

# The Impact of Applying Technical Equipment on the Quality of e-Learning at Northern Border University

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## Abstract

The study aimed to identify the impact of the application of technical equipment for infrastructure to achieve the quality of e-learning for students in the faculties at Northern Border University, in Arar city. The study applied the analytical survey study method. To achieve the study purpose, the researcher prepared a study tool which is a questionnaire to measure the impact of applying technical instrument for the infrastructure to achieve the quality of e-learning for students. The study sample size reached (218) students from both groups from the university faculties in Arar city. The results of the study revealed a tendency in the study sample's responses to the availability of the majority of the questionnaire criteria significantly. This indicates the positive impact of the application of technical equipment on the infrastructure to achieve the application quality of e-learning at Northern Border University, the study recommended the following: The need to pay attention to measuring the quality of electronic courses every two years in addition to the need to adjust the quality standards of e-content provided through e-learning platforms. Also, there is the gradual application of e-learning at the university in addition to spreading the culture of e-learning quality among all groups of the university community. Also, it is necessary to direct them towards benefiting from the advantages of e-learning that observes quality standards.

**Keywords:** Technical equipment, IT infrastructure, E-learning quality, Education technologies, Northern Border University.

## 1. Introduction

Employment of e-learning in university education has become an urgent necessity that imposes educational systems, in general, to benefit from it. This is to produce a comprehensive change in achieving the set goals, including achieving quality in the learning process and focusing on providing students with a set of skills required by life in the information age, including continuing education skills and distance education skill [1].

The quality of e-learning within universities considers part of a set of characteristics and advantages of the educational product that can meet the requirements of the student, the labor market, and the entire community. Achievement of electronic education quality requires directing all human resources, policies, systems, curricula, operation, and

infrastructure to create suitable circumstances for innovation and creativity in ensuring that the educational product meets, which is a set of standards that are used to evaluate the quality of electronic content in light of the requirements of e-learning in addition to the ability of the student to interact with his colleagues, and carrying out interactive activities in the same space available in regular education [2].

So, the concept of quality in e-learning aims to demonstrate the ability and excellence of the educational institution in offering its study programs and ensuring, that the learner receives electronically.

In order quality in the application of e-learning in universities, decision-makers must have a vision, and their adoption of this vision by providing material and moral support, as well as being convinced of the importance of implementing the e-learning strategy, and reaping its fruits on both the short and long levels [3].

## 2. The study Problem

The researcher's sense of the problem of this study emerged from the following points:

- The low level of some graduates at Northern Border University, and their poor performance in the labor market, despite the provision of a good technical infrastructure for the application of e-learning.
- The necessity of diagnosing strengths and weaknesses towards the application of e-learning in general at Northern Border University.
- The importance of measuring the impact of university spending on technical equipment and infrastructure.
- Recommendations of scientific conferences and research that it is necessary to study the impact of spending on the equipment needed to build a good technical infrastructure in the quality of e-learning in universities.

So, the problem of the study represented the necessity of studying the extent of the impact of the technical equipment of the infrastructure to achieve

the quality of e-learning at Northern Border University.

### 3. Study questions

According to the study problem, we can present the following main question can be posed:

What is the impact of the technical equipment for the infrastructure to achieve the quality of e-learning at Northern Border University?

The following sub-questions could be driven from the main question:

- What are the standards of achieving the quality of e-learning at the university?
- What is the impact of the technical equipment for the infrastructure to achieve the quality of e-learning on university students?

### 4. Objectives of the study

The study aimed to identify the impact of the technical infrastructure equipment to achieve the quality of e-learning on students at Northern Border University.

By achieving the following detailed objectives:

- Contribute to providing a set of standards that will achieve the quality of e-learning for students at Northern Border University in particular and students of universities in the Kingdom of Saudi Arabia in general.
- Presenting a set of recommendations to the university community to make the most of e-learning.
- Identifying the obstacles that prevent students from making the most of e-learning and providing suggestions and solutions to them.
- Spreading a culture of quality e-learning in universities.

### 5. Study method

The study used the analytical survey method, in addition, to using the main data collection tool (the questionnaire) to measure the impact of the technical equipment of the infrastructure for achieving the quality of e-education at Northern Border University.

### 6. Study limits

Time limits: The study was implemented during the first semester of the academic year 2021/2022.

Spatial limits: The study was applied to university students in the faculties in Arar city.

### 7. Study sample

The pilot study sample was consisted of (87) students of both categories, from university faculties in Arar city, while the basic research sample consisted of (218) students.

### 8. Study terminology

Infrastructure technical equipment: It is procedurally intended for everything that has been prepared and designed includes Internet networks, ready-made programs, computer labs, and provision of assistive devices to operate computers, to e-learning in a good manner.

The quality of e-learning: It is procedurally meant a set of practices, procedures, codified foundations, and specific standards, through which the quality of e-learning application is achieved, which aims to ensure that the final educational output is delivered to the community efficiently and impassive.

### 9. Study procedures

The researcher followed the following procedures:

- Determine the theoretical framework of the research by reviewing the literature, research, and previous educational studies related to its subject.
- Build a questionnaire to measure the impact of the technical equipment of the infrastructure to achieve the quality of e-learning in the faculties of the Arar city, at Northern Border University.
- Presenting the questionnaire in its initial form to experts and arbitrators specialized in educational technology.
- Prepare the questionnaire in its final form, in light of the suggestions and amendments of the experts and arbitrators.
- Present the questionnaire to the members of the research sample (students of faculties in Arar city, Northern Border University)
- Statistical treatment of data, reaching and interpreting results, and making recommendations and proposals.

### 10. The theoretical framework

Certainly, the success of any educational system, in general, depends more on the extent of its commitment to internationally agreed quality standards, and in the field of the e-learning system, the matter takes on greater importance, especially in light of the technical preparations made by some

universities to provide an interactive environment centered around students. It is well designed, accessible, and available at any time and time, using the characteristics and resources of the Internet, and digital technologies.

### 10.1 E-learning philosophy

E-learning is defined as the provision of educational content in an electronically approved media using the computer, and the Internet, with the possibility of completing this learning in time, place, and at a speed that suits the student and his abilities [4], based on modern technologies in providing educational content to students with high efficiency and impassiveness. Through shortening the time, shortening the effort, and low cost, in addition to its multiple capabilities to enhance students' learning, improve their scientific level, and provide an interesting, interactive and exciting learning environment for student [5].

### 10.2 E-Learning Objectives

E-learning seeks to achieve the following [6,7]:

- Provide a self-learning service that gives allows the students the educational material and the method of learning, and also allows the student to divide himself according to different levels that are suitable to his level.
- It achieves full, direct, direct interaction between the teacher and the learner on the one hand, and between the learners among themselves on the other.
- Help to transfer the impact of learning, in addition to the self-mastery of information.
- Provide the student the ability to search for information over the Internet.
- Help to achieve equal educational opportunities among students.
- Help to increase students' interest in education through the flexibility it provides to students in the learning process.
- Faculty members assist in preparing educational content for students.
- It addresses reducing the impact of the shortage in academic and administrative cadres in some educational sectors through virtual classrooms.

### 10.3 E-learning quality

The quality of e-learning means: a set of practices, procedures, codified foundations, and specific standards, through which the quality of e-

learning application is achieved [8,9], which aims to ensure that the final educational output is delivered to the community efficiently and impassive through standards: Institutional commitment, which means Physical planning, technical support, in addition to the technological infrastructure standard by storing information in the database, the delivery of high-quality e-learning programs [10,11], the student services standard, which are tips, instructions, directions, and the teaching design standard by relying on organized synchronous models, And learning control, the standard of teaching and teacher services, follow-up and control of courses between students and faculty members [12,13], the cost standard for the material cost of publishing e-education, the standard for delivering the program to teachers' expectations with the aim of feeling satisfied, and the standard for comprehensive evaluation of students in light of what is expected of e-learning [14,15].

### 10.4 The quality of e-learning in universities

There is an educational need in light of keeping pace with electronic developments to actor in actor plication of e-learning at universities, and these reasons include the following [16,17,18].

- The emergence of the need in higher education institutions for integration and harmony between its different levels (administration, faculty members, students, parents).
- The low level of some higher education graduates and their poor skill performance as a result of the poor scientific and educational content provided to them.
- Increasing global challenges and transformations, which place higher education institutions on the responsibility of developing human resources, both quantitatively and qualitatively, to be able to keep pace with these transformations.
- Increasing technological conflicts globally; this requires higher education institutions to serve the community, in addition to being a center for future skills development.
- The necessity of diagnosing the strengths and weaknesses in the management of university educational institutions of all kinds, to improve educational outcomes.
- Universities need the trust of their beneficiaries, whether students or parents and to evaluate their production and ability to give.

### 10.5 University e-learning quality requirements

There are many requirements willy in e-learning in universities, including [19,20,21]:

- The presence of conviction and support from those in charge of higher education administration and university administration for the total quality management system.
- Spread culture of knowledge communication, productive work, and achievement among all employees of higher education institutions.
- Spread a culture of quality e-learning and its benefits for students.
- Support culture of quality among the cadres of higher education institutions, by spreading societal awareness of the value of quality, and striving towards achieving it.
- Adopt transparent criteria based on experience, competence, and merit in selecting business leaders in higher education institutions.
- Give those in charge of developing e-learning confidence, and encouraging them to perform the work well.
- Spread the principle of reward and punishment among all university employees, and increase the reward for distinguished workers.
- The necessity of involving the employees of the scientific departments in making decisions related to the operations to be improved.
- The necessity of adopting codified standards based on sound scientific foundations to assess the quality of e-learning in universities.
- Comprehensiveness and continuity of follow-up so that a comprehensive evaluation process, and to address deviations from development standards.
- Change the attitudes of all employees in line with the standards for achieving quality for e-learning within universities; with integration among all employees.

### 11. Practical procedures

The following procedures were taken for the study:

First: Preparing a list of criteria for achieving the quality of e-learning application for students at Northern Border University.

While preparing a list of criteria for achieving the quality of e-learning application among Northern Border University students, the researcher relied on the literature and previous studies related to the

research topic, in addition to taking the opinion of experts and arbitrators for the list of criteria, and we address this as follows:

- Sources for preparing an initial list of criteria for achieving the quality of e-learning application for Northern Border University students: The list of initial criteria was prepared by reviewing the literature, educational books, and previous studies related to the subject of the research, in addition to the criteria for building e-learning via the Internet.
- Preparing list of standards in its final form: After reviewing the literature, educational books, and previous studies related to the topic of the research, the researcher extracted and prepared an initial list of the proposed standards to achieve the quality of e-learning application among students at Northern Border University.
- Approval of the list (the ratification of the arbitrators): The researcher presented the list of criteria in its initial form to (10) experts and arbitrators specialized in e-learning technology. The arbitrators made several as reformulating some of the amendments, deleting and adding some other standards, all modifications have been made until the list of standards is in its final form.
- List of standards in its final form: The list of standards has been prepared in its final form, and it consists of (10) main standards, and (52) sub-criteria.
- Second: Preparing the research tool: The researcher prepared the research tool represented in (the questionnaire) according to the following stages:
  - Determine the purpose of the questionnaire: This questionnaire aimed to identify the impact of technical equipment for infrastructure to achieve the quality of e-learning on students studying at Northern Border University.
  - Sources of deriving questionnaire phrases: The criteria for the questionnaire were prepared by referring to many kinds of literature, books, and educational studies related to the subject of the research, in addition to the opinions of experts and arbitrators specialized in e-learning technology.
  - The pilot study sample: The exploratory research sample consisted of (87) male and female students from the colleges of the Arar city, at Northern Border University (from outside the basic sample).
  - Basic research sample: The main research sample consisted of (218) male and female students from the colleges in Arar city, Northern Border University,

who responded to the electronic correspondence method via their e-mail.

- Calculating the validity of the questionnaire: It means the validity of the questionnaire: the extent to which the questionnaire is suitable for the purpose for which it was developed, through the initial examination of the content of the questionnaire, and the following have been taken into account:

- Clarity of the questionnaire instructions.
  - The validity of the criteria that the questionnaire aims to measure.
  - The possibility of producing the questionnaire electronically, applying it, obtaining student responses about it, and interpreting its results easily.
- To ensure the validity of the questionnaire, the arbitrators' validity and internal consistency were used, and this can be explained as follows:

- The arbitrators' validity: To ensure the validity of the questionnaire, the questionnaire was presented to (10) experts and arbitrators specialized in e-learning technology; In order to verify the veracity, the arbitrators referred to some observations, which were modified in the light of the majority of their opinions; The issue of increasing some of the questionnaire's criteria, in addition to dividing the questionnaire criteria into main criteria and individual criteria. The researcher pre-empted the criteria whose validity was agreed upon by the arbitrators by (80%) or more,

**Table (1): correlation factors among criteria of the questionnaire of quality of e-learning in light of the technical instrument of the infrastructure at Northern Border University**

Sentence	Correlation factor of the sentence with the total grade of the axis	Sentence	Correlation factor of the sentence with the total grade of the axis	Sentence	Correlation factor of the sentence with the total grade of the axis	Sentence	Correlation factor of the sentence with the total grade of the axis
1	<b>**0.634</b>	14	<b>**0.785</b>	27	<b>**0.648</b>	40	<b>**0.477</b>
2	<b>**0.626</b>	15	<b>**0.729</b>	28	<b>**0.711</b>	41	<b>**0.714</b>
3	<b>**0.787</b>	16	<b>**0.435</b>	29	<b>**0.581</b>	42	<b>**0.661</b>
4	<b>**0.789</b>	17	<b>**0.761</b>	30	<b>**0.572</b>	43	<b>**0.511</b>
5	<b>**0.723</b>	18	<b>**0.796</b>	31	<b>**0.610</b>	44	<b>**0.882</b>
6	<b>**0.749</b>	19	<b>**0.839</b>	32	<b>**0.689</b>	45	<b>**0.712</b>
7	<b>**0.717</b>	20	<b>**0.671</b>	33	<b>**0.435</b>	46	<b>**0.572</b>
8	<b>**0.694</b>	21	<b>**0.703</b>	34	<b>**0.712</b>	47	<b>**0.781</b>
9	<b>**0.757</b>	22	<b>**0.789</b>	35	<b>**0.552</b>	48	<b>**0.596</b>
10	<b>**0.789</b>	23	<b>**0.729</b>	36	<b>**0.572</b>	49	<b>**0.457</b>
11	<b>**0.723</b>	24	<b>**0.435</b>	37	<b>**0.610</b>	50	<b>**0.714</b>
12	<b>**0.749</b>	25	<b>**0.761</b>	38	<b>**0.689</b>	51	<b>**0.661</b>
13	<b>**0.717</b>	26	<b>**0.796</b>	39	<b>**0.435</b>	52	<b>**0.511</b>

(\*\*) significant at level (0.01)

According to the previous table, it is clear that the correlation coefficients between the questionnaire

based on their observations, and after making the required modifications; The arbitrators agreed that the standards of the questionnaire are appropriate to measure what was set to measure (recognizing the impact of the technical equipment of the infrastructure to achieve the quality of e-learning on students studying at Northern Border University), and the Cooper equation was used to calculate the percentage of agreement between the arbitrators, and the percentage of agreement on the questionnaire was As a whole (95.00%), which is a high percentage indicating the validity of the questionnaire. Thus, after making the amendments of the arbitrators, the questionnaire became composed of (10) main criteria and (52) sub-criteria, the examinees respond to the questionnaire criteria through three responses (existing- medium - not present).

- The validity of the internal consistency of the questionnaire: The researcher verified the internal consistency of the questionnaire through the application that was made to the questionnaire on the exploratory sample, which amounted to (87) male and female students from the faculties of the Arar city, at Northern Border University (from outside the basic sample), by calculating the coefficients of The relationship between the questionnaire's statements and the total score for its axis, and this can be clarified through Table no. (1)

statements and the total score for each domain separately ranged between (0.435) and (0.882), all of which are statistically significant at the level (0.01). Based on the foregoing, it appears that the coefficients of correlations between the expressions and the total score of the questionnaire are all significant at the level (0.01); this indicates the coherence and coherence of standards; this indicates that the questionnaire has internal consistency.

• **Calculating the reliability of the questionnaire:**

Reliability is one of the important psychometric conditions that express the accuracy in measuring

the so-called measurement. The reliability of the questionnaire was calculated using the split-half method, as the scores of the sample of (87) male and female students were unloaded, and then the scores were divided in each dimension. After that, the simple correlation coefficients (Pearson) were extracted between the scores of the two halves in the questionnaire as a whole, they were corrected using the (Spearman-Brown) equation, and then the Guttman equation was used as shown in Table (2):

**Table (2):** values of reliability factor of the questionnaire related to know the impact of the technical instrument of the infrastructure to achieve the e-learning quality of students in Northern Border University by using half division method

Questionnaire	Reliability by Pearson coefficient	Reliability after correction of (Spearman-Brown)	Guttman coefficient
questionnaire related to know the impact of the technical instrument of the infrastructure to achieve the e-learning quality of students in Northern border University	0.719	0.854	0.862

Values in the previous table no. (3) Indicate that the questionnaire has an appropriate degree of reliability to know the extent of the impact of the technical equipment for the infrastructure to achieve the quality of e-learning on students studying at Northern Border University, and this means that the values are

appropriate and reliable and indicate the validity of the questionnaire for application.

## 12. Study results

First: Adopting an estimated balance according to the Likert triple scale:

**Table (3):** Estimated balance according to the Triangular Likert scale.

Respond	Weighted medium	Availability degree
Absence	From 1.00 To 1.66	Low
Average	From 1.67 To 2.33	Average
Found	From 2.34 To 3.00	Great

So, the researcher will use the weighted average of the students' answers (the research sample) on the criteria using the Triple Likert scale to reveal the extent to which the technical equipment of the infrastructure affects the quality of e-learning on

students studying in the faculties of the Arar city, at Northern Border University.

### Second: Presentation and discussion of the results:

The results are presented through the survey criteria as follows:

**Table (4):** frequencies, means, and standard deviation of study sample opinions about criteria of questionnaire of the impact of the technical instrument of the infrastructure to achieve the quality of e-learning on students (N=121).

Criterion content	Responses			Mean	Standard deviation	Availability degree
	Rarely	Sometimes	Usually			
	frequency	frequency	frequency			
First: electronic registration and follow up criteria						
1- There is an electronic system that enables you to delete and add study curricula during the registration at the beginning of each semester.	8	8	202	2.80	0.542	large
2- There is a service provides you to search for a specific curriculum, or several curricula suitable to your study schedule	7	6	205	2.83	0.506	large

Criterion content	Responses			Mean	Standard deviation	Availability degree
	Rarely	Sometimes	Usually			
	frequency	frequency	frequency			
3- There is a service that provides you explain your study schedule in detail.	11	6	201	2.77	0.602	large
4- There is a service that enables you to show all your restrictions either financial or academic	5	8	205	2.85	0.459	large
5- There is a service that enables you to show your final grades for all registered curricula	5	5	208	2.88	0.439	large
6- There is a service that gives you the ability to give you a summary of all your prescribed fees.	5	4	209	2.80	0.542	large
7- There is a service that allows you to provide a personal email.	8	7	203	2.83	0.506	large
8- There is a service that allows you to know the e-mail of the faculty member who is teaching you.	8	7	203	2.77	0.612	large
9- There is a service that enables you to view your data.	6	3	209	2.85	0.449	large
10- The system enables you to evaluate the electronic service provided to you.	6	4	208	2.88	0.439	large
11- There is an electronic registration system that provides you with the service of knowing the admission decision, and stating your status electronically.	4	6	208	2.80	0.532	large
Second: electronic technical equipment.						
12- There are specialists for maintenance and electronic technical support.	5	6	207	2.85	0.506	large
13- There are training programs on how to best use the application of the e-learning system	4	7	207	2.87	0.542	large
14- Educational software used in e-learning is of high quality.	3	1	214	2.73	0.506	large
15- Adequate maintenance of computer laboratories.	8	8	202	2.88	0.602	large
16- E-learning lessons are available through mobile phones.	7	6	205	2.80	0.542	large
Third: Infrastructure.						
17 There are classrooms equipped with the necessary equipment and techniques.	11	6	201	2.83	0.506	large
18- There are advanced computers used by students.	5	8	205	2.77	0.602	large
19- There are internal computer networks that work efficiently.	5	5	208	2.85	0.459	large
20- There are Internet networks that work very efficiently.	5	4	209	2.88	0.439	large
21-Existence of an integrated infrastructure that facilitates the process of Communicating electronically with sources of knowledge.	8	7	203	2.80	0.542	large
22- The educational software used is of good quality	8	7	203	2.85	0.506	large

Criterion content	Responses			Mean	Standard deviation	Availability degree
	Rarely frequency	Sometimes frequency	Usually frequency			
23- There is a specialized department for e-learning affairs to answer all questions asked.	6	3	209	2.87	0.612	large
Fourth: Technical support for e-learning.						
24- Providing clear instructions on technical support, and clarifying how to reach it.	6	4	208	2.88	0.449	large
25- Providing an electronic system that verifies the identity of the student used.	4	6	208	2.80	0.439	large
26- Directing the student to electronic instructions in case he makes a mistake.	5	6	207	2.83	0.532	large
27- Electronic technical support is intertwined throughout the learning period.	4	7	207	2.77	0.506	large
Fifth: E-Learning Department.						
28- Through e-learning, it is possible to identify the objectives of the scientific content presented.	3	1	214	2.85	0.542	large
29- E-learning includes correct codes of conduct and ethical practices about simultaneous discussions.	8	8	202	2.88	0.542	large
30- Simultaneous electronic attendance is considered equivalent to regular attendance.	8	8	202	2.88	0.506	large
31- Announcing the previous knowledge and competencies required to learn from electronic content.	7	6	205	2.80	0.602	large
32-Providing an attractive electronic environment for the use of electronic resources in educational situations.	11	6	201	2.83	0.459	large
Sixth: The components of a faculty member in e-learning.						
33- There are a curriculum vitae for a faculty member that satisfies his self-identification.	5	8	205	2.77	0.439	large
34- A faculty member has electronic office hours for simultaneous communication with students and responding to them.	5	5	208	2.85	0.542	large
35- The faculty member has the necessary skills to design, implement and evaluate electronic content.	5	4	209	2.88	0.542	large
36- A faculty member communicates with his students in many electronic ways (messenger, WhatsApp, mobile)	8	7	203	2.80	0.506	large
Seventh: The art of e-learning.						
37- Describe learning objectives according to measurable outcomes.	8	7	203	2.85	0.602	large
38- Designing educational objectives in a manner commensurate with the level of scientific content	6	3	209	2.87	0.459	large
39- There are sufficient and clear instructions on how to achieve the learning objectives.	6	4	208	2.73	0.439	large
40- All learning objectives are clearly stated and include the students' points of view.	4	6	208	2.88	0.542	large



Criterion content	Responses			Mean	Standard deviation	Availability degree
	Rarely	Sometimes	Usually			
	frequency	frequency	frequency			
Eighth: Students' interaction and electronic participation.						
41- Learning activities provide opportunities for interaction that support self-learning.	5	6	207	2.80	0.506	large
42- Learning activities promote and support the achievement of the stated learning objectives.	4	7	207	2.88	0.612	large
43- Students interact with faculty members through discussion and answering their inquiries through electronic meetings.	3	1	214	2.80	0.449	large
Ninth: Developing and supporting electronic students.						
44- Correctly display the minimum technical skills expected of the student.	7	202	9	1.99	0.343	medium
45- Raising the capacity of graduates, and presenting them in a good way to the labor market.	8	200	10	2.05	0.425	medium
46- Reducing the rumors about repetitions and educational dropouts.	7	204	7	1.99	0.353	medium
47- Providing free digital repositories and libraries for access to educational resources.	6	198	14	2.05	0.425	medium
Tenth: Evaluation of e-learning.						
48- Students have more than one opportunity to measure progress in the e-learning process.	11	200	7	1.93	0.353	medium
49- The sequence and variety of assessment tools selected for the students' work being evaluated.	7	197	14	2.15	0.425	medium
50- Providing basic determinants related to the grading policy for evaluating students' work and participation.	8	8	202	2.88	0.542	large
51- There is a mechanism for providing students with the results of evaluating their work.	7	6	205	2.80	0.506	large
52- At the end of the academic year, an overall evaluation is conducted to measure the effectiveness and efficiency of e-learning.	11	6	201	2.83	0.612	large
Weighted mean of the questionnaire criteria				2.74	0.503	large

It is evident from the statistical indicators to determine the extent of the impact of the technical equipment for the infrastructure to achieve the quality of e-learning on students studying in the faculties of the Arar city, at Northern Border University.

- **The general mean:** which equals to (2.741) with a standard deviation of (0.503); It confirms the presence of a tendency in the responses of the research sample to the availability of the questionnaire criteria as a whole in a large way in terms of the responses of the research sample

(students of the colleges of the Arar city, Northern Border University); Which indicates the realization of those standards on the ground.

- First rank: There is a level of availability to a large extent across the range of these criteria (from 1 to 43, and from 50 to 52) with averages ranging between (2.73 to 2.88), and it is one of the indicators of the third category of the average (2.34 to 3.00), which confirms the existence of a practice of these standards On the ground, and that the responses of the research sample students (students of the faculties in Arar city, Northern Border University) tend to the positive direction,

and the researcher attributes this result to the efficiency of the infrastructure, and technical equipment of the e-learning system at Northern Border University, and this means the efficiency of graduates who learn through E-learning in the faculties in Arar city, Northern Border University, and their ability to deal with the labor market with high efficiency, and this indicates the interest at Northern Border University in e-learning, and work to improve its quality.

- The second rank: there is a level of availability at a medium degree across the range of these standards (from 44 to 49), with averages ranging between (1.93 to 2.15), and it is one of the indicators of the second category of the average (1.67 to 2.33), which confirms the existence of the practice of these standards at a medium degree on the ground And that the responses of the research sample (students of the faculties of the Arar city, (Northern Border University) tend to the neutral direction, and the researcher attributes this result to the tendency of the students of the research sample to the neutral direction of those criteria, which may be present with an efficiency that is not high from their point of view through their responses to the criteria This questionnaire, and the reason for this may be due to some defect in the assessment system or the provision of electronic support to students.

### 13. Study recommendations

- The necessity of paying attention to measuring the quality of electronic courses once every two years; to diagnose and enhance strengths, discover weaknesses, and address them.
- Quality standards for e-content provided via e-learning platforms.
- The necessity of gradual application of e-learning to universities, and dispensing with the traditional system in the educational process.
- When allocating funds for technical equipment and infrastructure for the application of e-learning in universities, it is necessary to know the return on the university from that, and not to deplete useless amounts.
- The necessity of spreading the culture of e-learning quality among all segments of society, and directing them towards benefiting from the advantages of e-learning that respects quality standards.

- The necessity of good planning to pursue the difficulties that impede the achievement of the quality of e-learning in universities, in general.

### 14. Suggested Research

- There is a need to study the impact of technical equipment and infrastructure towards the application of the quality of e-learning in pre-university education.
- There is a need to conduct a study aimed at setting codified standards for assessment methods used in e-learning at various educational levels.

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### References

- [1] Al-Saadi, A. Requirements for the use of e-learning in the faculties of the University of Maysan from the viewpoint of faculty members, the second regional e-learning conference: March 25-27, Kuwait, (2016).
- [2] Andrew, H. Creating A National E-Learning Strategy in The Open Learning Environment. A New Zealand Case Study", University of Otago, Dunedin, New Zealand, 29(3) (2020) 79-129.
- [3] Nomus, S., Al-Anzi, A. The reality of employing e-learning technology and its relationship to the quality of the outputs of the training sector in the Public Authority for Applied Education and Training in the State of Kuwait. Journal of Educational and Human Studies, College of Education, Damanhour University, 6(2) (2017).
- [4] Iraklis, V., Ioannis, A. The Present and Future of Standards for E-Learning Technologies, Interdisciplinary Journal of Knowledge and Learning Objects, 2 (2016) 59- 76.
- [5] Shank, P. New Skills for New Field, University of Colorado, Denver. Technologies, Interdisciplinary Journal of Knowledge and Learning Objects, 6(2016)102-211.
- [6] Davey, Y. Toward an Effective Quality Assurance Model of Web-based Learning: The Perspective of Academic Staff. Education Technology, 19 (2015) 256-309.
- [7] Brown, A., Voltz, B. Elements of effective e-learning design. The International Review of

- Research in Open and Distributed Learning, 6(1) (2015).
- [8] Ehlers, U. Quality in ELearning from A learner's perspective. *European Journal of Open, Distance, and eLearning*, (2019).
- [9] Abdel Aziz, M. The extent to which quality standards are applied in e-learning management at King Saud University from the point of view of leaders and faculty members. *Dar features for studies and research*, 9(9) (2016) 167-189.
- [10] Hsu, C., Yu-Chu, Y., Jen, Y. Development of design criteria and evaluation scale for web-based learning platforms." *International Journal of Industrial Ergonomics*, 39(1) (2018) 90-95.
- [11] Karagiannidis, C., Sampson, D., Cardinali, F. Integrating adaptive educational content into different courses and curricula, *Educational Technology & Society*, 4(3) (2020).
- [12] Ehlers, T. Development of design criteria and evaluation scale for web-based learning platforms. *International Journal of Industrial Ergonomics*, 39(1) (2014) 90-95.
- [13] Al-Jammal, R. The Tenth Scientific Conference on E-Learning Technology and Total Quality Requirements. *Arab Center for Education and Development*, 12(2016) (40).
- [14] Sampson, D., Karagiannidis, C., Kinshuk. *Personalized Learning; Educational, Technological and Standardization Perspective, Interactive Educational Multimedia, Special Issue on Adaptive Educational Multimedia* (2019).
- [15] More, K., Pinhey, N. Guidelines and Standards for the Development of Fully Online Learning Objects. *Interdisciplinary Journal of Knowledge and Learning Objects*, 2 (2016) 95-103.
- [16] Al-Ansari, R. The roles of the teacher is facing the challenges of achieving the quality of e-learning, the virtual international conference for the future of digital education in the Arab world. *Enriching knowledge for conferences and research*, 1(2020) 237-247.
- [17] Abdel Aziz, M. Quality in E-Learning: Contemporary Global Experiences in E-Learning Quality Standards in Universities. *Journal of Educational Knowledge*, Egyptian Association for Pedagogy, 5(10) (2017) 80-100.
- [18] Mahya, W. *Quality of Service Guidelines for Online Courses*. Houston: Region IV Educational Service Center, (2020).
- [19] Hanan, K. Building a repository of digital learning units in light of e-learning quality standards to develop e-content design skills for graduate students at the College of Education. *Journal of the College of Education*, Mansoura University, 1(75) (2017).
- [20] Frydenberg, J. Quality Standards in E-Learning: A matrix of analysis. *International Review of Research in Operand Distance Learning*, 2(2) (2017).
- [21] Lal, Z. E-learning technology lecture on e-learning quality standards. *Egyptian Association for Educational Technology*, 19 (2019) (1).