The Role of Electronic Evaluation as one of the applications of Artificial intelligence in Achieving Learning Outcomes and Improving the Quality of Higher Education

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Introduction:

These days, the world is witnessing important changes in the concept of evaluation and its tools, which is the fourth axis in the plan that aims to use technology in education in the American plan and its equivalent in the Sultanate of Oman. Hence, the evaluation process goals became new and clear that work to develop activities inside the classroom among students, and it aims to apply the real evaluation to investigate the effectiveness of learning and to know decisions and strategies that suit students' learning to improve higher thinking skills.

The Ministry of Higher Education in the Sultanate of Oman seeks to achieve high-quality education regarding electronic evaluation and technology development, by expanding the use of assessments through merging with technology, and this technology development gives help for faculty staff members by achieving immediate feedback to students.

We define the electronic evaluation as carrying out the evaluation process through the use of electronic multimedia as a part of the e-learning process (Jordan, 2013, P.87).

Some electronic tools may help the faculty staff members in the measurement and evaluation processes, we find that these processes include quantitative and qualitative tests, and objective and essay, where the objective electronic tests are characterized by automatic correction and immediate feedback, but they have other drawbacks.

The electronic tests are considered one of the most important innovations in the digital evaluation, as the electronic tests provide a dual service to both the student and the course faculty staff member:

For the student, the importance of electronic tests lies in the ease of conducting the test so that he has only one question to answer on each page and few questions on one page, and a guide explaining the questions he answered and the questions that have been postponed and the ease of returning to those questions one more time, and provides him a possibility to get his result in the exam.

As for the professor of the course, the importance of electronic tests lies in the formation of a bank of questions for the course, which helps to develop it and facilitate the design of the test by choosing the chapters that the test covers and by choosing the level of difficulty of the questions, and they are corrected electronically and immediately, which ensures credibility and objectivity (Isenbergetal, 2016), (Stolberg, 2012, pp. 591-604).

One of the advanced tests that a computer can perform automatic correction for is those that rely on artificial intelligence to analyze the student's behavior instead of analyzing answers and to analyze his/her performance or educational simulation programs that enable the computer to observe and analyze the behavior of the learner within the software to report the level of the student to achieve the activities included in that program, for example, instead of asking a

multiple-choice question to a question that carries a skillful goal, to write a program code or open a specific program.

Regarding some common electronic measurement and evaluation methods, which do not require any programming background or even advanced computer skills, in order for most faculty staff member to use, the table below shows a simple comparison between the most popular tools, which can be classified into three categories: The first class is the tools Internet-based, which does not require downloading programs on the desktop, except that they are independent tools for creating electronic tests such as (Google forms, Class Marker) and independent means that they are not integrated with integrated learning management systems in themselves (virtual classes, discussion forums, a question bank, tests. Electronic, student lists, additional tools (Christian & Hermann, 2011).

Research problem:

The researchers 'sense of the research problem stemmed from several sources like the educational literature which emphasized the importance of the electronic evaluation, which is one of the elements of learning and the educational system. Because of the fundamental relationship that connects it with the main objectives of learning and teaching processes, in addition to being the true criterion for diagnosing the strengths and weaknesses of any educational system (Stanojevic, Stankovic&Maksimovic, 2018, Pp.185-197).**the problem of search is to answer the following questions:**

-What is the role of electronic evaluation as one of the applications of artificial intelligence in the learning process?

- What are the most important electronic evaluation tools that we can rely upon them in the e-learning system (blackboard)?

- What are the roles of the electronic evaluation tools that we can rely upon them in the e-learning system (blackboard) in the learning process?

The research aims:

the research aims to achieve the following objectives:

1-Recognizing the role of electronic evaluation as one of the applications of artificial intelligence in the learning process.

2-Stating the most important electronic evaluation tools that we can rely upon them

in the e-learning system(blackboard).

3-stating the role of electronic evaluation tools that we can rely upon them in the electronic learning system (blackboard) in the learning process

The research importance:

1- The research paper may shed light on the practical efforts made by faculty teaching staff members in evaluating student achievement.

2- This research provides some information in the field of faculty teaching staff use of electronic evaluation methods that may benefit those in charge of curricula in the development process.

3- We can be guided by research results in training programs for faculty teaching staff members in developing electronic evaluation methods used in the light of recent trends.

4- It is possible to provide electronic evaluation tools used in higher education that can be used in future researches.

Search terms:

Electronic evaluation :

It is the process of using information networks, Computer equipments, learning software, and multi-media learning material using evaluation methods to collect and analyze student responses in a way that helps the faculty teaching staff member to discuss and determine the effects of programs and activities on the learning process. To reach a standardized judgment based on quantitative or qualitative data related to academic achievement (Stanojevic, Stankovic&Maksimovic, 2018, P.186). It is procedurally defined as the set of roles that the electronic evaluation performs from the faculty teaching staff members at the College of Education in Rustaq, Sultanate of Oman, using computers and the Internet to evaluate students' performance during learning in all stages of the course learning process through the blackboard system.

Methods of electronic evaluation:

Lee (Lee et al., 2006, PP13-23) mentions different methods used in electronic assessment, which are classified according to the nature of the learning outcomes to be measured:

Discussion forum, Applied activities, Short exams, Essay exams, Research papers, self-evaluation, Electronic periodic and final exams, Electronic files, Projects/field training, Group learning, Electronic interviews through the e-learning environment in a synchronized manner using video conferencing. , A diary. , several participation times, Peer evaluation.

Search procedures:

Research methodology:

this current research used the descriptive and analytical approach in studying the role of electronic evaluation as one of the applications of artificial

intelligence in achieving learning outcomes and improving the quality of higher education.

The research community and the sample:

The research community consisted of faculty staff members at the College of Education in Rustaq during the academic year 2019/2020. As for the research sample; the exploratory sample consisted of "30" faculty staff members, while the basic research sample consisted of "48" faculty staff members, with an average age of (43.8) and a standard deviation (1.17).

The research tools:

Electronic Evaluation (Preparation of the Researchers):

To prepare this scale, the two researchers conducted a survey of several Arab and foreign standards published concerning the electronic evaluation, such as the study of (Duque et al., 2006), (Verdoodt, & Van Ranst 2006). (Bowyer, & Chambers, 2017), the researchers formulated "18" statements, and they are answered by choosing one of five responses: too much, much, medium, little, too little, and scores are given (5, 4, 3, 2, 1) in order, and to ensure the validity of these statements, they were presented to the arbitrators, and they were applied to the sample of calculating validity and reliability, and the researchers performed the following procedures:

Presentation to the arbitrators:

The phrases and the procedural definitions of Dimensions of future anxiety were presented to the arbitrators, psychology professors. Moreover, in the light of their opinions, the wording of some phrases has been modified, such as: Amending the wording of phrase No. (2), and one phrase was deleted because it obtained a low agreement of (54.92%) percent so that the scale after the arbitration became (18) phrases.

A) **Calculating the scale validity**: It was done in two methods: The first method; The scale (in its form after judging) was applied to the sample of calculating validity and reliability, and the correlation coefficients between the scores of each statement and the total scores of the scale were calculated (with omitting the degree of the statement from the total score each time), And all the correlation coefficients were statistically significant (between 0.75 and 0.89), and this indicates the validity of (18) statements.

(B) **Internal consistency**: The correlation coefficients were calculated between the scores of the expressions and the total degrees of the dimension to which they belong, and it was found that all the correlation coefficients were statistically significant (between 0.67 and 0.87), and this indicates the availability of the internal consistency of (18) statements.

(C) **The scale Reliability calculation**: The scale stability was calculated by calculating the stability of the electronic evaluation statements; As the "Cronbach's alpha" coefficient was calculated (in case that the degree of the expression was omitted), the alpha values were between 0.69 and 0.86 and the value of the alpha coefficient for the scale as a whole was 0.87, and the values of the alpha coefficients for (18) statements were less than the general alpha coefficient, and this indicates the stability of (18) statements. From the previous procedures, the researchers made sure of the validity of the electronic evaluation scale in its final form (consisting of 18 phrases), for applying in the current research (Appendix 1)

Statistical Styles:

Two programs were used (SPSS v.26), in procedures validity and reliability procedures of the research tools and to verify the acceptance or rejection of the hypotheses of the study. The program (SPSS v.26) was used to calculate the

value of the Cronbach alpha coefficient, the Duplicates, the arithmetic mean, the standard deviation, and the correlation coefficients.

Research results and their interpretation:

Results of verification of the research questions: To answer this research questions, means and standard deviations of the sample scores on the study tool and its sub-dimensions were calculated using the SPSS v.26 program, as shown in Table (2).

he following table clarifies the criterion for interpreting the average evaluation averages of the faculty members at the College of Education in Rustaq for the role of electronic evaluation as one of the tools of artificial intelligence in the educational process:

Table (1)

Criterion for interpreting the averages of the electronic evaluation role in the educational process

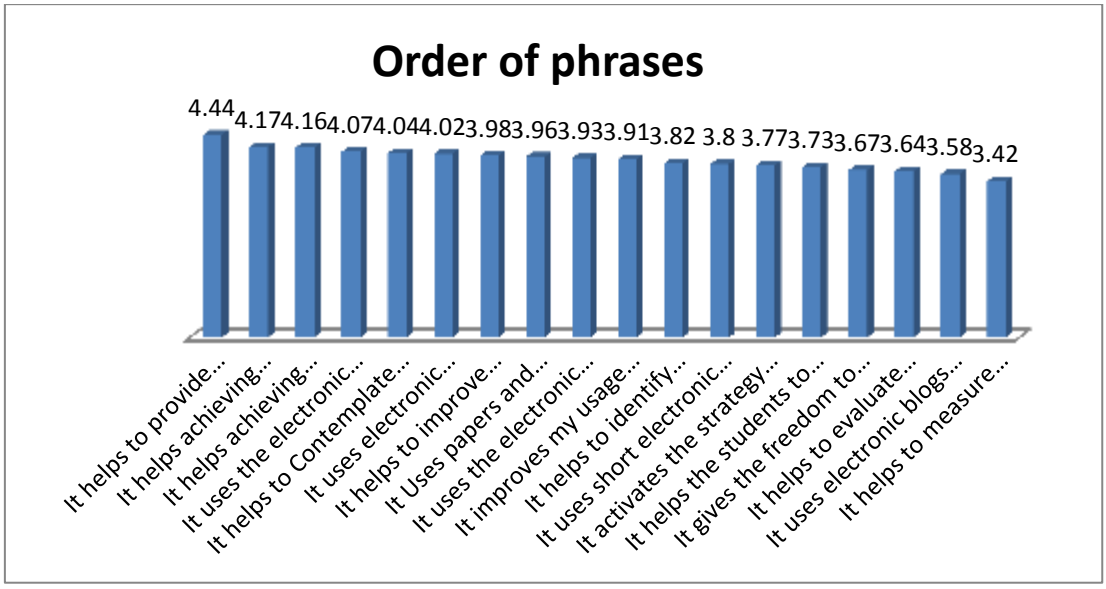
The role of the electronic evaluation	The range of the mean
high	(3.68- 5.00)
Average	(2.34- 3.67)
Little	(3.67-5)

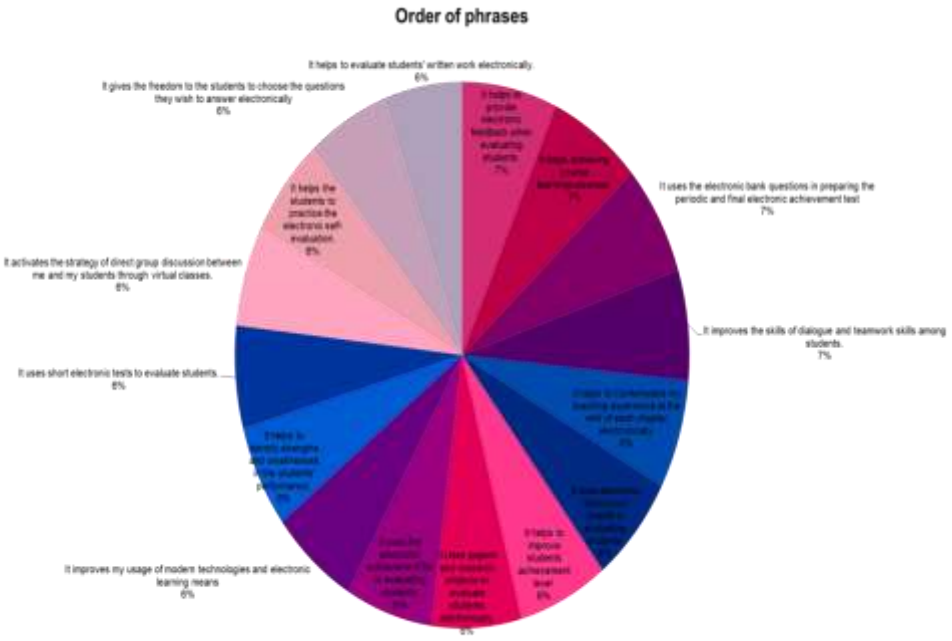
Table (2)

means and standard deviations of the sample scores on the electronic evaluation roles scale phrases arranged in descending order according to the arithmetic averages

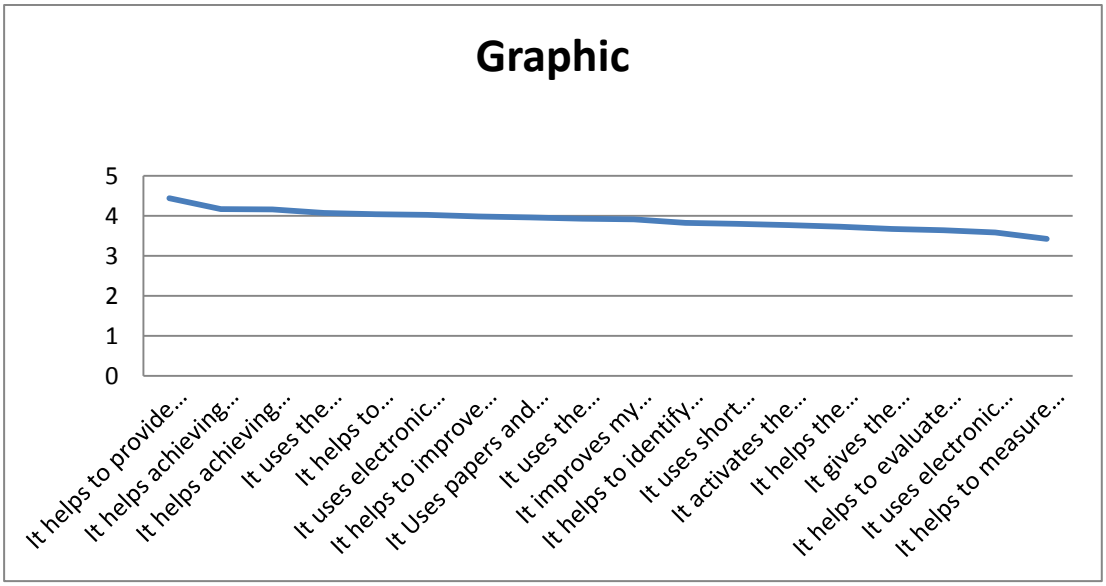
Serial	phrases	means	standard deviations	The role	Rank
١٢	It helps to provide electronic feedback when evaluating students.	٤.٤٤	٠.٨١	high	١
٨	It helpsachieving course learning outcomes.	٤.١٧	٠.٨٦	high	٢
٧	It uses the electronic bank questions in preparing the periodic and final electronicachievement test	٤.١٦	٠.٩٠	high	٣
١٠	It improves the skills of dialogue and teamwork skills among students.	٤.٠٧	١.٠١	high	٤
٦	It helps to Contemplate my teaching experience at the end of each chapter electronically.	٤.٠٤	١.١٩	high	٥
١١	It uses electronic discussion boards in evaluating students.	٤.٠٢	١.٢٢	high	٦
١٨	It helps to improve students achievement level.	٣.٩٨	٠.٧٥	high	٧
١٤	It Uses papers and research projects to evaluate students electronically.	٣.٩٦	٠.٩٩	high	٨
١٣	It uses the electronic achievement file in evaluating students.	٣.٩٣	١.١٦	high	٩
٩	It improves my usage of modern technologies and electronic learning means	٣.٩١	٠.٩٩	high	١٠

١١	high	١.٠٥	٣.٨٢	It helps to identify strengths and weaknesses in the students' performance.	١
١٢	high	٠.٨٢	٣.٨٠	It uses short electronic tests to evaluate students.	٢
١٣	high	٠.٨٤	٣.٧٧	It activates the strategy of direct group discussion between me and my students through virtual classes.	١٦
١٤	high	١.١٢	٣.٧٣	It helps the students to practice the electronic self-evaluation.	١٥
١٥	high	٠.٨٦	٣.٦٧	It gives the freedom to the students to choose the questions they wish to answer electronically	٣
١٦	Average	٠.٧٤	٣.٦٤	It helps to evaluate students' written work electronically.	٤
١٧	Average	٠.٩٩	٣.٥٨	It uses electronic blogs and estimation scales to evaluate students.	١٧
١٨	Average	٠.٩٨	٣.٤٢	It helps to measure cognitive, skill and emotional goals in the course.	٥
high		٠.٥٤	٣.٩٠	Degree of scale as a whole	




Order of phrases
It helps to evaluate students' written work electronically.
6%
It gives the freedom to the students to choose the questions they wish to answer electronically
6%
It uses the electronic bank questions in preparing the periodic and final electronic achievement test
7%
It improves the skills of dialogue and teamwork skills among students.
7%
It helps the students to practice the electronic self-evaluation
6%
It activates the strategy of direct group discussion between me and my students through virtual classes.
6%
It uses short electronic tests to evaluate students
6%
It improves my usage of modern technologies and electronic learning means
6%

Conclusion:


Graphic
5
4
3
2
1
0
It helps to provide...
It helps achieving...
It helps achieving...
It uses the...
It helps to...
It uses electronic...
It helps to improve...
It Uses papers and...
It uses the...
It improves my...
It helps to identify...
It uses short...
It activates the...
It helps the...
It gives the...
It helps to evaluate...
It uses electronic...
It helps to measure...

The previous table shows that the working average for the scale as a whole (the role of the electronic evaluation in the educational process is (3.90), and the standard deviation (0.54). This score is considered to be high, and this indicates that the role of the electronic evaluation in achieving learning outcomes and improving the quality of higher education is higher from the point of view of faculty staff members in the College of Education in Rustaq for all its phrases, except for phrases No. (4, 5 and 17), their degree were medium.

Recommendations:

1- Training faculty staff members to use various electronic evaluation methods.

2- Making use of the positive trends of students and faculty staff members towards electronic evaluation and developing plans and programs to benefit from these trends.

3- The College of Education in Rustaq must conduct studies and hold periodic seminars and conferences to set plans for the advancement and development of e-learning.

4- It is necessary to adopt diversity in the methods of evaluating students in all academic subjects in general and electronic courses in particular.

Suggested researches

1- In the light of the research findings, it may be possible to suggest some research topics such as: Conducting research studies on the impact of the diversity of electronic evaluation Techniques on the student achievement in various academic courses.

2- Conducting research studies on the relationship between the diversity of the use of electronic evaluation Techniques and the development of meta cognitive thinking skills.

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