THE EFFECTIVENESS OF USING FLIPPED LEARNING IN DESIGNING AND PRODUCING ELECTRONIC EDUCATIONAL AIDS FOR STUDENTS OF THE COLLEGE OF EDUCATION

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ABSTRACT

This study aimed to identify the effectiveness of using flipped learning in designing and producing electronic educational aids for students of the College of Education. Education and those who study the design of educational aids course at Al-Ahliyya Amman University, where they were divided into two groups: one of them was experimental, consisting of (40) male and female students who were taught using flipped learning, and the other was a control group, whose number reached (39) students who were taught in the usual way During the second semester of the year (-2021-2020), the researcher prepared a teaching guide for this course according to the flipped learning strategy, in which he used the experimental group to teach it according to the strategy. And a post-achievement test to measure students’ achievement, and the data were statistically treated using the accompanying one-way analysis of variance and came out with several results, which were the presence of a statistically significant difference at the significance level ($\alpha = 0.05$) between the mean The responses of the students of the experimental group who studied using flipped learning and the average responses of the students of the control group who studied in the usual way, in favor of the experimental group that studied using flipped learning, and in light of these results, the researcher recommended a number of recommendations, the most important of which is the need to continue paying attention to the strategy Teaching related to flipped learning as it supports students’ learning, working to attach teachers to training courses in order to perfect the learning strategy using flipped learning.

Keywords: Flipped learning, electronic teaching aids, students of the College of Education

I. INTRODUCTION

Educators are particularly interested in the process of education, delivering knowledge to the learner and creating his desire for research and exploration, and work to reach knowledge. Therefore, it is no secret to the practitioner of the teaching and learning process that educational aids are of great importance in providing sensory experiences that are difficult to achieve in the natural conditions of educational experience. As well as in overcoming the obstacles that hinder the clarification process if it is based on reality itself, and the importance of the educational method stems, and its purposes that it performs in the learner are determined by the nature of the goals that the method is chosen to achieve from the educational material that the students want to learn, and then from the cognitive growth levels of the learners. The educational means that are chosen for the lower educational stages differ somewhat from the means that we choose for the higher grades, or the advanced educational stages (Basha, 2020).

The names of educational aids differ from one user to another, sometimes they are called clarification aids, because they aim to clarify information, and other times they are called audio-visual aids, because some of them depend on listening, such as radios, audio recordings, and lectures. . . etc., and some of them depend on the sense of sight, such as silent films, photographs and others, and some of them capture the two senses, such as talking films and television. It often increases his burden, as he must choose it with great care, present it at the appropriate educational time, and work to connect the experiences provided by the teacher himself, which are treated by the chosen medium, and thus his message becomes more effective and deeper in impact (Abdul Moati, 2019).
Among the strategies that countries have taken care of is that learning be centered on the learner, and we find that active learning strategies achieve this goal, as active learning aims to activate the role of the learner in terms of learning, through experiments, research and relying on himself to obtain information away from Indoctrination and memorization, but rather by teamwork and developing his abilities in thinking and solving problems, and the active learning philosophy focuses on research and experimentation, and linking what he learned with his previous experiences to form values and trends and acquire skills, as there are many active learning strategies that are centered around the learner. The learner is greatly affected, and one of the most important of these are the flipped classroom strategies, which use the flipped learning method (Al-Zaytawi, 2010).

The flipped classroom strategy has many advantages, represented in the good use of modern technology and its tools in the educational process, and the development of the role of the tutor to become a guide, motivator, guide and assistant, and the student’s participation in the educational process to become a teacher, participant and researcher, as well as helping students to self-learn according to their individual abilities and differences, as well. It is suitable for students who are shy about asking for partial repetition of the lesson, so they can repeat the lesson many times, make good use of class time and provide an interesting and enjoyable learning environment that helps attract students to learn, in addition to developing higher-order thinking skills such as critical thinking and twenty-first century skills, without helping to take into account the differences Individuality among students, whether the speed of learning or the method of learning or that. The students of one class have many individual differences. Some of them are alert and quick to learn, one time is enough to understand the teacher’s words, another needs repetition to comprehend the lesson, and a third is visual learning that needs images and representation to understand what is meant, and a fourth audio, and so on. The teacher can diversify the use of different influences in presenting his lesson to suit the different temperaments of the students. Strengthening the relations between the student and the teacher in the classroom through the participation of the teacher for students in different language activities and his direct supervision. And the development of cooperative learning skills, by dividing students in the class into groups and assigning them to competitive activities and applications that encourage students and train them to work together, and turn the student into a researcher for his sources of information, so that he can search and refer to information he has previously studied in previous lessons and review it if he forgot it as if he heard it directly (Ali, 2015).

Based on the foregoing, it was found that there is great importance for the production of educational aids in teaching students, and all universities and colleges of education are interested in teaching students to produce educational aids. Accordingly, this study came in order to explore the effectiveness of using flipped learning in designing and producing electronic educational aids for students. Faculty of Education

Study Problem

The design of educational aids is one of the most important practical skills that the teacher uses while explaining the lesson in our time, especially electronic means, and that the faculties of education in all universities contain a group of specializations and have unified courses, and among these unified courses there is at least one course that seeks to train students On the production of normal as well as electronic educational aids and the optimal ways to use them, Al-Bari study (2018) emphasized the importance of producing and learning educational aids for students of the College of Education, and Al-Hotri study (2020) indicated that there is a weakness in the production of electronic educational aids for teachers during the Corona pandemic, and the fact that Researchers are specialists in the field of educational sciences and teach some courses in universities. They have noticed a shortcoming in students’ education and mastery of the work of educational aids in general and electronic means in particular, and that Amman Al-Ahliyya University is one of the private universities available to researchers to apply this strategy to its students, it was chosen, and from this point of view A student-based learning strategy was chosen, which is the flipped learning strategy, as this strategy has been proven Its success in many learning styles, so the researcher decided to apply it.

To teach electronic teaching aids and to identify their effectiveness in them. The problem of this study also comes in answering the following questions:

1. What is the effectiveness of using flipped learning in designing and producing electronic educational aids for students of the College of Education at Amman Al-Ahliyya University?
2. To identify if there are statistically significant differences in the average scores of students of the College of Education in the test of designing and producing electronic educational aids according to the teaching method (normal, flipped learning).

Study Importance
The importance of the study lies in that it sheds light on a recent topic, which is the work of electronic educational aids, and this topic is important in our time, as we live in a recurring case of electronic education due to the Corona virus. As well as flipped learning, as well as the importance of the study through the recommendations reached by the study in finding appropriate ways to employ the flipped learning strategy, as well as using it in teaching skills related to electronic educational means or not using it, and that this study will benefit researchers and specialists in this field. It will be prepared from previous studies that focused on the subject of teaching aids and the flipped learning strategy, and it will provide a set of references that researchers can refer to by presenting them in this study.

Study Objectives
This study seeks to achieve the following objectives
1. Recognizing the effectiveness of using flipped learning in designing and producing electronic educational aids for students of the College of Education.
2. Identifying if there are statistically significant differences in the average scores of the students of the College of Education in the test of designing and producing electronic educational aids according to the teaching method (normal, flipped learning).

Study hypothesis
There are no statistically significant differences at the significance level ($\alpha \leq 0.05$) in the mean scores of the College of Education students in the design and production of electronic educational aids test according to the teaching method (normal, flipped learning).

Study Limitation
The study was limited to the following limits:
Spatial boundaries: College of Education at Hawalley University
Human Limits: Students of the Teaching Aids course
Temporal limits: the second semester of the year 2020-2021

Study Terminology
Teaching strategies: They are the tools that are used by teachers in order to improve the educational process and develop attitudes towards the good habits of students (Susan, 2018).

Flipped learning: It is also known as a strategy by which the teacher prepares a video that the students watch before coming to the class. (Alswat, 2014).

Previous study
Through the researchers' briefing on the studies related to electronic learning media, a group of previous studies was summarized, some of which dealt with the topic directly, and some of them were dealt with implicitly.

The study aimed to identify the repercussions resulting from employing the flipped classroom strategy in mathematics classes at the primary stage on the teaching practices of its teachers and the performance of their students. A student of the sixth grade of primary school, through the following tools: a teacher’s notebook, a participant’s note, and an interview. The study used thematic analysis (deductive, inductive); To analyze the data, the study reached a set of results, including: the flipped classroom strategy contributed to the development of mathematical achievement, classroom interaction, and the trend towards teaching and learning mathematics, in addition to its contribution to providing the opportunity for teachers to address a set of lesson ideas, and the use of many strategies during the lesson. and appropriate planning and preparation for the lesson, and recommended.

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the importance of training teachers to employ techniques in teaching mathematics, and to produce educational videos (videos) for mathematics lessons.

Al-Lahibi & Rayes (2020)

The current study aimed to identify the attitudes of faculty members in Saudi universities towards the use of flipped learning and the obstacles to its application in teaching. The study followed the descriptive approach. It was applied to a random sample of (220) members of the teaching staff in the faculties of education in a number of Saudi universities, during the first semester of the academic year 1440/1439 AH. To achieve the objectives of the study, a questionnaire was designed consisting of four areas: the faculty member’s attitudes towards the role of flipped learning in teaching, the faculty members’ attitudes towards the importance of flipped learning for them, the faculty members’ attitudes towards the importance of flipped learning for university students, and the obstacles to using learning Inverted teaching in Saudi universities. The results of the study showed a very large positive trend in all fields of study. The results also showed the presence of several obstacles that prevent the use of inverted learning in teaching, while the results showed that there were no statistically significant differences in the attitudes of faculty members towards the use of inverted learning and the obstacles to its application in teaching, due to the variables of gender, academic rank, and number of years of experience.

(Jabara, 2019) Study

This study aimed to identify the attitudes of Arabic language teachers towards the use of the flipped classroom strategy in Palestine. To achieve the objectives of the study, the descriptive analytical method was used, and its tool was built for the study, which is a questionnaire consisting of (25) paragraphs that were distributed to a sample of (84) teachers of the Arabic language that was chosen by stratified random method according to the gender variable, where it was distributed to the study sample and after They were compiled, encoded, entered into the computer, and statistically processed using the Statistical Package for Social Sciences (SPSS) program, and its validity and stability were measured. The significance level (α = 0.05) in the average responses of the study sample members towards the use of the flipped classroom strategy in Palestine according to the variables (gender, specialization) There are no differences Statistically significant at the significance level (α = 0.05) in the average responses of the study sample members towards the use of the flipped classroom strategy in Palestine. Variables (educational qualification, job experience) are calculated. In light of the results of the study, the researcher suggested several recommendations, the most important of which were: the need to continue paying attention to the classroom's teaching strategy. Inverted as it supports students' learning, and works to enroll teachers in training courses in order to master the flipped classroom strategy

(Azzain, 2015) Study

It aimed to stand and identify a design model for the user of applying the flipped classroom strategy and its impact on the academic achievement of female students at the College of Education at Princess Nourah Bint Abdul Rahman University in Riyadh. The study used the experimental method on a sample of (77) female students from the College of Education by applying an achievement test In the Arabic language subject, where the stability was verified using the Torsi test, and the results were entered into the statistical package program and the data was processed statistically, and it came out with a set of results, the most important of which was the existence of the effectiveness of the strategy (the flipped class) in the academic achievement of the female students in the language subject.

Study) 2014(Rozinah,

The study aimed to use the flipped classroom to enhance participation and promote active learning. The study was conducted in a Malaysian university, the University of Science Malaysia. The research used the descriptive approach. The study sample consisted of (24) undergraduate students in educational design. The questionnaire was used to measure participation through Cognitive, skill and affective participation and self-learning, in addition to the benefits of using mirrored classes in promoting active learning primarily. The highest score in favor of students' emotional participation, followed by behavioral and cognitive participation.

Study) 2017, AlJaser ( 

The aim of the study was to measure the effectiveness of using the flipped learning strategy in academic achievement and self-efficacy among female students at the College of Education at Princess Nourah Bint Abdul Rahman University in the Kingdom of Saudi Arabia. The study adopted the experimental approach based on the experimental and control groups, where the experimental group was taught through the flipped learning strategy,
while the control group was taught by the usual method, and both groups (experimental and control) studied the course (class management) in the College of Education during the academic year 2017/2016. Two tools were used in this study: the achievement test and the self-efficacy scale. The results showed that the experimental group that was taught according to the inverted learning strategy was superior to the control group in the achievement test and the self-efficacy measure in the post application, which indicates the effectiveness of using the inverted learning strategy in academic achievement and self-efficacy among the students. The results also showed a positive relationship between the students’ scores on the achievement test and their attitudes on the self-efficacy scale; That is, if the scores on the achievement test increase, the self-efficacy increase.

Study) Karimi & Hamzavi, 2017

This study aimed to identify the impact of the flipped classroom strategy on developing the reading comprehension skill in English as a foreign language, and to identify students’ attitudes toward the flipped classroom strategy.

The study sample consisted of (50) students studying at the accredited private language institute in Isfahan. They were divided into two equal groups (experimental and control). The study followed the experimental method. A special test for reading comprehension and a measure of students’ attitudes towards the flipped classroom strategy was prepared. The results revealed that the students of the experimental group outperformed the students of the control group in reading comprehension skills. Moreover, the results of the post-application of the Attitude Scale showed the growth of positive attitudes towards learning English using the flipped classroom.

Commenting on the previous studies:

It was found that all previous studies dealt with topics related to the use of flipped learning, some of them were Arab and some were foreign, and that these studies ranged from 2014 to 2021, and this indicates that there is interest in this style of learning until the present time, and researchers took care of it tens of years ago. As we note that There are many previous studies that used the descriptive approach, and a large group used the experimental and quasi-experimental approach. This study benefited from the previous studies in developing a perception about the order of the research, the method used in the descriptive studies, the size of the samples, building the study tool and statistical treatments, where this study agreed with some previous studies. In the method used, the tool and the statistical treatments, and it agreed with all the studies in the method of selecting the sample and forming research questions and hypotheses, as it differed from previous studies in the nature of the study community, the number of study sample members and the title of the study

Study Approach

The researchers used the experimental method, with a semi-experimental design (Quasi Experimental Design) to identify the effectiveness of using flipped learning in designing and producing electronic educational aids for students of the College of Education. The other is experimental (students who study the design of electronic media according to the flipped learning strategy).

study community

The study population consisted of students of the Faculty of Education at Amman Al-Ahliyya University, for the second semester of the year (2020-2021), and their number was (245) students, according to the records of the Deanship of Admission and Registration.

The study sample

The researchers applied his study to a purposive sample of students who study the design of educational aids course, and the researchers chose two out of three class divisions, from students who study the design of educational aids in the College of Education at Amman Al-Ahliyya University.

study tool

The researcher used the academic achievement test, in order to achieve the objectives of the study, where the test consisted of 15 paragraphs, which are steps that must be applied when designing the educational aim.

reliability of the study tool

The reliability coefficient was calculated according to the midterm splitting after applying the achievement test to the students of the educational aids design course.

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With regard to the achievement test, the difficulty coefficients were found for all test items, and the coefficients of difficulty ranged between (0.35-0.76), and they agree with the educationally acceptable difficulty coefficients (0.35-0.84), which is an appropriate value and meets the purposes of the study.

**Study implementation procedures**
The researchers carried out the study procedures, according to the following steps:

1. Choosing the skills of designing educational aids to be taught to the study sample members.
2. The equivalence of the control and experimental groups was verified through their cumulative averages.
3. An explanation of the procedures of electronic educational aids in the light of the flipped learning strategy was prepared over (15) lectures, and an educational guide was prepared according to the flipped learning strategy.
4. Preparing an achievement test and presenting it to a group of arbitrators for arbitration.
5. Applying the achievement test to the students
6. Starting to teach the experimental group using the flipped learning strategy.
7. As for the control group, it was taught using the usual teaching strategy.
8. Analyzing and discussing the results, and making recommendations

**study design**

EG: O₁ X O₂
CG: O₁ __ O₂
CG: The Control Group.
EG: The Experimental Group
O₁: pre-achievement test
O₂: pre-achievement test
X : Experimental processing (flipped teaching)
- : normal, untreated

**Statistical manipulations**
Arithmetic means and standard deviations were extracted in order to know the results of the post-test, and Ancova test was used to show the differences in favor of those in the experimental and control groups, and (Cronbach's alpha) test was used to calculate the stability of the test.

**II. RESULTS**

This study aimed to identify the effectiveness of using flipped learning in designing and producing electronic educational aids for students of the Faculty of Education at Amman Al-Ahliyya University. One of them is a control one that was studied using the usual method, and the other is an experimental one that was studied according to flipped learning. The researcher designed a scale for designing and producing educational aids, and applying it to both groups, and the validity, stability and validity of the scale were confirmed to achieve the objectives of the study, then the data were collected, coded, processed and analyzed using the Statistical Package for Science (SPSS), and before starting to answer the study questions, the equivalence of groups was verified, and the following table shows that:

Table (1) Arithmetic averages and standard deviations of the scores of students of the College of Education for the two study groups in the pre-test
It is evident from the previous table that there are small differences between the arithmetic averages of the experimental and control groups, and this confirms that there was parity between the two groups.

The results were extracted as follows:

The results of the study questions

The first question:

The first question of the study stated: "What is the effectiveness of using flipped learning in designing and producing electronic educational aids for students of the College of Education?

To answer this question, the following null hypothesis was formulated:

There are no statistically significant differences at the significance level (α ≤ 0.05) in the mean scores of the College of Education students in the design and production of electronic educational aids test according to the teaching method (normal, flipped learning).

To test this hypothesis, the arithmetic means and standard deviations of the scores obtained by the students were extracted according to the scale of design and production of educational aids in the experimental and control groups. Table (1) shows these results.

Table (2) Arithmetic averages and standard deviations of the scores of students of the College of Education for the scale of design and production of educational aids according to the two study groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Repetition</th>
<th>Creative Thinking Pretest (out of 38)</th>
<th>directions pretest (out of 38)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>standard deviation</td>
<td>Average</td>
</tr>
<tr>
<td>Control</td>
<td>19</td>
<td>8.78</td>
<td>15.26</td>
</tr>
<tr>
<td>Experimental</td>
<td>19</td>
<td>4.28</td>
<td>17.47</td>
</tr>
</tbody>
</table>

The previous table shows an apparent difference in the arithmetic averages of students’ scores in the design of educational aids according to the control and experimental groups in the post-test, as the arithmetic mean of the control group was (16.26), while the arithmetic mean of the experimental group reached (23.47), meaning that there is a difference between the means. The arithmetic reached (7.14), and to clarify the significance of the statistical differences between these averages, the accompanying one-way analysis of variance (ANCOVA) was used, and the results were as in the following table (2).

Table (3) The results of the analysis of the unilateral variance associated with the effectiveness of the use of flipped learning in the design and production of electronic educational aids for students of the College of Education in the control and experimental groups according to the dimensional scale

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>squares Sum</th>
<th>Freedom Degree</th>
<th>Squares average</th>
<th>F value</th>
<th>Statistical significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>post test</td>
<td>934.572</td>
<td>1</td>
<td>934.572</td>
<td>41.73</td>
<td>0</td>
</tr>
<tr>
<td>Teaching method</td>
<td>272.961</td>
<td>1</td>
<td>272.961</td>
<td>12.188</td>
<td>0.001</td>
</tr>
<tr>
<td>Error</td>
<td>783.849</td>
<td>35</td>
<td>22.396</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>17213</td>
<td>38</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
It is clear from Table (3) that the null hypothesis is not accepted, and this means that the effectiveness of using flipped learning in designing and producing electronic educational aids for students of the College of Education in the usual way, the statistical significance reached (0.000), which is less than (0.05), and the difference is attributed to the method of Teaching (Flipped Learning, Ordinary) in favor of the experimental group that studied by Flipped Learning, and this means that students who studied by Flipped Learning method have increased production of teaching aids more than their counterparts who studied in the usual way.

Recommendations

Based on the results of the study, the study recommended a set of recommendations, which were as follows:

1. The need to continue paying attention to the teaching strategy of flipped learning, as it supports students' learning.

2. Working on enrolling teachers in training courses in order to perfect the learning strategy using flipped learning.

3. Faculty members in the College of Education should apply the Flipped Learning strategy in teaching all courses of the College of Education.

4. The necessity of holding workshops constantly in order to help the students of the College of Education to identify learning strategies, not just the flipped learning strategy.

5. The necessity of conducting a study in order to measure other specialized strategies and apply them to the learning of students of faculties of education.

REFERENCES

9. Basha, Maie (2020) The role of educational media in increasing students' motivation to learn from the point of view of male and female teachers in public schools in Iribid Governorate, Alpha Journal of Human Studies and Science, 1(3), 120-158.
13. Susan Rickey (2018),"a definition of teaching aids" ·classroom.synonym.com, retrieved. Edited

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