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Needs Assessment For Developing Digital Tools And Open Learning Resources To Support The Acquisition Of The 21st Century Skills For Faculty Members

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Abstract

This study aimed to investigate the need for developing digital tools and open learning resources to support the acquisition of the 21st-century skills for faculty to achieve. Achieving this goal, a descriptive analytical methodology was used by administering a questionnaire to a purposive sample of 200 academic and faculty members at University of Bisha, located in the Aseer region of the Kingdom of Saudi Arabia (KSA). The results showed total agreement with an arithmetic mean of 3.61 and a standard deviation of 0.954 on the expected impact of developing digital tools and open learning resources on acquiring 21st-century skills. The study found full agreement on the expected relationship between the development of digital tools, open learning resources, and the acquisition of 21st-century skills, with an arithmetic mean of 3.59 and a standard deviation of 1.012. Regarding the challenges and difficulties that face developing digital tools and open learning resources, the results exposed full agreement with an arithmetic mean of 3.58 and a standard deviation of 0.977. Additionally, there was a correlation and effect for the years of experiences of the participants from their point of view regarding the challenges and difficulties of developing digital tools and open learning resources.

Keywords: 1. Needs Assessment. 2. Digital Tools. 3. Open Learning. 4. 21st Century Skills.

Introduction

Nowadays, we live in the era of open knowledge, which encompasses the collective intellectual efforts available for research, education, innovation, and creativity. In 2002, UNESCO defined open educational resources at a conference on the impact of free study program software on higher education in developing countries. It emphasized that the goal of these resources was primarily to promote free access to digital resources available on the Internet for all beneficiaries with the aim of enhancing skills and capabilities (Frag, 2019).

Under the concept of digital resources, free textbooks, educational materials, audio and video lectures, computer programs, and many other technologies have been found to have a clear impact on teaching methods, strategies, and the level of outputs, whether in terms of achievement or acquired skills and development of teaching methods. It is worth noting that the use of open educational resources is not limited to employment in e-learning and distance education processes. These resources can be adapted to be compatible with any learning management system and can also be integrated into traditional education processes. Open educational resources are available through many outlets, including Repositories Open Educational Resources (ROER), sometimes called Learning Object Repositories (LORs), as universities allocate a website along with research and scientific information sources, as well as platforms. There are many educational platforms and repositories available online that promote digital educational content. Recently, Arab platforms such as “SHMS,” a digital network of institutions and individuals dedicated to connecting people and ideas for the enrichment of all communities, have been created for this type of resources. These can be divided into general, specialized, and qualitative platforms.

In order to understand the relationship between supporting and promoting digital and open educational resources and acquiring 21st-century skills, we must understand that the acquisition of these skills depends largely on the presence of those resources that support self-learning and the ability to innovate, which is the basis of entrepreneurship. On developing critical thinking, applying technology, and moving towards participatory work, some have summarized them in three categories: learning and innovation skills (creativity), technology information and communication skills, and life and professional skills (Al Hariri, 2020).

Several studies have identified 21st-century skills with digital age skills - meaning the ability to use technology means communication tools and networks to access, produce, manage and evaluate information. These include basic

scientific economic technological informational multicultural skills in addition to cosmic awareness and creative thinking skills which include higher-order thinking adaptability self-direction innovation effective communication skills including teamwork social personal responsibility interactive communication high productivity skills including planning management organization effective use of technology tools in the real world (Arnos, 2019).

(Hamayel, 2013) focused on the role of open sources in building knowledge. Open-source initiatives were not only limited to educational curricula that support teaching and learning but also went beyond that to software authoring tools that assist in the production of educational content in addition to systems that manage teaching and learning processes in a flexible, open, and low-cost interactive educational environment. This confirms its role in building knowledge, which represents one of the key features of 21st-century skills in terms of gaining the ability to form and create new knowledge with originality, fluency, and creativity. This is consistent with what was previously confirmed by (Al-Tawalbeh, & Al-Masha'leh 2008) that there is an impact of learning based on activities based on e-learning sources in developing critical thinking skills as one of the essential skills of the 21st century.

In addition, the study carried out by (Al-Shehri, 2022) confirmed the impact of education by employing open educational resources in developing scientific thinking skills and the trend towards learning science. Learning environments that employ artificial intelligence help to overcome science learning difficulties and develop the ability to analyze through an active learning process that enhances the cognitive and skill aspects of learners.

From the above, and in the context of the relationship between the development and employment of digital learning resources and open sources in teaching and learning processes for students, and the role of the learning resource center to support the application of what is recently called knowledge management in universities. Knowledge departments in universities have become a qualitative leap in which humans are presented as a key factor in intellectual, cognitive, and material creativity (El-Sawy, 2020).

THE STUDY PROBLEM

Open educational resources and applications are among the most important tools that can be utilized in the design and development of educational systems and strategies. These

programs are codified and adapted to achieve the goals of educational institutions. Usability is one of the most important features of these resources, applications, and systems in terms of the quality of interaction to efficiently achieve learning goals and its reflection on the level of skills, especially the 21st-century skills (Alfeky, 2016).

Many researchers have emphasized the impact of employing open educational resources and digital tools on encouraging creativity, such as (McAndrew, 2015), while (Muhammad, 2016) emphasized the relationship between the employment of open sources in a virtual learning environment and the development of the ability to interact and self-learn. (Youssef, 2018) indicated the role of open educational resources in adapting to the requirements of the era of knowledge explosion and the need to respond to society's requirements in education. (Al-Hefnawi, 2017) indicated the relationship between open educational resources, digital tools, and countries' desire to develop their educational systems to keep pace with modern global trends by taking advantage of information and communication technology in transitioning to new systems that focus on the learner as the center of the educational process. (Al Samah, 2009) previously linked academic achievement by relying on open educational resources with the development of critical thinking. In this context, (the Boston Consulting Group's 2018) recommendations were issued for governments to develop 21st-century skills and focused on the World Government Summit as a global platform aimed at foreseeing future governments on the importance of working on developing higher skills by utilizing technology in all aspects of the educational curriculum. Thus, education becomes a component, motivator, and catalyst for 21st-century skills in reality by employing digital tools and open sources.

Accordingly, the main aim of the study is to investigate : ***What are the determinants of the need to develop digital tools and open learning resources in order to acquire the 21st-century skills?***

THE STUDY QUESTIONS

1. What is the expected impact of developing digital tools and open learning resources on acquiring 21st-century skills?
2. What are the determinants of the relationship between developing digital tools, open learning resources, and acquiring 21st-century skills?

3. What are the challenges and difficulties in developing digital tools and open learning resources?

THE STUDY OBJECTIVES

1. Analyze the expected impact of developing digital tools and open learning resources on acquiring 21st-century skills.
2. Explain and clarify the determinants of the relationship between developing digital tools, open learning resources, and acquiring 21st-century skills.
3. Identify challenges and difficulties in developing digital tools and open learning resources.

SIGNIFICANCE OF THE STUDY

This study is significant because it is an attempt targeting and clarification of the theoretical background of the advantages and uses of open learning resources in the context of their relationship to skills acquisition, Small analyzing frameworks for developing 21st-century skills related to ICT applications in education And it also hoped to Identify, analyze, and discuss the dimensions of 21st-century skills within the framework of the advantages and capabilities of digital learning tools and open educational resources.

Focusing on the determinants of the relationship and the expected impact of developing open learning resources on developing 21st-century skills. Determining gaps, difficulties, and challenges in developing digital tools and open learning resources to work on overcoming them with a proposed strategic and implementation effort. Coming up with practical and applied recommendations to enhance the role of digital tools and open learning platforms in providing students and future graduates with 21st-century All these make this study significant.

DEFINITION OF KEY TERMS

Open-Source Learning Resources

Various electronic educational media that exist in digital form and interact with learners within an educational system to achieve desired goals. These are teaching and learning resources and research resources that are in the public domain or for which intellectual property licenses have been released that allow their free use or redefining their educational goals by others (Al-Baghdadi, 2020).

Procedural definition

Sources of information, knowledge, and data that are open for free use in a digital and interactive form that students, teachers, and researchers can use to achieve learning goals. Through developing their design and expanding their use, they can contribute to developing 21st-century subjective scientific technical cognitive technological cultural skills.

21st - century skills

Categories of skills important for learning and work in the 21st century include learning and innovation (critical thinking and problem-solving), communication and sharing (information media technology skills including information culture media culture ICT culture), life work skills (flexibility adaptability initiative self-direction social cross-cultural skills productivity accountability leadership responsibility) (Al-Anzi 2020: 438).

Procedural definition

21st-century skills are the skills that meet the requirements of the era of knowledge and work in the 21st-century environment. These include self-skills such as higher-order skills like critical, analytical, creative and innovative thinking, problem-solving, technology and communication skills, as well as adaptability, acceptance, self-direction, the ability to take initiative, productivity, and responsible participation. Their development largely depends on applying modern learning strategies based on employing open learning resources and digital tools in the educational process.

PREVIOUS STUDIES

The study Carried out "do the same with all the studies" by (Ahmed, 2022) aimed to employ artificial intelligence applications in developing self-learning skills and the trend towards participatory learning. To achieve this goal, the experimental method was applied to a sample of 25 teachers from the Heliopolis Educational Administration. The research tools were applied and included a training program using artificial intelligence applications in chemistry, a test to measure self-learning skills, and a measure of the trend towards participatory learning. The study found statistically significant differences in teachers' scores in favor of the dimensional application in the level of self-learning skills and the trend towards participatory learning. This confirms the impact of artificial intelligence applications on developing self-learning and participatory skills as one of the 21st-century features.

The study by Kamal (2022) aimed to identify the reality of digital education in developing 21st-century skills in light of the

Covid-19 pandemic. Digital learning skills and a questionnaire to measure 21st-century skills were used. The results showed a low level of digital learning skills among the study sample and an average level of 21st-century skills. The variable of experience and the number of technical courses had statistically significant differences in the level of digital learning and 21st-century skills. This confirms the importance of enhancing digital learning skills by employing digital tools to enhance 21st-century skills.

The study by Al Mubarak (2019) aimed to identify difficulties facing university faculty members when using open educational resources in relation to some variables. The most prominent difficulties presented were a lack of specialists in scientific design and a need for continuous communication and follow-up when employing open sources in education. Additionally, pressures from academic work or administrative duties left little time to employ these resources. There was also an increased need for faculty members to have experience dealing with electronic tools and their ability to face difficulties.

The study by Bilal (2019) aimed to identify university students' attitudes towards using smartphones to access and benefit from electronic information sources. 84% of students preferred using smartphones to access electronic information sources due to benefiting from interactive services and websites. However, their level of knowledge about these services was weak. The study recommended increasing attention to scarcity and enhancing enhance benefits from employing information sources in learning.

The study of Zwain (2017) aimed to identify the effectiveness of using electronic blogs in teaching geography in developing digital citizenship skills. A scale of digital citizenship was taught to the group using electronic blogs, and the study concluded that there are statistically significant differences for the dimensional application of the digital citizenship scale, and this indicates the impact of employing electronic blogs as one of the digital education tools in developing digital citizenship skills as one of the skills of the twenty-first century.

The study of Al-Atifi (2014) aimed to identify the impact of the graphic characteristics of digital image search engines in developing the attitudes towards digital access to artwork and the development of innovative thinking among art education students. At Ain Shams University, a test of innovative thinking and a measure of trends in digital access to artworks was applied. The results of the study confirmed the effectiveness of the graphic characteristics of digital image search engines in

developing the attitudes towards digital access to artwork and the development of creative thinking among students.

THEORETICAL FRAMEWORK

The goal of open learning resources and digital tools is not limited to being a repository of knowledge or a tool for transferring information. Rather, it is a means in itself that aims to develop skills and capabilities and contribute to the development of students' abilities to cope with the requirements of the times, leading to the possession of 21st-century skills.

Educational systems aim to employ open sources and digital tools to achieve an effective active learning strategy and support educational and social communication and interactions, which are at the core of the educational process. Al-Mu'tasim (2016) indicated that many researchers have emphasized the effectiveness of open learning resources in developing higher-order thinking skills, critical thinking, innovative thinking, self-learning skills, information search skills, problem-solving skills, in addition to the skills needed by the 21st century.

At the World Innovation Summit for Education, Jian et al. (2016) pointed out that one of the most important driving forces behind 21st-century competencies are changes and transformations in science and technology. These include globalization, the era of knowledge, and continuous scientific and technological development. In addition to economic and social development goals such as achieving economic growth, providing local needs for skilled people, creating cultural pluralism, achieving sustainable development goals in all dimensions, developing education to improve its quality and ensure equality in the right to education and its effectiveness.

It is worth noting that many organizations, countries, and researchers have been interested in adopting and integrating information and communication technology effectively in smart classroom environments. For example, in the United States of America, the International Association for Technology in Education has set standards and competencies for teachers in relation to information and communication technology. Additionally, a report by the European Commission titled Information Technology and Work Communications focused on digital skills and their importance as one of the most important tools for community development (Al-Sharif, 2021).

From an educational point of view, there is a need for a comprehensive and clear vision for employing open learning resources and digital tools so that teachers take into account

the educational possibilities associated with digital tools. This includes ensuring appropriateness and beneficial use of different technologies or resources. For example, blogs enhance discussions and achieve reflective practice while videos help develop knowledge about professions and tasks by linking theory to practice. Electronic forums also allow participation and enhance observation skills while creating high levels of support and cooperation among group members. Hence the importance of ensuring that selected tools or resources help learners achieve desired results.

This means that teachers move from being at the center of interaction or being a source of information to being facilitators and mentors. Teachers design organize schedule activities while learners bear greater responsibility for learning through coordinating organizing educational activities. This creates students with skills in acquiring knowledge self-learning capable research analytical thinking thus integrating into innovation environment more accurately student capable possessing 21st-century skills.

On the basis of the importance of employing open learning resources and digital tools to achieve the goal of developing education and ensuring quality through their role in developing skills, especially 21st-century skills, we address the possibilities and advantages of developing open learning resources and digital tools as follows:

The possibilities of open learning resources as identified by (Khamis, 2015):

1. Availability and Simultaneous Access: Open e-learning resources are available all the time and make it easy for all learners to access them simultaneously at any time and place.
2. Quality and accuracy: Useful resources are the basis for good learning. E-learning resources are distinguished by their quality and accuracy because they are usually prepared by specialists and many learners and experienced people look up to them.
3. The content of open learning resources usually requires quality scientific content that observes modernity and develops creativity by focusing on what the researcher will add in a perfect coordination of information that makes it easier for the beneficiary to deal with the information.
4. One of the most important features of open educational resources is the possibility of increasing

storage capacity and capabilities and displaying multiple forms of educational stimuli in patterns suitable for learners.

5. Interactive capabilities: These are resources that learners can interact with and control, as is the case with electronic content, digital images, and digital videos.
6. Multiplicity of forms and formats of information and richness of information: It includes materials such as texts, images, graphics, audio, video, or even animation.
7. Possibilities of customization and classification: The way information is presented allows beneficiaries to identify and modify needs.

WHAT ARE THE SKILLS OF THE TWENTY-FIRST CENTURY?

21st-century skills, as defined by the Partnership for 21st Century Skills, include abilities such as problem-solving, individual creativity, cooperation, innovation, use of technology tools, adaptability to optimal information media technology in the 21st century (Shalaby 2014: 6). (Al-Balawi & Khalifa 2019) defined them as skills that enable individuals to learn work successfully in the 21st century include creativity innovation skills, critical thinking, problem-solving, decision-making and communication addition to teamwork ICT culture informatics flexibility adaptability initiative self-direction social productivity accountability and leadership responsibility.

To be revise well To focus on the relationship between developing digital tools open educational resources acquisition development 21st-century skills, we address framework Of the 21st-century skills American Association Colleges Institutes mentioned (Al-Zahrani, 2019). It includes recommendations reports and business community according to which American Association Colleges Institutes developed framework for graduate not clear, consider revising [2]1st century form following learning outcomes:

Knowledge human cultures natural physical world through study sciences mathematics social sciences humanities history languages arts (“Guidelines Review ACE Course Certification Requests”).

a) punctuation marks are needed here Intellectual practical skills include inquiry analysis critical innovative thinking communication quantitative culture information culture teamwork problem-solving.

c) Social and personal responsibility includes civic knowledge, local and global engagement, cross-cultural knowledge, ethical thinking and action, and lifelong learning skills and foundations.

d) Integrative learning includes creativity and advanced achievement through general and specialized studies.

THE ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (OECD) 21st-CENTURY SKILLS FRAMEWORKS:

The Organization for Economic Cooperation and Development has developed its framework for 21st-century skills through two initiatives. The first included a program for defining skills while the second was the international program for student assessment. The first initiative formed the theoretical framework in which 21st-century skills were divided into three primary areas (OECD, 2005):

a) Using interactive tools: This includes using language symbols text interactively using knowledge, information, interactively and using technology interactively.
b) Interacting in various groups: This includes effective communication cooperation team knowledge management conflict resolution.
c) Acting independently within the bigger picture: This involves planning implementing life plans personal projects.

(Bernie & Charles 2013: 11) classify 21st-century skills into three categories:

First: Learning and creativity skills:

This includes critical thinking problem-solving skills communication sharing skills innovation creativity skills.

1) Critical thinking and problem-solving: The importance of these skills lies in the availability of modern technologies for accessing searching criticizing information. These skills can be learned through various activities programs investigation problem-solving through critical learning projects based on raising questions seeking solutions to the problems.
2) Communication and sharing: Education focused on basic communication skills while digital tools requirements in current era are called personal stock communication sharing skills encourage learning skills development through communication cooperation real virtual.
3) Innovation and creativity: The 21st century requires continuous innovation of new services products that

improve the economy. Innovation creativity can be nurtured through learning environments that encourage questioning openness new ideas design projects students lead invention solutions real problems.

Second: Digital Culture Skills

This includes information culture, media culture, and information and communication applications skills.

Information culture: Effective and efficient access to information, its evaluation, and its accurate and creative use are some of the skills that define digital culture. It can guide students to understand how to use different types of communication media.

Media culture: This refers to the skills of designing and transmitting messages and choosing communication methods to publish and share work through a media culture that enhances the role of media in skills of development and self-development.

Information and communication applications skills: Although the generation of the age of knowledge is distinguished by technology, they always need guidance on the optimal use of digital tools in learning and information inquiry tasks.

Third: Work and Life Skills

This includes flexibility adaptability skill initiative self-direction social interaction multicultural interaction productivity leadership responsibility.

Flexibility and adaptability: The rapid pace of technological change forces us to adapt to modern ways of communicating learning, working and living. Flexibility and adaptability can be learned by working on progressively more complex projects through training in adapting to new projects.

1) Initiative and self-direction: This means providing an appropriate level of freedom to exercise self-direction initiative through training.
2) Social interaction multicultural and interaction skill: Contemporary research has emphasized importance of social to be revised skills-supporting programs materials designing coherent learning environments providing activities.
3) Productivity skill and accountability: With increasing demand worker's productive learner's business learning sector need these two skills emerge knowledge of technical work tools and enhance personal productivity

facilitate burden accountability related following up work participating highlighting results.

4) Leadership skill responsibility: This means ability divide work distribute tasks contribute formation innovative outputs thus learner acquires ability assume responsibility exercise leadership.

THE IMPORTANCE OF ACQUIRING TWENTY-FIRST CENTURY SKILLS

The economic and industrial transformation and the information-knowledge economy based on developments in information and communication technology and media require different sets of requirements and skills that individuals must acquire through the education system. This system must keep pace with these developments and challenges. Therefore, those responsible for education should formulate education systems within those requirements to enable students and teachers to acquire 21st-century skills that not only enable them to acquire knowledge but also give them the ability to produce knowledge and apply it in various aspects of life (Al Tokhy, 2017).

The importance of 21st-century skills lies in their ability to enable learners to learn and achieve in higher-level subjects. They also provide an organized framework that ensures learners' involvement in the learning process, helps build confidence, and qualifies for innovation, leadership, and effective participation.

From the foregoing, we see a strong relationship between employing and developing open learning resources and digital tools in education and achieving the goal of skills development in the era of knowledge. These sources have become a tool, a means, and a gateway to developing these skills. There is still an urgent need for their development, enhancement, and overcoming several challenges that we can summarize below(Al-Ghamdi, 2019):

1. The development of open learning resources requires effort from programmers and developers at a global level to make those products more effective and accurate.
2. Open sources should be more flexible in use and allow for benefiting from multiple forms of their products, visual or audio.
3. These sources must have a high degree of security to ensure the safety of content and user data.

4. There is a need for special technical supervision on employing these open educational resources and digital tools in educational institutions.
5. There is a need for human cadres capable of applying active blended learning strategies education employing those resources tools.
6. There are several skills required to employ those open sources in education including skills dealing with those sources building content addition designing educational activities conducting final evaluation students according their efforts using them.
7. There is a need for immediate technical support in educational institutions whether explicit interventions by teacher deferred support after completing tasks individual support group support use these resources affects content learning teacher student learning aids learning time educational environment assessment tools.

In addition, (Al Mubarak, 2019) pointed out the difficulties faced by faculty members at universities when using open educational resources. These include lack of awareness of methods for disseminating of open educational resources due to the huge diversity of computer systems and software. There is also a lack of awareness of ways to obtain, use, and benefit from them properly. Some OER tools involve a high level of complexity, lack of support for students when using OER, or a negative attitude towards it from the student or teacher. There are also problems related to the need for modernization and development or the problem of open-source standards and the issue of hegemony or globalization in producing OER and thus strengthening specific global systems.

In general, overall challenges include awareness promotion groups network building continuity quality assurance copyright licensing capacity development availability financing standards support learning scientific research policies technical means learning assessment weak infrastructure Internet connection problem different dialects language limitations.

METHODOLOGY AND PROCEDURES

STUDY METHODOLOGY: To achieve the aim of the study, a descriptive and analytical approach has been used. “The descriptive approach is concerned with collecting data and facts, and classifying them, in addition to careful in-depth analysis to come to generalizations about the subject of the study.” (Saber and Khafaja, 2002, 87).

THE STUDY POPULATION AND SAMPLE: The study population included all academic and faculty members at University of Bisha in Aseer region, Kingdom of Saudi Arabia. A simple random sample of 200 academic and faculty members out of 1173 members of University of Bisha in Aseer region; Kingdom of Saudi Arabia was selected.

THE STUDY TOOL: After reviewing the literature and previous studies related to the study's subject, the researchers designed a questionnaire for the study sample.

THE STUDY PROCEDURES: To carry out the study and answer its questions, the following steps were taken: Previous studies and research in this field were reviewed, whether they were in Arabic language or English, the study tool was identified and prepared, which is the questionnaire, the questionnaire was distributed to the study sample during The year 2022, The results were monitored and analyzed.

STATISTICAL METHODS

Depending on the nature of the research and the goals it seeks to achieve, the data were analyzed using the Statistical Package for Social Sciences (SPSS) program, and the results were extracted according to the following statistical methods: Arithmetic means and standard deviations: to calculate the means of the questionnaire statements, Alpha Cronbach coefficient: to calculate the reliability of the questionnaire.

Reliability and validity of the questionnaire:

1. The study tool was presented to the reviewers to ensure its validity and suitability for the study questions, and then carry out the necessary deletion and modification in light of the given suggestions.
2. Pilot test was carried out by administering the questionnaire to 10 participants in order to verify the validity and reliability of the questionnaire.

validity stats.

Table 1 Alfa Cronbach's coefficient for the three themes:

Cronbach's Alpha Coefficient	ITEMS NO	THEMES	NO
0.966	10	Axe1	1
0.978	10	Axe2	2
0.981	10	Axe3	3

0.991	**30**	**Total**

3. Cronbach's alpha coefficient of the tool reached 0.991, a percentage exceeding 0.6, and therefore the variation has a high validity rate that achieves the objectives of the study. The highest degree of stability for the third theme was at a degree of 0.981, followed by the second axis with a degree of 0.978, while the first theme achieved the lowest degree of stability of 0.966, but in general the three themes are highly valid.
4. Thus, the total of the statements is 30 the answers to which were determined according to the Likert scale of five answers, starting from the highest degrees of agreement = (5), to the highest degrees of disagreement = (1), with a neutral score in the middle = (3)

DISCUSSION OF THE STUDY RESULTS

The first theme: The expected impact of developing digital tools and open learning resources on acquiring twenty-first century skills. To determine this theme' results, the researchers used the arithmetic means and standard deviations of the study sample's answers, as shown in Table (2).

Table 2 Arithmetic means and standard deviations of the answers of the study sample on the first theme statement the expected impact of developing digital tools and open learning resources on acquiring twenty-first century skills

NO	items	Mean	S.D	Rank	degree of agreement
1	Open and digital learning resources encourage the development of self-learning possibilities.	3.56	1.016	4	Agree
2	Open sources for learning give the opportunity to develop the possibilities as a wide rage of imagination as a key motivator in the innovation process.	3.46	0.997	4	Agree
3	Learning processes using open learning platforms enhances the capabilities of dealing with technology.	3.64	0.935	4	Agree
4	Open learning platforms represent one of the most important tools for utilizing information technology in the development of education.	3.73	0.970	4	Agree
5	Learning processes based on digital tools and open learning platforms	3.29	1.137	4	Neutral

	support collaborative, interactive and active learning.				
6	Open-source learning increases the development of awareness, diverse knowledge, viewpoints, and cultures.	3.82	0.996	4	Agree
7	Learning with open learning resources develops flexibility and adaptability in learning and dealing with different information.	3.55	0.831	4	Agree
8	Employing open learning resources helps develop higher order thinking skills, including critical and analytical thinking.	3.67	0.897	4	Agree
9	Learning with open learning resources helps to give students the ability to plan and organize.	3.79	0.866	4	Agree
10	Learning with open source and digital tools helps to gain the ability to form and create new knowledge.	3.58	1.004	4	Agree
The overall mean of the theme		**3.61**	**0.954**	**4**	**Agree**

The response of the participants to the statements of the first theme for the expected impact of developing digital tools and open learning resources on acquiring twenty-first century skills was with a total degree of theme (2), with an arithmetic mean of (3.61) and a standard deviation of (0.954), which shows full agreement on the expected impact.

The second theme: The relationship between the development of digital tools, open learning resources, and the acquisition of twenty-first century skills. To determine this theme, the study used the arithmetic means and standard deviations of the study sample's answers as shown in Table (3).

Table 3 Arithmetic means and standard deviations of the answers of the study sample on the second theme statement the relationship between the development of digital tools, open learning resources, and the acquisition of twenty-first century skills.

NO	items	Mean	S.D	Rank	degree of agreement
1	Digital and open resources enable the realization of an educational process that focuses on the learner himself and his role in the learning process.	3.77	0.801	4	Agree

2	The teacher can develop teaching methods through the use of digital and open sources and thus develop higher-order skills.	3.55	0.972	4	Agree
3	Digital and open resources are an essential tool for gifted education and innovation promotion.	3.51	1.115	4	Agree
4	Digital and open resources help decision makers in the educational system to adopt modern strategies and advanced curricula.	3.65	1.133	4	Agree
5	Digital and open resources support the achievement of the goals of national education development strategies, including the acquisition of 21st century skills.	3.43	1.111	4	Agree
6	Digital and open resources help to develop and raise the level of teacher competencies to play his role in imparting the skills of the 21st century	3.33	1.126	4	Neutral
7	Digital resources help to solve learning problems effectively and thus focus on skill level.	3.65	0.944	4	Agree
8	Open source and digital tools are a gateway to the unlimited sea of knowledge and thus achieve the element of unlimited knowledge.	3.68	1.079	4	Agree
9	Through open source and digital tools, students can develop higher-order thinking skills.	3.61	0.929	4	Agree
10	Through open sources and digital tools, students develop their technological capabilities and communication skills.	3.67	0.908	4	Agree
The overall mean of the theme		**3.59**	**1.012**	**4**	**Agree**

The response of the participants to the statement of the second theme of the relationship between the development of digital tools, open learning resources, and the acquisition of twenty-first century skills was with a total degree of theme (3), with an arithmetic mean of (3.59) and a standard deviation of(1.012), which expresses full agreement on the expected relation.

The third theme: The challenges, gaps, and difficulties of developing digital tools and open learning resources. To determine this theme results, the study used the arithmetic means and standard deviations of the study sample's answers as shown in Table (4).

Table 4 Arithmetic means and standard deviations of the answers of the study sample for the third theme statements the challenges, and difficulties of developing digital tools and open learning resources.

NO	items	Mean	S.D	Rank	degree of agreement
1	The methodology for designing some traditional science curricula remains a challenge for open and digital sourcing in education.	3.51	0.946	4	Agree
2	The time factor of teaching the course is an obstacle to the effective use of open learning resources.	3.65	0.934	4	Agree
3	Benefiting from open learning resources requires special competencies for the teacher to be able to adapt the materials through advanced teaching strategies.	3.48	1.027	4	Agree
4	To benefit from open learning resources, students need to have special technological skills and technical and technology support.	3.61	1.021	4	Agree
5	The teacher and the student need open learning resources that are codified and directed to the educational materials being taught, taking into account the dangers of the dominance and globalization of education.	3.60	0.940	4	Agree
6	The preparation of open learning resources and digital tools requires a special effort from those in charge of the educational system to ensure the level of quality.	3.65	0.996	4	Agree
7	Employing open sources in learning requires students to have scientific knowledge of the scientific research methodology.	3.49	1.017	4	Agree
8	In order to benefit from open source and digital tools, a direct supervisory and mentoring role is needed to ensure consistency with imposed standards.	3.53	1.056	4	Agree
9	Digital tools in education need to be constantly developed and updated to ensure the efficiency and effectiveness of the scientific material in developing students' skills.	3.61	0.929	4	Agree

10	There are obstacles in the expansion of the employment of open sources and digital tools related to technology and financing and their availability to the student and the educational institution.	3.65	0.901	4	Agree
The overall mean of the theme		**3.58**	**0.977**	**4**	**Agree**

The response of the participants to the statements of the third theme of the challenges and difficulties of developing digital tools and open learning resources was with a total degree of theme (3), with an arithmetic mean of (3.58) and a standard deviation of (0.977), which expresses full agreement on the challenges and difficulties.

SUMMARY OF THE FINDINGS & RECOMMENDATIONS

The response of the sample to the first theme of the expected impact of developing digital tools and open learning resources on acquiring 21st-century skills was with an arithmetic mean of 3.61 and a standard deviation of 0.954. This expresses full agreement on the expected impact. 61% agreed that open and digital learning resources encourage the development of self-learning possibilities. 55% agreed that open sources for learning provide the opportunity to develop possibilities as a wide range of imagination as a key motivator in the innovation process. 67% agreed that learning processes using open learning platforms enhance capabilities for dealing with technology. 58% agreed that open learning platforms represent one of the most important tools for leveraging information technology in the development of education.

44% agreed that learning processes based on digital tools and open learning platforms support collaborative, interactive, and active learning. 57% agreed that open-source learning increases the development of awareness, diverse knowledge, viewpoints, and cultures. 54% agreed that learning with open learning resources develops flexibility and adaptability in learning and dealing with different information. 68% agreed that employing open learning resources helps develop higher-order thinking skills, including critical and analytical thinking. 64% agreed that learning with open learning resources helps give students the ability to plan and organize. 65% agreed that learning with open source and digital tools helps gain the ability to form and create new knowledge.

The response of the sample to the second theme which is about the relationship between developing digital tools, open learning resources, and acquiring 21st-century skills was with an arithmetic mean of 3.59 and a standard deviation of 1.012.

This expresses full agreement on the expected relationship. 66% agreed that digital and open resources enable realizing an educational process that focuses on the learner himself and his role in the learning process. 58% agreed that teachers can develop teaching methods through using digital and open sources and thus develop higher-order skills. 60% agreed that digital and open resources are essential tools for talented education and innovation promotion. 58% agreed that digital and open resources help decision-makers in the educational system adopt modern strategies and advanced curricula.

55% agreed that digital and open resources support achieving goals of national education development strategies including acquiring 21st-century skills. 51% agreed that digital and open resources help to develop and raise level of teacher competencies that play role in imparting skills of the ^{21}st century. 66% agreed that digital resources help solve learning problems effectively, thus foster skill level. 57% agreed that open source digital tools gateway unlimited sea knowledge thus achieve element unlimited knowledge. 61% agreed that through open source digital tools students can develop higher-order thinking skills. 66% agreed that through open sources digital tools students develop technological capabilities communication skills.

The response of the sample to the third theme of challenges and difficulties in developing digital tools and open learning resources was with an arithmetic mean of 3.58 and a standard deviation of 0.977. This expresses full agreement on the challenges and difficulties. 54% of the participants agreed that the methodology for designing some traditional science curricula remains a challenge for open and digital sourcing in education. 68% agreed that the time of teaching the course is an obstacle to the effective use of open learning resources. 59% agreed that benefiting from open learning resources requires special competencies for the teacher to be able to adapt materials through advanced teaching strategies. 64% agreed that to benefit from open learning resources, students need to have special technological skills and technical and technology support.

58% agreed that the teacher and student need open learning resources that are codified and directed towards educational materials being taught, taking into account dangers of dominance globalization education. 57% agreed that preparing open learning resources and digital tools require special effort those in charge of educational system have to ensure level of quality. 57% agreed that employing open sources in learning requires students to have scientific knowledge of scientific

research methodology. 55% agreed that to benefit from open source digital tools direct supervisory mentoring role needed to ensure consistency imposed standards. 61% agreed that digital tools in education need to be constantly developed and updated to ensure efficiency and effectiveness of scientific material for developing students' skills. 61% agreed that there are obstacles in expanding employment for open sources and digital tools related technology this in addition to financing availability student educational institution.

In addition to the above, the researchers found a correlation effect for years of experience of the participants concerning their points of views on the challenges and difficulties facing developing digital tools open and learning resources.

THE STUDY RECOMMENDATIONS

Based on the findings, the study recommends the following:

1. Preparing and implementing strategic plan based on inventory preparation for developing open learning resources and digital tools.
2. Allocating sufficient funds for education system especially for planning designing implementing and developing open learning resources and digital tools due to its special importance for acquiring skills 21st century.
3. Implementing periodic evaluation for open learning resources and making priority list for using educational resources effectively educational resources effectively.

Intensifying efforts issue of funding preparation and developing open learning.

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