The Effectiveness of Designing Digital Course ın Light of Quality Matters Association Standards on Enhancing Some Digital Skills and Satisfaction Among Graduate Students

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Abstract

The study's objective was to create a digital course adhering to Quality Matters Association standards and evaluate its influence on digital skill development for (21) postgraduate students in the Faculty of Education at Al-Aqsa University. The research utilized a methodical approach, incorporating a digital skills cognitive test, an educational product evaluation card for assessing performance, and an open-ended questionnaire to gauge satisfaction. Results demonstrated the digital course's efficacy, enhanced efficiency, and mastery in the study group's cognitive and performance skills. High satisfaction levels were reported through the open-ended questionnaire. The study suggests designing courses in line with Quality Matters standards, training instructors on these standards, encouraging electronic skill development among postgraduate students, and leveraging in-service training for curriculum-based digital skill application.

أثر تصميم مقرر رقمي في ضوء معايير جودة منظمة Quality Matters العالمية في تعزيز بعض المهارات الإلكترونية والرضا لدى طلبة الدراسات العليا

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الملخص

هدفت هذه الدراسة الى تصميم مقرر رقمي قائم على معايير منظمة Quality Matters لمساق تطبيقات الكترونية وقياس أثره في تنمية المهارات الإلكترونية لدى (21) طالباً وطالبةً من طلبة الدراسات العليا بكلية التربية في جامعة الأقصى، وهي مجموعة الدراسة التجريبية، واستخدم المنهج المنظومي كمنهج للبحث وفي اطاره طبقت أدوات الدراسة على عينة الدراسة وهي الاختبار المعرفي للمهارات الإلكترونية، وبطاقة تقييم منتج تعليمي لتقييم المهارات الأدائية للطلبة، واستبيان مفتوح لقياس رضا الطلبة عن المساق، وأظهرت نتائج الدراسة فاعلية المقرر الرقمي القائم على معايير Quality Matters وزيادة كفاءة وإتقان أفراد عينة الدراسة للمهارات المعرفية والأدائية في التطبيقات الإلكترونية، كما أظهر الاستبيان المفتوح درجة رضا عالية للمقرر الرقمي من قبل عينة الدراسة، وأوصت الدراسة بتصميم المقررات الرقمية في ضوء معايير منظمة Quality Matters وتدريب المحاضرين على تصميم المقررات الرقمية ضمن هذه المعايير، والاهتمام بتنمية المهارات الالكترونية لدى طلبة الدراسات العليا، والاستفادة من المساق في تدريب المعلمين قبل الخدمة وأثناء الخدمة على توظيف المهارات الالكترونية في المناهج الدراسي.

الكلمات المفتاحية: مقرر رقمي، معايير الجودة، المهارات الالكترونية، الرضا.

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Introduction

The imperative for digital course design has become intrinsic to the realm of higher education, with its principal objective being the attainment of comprehensive quality in digital courses to augment educational outcomes. Among the latest advancements in educational technology is the development of digital courses facilitated by the internet. Consequently, educational institutions embracing e-learning have predominantly turned to the creation and dissemination of digital courses, simplifying the learning process for students and enhancing their grasp of academic content (Al-Dakrouri, 2019).

The construction of digital courses, designed to reconfigure and innovate content delivery, invariably integrates pedagogical theories. These courses are hosted on educational platforms equipped with digital metrics for assessing learner performance, while their educational designs incorporate strategies tailored to diverse learner profiles. These strategies foster self-directed learning, broaden learning opportunities, and facilitate interaction with the array of educational options presented (Ali, 2019).

Aviation Industry Computer-Based Training Committee (AICC) standards, Quality Matter standards (QM), Scorm and Information Management System (IMS) standards are just a few of the many e-learning quality standards that must be taken into consideration when designing digital courses in order for them to be of a high enough caliber. In the same context, universities seek to revitalize the role of e-learning and rebuild the

e-learning system. The (QM) standards are international standards that are current, high-quality, and continually updated to benefit course developers, instructors, faculty, and entire institutions. The key to verifying the caliber of online courses is to set quality expectations of 85% or better (Quality Matter, n.d.).

The (QM) standards are one of the most prominent means of evaluating e-courses and ensuring quality in e-learning in terms of increasing recognition which has become one of the most widely used standards in the field of e-course design evaluation.

The integration of electronic applications in education has become a mandate to address the myriad challenges in the contemporary educational landscape, promoting electronic and blended learning. The primary objective of establishing quality standards for online courses is to heighten student satisfaction with course materials, an immediate driver of their academic attainment and performance. This study endeavors to develop a digital course grounded in the QM standards to enhance digital literacy in education and elevate student satisfaction, with the ultimate aim of fostering digital courses that enrich the educational experience.

Problem of the Study

1. Through her work as a lecturer and supervisor for post graduate students' the author noticed the students' deficiencies in electronic skills while preparing their master's thesis.

2. The researcher conducted an exploratory study with the aim of revealing the extent of the availability of educational electronic skills among postgraduate students in the form of unstructured interviews. It aimed to identify their possession of electronic skills and their ability to employ them in the school curricula. The study concluded that there was a weakness among the students in possessing the electronic skills necessary to employ them. In the teaching and learning process.

3. The results and recommendations of many previous researches and studies, such as study Hourani (2021), Abdulmunem (2020), and Al-Qahtani's which emphasized the necessity of training teachers in electronic skills due to their importance in improving the educational

process, recommended the necessity of teachers having the skills to employ electronic applications in education.

In light of the foregoing, the problem of the current study is determined by the limited ability of graduate students to integrate electronic skills into the curriculum and its effect on achieving educational objectives.

Objectives of the study

- Determining the electronic skills needed to be developed among master's students in the College of Education at Al-Aqsa University.
- Designing a digital course in light of the QM standards for the electronic applications course in the curricula.
- Knowing the effectiveness of the digital course in developing electronic skills for master's students.
- Realizing the level of students' satisfaction with the digital course.

Significance of the study

- Enhancing theoretical foundations and supporting Quality Management Standards, by delving into the theoretical underpinnings and scientific investigations that underpin quality management standards. By doing so, the study provides valuable evidence to enhance the reliability of these standards, bolstering their credibility and applicability within educational contexts

- Guidance for researchers and experts as this study offers guidance to researchers and experts by delineating the fundamental electronic skills imperative for educators. This information aids in the identification and prioritization of key competencies required in the teaching profession, thus facilitating more targeted research and professional development initiatives.

- Development of digital course materials as a tangible outcome in that this research endeavours to develop a digital course tailored for the e-applications curriculum. This course resource serves as a valuable educational asset accessible to students enrolled in the master's program focused on e-skills development, as well as to educators seeking to integrate innovative teaching materials into their pedagogical practices.

- Expanding research horizons that researchers in the field is beneficial to from this study's contribution to the expansion of research horizons. The study paves the way for investigations encompassing diverse variables and varying educational environments, thereby fostering a richer and more nuanced understanding of the design and production of digital courses informed by quality management standards.

Research questions

The study seeks to answer the following main question:

What is the effect of a digital course based on QM standards on developing electronic skills for graduate students in the College of Education at Al-Aqsa University?

The following sub-questions are derived from it:

RQ1. Are there statistically significant differences between the mean ranks of the two measurements, the pre and post measurements, of the experimental group on the electronic skills test?

RQ2. Are there statistically significant differences between the average ranks of the post and follow-up measurements for the experimental group on the electronic skills test?

RQ3. What is the level of students' grades in the electronic applications product card scale after learning through the digital course based on QM standards?

RQ4. Are there are statistically significant differences at the level of significance ($\alpha \leq 0.05$) between the level of students' acquisition of electronic skills and the level of proficiency (80%)?

RQ5. What is the degree of students' satisfaction with the e-applications course in the curricula?

Hypotheses

H1. There are statistically significant differences between the average scores of the pre and post application on the cognitive test scores of electronic skills in favor of the post application.

H2. There are statistically significant differences between the average scores of the study sample in the two post and follow-up measurements on

the scores of the electronic skills cognitive test in favor of the follow-up measurement.

H3. There are statistically significant differences at the level of significance ($\alpha \leq 0.05$) between the level of students' acquisition of electronic skills and the level of proficiency (80%).

Terminology

Online Course: "The online course website is part of the Blackboard e-learning system and contains multimedia content, activities, calendars, and electronic engagement tools for the course such as forums, blogs, wikis, and groups which may serve as a teaching assistant" (Al-Qahtani & Al-Bishi, 2017, p. 454).

Online Courses Design: "The process of planning and building the course and everything that is done before the students reach the course and start teaching"(Al-Qahtani & Al-Bishi, 2017, p. 474).

It is procedurally defined in the current study as an structured process in which updates or alterations are made to a digital course in accordance with (QM) standards.

Electronic skills: "The cognitive and practical abilities that are required of the students of the Higher Institute for Specific Studies, and they include the following skills: (storage - data sharing - file receiving - sending files - data processing - image processing - calendar" electronic communication)" (El-Hais, 2018, p. 474) .

Procedurally defined, technological competency encompasses cognitive and performance skills derived from modern applications in curricula, which master's students must rapidly and proficiently attain. This competency is assessed through cognitive test scores and product evaluation quality.

Quality Matters (QM) Standards

According to Al-Dakrouri, they are "a set of standards for designing, developing, building, and evaluating high-quality digital course, based on the latest research findings and instructional design principles" (Al-Dakrouri, 2019, p. 89).

It is defined in the current study as an digital course must meet a set of specifications and conditions in order to meet the needs of students, a set of eight globally agreed upon standards for digital course quality, which are outlined in the current study. In order to achieve the quality of e-learning, a master's course on electronic applications was developed in the College of Education curriculum.

Satisfaction

Al-Saud defines satisfaction as "the feelings of acceptance, happiness, and enjoyment an individual feels about himself, his job, and the place he belongs to" (Al-Saud, 2015).

It is procedurally defined as: the degree to which postgraduate students are in harmony with the electronic applications course, which is presented electronically, and the positive direction it has to satisfy certain requirements and wishes for them, and is measured using an open-ended questionnaire.

Literature Review

Digital Courses: The process of designing digital courses and publishing them electronically is one of the latest uses of e-learning. Therefore, the e-learning system was adopted by universities that developed digital courses and broadcast them, making it easier for learners to study the content and follow the educational process.

Features of the Digital Course: The most important advantages of digital courses are, allowing students to work on the online course whenever and wherever they want, considering individual variances, provides digital content in a variety of formats supported by multimedia, with the freedom to easily and quickly generate it, synchronous or asynchronous presentations of real-world experiences, such as surgical procedures, lab experiments, and others and makes it simpler for the teacher to evaluate the process of correcting assignments and tests and gives him a report on the academic progress of pupils both individually and collectively. (Al-Mandeel ,2020; Al-Nahal et al., 2021; Al-Dakrouri ,2019; Fansury, et al. 2020).

The results of the study of Martina et al. (2019) revealed that online teachers use a systematic design process, focusing on course development and the use of quality standards. The study recommended a variety of evaluation methods, in addition to the use of rubrics and stressed the importance of training course models and quality assurance processes.

In the author's opinion, the most significant characteristics of digital content is that it is in line with contemporary developments of knowledge and technological development, in addition to the fact that it is one of the elements that can suit learning in light of crises by relying on remote access.

Effectiveness of Using Digital Courses

Numerous research studies have underscored the efficacy of course design in the educational landscape. Al-Sabeeh (2018) advocated for the incorporation of digital courses into the educational process, emphasizing the importance of adhering to stringent quality criteria in the creation, distribution, and utilization of digital content to achieve the desired educational outcomes. Al-Shakrawy (2020) put forth a visionary perspective regarding the establishment of standards for crafting digital course content, emphasizing the imperative for those responsible for these courses to consider and implement the proposed vision.

The findings of Fansury et al. (2020) corroborate the notion that the integration of digital content into the learning process simplifies educational experiences by facilitating seamless integration across diverse applications. The utilization of digital content in the teaching of English holds particular merit, especially amidst the challenges posed by the COVID-19 pandemic and, notably, for the millennial generation.

In a study conducted by Baldwin & Ching (2020), efforts were directed toward the formulation of guidelines for designing digital courses tailored for mobile devices. The study culminated in the development of a skills assessment card for digital course design, informed by the analysis of four assessment tools deemed suitable for mobile learning, namely CCEC, OSCQR, QLT, and QOCIK.

Zarabian (2019) revealed that digital courses wield the potential to provide diverse learner groups with sustainable and accessible learning experiences. Additionally, electronic courses have demonstrated their capacity to furnish successful educational experiences, thereby contributing to the enhancement of education.

Digital Course Design Standards

Specific guidelines must be followed in order to guarantee the caliber of digital courses so that educators, decision-makers, and those in charge of setting educational policy can utilize them to enhance and assess educational initiatives. To guarantee the caliber of digital content, a list of standards must first be created. The Scorm standards, IMS standards, AICCK standards, and Quality Matter organization standards are some of the most crucial e-learning quality standards to meet in order to achieve educational quality standards. The study utilized Quality Matter guidelines for creating online courses.

Quality Matter Organization QM

QM is a leading global e-learning quality assurance organization dedicated to identifying, measuring and assuring the quality of digital educational courses, created by Maryland online, Inc. employees to determine how to measure and ensure the quality of electronic content taught on the web. The quality assurance system in quality management relies on the principle of continuity and cooperation to create a culture of continuous improvement (Quality Matters, n.d.).

The study Amato (2023(introduced Quality Matters (QM) as a standard for evaluating online courses, and considered it a leading assessment tool aligned with the principles of Universal Design for Learning. Drawing on her personal experience and insights gained from participating in a quality management audit for an online marketing course, the study shared valuable lessons. The study recommended adopting a quality management process as a viable solution to meet students' requirements for designing high-quality courses that enhance accessibility, diversity, and inclusion.

Among the main reasons why the QM List is pedagogically effective is that it is more comprehensive and specific than the Inquiry Communities framework, as well as being more specific and practicable for individual digital courses separately (Woods & Dexter, 2014).

Al-Dakrouri (2019) provided evidence of the efficiency of the online course based on (QM) standards in fostering graduate students' performance and success skills, as well as in facilitating access by creating tools that direct learners. The study suggested educating academic staff on how to create digital courses that adhere to QM quality criteria. Even while quality management standards are acceptable for any online training course regardless of cultural or societal differences, (Al-Ubthne, 2020) advised adopting them to build, improve, and assess online courses in Saudi universities.

E-skills in Education: There are many skills for applications and tools that can be employed in e-learning , continuing education and conducting assessment in emergency situations in order to overcome many problems. Al-Mabaridi (2021) suggests dividing e-learning applications and programs into three basic categories, as follows:

1. Applications and programs for publishing and sharing lessons.
2. Applications and programs for remote communication.
3. Applications and programs to manage online learning.

The following figure shows an infographic showing e-learning applications and tools.

Figure (1)
E-learning applications and tools (Al-Mabaridi, 2021)

Contemporary research underscores the paramount importance of imparting electronic skills to students within the realm of education. Hanna (2021) advocated the utilization of the Moodle educational platform as a means to facilitate the development of creative oral expression skills among primary school students while addressing practical skill challenges. Hourani (2021) emphasized the ongoing necessity for educators to grapple with these challenges within the classroom, urging the Ministry of Education to extend support and furnish opportunities for teacher training to enhance their role.

Al-Thneibat et al. (2016) conducted a study aimed at constructing an electronic environment tailored to cognitive tasks linked to interactive Internet applications, a venture targeting faculty members at Mutah University. The effectiveness of this initiative in cultivating cognitive tasks during the post-application phases was duly validated.

Al-Radadi (2019) conducted an inquiry into the professional development of social studies teachers in digital applications. The study recommended the integration of digital applications and innovations into teacher manuals, along with continuous certification and training provisions.

Al-Qahtani (2018) sought to delineate the utilization of digital technology applications in scientific research among graduate students, proposing the implementation of training courses and programs to equip them with the requisite skills.

Recognizing the pivotal role of electronic skills in contemporary education, the author undertook a comprehensive review of educational literature and prior research studies, including works by Al-Waheedi (2009), El-Hais (2018), and Al-Thneibat et al. (2016). This comprehensive review culminated in the identification of a set of crucial skills deemed essential for graduate students. These skills were categorized into primary and sub-skills, encompassing proficiency in the use of Google educational applications, virtual classrooms, image processing, evaluation and electronic measurement methods, QR Codes, e-books, personal learning networks, cognitive journeys, and electronic educational games.

Learning Satisfaction

The use of modern technologies in education has contributed to the provision of complementary resources that cater to the different learning conditions, resulting in a high level of learner satisfaction and acceptance of new learning methods. Studies such as (Al-Bayat et al., 2019) have shown a positive relationship between learning styles and satisfaction with blended education, emphasizing the need to consider these factors when developing curricula. Other studies, including Al-Rushud (2015), have focused on the issue of student satisfaction with education and recommended the improvement of academic guidance in e-learning. The current study aims to evaluate the effectiveness of an electronic course based on the quality standards of the International Organization (QM) in developing electronic skills and enhancing graduate students' satisfaction with education.

Methodology

In this study the systemic approach was used which consisted of the descriptive approach (qualitative and quantitative), Educational Systems Design Curriculum by using the ADDIE general model and quasi-experimental design.

Study Sample

The sample comprised (21) students for the experimental group and (13) students for the open interview. Students were purposefully selected among those enrolled in an electronic applications course.

Procedures

I- Designing a digital course according to QM standards: The author used the ADDIE general design model that went through numerous stages.

1-Analysis Stage: the course was divided into theoretical and practical section. The blended learning approach is used in which the scientific content is delivered on the Moodle platform and the information and skills acquired are put to use in the lab after reviewing the website of (QM) and earlier studies that addressed (QM) standards, such as the study of

Solomon and Muhammad (2021), Al-Qahtani and Al-Bashiti (2017), and Al-Dakrouri (2019), Al-Ubthne (2020), Al-Sabeeh (2018).

The author adopted the quality standards for designing digital course, which are (QM) standards in the course design process, and discovered that the most recent version of the (QM) standards issued is the sixth version which was issued in 2018, and includes (8) main standards and (43) sub-standards distributed over three categories: (21) basic standards, each with three points, It is very important, (N=14) criteria, each of which has two points, and it is important (N=8) criteria, each of which is one point, so the total number of points is (85) points. (Quality Matters, 2020).

2- **Design stage:** The design was carried out according to the standards issued by (QM) (Quality Matters, 2023).

A. Determining digital content topics: After the literature review, electronic applications course descriptions, and some specialists opinions, the most prominent cognitive skills were Uses of Google Apps in Education , Virtual classes in education , Educational image processing , Electronic evaluation and metrics , Personal Learning, e-Book, QR Code Networks , Cognitive trips, virtual trips and Electronic educational games. building the digital course.

B. Building the digital course: It is a set of elements for the components of the course as shown in Table (1):

<div align="center">

Table (1)
Components of the electronic course

</div>

Part	Description
Introduction	It explains the general idea of the course, its requirements, presenting the lecturer of the course and the communication mechanism, a description of the course and learning outcomes, course topics, teaching strategies, assessment methods, grades, and learning resources.
Lectures	The lectures are designed in the form of small units containing annotated lessons.
Ads	It contains everything related to the course of news, events and exam dates that are published in advertisements

Table (1)

Part	Description
Strategies	A variety of strategies linking theory and practice, which are compatible with the course content.
Activities	It contains a link to activities through which assignments can be resolved and delivered.
means	PDFs, PPT files, enrichment materials, videos, and other media.
communication	Lecturer's mail, WhatsApp group, SMS messages for the student's page on the model.
Forums	Colleagues and lecturers are contacted.
Learner Support	Answering students' inquiries and assisting them technically in case of any problem.

C. Defining the students' role: Students participate in studying the course through studying it from the Model system, and their public participation in the university's laboratories, through activities, applications, and discussions in the course forum.

D. Determining the teaching method and learning process by presenting knowledge and skills, coaching students, summarizing, discussing and applying skills that have been learned through activities, exercises and projects, finally evaluating and providing feedback.

E. Determining the evaluation method: Diagnostic evaluation by using study tools to identify the level of students, continuous evaluation and final product of the students.

F. The researcher will apply the research experience to a research sample of master's students for a course on electronic applications in curricula, during the first semester of 2021/2022, and the teaching method has been determined, and includes: blended learning through the flipped classroom, participation in discussions, solving exercises and assignments, research, and implementing projects.

3- Development Stage: The course was created using the Moodle platform in accordance with (QM) standards, course materials, and multimedia, were prepared.

Developing a case study for the course: Its purpose is to give students the chance to access the course and navigate between its various components in a way that will be most beneficial to them. The lesson organized the three main sections of the e-learning management system's navigation
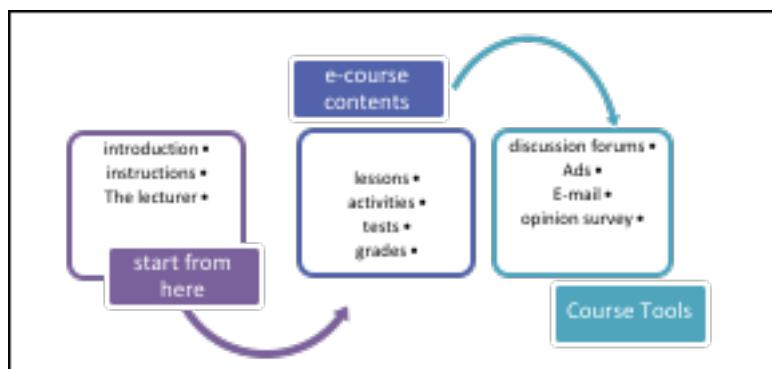
menu into priority order, as shown in Figure (2).

Figure (2)
Moving around in Moodle

The first part of the diagram (figure 2) begins with (start here) which means that the student starts with getting an idea about the course which represents the starting point for this course according to (QM) standards. The second part of the course includes (educational electronic content) that comprises various educational and enrichment resources, and activities. The last part of the course provides tools for course evaluation, as it includes tests, activities, a link to a poll for the course, discussion forums, course announcements, and e-mail.

4- Implementation stage: Once the criteria had been verified to be compatible with the (QM) standards and the course content, the course was tested with a number of students to ensure its ease of use, to make sure the links worked, and to ensure that the content is correctly formulated linguistically and scientifically, that the steps are in the correct order, and that modifications are made as necessary.

5- Evaluation Stage: During the fifth stage of course evaluation, the course content was presented to a number of arbitrators, in order to ensure that it met all the standards of the sixth edition (QM).

Study tools:

1- List of digital skills in education: The list aimed to identify the digital skills to be developed for postgraduate students, in which the sources of derivation of the list of skills were identified through the analysis of literature and studies and by reference to the description of the digital applications course. The initial form of the tool was prepared and presented to the arbitrators in the field of specialization to take opinions, and after analyzing the opinions of the arbitrators, the final form of the list of skills was prepared after making some modifications and linguistic suggestions. The list contained (9) basic skills and (22) sub-skills.

2-Experimental Processing Tool: It includes the course elements in accordance with the quality standards (QM). This course was designed based on the quality standards card approved by the International Organization for (QM) Quality Management, which is honest and cannot be falsified, as found in the study (Woods & Dexter, 2014) that these standards were valid and stable.

3- Measurement tools: consist of

1- Cognitive test: It measures electronic cognitive skills. Table (2) shows the topics included in the cognitive test in the scientific material for an electronic applications course.

Table (2)
Specifications of the Electronic Cognitive Skills Test

	Fields of the test	No. of questions	Weight %
1	Uses of Google Apps in Education	5	16.7
2	Virtual classes in education	3	9.7
3	Educational image processing	4	12.9
4	Electronic evaluation and metrics	4	12.9
5	Personal Learning Networks	2	6.5
6	e-Book	3	9.7
7	QR Code	4	13.9
8	Cognitive trips, virtual trips	3	9.7
9	Electronic educational games	3	9.7
	Total	31	%100

Validity was insured by counseling a group of experts in the field and taking their observation in count. Also reliability was tested where reliability coefficient was (0.91).

2 - Evaluation card for the performance aspect of electronic skills: The author built a list of performance criteria for electronic skills, where the card included (43) performance skills, and the level of answering the items of the card was determined by giving a score for each skill (5 is very high), (4) is high, (3) is medium, (2) is weak, and (1) is very weak. For Validity and reliability he Cooper, equation agreement of (0.84) was used.

3- An open questionnaire to measure the level of students' satisfaction with the electronic course: An open end questionnaire was used to answer the RQ5. An open question is best applied when the answer is open (Gillham, 2008).

After preparing the open end questionnaire it was sent to the study sample (N=13), and the answers were analyzed according to Gillham (2008) rules for qualitative research analysis. Students' answers were reviewed, coded and organized into six categories: "Acquiring new skills related to the digital teacher", "Mastering the learning material by reviewing the material more than once in different ways and forms", "Flexibility of accessing the educational material at any time that suits the student", "Clarity of the course instructions", "Continuous feedback on the material", Preparing digital content in an interesting and organized way.

The author used the steps of qualitative data analysis provided by (Lodico et al., 2006) . The interviews were completely transcribed, classified and organized into six categories. To establish the credibility of the interview data, another researcher reviewed and classified the material, and the two researchers agreed on (85%) of the Classified data.

Results

To answer RQ1, validity of H1 was verified, and the experimental group was compared to itself in the electronic cognitive skills test before and after the application of the experiment, using the "Wilcoxon Signed Ranks Test" for two related samples to show the statistical significance, as shown in Table (3):

Table (3)
The differences between the mean ranks of the pre and post measurement
scores for the sample members on the cognitive test of electronic
skills using the Wilcoxon Test for two related samples

Rank type	N	Mean of ranks	Total of ranks wobs	Z	Sig.	coefficient for correlated pairs R_{prb}	size of Effect
Positive ranks	19	10.82	205.5				
Negative ranks	1	4.5	4.5	-3.757	0.00	1	0.779 Largly effective
Equal ranks	1						
Total	21						

It is clear from Table (3) that the absolute normative value (Z) by using the mean approximation and the corresponding to Wilkinson statistics for the differences between the mean ranks of the pre and post measurements among the students of the experimental group was significant at the level of significance (0.001) where the calculated (Z) value was (- 3.757), and then it is concluded that there is Statistically significant differences at the level of significance (0.001) between the average ranks of the students' scores for the experimental group in the pre and post applications of the cognitive test in favor of the post application.

In reference to the magnitude of the impact of the electronic course on the experimental group, the researcher employed the Wilkinson test to compute the disparity between the mean ranks of paired, correlated degrees. The findings indicated a statistically significant difference in the ranks of the pre and post measurements. Consequently, an examination of the strength of the association between the independent and dependent variables was carried out using the coefficient of Biserial Correlation Matched-Pairs Rank.

In accordance with the commonly accepted convention for interpreting correlation coefficient (r) values, a correlation of(0.9) or greater is considered very large, while a range of 0.9 to 0.7 is deemed large, (0.7) to (0.4) is considered medium, and less than (0.4) is categorized as weak. The

preceding analysis revealed a substantial effect size of (0.779), thereby affirming the validity of the first hypothesis and attesting to the effectiveness of the digital course rooted in Quality Matters (QM) principles in enhancing electronic cognitive skills among the study participants.

The success of the course can be attributed to its meticulous adherence to QM-based design principles, encompassing engaging visual icons, interactive discussion forums, lucid instructional materials, and a diverse array of content formats, including videos, images, files, and diagrams. Furthermore, the incorporation of accessible course components and well-defined learning objectives serves to mitigate cognitive load and facilitate the processing of information. These findings are in congruence with similar investigations conducted by Al-Sabeeh (2018), Al-Shakrawy (2020), and Amato, (2023), as well as Solomon and Muhammad (2021), which collectively underscore the constructive impact of QM-compliant electronic courses on students' cognitive development.

To address RQ2 and H2 validity, a subsequent measurement compared the experimental group's electronic skill acquisition a month after the post-application stage by employing the Wilcoxon Test to determine statistical significance. Results are displayed in Table (4).

Table (4)
Rank averages, the value of (Z) and the significance of the differences between the two applications, the post- test and the follow-up, for the development of electronic skills

Rank type	N	Mean of ranks	Total of ranks wobs	Z	coefficient for correlated pairs R_{prb}	Sig.
Positive ranks	8	8.31	66.5			
Negative ranks	8	8.69	69.5			
Equal ranks	5			-0.078	1	0.938
Total	21					

Table (4) provides a clear depiction of the mean scores attained by the experimental group in both post-test and follow-up measurements. The

statistical analysis reveals that there is no statistically significant difference, as evidenced by the calculated Z value of (0.078), which falls below the threshold for statistical significance. Consequently, the second hypothesis is rejected. This outcome elucidates the efficacy of digital courses, which are designed to foster interactive, structured, and sequential learning experiences. These courses are carefully crafted to integrate seamlessly with students' existing knowledge structures. Such an approach serves to facilitate the retention of information in long-term memory, thereby prolonging the retention of cognitive skills and enabling their recall when needed.

This finding is corroborated by the research of Hayat and Nubi (2015), which investigated the impact of implementing information retention strategies in the design of electronic courses on academic achievement. Furthermore, the enduring effects of learning in the context of racquet games courses for physical education students at the College of Basic Education were affirmed when strategies were incorporated into the electronic course. This is also in line with the findings of Abu Attia and Kharabsheh (2019), who emphasized the significance of blended learning and digital courses in preserving the efficacy of the learning process. Similarly, Martin et al. (2019) underscored the necessity of incorporating best practices, standards, and effective pedagogical competencies for online learning via the Internet

To answer RQ3, the average ranks of each skill of the post-application skills of the electronic skills product evaluation card were calculated. The results of this treatment are shown in Table (5).

Table (5)
Rank averages for each of the main skills of the
e-skills product evaluation card

Main Skills	Mean of ranks	Total of ranks	N
Google skills	85	85	21
Image Processing	57	60	21
Digital game design	18	20	21

Table (5)

Main Skills	Mean of ranks	Total of ranks	N
Educational trip design	20	20	21
e-book design	29	30	21
Total	205	215	21

The data presented in Table (5) highlights the cumulative rankings of students' scores in various electronic skills as assessed in the Electronic Skills Product Evaluation Card. Notably, the skill related to Google applications garnered the highest aggregate ranking, with a total score of (85). This was closely followed by the cumulative rankings of students' performance in the domain of image processing, which accrued a total score of (60). In contrast, the skills associated with digital game design and the creation of educational journeys received the lowest aggregate ranking, attaining a combined total of (20). Furthermore, the skill pertaining to electronic book design secured a total ranking of (30). The summation of these rankings yielded a grand total of (215). This collective assessment underscores the heightened efficacy of the electronic course, grounded in Quality Management (QM) principles, in fostering the development of electronic skills among graduate students.

This affirmation substantiates the pivotal significance and impact of digital courses founded upon principles of quality assurance. Such courses actively contribute to the enrichment of the educational process, expeditious knowledge acquisition, and the enhancement of student engagement and interaction. In summary, online courses assume a vital role in augmenting the educational experience by providing convenience, fostering active participation, facilitating access to invaluable educational resources, and, through meticulous design, addressing various pedagogical challenges.

To answer the RQ4, the H3 was verified. The product evaluation card was studied, and its (Z) value was calculated for one sample for the post application average with the default standard proficiency average (80%) as shown in Table (6).

Table (6)
The difference between the ranks of the e-skills product evaluation card scores with the standard average equivalent to (80%)

Main Skills	Direction of measurement	N	Mean of ranks	Total of ranks	Z	Sig.
Google skills	Positive ranks	21	11	231	4.108-	0.00
	Negative ranks	0	00	00		
	Equal ranks	0				
	Total	21				
Image Processing	Positive ranks	21	11	231	4.036-	0.00
	Negative ranks	0	00	00		
	Equal ranks	0				
	Total	21				
Digital game design	Positive ranks	13	9.92	129.00	-2.057	0.012
	Negative ranks	4	6.00	24.00		
	Equal ranks	4				
	Total	21				
Educational trip design	Positive ranks	21	11	231	-4.583	0.00
	Negative ranks	0	00	00		
	Equal ranks	0				
	Total	21				
E-book Design	Positive ranks	19	12.00	228.00	-3.939	0.00
	Negative ranks	2	1.50	3.00		
	Equal ranks	0				
	Total	21				
Total	Positive ranks	21	11	231	-4.019	0.00
	Negative ranks	0	00	00		
	Equal ranks	0				
	Total	21				

Table (6) demonstrates the statistical significance of the value of (Z) in all main skills, ranging between (-4.583 and -2.057), with an overall (Z) value of (-4.019). This significance occurs at an 80% virtual mastery level,

indicating significant differences between the standard mean (215) and the study sample students' average scores in the electronic skills assessment card. Consequently, the third hypothesis is dismissed, with the results of questions three and four explained by the standards focusing on design and development skills.

Quality management standards for electronic courses aim to streamline learners' access to courses, interaction with course components, and navigation improvement. Theoretical materials, such as files, images, and diagrams with explanatory videos, are presented sequentially to enhance skill development.

Previous studies (Al-Hussein & Al-Rashed, 2021; Al-Dakrouri, 2019; Fansury et al., 2020; Al-Sabeeh, 2018) support digital courses in facilitating student skill development. The behavioral theory emphasizes clear information delivery through proper techniques. Interactive digital course components allow students to review processes repeatedly, practice them, and receive performance feedback.

The results of the RQ5 showed an agreement and convergence in the ideas put forward by the students about their satisfaction with the digital course, the students described some of its features that are classified into six categories as shown in table (7):

Table (7)
Classification of the categories of satisfaction with the digital course

Category	Number of responses	%
Gaining new skills for a digital teacher	12	86%
Mastering the learning material by reviewing the material more than once in different ways and forms.	11	84%
Flexibility to access the educational material at any time that suits the student	12	86%
Clarity of course instructions	10	71%
Continuous feedback for the material	12	86%
The digital content is prepared in an interesting and organized manner	13	93%

The tabulated data presented herein encapsulates feedback solicited from participants pertaining to diverse facets of a digital course. Notably, the highest level of satisfaction, quantified at (93%), is attributed to the statement, "The digital content is prepared in an interesting and organized manner." Conversely, the lowest satisfaction rating, standing at 71%, is associated with the statement, "Continuous feedback for the subject" Participants underscored manifold advantages conferred by digital courses at both personal and educational levels. These benefits encompass the acquisition of technological competencies, the cross-application of software across disciplinary boundaries, and the augmentation of computer literacy.

From an educational perspective, the digital course in question avails a plethora of programs and applications designed to facilitate the dissemination of scholarly knowledge. Such tools include, but are not limited to, Scratch, Flip Book, Web Quest, Augmented Reality, and an array of others. One respondent lauded the course for presenting an optimal quantity of content and knowledge, striking a balance between engagement and pedagogical rigor. The pivotal role played by instructors in nurturing students' affinity for the course should not be understated. Indeed, their cooperation and guidance emerged as salient factors contributing to positive student experiences.

These findings align harmoniously with prior research by Al-Bayat et al. (2019) and Al-Rushud (2015), which substantiates a positive correlation between the adoption of blended learning methodologies and digital courses, and students' overall satisfaction with the learning process.

Such commendable outcomes can be attributed, in part, to the adherence to Quality Management (QM) standards, which pivotally emphasize the assessment of digital course quality through the provisioning of a diverse spectrum of learning resources. Additionally, Garrison's Communication Theory lends theoretical underpinning to the efficacy of e-learning, emphasizing its capacity to foster student autonomy and elevates the qualitative dimensions of educational processes.

Limitations

The study was limited to a digital course based on internationally recognized QM standards in the Master's Program of the Faculty of Education, Al-Aqsa University, registered in the first semester 2021/2022 to measure the quality of digital courses in the development of electronic skills.

Recommendations

The study suggests the following recommendations:
- Designing Digital Courses in Master's Programs in Compliance with Quality Management Standards.
- Training faculty members to design digital courses according to QM standards.
- Promoting Digital Proficiency Among Master's Program Students in the College of Education.
- Applying blended learning by setting the necessary policies and plans for that in university education.
- Embracing Blended Learning Initiatives and Enhancing Digital Course Quality in Conformance with International Standards.
- Reinforcing Contemporary Pedagogical Strategies to Enhance Student Satisfaction.
- Future studies within this domain should explore avenues such as the refinement of digital course standards within Palestinian universities to align with the unique cultural and educational context of Palestine.

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