The Effect of Digital Content Designed Based on Learning Styles on Academic Achievement and Motivation toward Learning

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Article Info	Abstract
	This study aimed at examining the effect of using digital educational content designed by learning style (audio, visual, or kinesthetic) on the academic achievement and motivation towards learning among students of the Life Skills subject at Al al-Bayt University during COVID-19. The study sample consisted of two groups chosen randomly; one was the experimental group and comprised 55 students, while the other was the control group and comprised 50 students. An academic achievement test, consisting of 25 questions and a motivation scale of 25 items was prepared to measure the use of digital educational content based on learning style (audio, visual, or kinesthetic) in the academic achievement and motivation towards learning among Life Skills students. The validity and reliability of the study tools were determined. To answer the study questions, the means and standard deviations of the study sample were calculated, and a one-way analysis of variance (ANCOVA) was computed. The results showed a statistically significant difference between the mean scores of academic achievement and the scores on the motivation scale due to the variable of teaching method, in favor of the experimental group, which studied using digital educational content based on learning style (audio, visual, or kinesthetic). The researchers recommended generalizing the experience of using digital educational content based on learning styles (audio, visual, or kinesthetic) due to its impact on the academic achievement and motivation toward learning among students of the Life Skills subject at Al al-Bayt University during COVID-19 on various subjects in the university.

Introduction

E-learning forms have gained increasing importance since the start of COVID-19, due to the change in the lifestyle of individuals, in particular, and societies in general. The COVID-19 pandemic has enforced many global universities to re-engineering their teaching activities because eLearning is not optional anymore; it has become a lifeline way to deliver lectures, conduct tutorials, and provide skill training for achieving learning outcomes (Müller et al., 2021). In light of these challenges and the rapid revolutions that the world is experiencing, including

revolutions in information and knowledge, the technical, scientific, and technological progress, and the challenges of globalization in all fields of life, countries are striving through their educational system to prepare individuals for the New world of today and tomorrow. It needs to shift towards a new educational system that is comprehensive and compatible with emerging technological changes and challenges. So, this system which is harmonious with modern technological advances ensures providing individuals with a real opportunity for growth depending on their personalities. It also develops their innovative and creative abilities and creates individuals who can adapt, work, and move from one site to another easily and conveniently (Alhumaid et al., 2020).

The technological development that has taken place includes all educational programs offered by educational institutions concerning the possibility of applying and getting benefits, especially at the higher educational level. The outputs are supposed to prepare qualified people who can manage life requirements in different times with different fields and sectors (Murphy, 2020). With this technological evolution, knowledge development and the challenges imposed by COVID-19 and increased the need for modern learning strategies that are compatible with the new modern environments to improve teaching and learning activities, such as virtual learning environments and distance learning alongside their electronic media platform to sustaining higher education especially (Mahfoodh & AlAtawi, 2020). Accordingly, aspirations have begun to integrate the implementation of the usual learning and teaching strategies recognized in educational institutions and between computerized education and e-learning, known as blended learning resulting from the applying the positives of both methods in learning and teaching environment. This situation has been primarily caused by the emergence of a scientific and technological revolution and an explosion of knowledge. Thus, it led to the accumulation of discoveries, theories, and technological applications, in novel ways to human life, particularly focusing on changes in all aspects of life. As a result, it was necessary to respond to these changes by employing knowledge and technology to keep pace with the nature of the era and the response to transformations that include different areas of life (Mladenova et al., 2021).

Among these strategies is multimedia strategy, which plays an important and effective role in dealing with the huge amount of information and then delivering it to the users. The multimedia used in the educational process is one of the most important developments in the learning and teaching process. In a study conducted by (Çeken & Taşkın, 2022), 136 journal articles related to multimedia learning principles, learning environments, measurements, topics, learning outcomes, research methodologies, educational programs, educational fields, and publication years were identified and then reviewed. The results demonstrated a growing interest in the principles of multimedia learning. The authors indicated that undergraduate students were the target group in the review studies, and only five studies discussed one of the principles of multimedia learning in a virtual reality environment. On the other hand, no studies covered the augmented reality learning environment. In addition, most studies were in favor of subjective measurements (e.g., mental effort and difficulty) or indirect objective measures (e.g., learning outcomes, eye tracking, and study time). Also, most subjects were from science, technology, engineering, and mathematics (STEM) fields that are often preferred in research.

Mayer (2014) indicated in the cognitive theory of media learning that using computerized multimedia improves students' ability to make audio-visual representations when presented. Thus, these representations act as stimuli

that stimulate the brain to recall previous knowledge and link it to current data to find the appropriate solution. To achieve optimal use of multimedia in the educational process, it is necessary to employ the multisensory approach and the interactive approach together (Butcher, 2014). Also, in the teaching and learning processes student's learning styles and the appropriate types of multimedia must be studied without fear of adapting the content or losing the importance of information (Abella et al., 2022). Among these styles is the VAK style, which was developed by psychologists in the twenties of the last century to classify the most common styles and methods of education among people. VAK stands for the first three letters of the three famous learning styles: visual, auditory, and kinesthetic. According to the model, people generally learn through one of these styles. Education has evolved and adapted to different technological contexts and societal realities. For this reason, more and more teachers are trying to use multiple resources and diversify learner-centered forms and methods to deal with these varied technological contexts and realities, treating each individual as a special case where emotions and the process of perceiving and assimilating knowledge differ with each individual and each of their learning styles (Burak & Gultekin, 2021; Ozaydin Ozkara & Ibili, 2021; Tyng et al., 2017; Zillmer & Mussmann, 2023).

Learning styles have dominated educational practice for many years ago, which makes it acceptable more and more worldwide. Despite the lack of evidence in support of the concept, there is widespread interest among teachers in applying learning styles (Dekker et al., 2012). Dekker showed that more than 90% of teachers believe there is an optimal delivery style for each learner, and it is led to reducing the gap between neuroscience and education which may lead to misconceptions. Knowing and determining the learners' learning style is an important factor that makes it easier for the teacher to do his work, especially with using multimedia that meets the learning style – this shows that learning style reconfirms the fact that individual differences exist. It should not be used as an educational preference in light of the technological revolution, diversity, and abundance in using learning methods and strategies. Studies have shown that learning styles are conducted by more than 90% of teachers worldwide, even that there is no relationship was found between students' self-assessment and teachers' assessment. It was suggested that teachers cannot assess the LS of their students accurately (Papadatou-Pastou et al., 2018). This notion means that we should realize a trusted universal model. We all differ from each other. Because of this, many students, parents, teachers, administrators, and even researchers feel that we should conduct the people's preferences to learn visually, auditively, kinesthetically, or whatever other way one can think of. Consequently, we should consider learning situations and learning materials to those preferences. Most so-called learning styles are based on types; they classify people into distinct groups (Kirschner, 2017).

In their study, Mora et al. (2021) evaluated the relationship between channels of perception and cognitive methods, through the analysis and sharing of concepts over time, where two educational strategies were created and applied for learning through experience and application. The channels are characterized by VAK, Styles with CHAEA, and Performance. It was found that the channels of perception and methods have a future and played an effective role in the teaching and learning process. The authors, additionally, reported that people who use different perception channels and multiple methods in the learning process develop more skills and achieve better results. Games are among the activities that stimulate all cognitive channels in building knowledge, thus improving performance with positive differences (p values between 0.014 and 0.022).

During COVID-19, most educational institutions resorted to distance learning, and most higher education institutions used the emergency remote teaching strategy, which can be considered a branch of distance education (Hodges et al., 2020). This type of teaching is distinguished by the fact that it is intended for emergencies, as the mechanism of application and practice is not planned, and there are no options available to the teacher but to use the resources that are at hand at the time. From this position, researchers from all over the world have begun to study a variety of teaching and learning-related topics that rely on multimedia technology to present educational content to the learner in a way that is representative, effective, and in tune with each student's learning style.

The learner's participation in digital or online learning is one of the challenges of distance learning that have been receiving great attention in academia. The present study has included the personal character of each student to the content of digital learning to encourage and motivate students to participate and interact during the distance teaching process. Therefore, it is necessary to determine the levels of student participation and understand the relationship between learner participation and academic achievement. Students' participation and interaction depend on the degree to which learning is customized through digital content that matches each student's learning style. As a result, it is necessary to direct the performance of faculty members in designing the activities and digital content in harmony with students learning styles (Bond et al., 2021). The integration of some multimedia, such as educational videos can make learning more efficient than applying multimedia principles. Video animations can also illustrate complex concepts and dynamic processes common in health science education and other sciences (Tackett et al., 2021).

From a scientific perspective, academic achievement is linked to the learner's active participation and interaction with content, especially in an informal online learning environment. Online learning has shown significant growth in higher education institutions since the early 2000s. According to National Center for Educational Statistics (2020), the control-value theory of achievement emotions describes how specific emotional experiences are triggered in academic settings. Also, the associations between achievement emotions and learning outcomes assume that achievement emotions are an additive function of students' learning outcomes. That is achievement emotions are independent of one another, and there is no interaction among them (Cheng et al., 2023). To enhance the performance of online learning, it is necessary to examine how multi-dimensional learner participation affects the outcomes of basic and experiential learning. An online survey was conducted to investigate the effect of using information modeling, and the results showed that behavioral engagement, cognitive engagement, and emotional engagement have a significant impact on learning outcomes. In addition, the pursuit of good learning outcomes in an informal online learning environment is not just a technological structure or pedagogical guidance but also a process of creating a complete integrated learning environment that enhances the personal and social value of students and serves as an engine and mediator for better educational outcomes (Wang et al., 2022).

Hence, when addressing the great impact of blended learning, all aspects of the life of learners should be considered. Educational systems have become vital for developing this form of blended learning to match students' needs and different learning styles. Also, it should be noted that the volume of information in all branches of knowledge has increased. In addition, learners should be assisted in facing the global challenge – this has resulted in a boom in e-learning.

Therefore, educational learning situations designed based on blended learning models that depend on learning and teaching theories can lead to the desired educational activities that result in effective learning, which takes into account to a large extent the design and development of digital content compatible with the needs and styles of students to increase their motivation to learn indirectly. Thus, compared to other e-learning styles, it increases their participation and interaction with the content, which will reflect on their performance and academic achievement, thus increasing the effectiveness of learning, creating learning goals, and enhancing positive participation by the learner, and this leads to the enrichment of human knowledge and raises the quality of the teaching-learning process.

Here, the importance of motivation must be pointed out. Segbenya et al. (2022) found a relationship between the availability of tools and online presentation methods and the use of online learning. Hence, these factors are essential for successful online learning. Students' motivations in the educational content are embodied in the interrelationship between the student's characteristics and the characteristics of this content. In this regard, the student's characteristics related to his learning style must agree with the interactive characteristics of the content, and the more this content is in harmony with the student's characteristics, the more effective and dynamic the learning. Hence, educational content must be designed in a manner that suits students' learning styles and is in line with their tendencies and desires.

It is possible to identify the student's preferred learning styles through the educational environment. This notion is because providing an educational environment rich in educational resources helps the teacher to identify the preferred learning style for each student. It allows the educational environment with its multiple elements to express the learning styles, as learning styles are described as the way one prefers to understand the experience and turn it into knowledge (Abu Hussein, 2014).

Proceeding from previous literature, the importance of designing digital educational content appropriate for students' different learning styles (visual, audio, and kinesthetic) in university education or higher education, in teaching some university subjects, including Life Skills. Hence, the importance of this study comes to interest in the necessity of studying the impact of using digital educational content based on learning style (audio, visual, or kinesthetic) used in blended learning on the academic achievement and motivation toward students' learning of Life Skills at Al al-Bayt University during COVID-19, that will be the first stage in future to customized blended learning, or advanced blended learning which will distinguish this study.

Statement of the Problem

Given the current challenges imposed on us by COVID-19 (Nuere & De Miguel, 2021), which forced us to keep pace with the rapid progress of educational technology and its impact on the teaching process, the use of technological technologies has become indispensable to achieving comprehensive development in various aspects of the educational process. It starts from the base of developing teaching methods and strategies in line with students' learning styles, as the use of technology in education is an effective means of developing these methods

and strategies, increasing students' absorption of the curricula, and their possession of skills and experiences that enable them to deal with the current data and challenges. In addition, it is necessary to the awareness of technological innovations and invest their potential in the field of education, each according to his learning style. Hence, digital educational content must be designed in a manner that is commensurate with the student's learning style to create an individual capable of dealing with the variables of this era.

Online education through digital content has addressed the limitations of the traditional classroom in terms of time and space (Cecilio-Fernandes et al., 2020). Moreover, it provides students with comprehensive self-learning services, taking into account the different learning styles, with the individual privacy of the learner, self-responsibility, and interaction as the core principles that form the theoretical basis for these modern ways and methods of learning (Su et al., 2022).

Among the most prominent learning strategies that emerged from technological innovations that can be used in the educational field at present are the blended learning strategy and the distance learning strategy. Since the studies on the determination of learning styles (audio, visual, or kinesthetic) and the designing of digital educational content based on learning styles at Al al-Bayt University, in particular, and in Jordan, in general, are almost non-existent, there is need to conduct studies on this strategy to provide feedback on the feasibility of the impact of using digital educational content based on the learning style (audio, visual, or kinesthetic) on the academic achievement and development of motivation towards learning among students of Life Skills at Al al-Bayt University during COVID-19.

Research Questions

This study aims to answer the following questions:

1) What is the effect of using digital educational content designed by learning styles (audio, visual, or kinesthetic) on the academic achievement of students of the Life Skills subject at Al al-Bayt University during COVID-19?

2) What is the effect of using digital educational content designed by learning styles (audio, visual, or kinesthetic) in developing the motivation towards learning among students of the Life Skills subject at Al al-Bayt University during COVID-19?

Objectives of the Study

This study aimed to identify the effect of using digital educational content designed by learning styles (audio, visual, or kinesthetic) on the academic achievement and development of motivation toward learning among students of the Life Skills subject at Al al-Bayt University during COVID-19.

Significance of the Study

The problem of integrating technology into education is one of the most important contemporary problems. This

integration cannot succeed without effective contributions by learners. The use of a blended learning strategy is one of the examples of this integration, which requires certain skills that the student should possess to benefit from this technology. The subject of this study is important in several respects as described below:

- This study takes its significance from the importance of integrating technology as a contemporary and important educational trend in education in general, to master learning.

- There has been a lack of research in the field of the current study. This study is one of the few studies in digital educational content designing based on the determination of learning styles (audio, visual, or kinesthetic) in the academic achievement and development of motivation toward learning among students of the Life Skills subject at Al al-Bayt University. The university seeks to introduce blended learning in all subjects. Therefore, it is necessary to start thinking about how to design customized content in the blended part. It is expected that the current study will get a new imprint on the reality at the university. Thus, this study is expected to help enrich the knowledge and performance aspects of the educational process at the university.

- This study defines the positive reflections of designing the existing digital educational content and determining learning styles (audio, visual, or kinesthetic) in the academic achievement and development of students' motivation toward learning. It is one of the necessary skills for the learner in the era of information and communication technology:

1. Providing those concerned in the university administration and faculty members in universities and others with recommendations related to the importance of using and designing courses in university education.

2. Providing an empirical basis for using digital educational content based on identifying learning styles (audio, visual, or kinesthetic) in the educational process as an alternative element to try to reduce the burden on students.

3. Assisting decision-makers in the education field and setting plans by highlighting the degree to which teachers possess the necessary skills to design digital content based on different learning styles in the teaching-learning process.

Methods

The study relied on the experimental approach with a quasi-experimental design. The design is based on selecting students who were studying Life Skills for the second semester (2019) and dividing them into two groups. The control group studied using the usual method followed at Al al-Bayt University where the material used in blended learning on an e-learning platform is represented in the paper content of the student's book). The experimental group studied using digital educational content based on learning styles (audio, visual, or kinesthetic).

The researchers used the VAK model to determine the students learning styles as the overwhelming majority (89%) of recent research papers listed in the ERIC and PubMed research databases, implicitly or directly endorse the use of learning styles in Higher Education dominated by the VAK and Kolb Learning Styles models (Newton, 2015). The study sample consisted of undergraduate students at Al al-Bayt University who were studying Life Skills for the second semester (2019). The experimental group consisted of 55 students whereas the control group consisted of 50 students.

Instruments

The study instruments were designed and developed based on the literature review. The first instrument was the academic achievement test comprising 25 objective questions of multiple-choice type. They were prepared according to the specification table for the two units (the concept of Life Skills, their characteristics, and their importance) of the Life Skills subject to be taught to undergraduate students at Al al-Bayt University. The students were instructed to choose the correct answer to the question from four alternatives, only one of which is correct. The students were also tested with 25 items, and each item was worth two marks. The student's academic achievement in the Life Skills subject can be inferred by the overall mark that he takes on the academic achievement test.

To verify the validity of the test, it was presented in its initial form to a group of 10 experts with specialization in curricula and teaching, educational technology, measurement, and evaluation. The test was amended according to the observations of 80% of the arbitrators. As for the constructive validity of the academic achievement test, the structural validity of the academic achievement test was verified by calculating the Pearson correlation coefficient between the item score with the test's total score. Table 1 shows the results.

Table 1. The Values of the Pearson Correlation Coefficients for the Items of the Academic Achievement Test with the Total Score of the Test

Item	Correlation coefficient with the total score	Item	Correlation coefficient with the total score
1	.130**	14	.452**
2	.266**	15	.474**
3	.320**	16	.393**
4	.345**	17	.355**
5	.349**	18	.677**
6	.554**	19	.541**
7	.562**	20	.682**
8	.567**	21	.548**
9	.602**	22	.573**
10	.732**	23	.449**
11	.741**	24	.492**
12	.652**	25	.360**
13	.392**		

** The correlation coefficient is significant at the level of 0.01.

It is noted from Table 1 that the correlation coefficients of the academic achievement test items with the total score of the test were positive and statistically significant. These values are acceptable for the study and indicate the structural validity of the test.

To verify the reliability of the academic achievement test, the test-retest method was used. The test was applied

to a pilot sample of 25 respondents from outside the study sample with an interval of two weeks between the two applications. Then, the reliability coefficient was calculated using the Pearson correlation coefficient. The reliability coefficient was 0.89 using Keodor Richardson's equation 20. The reliability coefficient was 0.82.

The second instrument: The motivation scale was developed to measure the motivation toward learning to answer the study questions. Taking advantage of the tools of previous studies, this tool was developed, and its final version consisted of 25 items that included motivation using a five-point scale (always, often, sometimes, rarely, never). The motivation scale was corrected as follows: always (5 degrees), often (4 degrees), sometimes (3 degrees), rarely (2 degrees), never (1 degree). To verify the validity of the scale, it was presented to a group of 10 experts with specialization in curricula and teaching, technology, education, and educational psychology. They checked the integrity of the linguistic formulation of the items, their degree of clarity, and their relation to the measured dimension. Modifications were made based on the consensus of the majority of experts, and then the tool in its final version consisted of 25 items.

The structural validity of the scale was verified by calculating the Pearson correlation coefficient between the item score with the total score of the scale. Table 2 shows the results.

Table 2. The Values of the Pearson Correlation Coefficients for the Items of the Motivation Scale with the Total Score of the Scale

Item	Correlation coefficient with the total score	Item	Correlation coefficient with the total score
1	.172**	14	.820**
2	.222**	15	.632**
3	.425**	16	.425**
4	.385**	17	.337**
5	.354**	18	.387**
6	.542**	19	.652**
7	.587**	20	.340**
8	.625**	21	.391**
9	.694**	22	.985**
10	.875**	23	.910**
11	.802**	24	.874**
12	.825**	25	.870**
13	.741**		

** The correlation coefficient is significant at the level (0.01).

It is noted from Table 2 that the correlation coefficients of the items of the motivation scale with the total score of the scale were positive and statistically significant. These values are acceptable for the study and indicate the structural validity of the scale.

To verify the reliability of the motivation scale, the test-retest method was used. The motivation scale was, thus,

applied to a pilot sample consisting of 25 individuals from outside the study sample with an interval of two weeks between the two applications. The reliability coefficient was calculated using the Pearson correlation coefficient, with a reliability coefficient of 0.92. The internal consistency method was also used, namely Cronbach's Alpha equation, where the reliability coefficient was 0.89.

Blended Learning Teaching Design

The following is an explanation of the method of teaching the students of the experimental group and the control group:

a) The control group studied using the usual method whereby the material was taught using a blended learning strategy via the platform Moodel. The instructor uploaded the usual material for all the students in the same form during the second semester of the academic year 2019/2020. He explained and presented the information to the group members, identified the important points in the material, and asked questions to them through the e-learning platform concerning the student's paper book available in the libraries. The role of the students was limited to receiving information and answering questions, and students also had limited participation.

b) The experimental group studied whereby the material was uploaded in a blended learning strategy using the platform Moodel by the instructor during the second semester of the academic year 2019/2020. These materials included digital content designed based on the learning style (audio, in the form of interactive audio recordings, visual through interactive videos covering the content, and kinetic by providing a set of examples in the form of a question-and-answer practice). The instructor explained the information to the group members, identified the important points in the material, and asked them questions.

A learning style identification test was conducted for all students of the experimental group to determine their learning styles for each student through a website (http://dquiz.net/quiz74). Then, the instructor divided the students into three learning style sets in the experimental group based on the learning style identification test that was conducted by the instructor, where the first group consisted of students of the type of visual learning style. The second group included students of the kinesthetic style, and the third group included students of the auditory style. The researchers worked and designed the digital educational material and produced it according to the learning style of each group and provided them with the material through Moodle platform under the supervision of the subject's instructor.

Statistical Processing

This study adopted appropriate statistical methods obtained from data analysis. Descriptive and inferential statistics methods of mean and standard deviation were used. Also, the accompanying one-way analysis of variance (ANCOVA) was used to detect the significance of differences in the arithmetic averages of students' scores in the post-test of the (total) academic achievement test according to the teaching method variable. In addition, the researchers used the Eta square to detect the effect size of the teaching method variable. The grades

for the motivation scale items were calculated using arithmetic averages after being arranged in descending order.

Results

The First Question States: What is the Effect of Using Digital Educational Content Based on Learning Style (Audio, Visual, Or Kinesthetic) on the Academic Achievement of Students of the Life Skills Subject at Al Al-Bayt University during Covid-19?

To answer the first question of the study, the arithmetic means and standard deviations of the academic achievement of the two study groups on the post-academic achievement test and their tribal scores were calculated according to the teaching method. Table 3 shows the results.

Table 2. Means and Standard Deviations of the Academic Achievement of the Two Study Groups on the Post-Academic Achievement Test and their Pre-Scores According to the Teaching Method

Group	Number	Total	Pre test		Post test	
			Mean	S.D	Mean	S.D
Experimental	55		32.93	9.70	43.86	5.01
Control	50	50	31.77	10.16	39.50	7.32
Total	105		31.85	9.83	41.80	6.53

Table 3 shows an apparent difference between the averages of the two study groups on the post-academic achievement test. The experimental group that studied using digital content based on learning style (audio, visual, or kinesthetic) during blended learning achieved a mean of 43.86. Finally, the control group that studied traditionally scored a mean of 39.50. To ensure that the difference between the mean of the two study groups is statistically significant at a certain significance level ($\alpha = 0.05$), the one-way analysis of variance (ANCOVA) was applied. Table 4 presents the results.

Table 4. The Results of the Associated One-Way Analysis of Variance (ANCOVA) for the Differences in the Academic Achievement of the Two Study Groups on the Post-Academic Achievement Test According to the Teaching Method

Variance source	Squares sum	df	Squares mean	F value	Sig	Eta
Pre-test application	86.273	1	86.273	2.294	0.136	
Teaching strategy	258.351	1	258.351	6.869	0.011	0.117
The error	1955.675	102	37.609			
Average total	2302.8	103				

Table 4 shows that the value of F calculated for the difference in the academic achievement of the two study groups on the post-academic achievement test according to the teaching method was 6.869. They are significant values at the significance level of (0.011). Thus, it is confirmed that the difference between the two study groups on the post-academic achievement test according to teaching method is statistically significant. This result proves that the first null hypothesis, which states: "There is no statistically significant difference (at $\alpha = 0.05$) between the average scores of students of the experimental and control groups in academic achievement curriculum for

students of Life Skills," was rejected.

To identify that the indicated difference is in favor of any of the two groups, the modified means and standard errors were extracted for the academic achievement of the two study groups. Table 5 displays that difference.

Table 5. Modified Means and Standard Errors for the Academic Achievement of the Two Study Groups on the Post-Academic Achievement Test According to the Teaching Method

Group	Number	Total	Modified arithmetic mean	S.D
Experimental	55	50	43.85	1.14
Control	50		39.51	1.20

Table 5 shows that the experimental group studied using digital content based on learning style (audio, visual, or kinesthetic) during blended learning scored an average arithmetic mean of 43.85. Finally, the arithmetic mean of the control group, which was studied traditionally scored a mean of 39.51. This result indicates that the difference was in favor of the average of the experimental group compared to the average of the control group. The result confirms the effect of using digital content based on learning style (audio, visual, or kinesthetic) during integrated learning in the academic achievement of Life Skills students at Al al-Bayt University. This result was confirmed by the value of Eta squared. It expresses that the size of the effect that this method has on academic achievement is equal to 0.117, demonstrating that 11.7% of the difference in academic achievement is due to the method of teaching, whereas the remaining percentage of the difference in academic achievement is equal to 88.3% due to other variables not addressed in the current study.

The Second Question States: What is the Effect of Using Educational Content Based on the Learning Style (Audio, Visual, or Kinesthetic) in Developing the Skill of Motivation toward Learning among Students of the Life Skills Subject at Al Al-Bayt University during Covid-19?

To answer the second question of the study, the means and standard deviations of the two study groups' academic achievement on the total score of the scale of motivation towards dimensional learning and their tribal scores were calculated according to the use of digital content based on the learning style (audio, visual, or kinesthetic) during blended learning and the usual method. Table 6 displays the results.

Table 6. Means and Standard Deviations of the Academic Achievement of the Two Study Groups on the Total Score of the Scale of Motivation toward Post-Learning and their Post-Scores According to the Teaching Method

Group	Number	Total	Pre test		Post test	
			Mean	S.D	Mean	S.D
Experimental	55		68.28	5.26	98.38	4.20
Control	50	125	65.04	4.22	78.12	6.99
Total	105		66.75	5.02	88.80	11.66

Table 6 shows an apparent difference between the averages of the two study groups on the total score of the scale

of motivation toward dimensional learning. The experimental group scored a mean of 98.38. Finally, the mean of the control group that studied traditionally was 78.12. To ensure that the difference between the mean of the two study groups is statistically significant, at the selected level of significance ($\alpha = 0.05$), the one-way analysis of variance (ANCOVA) was applied. Table 7 depicts the results.

Table 7. The Results of the One-Way Analysis of Variance (ANCOVA) for the Differences in the Academic Achievement of the Two Study Groups on the Total Score of the Scale of Motivation toward Distance Learning, According to the Teaching Method

Variance source	Squares sum	df	Squares mean	F value	Sig	Eta
Pre-test application	77.761	1	77.761	2.472	0.122	
Teaching strategy	4637.428	1	4637.428	147.425	0.000	0.739
Error	1635.72	102	31.456			
Average total	7342.8	104				

According to Table 7, the value of F calculated for the difference in the academic achievement of the two study groups on the total score of the scale of motivation toward distance learning according to the teaching method was 147.425. This result is considered significant at 0.000. Thus, it is confirmed that the difference between the two study groups on the total score of the scale of motivation toward post-learning according to the teaching method is statistically significant. As a result, the third null hypothesis was rejected. The hypothesis states that "there is no statistically significant difference (at $\alpha = 0.05$) between the mean scores of the students of the two groups (experimental, which studied using the model of determining the learning style (audio, visual, or kinesthetic) based on blended learning), and the control group (which was taught in the usual way) in increasing motivation toward learning among students of the Life Skills subject.

To identify that the indicated difference was in favor of any of the two groups, the modified means and standard errors of the two study groups were extracted. Table 8 provides the results.

Table 8. Modified Means and Standard Errors for the Academic Achievement of the Two Study Groups on the Total Score of the Scale of Motivation toward Post-Learning According to the Teaching Method

Group	Number	Total	Modified arithmetic mean	standard errors
Experimental	55	125	97.99	1.07
Control	50		78.55	1.13

It is shown in Table 8 that the experimental group that studied using digital content based on learning style (audio, visual, or kinesthetic) during blended learning scored a medium mean of 97.99. Finally, the mean of the control group, which was taught by the traditional method, was 78.55. This result indicates that the difference was in favor of the experimental group by comparing its mean with that of the control group. The result also confirms the effect of using digital content based on the learning style (audio, visual, or kinesthetic) during blended learning in increasing the motivation toward learning among students of the Life Skills course at Al al-Bayt University. The value of eta squared expresses that this method had on the total degree of motivation towards learning was

0.739. This result shows that 73.9% of the difference in the total degree of motivation towards learning was due to the teaching method, and the rest of the difference in the total degree of motivation towards learning was 26.1% due to other variables that the current study did not address.

Discussion

The results of this study showed that there were statistically significant differences between the averages of the academic achievement test in favor of the group that was studied using digital content based on learning style (audio, visual, or kinesthetic) during blended learning. The researchers attribute this outcome to the fact that the suitability of the digital content materials that are compatible with the students learning style of each student made the educational process more enjoyable, which the student's comprehension and understanding increased through online media, this integration thus increased the interaction and interactivity with the academic achievement subject the affect the academic achievement in evaluation and assessment process (Faridah et al., 2020). These results go with those of Buabeng-Andoh (2018) that showed that the application of digital learning materials makes students more independent in learning and deepening teaching materials because students can study anytime and anywhere, both online and offline based on their learning style, and learning evaluation is carried out by this application. Mansurjonovich (2023) assure "Google Classroom allows the user to go truly paperless, improve the student body and provide different instructions for students, save time, save paper, and create an inverter model of the classroom.". The format of the digital content was designed with all the goals to be achieved in the scientific subject of the Life Skills subject at Al al-Bayt University, and this may constitute an additional value for the electronic teaching methods used, especially in the subjects that may need to embody some concepts and knowledge (Christopoulos et al., 2022).

Preparing students for success in today's technology-driven modern workplaces requires educators who possess pedagogical skills, deep content knowledge, and the technical expertise to seamlessly incorporate new technologies into their teaching methods and curricula (Mallik et al., 2023). Learning styles are essential in developing knowledge and perception. They reveal how much a person will learn and how far he wants to go. All these things can be determined throughout one's life by designing learning for them as individual learners considered the learning style to high academic achievement level (Pentang et al., 2022). The use of digital content based on learning style (audio, visual, or kinesthetic) during blended learning increased the student's interaction with the content available at any time. Also, it suits him and his learning style with the possibility of enhancing the student's discussion of the same learning style of the available content, which increased his awareness. This result is in agreement with that of Cunningham (2017), who reported that the use of new technologies reduced the restrictions on communication abilities, feelings of separation from teachers and peers, and the possibility of dropping out. This notion is what educational informatics researchers have been arguing about active learning.

The results of this study also showed statistically significant differences between the averages of motivation in favor of the group that studied using digital content based on the learning style (audio, visual, or kinesthetic) during blended learning. The researchers attribute this result to the fact that the students know their preferred way of learning in the teaching and learning process so that students can learn better and increase their sense of

belongingness to the classroom. Such content reinforced the process of individualizing education and increased motivation toward learning (Naufal & Purnamasari, 2022). Some specialists have begun to think about the possibility of improving the quality of educational content and interaction capabilities in these environments by digitalizing it to increase motivation toward learning, including the importance of simulation models that may be used in these environments, which lead to effective learning and training in a safe environment (KH & WT, 2022). Failure to depict some abstract concepts sometimes, rote knowledge of knowledge, and low-class participation may cause students to feel bored, leading to inefficient and low confidence in learning. Therefore, the use of digital content based on learning style leads to deepening students' understanding of concepts and increasing the interaction and immediate reactions, which helps to stimulate their interest in learning, enhance the impact of learning and reduce their cognitive burden (Wang et al., 2022). Computer-Supported Collaborative Learning represents a promising innovation that enhances education with the aid of modern technologies. Nonetheless, the method of suggesting collaborative activities to students, while considering their individual learning requirements and preferences, has become an increasingly significant topic of concern. This outcome is employed to make activity recommendations to the students. The findings indicate a substantial level of pedagogical benefit and effectiveness in our approach, along with its favorable influence on the learning process.

Conclusion

This rapid technological development in the educational process, not only imposes on us the need to adopt it in the educational process but also pushes us to strive to individualize the education process for students. Individual differences must always be taken into account when designing any educational content. Knowing the learning style of each student will allow his development and increase his cycle and effectiveness in the learning process (Arritola et al., 2009). Further, the educational content should be designed in proportion to its learning style, thus increasing its interaction with this content. This interaction relationship is directly proportional to the success of the educational process (Hood et al., 2015; Gillani et al., 2014). When adding the digital feature, any difficulties or challenges that will face the educational process at all levels will disappear. Here, it is necessary to refer to the importance and role of the teacher in the process of exploiting technology in teaching design. It should center on the learner in the first place in proportion to his learning style and needs (Barnard-Brak et al., 2010). Providing the results of such studies will allow decision-makers to put direct efforts toward the desired goal (Gedera et al., 2013).

In light of the results of the study, the researchers make the following recommendations:

- Disseminating the experience of the impact of using digital educational content based on learning styles (audio, visual, or kinesthetic) on the academic achievement and motivation towards learning among students of the Life Skills subject at Al al-Bayt University during COVID-19 on various academic subjects at the university.
- Intensifying the efforts of educational institutions to provide students with the skills to increase their motivation.
- Urging the teachers and course coordinators to provide and produce the educational content of the materials following the different learning styles of students.

• Conducting new studies with different designs and measurement tools to investigate the impact of using digital education content based on learning style (audio, visual, or kinesthetic) in other academic subjects.

The study is subject to the following limitations:

Time: The study was limited to students of the Life Skills subject in the academic year 2019/2020.

Place: The research was limited to undergraduate students at Al al-Bayt University, the Hashemite Kingdom of Jordan.

Human: The study was limited to a sample of Al al-Bayt University undergraduate students studying the Life Skills subject for the academic year (2019/2020).

- The study relied on the use of tools prepared by researchers to study the effect of using digital educational content based on the learning style (audio, visual, or kinesthetic) on the academic achievement and development of motivation towards learning among students of the Life Skills subject at Al al-Bayt University during COVID-19.

 - The results of the study were determined by the degree of validity and reliability of the study tools, and the results of the study were generalized to the community from which the study sample was drawn.

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