes during the COVID-19 Schools Lockdown: A Case of Using Kolibri by Selected Government Schools in Uganda. *Journal of Learning for Development*, 3(7), 447-458. <https://files.eric.ed.gov/fulltext/EJ1280825.pdf>
- Kersey, S. (2019). Student Perceptions on Teaching and Learning Using Open Educational Resources in College Calculus. *Journal of Computers in Mathematics and Science Teaching*, 3(38), 249-265. <https://www.learntechlib.org/primary/p/188268/>
- Mansour, M. (2017). Employing an e-learning environment based on open source learning resources to develop interactive story production skills. *Mansoura College Journal*, 5(1), 2-15.
- Ministry of Higher Education and Scientific Research. (2020). Annual statistical report. <Http://rce.mohe.gov.jo/Statistics/2019-2020/2.xlsx>
- Nkwenti, M., & Abeywardena, I. (2019). OER Mainstreaming in Cameroon: Perceptions and Barriers. *Open Praxis*, 3(11), 289-302. DOI:10.5944/openpraxis.11.3.981
- Nyamweya, M. (2018). A new method for estimating OER savings. *Scholarly Publishing and Academic Resources Coalition (SPARC)*. <https://sparcopen.org/news/2018/estimating-oer-student-savings/>
- Pounds, A., & Bostock, J. (2019). Open educational resources (OER) in higher education courses in aquaculture and fisheries: opportunities, barriers, and future perspectives. *Aquaculture International*, 27(3), 695–710. DOI:10.1007/s10499-019-00355-9
- Salmi, F, Atmezi, J. (2019). Open Educational Resources: Use, Sharing, and Adoption. Arab Organization for Education and Culture. [https://ossl.alecso.org/doc/OER\\_BOOK.pdf](https://ossl.alecso.org/doc/OER_BOOK.pdf)
- Shams, S., Haq, M., & Waqar, Y. (2020). Open educational resources ( OER ) usage trends among university students of Pakistan. *Education and Information Technologies*, 4(5), 365 – 372. DOI:10.1007/s10639-020-10195-3
- Tillinghast, B. (2020). Developing an Open Educational Resource and Exploring OER-Enabled Pedagogy in Higher Education. *IAFOR Journal of Education*, 2(8), 159-174. DOI:10.22492/ije.8.2.09
- UNESCO. (2002). Forum on the impact of open courseware for higher education in developing countries: Final report. [http://unesdoc.unesco.org/images/0012/001285/12\\_8515e.pdf](http://unesdoc.unesco.org/images/0012/001285/12_8515e.pdf)

Zeichner, O. (2020). Enablers and Inhibitors in Teachers' Usage of Open Educational Resources. *Journal of Interactive Learning Research*, 3(31), 197-218.  
<https://www.learntechlib.org/p/213807/>