

# The effect of the inverted learning strategy on the achievement of second-grade secondary school students in the history subject

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## Abstract

*Because of the development that has taken place in all aspects of the twentieth century, educational systems do not only teach learners various sciences, such social studies through investing mental phases for educational stages and setting educational programs. These programs work on developing various mental skills and capabilities such as awareness, attention, focus and the ability to think properly. Investing minds is the logical investment in all societies to prepare people who are able to face the changes of life and its requirements, so institutions concerned focus on developing mental capabilities.*

*In the light of the above discussion, the researcher through her experience in the field of teaching, her knowledge of literature and studies and consulting the opinions of some male and female teachers of social subjects in general and history in particular notices that some methods of implementing the lesson depend on the experience of the school or the academic teacher. This experience does not suit the capabilities and qualification of the students. This makes the learners receptive and obeying the teacher's orders without providing sufficient opportunities to develop their abilities and skills such thinking.*

*Therefore, the current research problem is represented by the urgent need to improve these methods and the use of modern models and strategies in teaching. The problem also lies in the weak validity in the teaching methods used that were indicated by the results of the survey study.*

*In the light of those justifications and rationales, the current research problem takes shape in answering the following question (what are the effects of a flipped learning strategy on the achievement of second-graders average in the history subject?).*

**Keywords:** *learning strategy, achievement, history*

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## **Introduction**

The integration of technology in the educational process has become necessary in the modern world. This requires hard work to make technology an essential component of education. As technology dominates life, this generation needs technology to add excitement and eagerness to the various elements of the environment, such as the curriculum (Al Shamsi, 2013: 9).

Educators believe that diversity of teaching methods takes care of the tendencies of learners and reduces the individual differences in mental, psychological and social educational capabilities. This diversity also provides opportunities for learners to increase their interaction and their influence, and thus enhances what they learn in more than one way. Also, its effect goes deeper in their minds, souls and performance skills.

Education is considered a human necessity performing social functions and provides the learner and the society with the active force which push them to further scientific progress (Adas and Tawq, 1984:39)

This education is required to perform a planned process which leads to make the learning technique like (Atallah, 2010:14). Schools focus on achieving aims for which the curriculum is established which leads to the success of the education system (Salim, 2006:25).

The traditional syllabi that are successful in exams are one of the most important functions of the education subject and students must pass these exams to move to the next stage (Kampash, 2013:6).

Thus this method is a technique which is followed to reach a specific aim. Teachers must be ready to establish procedures to develop the education process more than to achieve a theory or an objective strategy. Therefore, the teacher must be always ready to help the administrative activities in their lesson (Kampash, 2013:15).

The use of modern method by teacher in general and flipped learning in particular provide a class atmosphere in which means and activities vary to encourage the teachers to improve their ideas because these strategies increase their ambitions and love to learning (Abu Nahleh, 2018:25).

In the light of the above discussion, the importance of the study appears.

Flipped learning is an important strategy to teach students and focuses on the activities of the learner rather than teacher. Also, this type of learning develops students' skills of thinking and creativity

### **Third: aim of the study**

The study aims at the following:

Identifying the effects of flipped learning in the progress the study population in the History subject.

### **Fourth: study hypothesis**

There are no statistically significant differenced at a significance level of 0.05 between the average of the students' scores, when flipped learning is used, and average score of the students who study using the traditional method of progress.

### **Fifth: limits of the study**

The study is limited to:

1. Public morning secondary school year two students of the General Directors of Education in Khalis province in Diyala City.

2. The third, fourth and fifth chapters of the second part of the book of Islamic Arabic history which the Minister of Education sets as a curriculum for the second year students of the secondary schools (2018-2019). The period of teaching is the second semester.

#### **Sixth: Vocabulary limits**

##### 1- Effect

-It is the ability to work on the study subject to achieve positive results and in case of failing. It could be a direct reason for negative consequences (Ibrahim, 2009:30).

It is the amount of change we see that can happen on the effector in the dependent variable after exposure to the independent variable (Shehata, and Al-Najar, 2003:22).

Procedural definition: it is the change of the students' scores of the experiment group and the control sample in the progress.

##### 2- Strategy

it is a military term which mean the art of using the available opportunities in an ideal way to achieve the aims (Sliti, 2008:35).

- Teaching strategy: it is defined by Al-Abdi et al. as sequential and in arrow group of teacher movements, which mean all the actions and activities that the teacher performs in the classroom such as introducing, presenting, discussing, illustrating, and interpreting difficult or new terms (Al-Abdi et al, 2006).
- 3- Flipped Learning: Al-Zain (2015) defines a teaching strategy as centered on students, not teachers. Students watch educational videos using audio-visual techniques, virtualization software and worksheets in their homes before class time. The teacher uses class time to provide an active interactive learning environment in which students are guided (Al-Zain, 2015, p. 6).
- Procedural definition of flipped learning. It is the level of the effect of the flipped learning strategy on the progress of the study sample by employing educational techniques to make learning take place outside the class in an interesting way and make the practical activities done in the classroom.
- 4- Achievement: Al-Ghamdi (2018) states that achievement is the ability of students to acquire information in an organized way that is inferred from the total scores obtained by students in the achievement tests presented to them. (Al-Ghamdi, 2018: 42).

Allam (2000) defines it as the degree of acquisition achieved by the individual or the level of success achieved in a specific study subject or training field (Allam, 2000: 305).

- 5- Procedural definition: it is the grades obtained by students of the research sample in the exams in the history subject using flipped learning strategy of the experimental group and the traditional method of the control group.

#### **Chapter two: Background theory and previous studies**

The activities that occur in a flipped learning strategy start with the constructivist theory (Johnson, 2012). The chapter in flipped learning depends on the constructivist theory, as students are viewed as thinkers who produce new theories about the world in which they live and work mainly in cooperative groups (Brook, 1999).

Flipped learning is not only a use of technology in the educational process; rather, it is a case in which appropriate and available technology is used to enrich the educational process, improve students' achievement, and provide new content for students at home before they come to the classroom session. During the lesson, the new content is performed through the students' practical applications, experiences, and discussions under the supervision of the teacher. Then the class

becomes a time for active learning, as students find sufficient opportunities to delve into educational content and find the teacher present when they need help to reach mastery (Al-Sharman, 2015: 160-161).

The flipped classroom is also defined as an educational strategy with a collection of technologies such as web applications, videos, and e-books, as it is available to students at home. The teacher practices direct individual instruction and turns the classroom tasks into interactive learning activities in small groups in the classroom to implement the educational activities and tasks assigned to students (Marwa, 2015: 183).

A flipped class is one of the types of education that focuses on making the best use of the teacher's time during a lesson, in which the teacher assesses the level of students at the beginning of the class and then designs activities in the class. Teachers focus on concepts, stabilizing knowledge, developing skills, supervising activities and providing appropriate support to those who are defaulting (Fahim, 2010: 57).

Achieving educational goals by more than one technique in the same strategy such as the active learning strategy makes the student an informed, thoughtful thinker of the subject covered. It also activates the student's self-learning taking into account the individual differences and achieving the goal of the desired learning process.

Through the flipped learning strategy, the student can also replay video clips several times to be able to understand the new content of the lesson, with the possibility of writing notes, of understanding the educational content or failure, to discuss them with the teacher. On the next day, the student attends the class fully prepared to apply what is previously learned at home. This thereby ensures the good use of the class time, as the teacher begins evaluating students at the beginning of the class, reviews what was learned at home, and provides the students with tasks activities such as projects or short tests to be performed in the classroom, which are homework that the student fulfills with the teacher in the classroom instead of at home (Al-Duwaikh, 2013, p. 2).

Through flipped learning, the group learning space is transferred to individual learning, on which collective learning is based within the framework of a dynamic interactive learning environment. In this environment, the teacher instructs the students to apply previously learned concepts and engage in various educational activities that achieve the objectives of the subject and its learning outcomes (Waron, 2015: 30).

#### **The role of the learner in flipped classes:**

The learner has an important role in activating this strategy, as it is a basic partner in it and a center for all educational activities:

1. Record the necessary notes and inquiries to increase understanding of the content of the viewed educational materials.
2. Actively participate in the discussion and dialogue on issues and ideas, including educational materials related to academic subjects.
3. Participate by asking questions and comment appropriately -from a point of view - on what is being discussed or presented in the classroom (Abdul Rahman, 2015: 480).
- 4- The ability of the student to use the scientific subject programmed in the form of a visual video at a time that they like in self-learning.
5. The opportunity to see scientific and informational sources in its various forms, paper in Learning Resources Room and neighboring libraries or electronic from the available information networks.

#### **The teacher's role in inverted learning: -**

1. Prepares printed educational materials and other electronic and audio-visual materials, such as educational videos and performance models for some of the targeted skills and electronic educational materials dealing with cognitive content and making them available for students to view before attending the classroom.
2. Divides role within the class in terms of observing and following students, facilitating the learning process, evaluating the performance and participation of students, and their roles outside the class by preparing and providing scientific content in its various forms.
3. Be an essential and pivotal partner for all practical and educational activities, such as watching educational videos and viewing them prepared s/he prepared.

### **Features of flipped learning**

1. It gives teachers more time to help learners, receive their inquiries and build stronger relationships between the student and the teacher (Abu Bakr, 2010: 45).
2. It better invests class time, improve student achievement and develop their comprehension, by frequent repetition of the class subject.
3. Students are given a part for first view of the knowledge of the content before the time of the lesson.
4. It encourages the ideal use of modern technology in education (Abanmi, 2016:21).
5. It compromises student's abilities with individual differences and provides shy students freedom to repeat the lesson molecule, so they can repeat the lesson many times (Abdellatif, 2016: 25).

### **Previous studies**

A lot of studies and literature on the flipped learning strategy (the flipped class) has been reviewed and has been classified as follows: -

- 1- The Baluchi study (2014) aims to determine the effectiveness of the flipped classroom strategy in learning and investing the Arabic language. The study uses a semi-experimental approach. The study sample consists of 24 students from the tenth grade, the basic of the Sultanate of Oman. Two tools are used: the achievement test and the scale of opinion. The study shows that there are statistically significant differences at the level of significance (0.05) between the averages of students' performance in the achievement test in favor of the flipped class strategy.
- 2- The study of Mghannam (2014) revolves around the attitudes of teachers of social studies at the intermediate stage in the Kingdom of Saudi Arabia towards the use of flipped classroom teaching and their training needs for its use. It applied the descriptive approach on 80 male and female teachers for social studies. The study tool was questionnaire. It showed that social studies teachers severely need to use flipped class and there were positive trends.
- 3- Shrer's study (2017) aims to identify the effectiveness of a flipped class educational environment in the development of grammar and the opinions about it among ninth grade students. The researcher designs grammar skill tests and prepares a measure of opinion about it. The tool is applied on 67 students from the nine basic class students at Ein Jalout School in Palestine. An experimental and descriptive approach is applied. The results show that there are statistically significant differences between the mean scores of the experimental group and the control group in the post test of grammar skills.
- 4- The study (Gopalan, 2018) determines the conditions for class activities that will be discussed in classroom dumping following a flipped class. The study sample is 120 male and female teachers studying in schools that uses the flipped learning system in the state of Illinois. Through a questionnaire that is distributed to the sample and after using the

appropriate analysis tools, the study concludes that the most important conditions to be met in flipped learning activities is open questions and multiple correct questions. The research finds that there are differences in favor of experience affecting the efficiency of providing class activities for flipped learning.

### Research methodology and procedures:

#### First / Research Methodology:

The experimental approach, one of the most scientific, accurate and objective research methods, is used because this type of research is done by changing one or more variables of the study on a regular basis in order to determine the effect resulting from this variable.

#### Second / experimental design:

The experimental method is applied on two equivalent groups (experimental and control). The two groups are analyzed with a post achievement. This is due to the relevance of the research goal and figure (1) illustrates this:

Figure (1)  
Experimental model

Research tool	Dependent variable	Independent variable	Group
Post-achievement test	Achievement	Flipped learning strategy	Experimental
		Traditional method	Control

#### Third/study population

The current research population is the second year students in the morning secondary schools of the General Directorate of Education for Diyala Governorate for the academic year 2018-2019 as in table (1):

Table (1)  
The names of secondary schools for girls in the Khalis District Center

Location	Name of school	ت
Khalis District Center	Al-insiany secondary school	1
Khalis District Center	Al-Qasaq secondary school	2
Khalis District Center	Asia secondary school	3
Khalis District Center	Al-Zahra quarter secondary school	4
Khalis District Center	Bnt Alhuda secondary school	5
Khalis District Center	Aslqawarer secondary school	6

#### Fourth/study sample

The research samples 64 students. The researchers choose Al-Insanya secondary school for girls in the Khalis district within Diyala Governorate, intentionally to apply the experiment for the following reasons:

1. The school administration expressed the desire to cooperate with the researcher to conduct research experiment.
2. The school's proximity to the researcher's residence makes it easy to move to and from school.
3. The conditions required for the research are provided because there are two second stage classes in the secondary school.

After deciding on the school in which the experiment will be applied, the researcher visited the school which has class A and class B. The researcher randomly chooses class A to conduct the experiment using flipped learning. The female students who are taught using the traditional method 32 female students, and there are no (repeat the year) female students in the research sample, and thus the research sample is 64 as in table (2):

Table (2)

Distribution of individual of the sample according to groups

Number of students	Class	Group
32	A	Experiment
32	B	Control
64		Total

#### Fifth/equivalence of the two groups

The researcher has the equalized process some of the variables that affect the results of the experiment based on statistical control procedures. These variables are the following:

- 1- The time age is calculated (in months).
- 2- IQ level test.
- 3- The educational levels of the parents' achievement.
- 4- Degrees of the previous academic year.

#### The age of students is calculated in months:

The average age of female students in the experimental group is (6.229) months, and the average age of female students in the control group is 0.227 months as seen in table 3. The T-test for two independent samples determines the significance of the statistical differences between the ages of female students of the two research groups. IT also shows that there are no statistically significant differences was mean of (05, 0) because the calculated T value (1, 777) is smaller than the value tabular T (2) with a degree of freedom (62). This indicates that the experimental and control groups are equal in time age and table (3) shows this:

Table 3

The arithmetic mean, the standard deviation, and the calculated and tabulated T value for the ages of students of the two research groups, are calculated in months.

Statistical significance at 0.05	T value		Degree of freedom	standard deviation	arithmetic mean	Sample size	Group
	Tabular	Calculated					
Not statistically significant	2	1,777	62	9,661	6.229	32	Experiment
				7,556	0.227	32	control

#### Intelligence quotient test

Intelligence is one of the factors affecting achievement. The researcher relies on the Raven test for matrices, and in each of these forms there is a missing part, and at the bottom of each form there are six illustrated options. The student is required to complete the missing part of the six options by placing the number of the correct option in the missing part of the figure. Each point is for the correct part and zero for the wrong or abandoned part, or for which there is a multiplicity of answers. Therefore, the total scores are (60) degrees, and in the light of the answers determines the degrees of intelligence.

The mean of the experimental group is (966, 35), while the mean of the control group is (566, 346). When processing these data statistically using the T-test for two independent samples, the results show that there are no statistically significant differences between the two research groups. As the calculated T value reaches (198, 0) which is less than the tabular T value of (2) at the level of (05, 05) with a degree of freedom (62), the two research groups are equivalent in the IQ variable, table (4) shows that:

Table (4)

Arithmetic mean, standard deviation, calculated and tabulated T value of IQ scores for both research groups (experimental and control).

Statistical significance 05.0	T value		Degree of freedom	standard deviation	Arithmetic mean	Sample size	Group
	Tabular	Calculated					
No significance	2	0,198	62	7,622	35,966	32	experimental
				8,508	34,566	32	Control

#### Sixth: controlling the internal variables

The researcher tried as much as possible to avoid the effect of some exotic variables on the experiment.

A - Differences in sample selection: Through equating the two research groups in five variables, the researcher tries her best to avoid the impact of this variable on the results of the research.

B- The measuring tool: The progress measurement tool for students of the two research groups is the progress test.

C- Impact of the experimental procedures:

The teacher: The researcher teaches the two research groups herself which makes the results accurate and objective.

D- Confidentiality of the research: The researcher agrees with the school administration not to inform the students of the nature of the research and its purpose, so that their activities do not change with the experience.

E- Duration of the experiment: The duration of the experiment is similar for the two groups starting in 24/2/2019 and ending on 5/5/2019, meaning that it continues for a whole semester.

School building: The experiment is implemented in one school, and in two adjacent classes, similar in size, number of seats, and windows.

F- The allocation of lesson: The lessons are divided equally between the two research groups, with two lessons per week for the subject of Arabic Islamic history as shown in table (5).

Table (5)

#### Distribution of lessons on the subject of Arabic Islamic history to students of the two research groups

Day	Lesson	Time	Day	Lesson	Hour	Group
Monday	second	8:50	Monday	First	8:00	Experimental
Thursday	second	8:50	Thursday	First	8:00	Control

#### Seventh / Research Requirements:

1- Determining the scientific subject: This subject included chapters three, four and five of the second part (second course) from the social studies book.

2- Behavioral goals: Setting goals facilitates the evaluation process, as setting them in an objective and behavioral manner facilitates setting the appropriate test that measures progress in order to improve learning outcomes (Salama, 2001: 69). Therefore, the researcher has set out (111) behavioral aims dependent on general goals, and the content of the subjects. They are divided into the first three levels of Bloom's taxonomy (remembering - understanding - applying). In order to verify their validity, they are exposed to a group of experts and specialists in teaching social subjects and their teaching methods in educational and psychological sciences

After analyzing the responses of the experts, some goals are modified and 11 are deleted (11). Thus, 80% of the aims are approved by the experts. Thus the number of behavioral goals become 100 behavioral goal.

1- Teaching plans: The researcher prepares (30) teaching plans for each group for the subjects of social studies for the experiment. Two models are exposed to experts, the first according to the (flipped learning) strategy and the second according to the traditional method. The experts express their views and have confirmed their validity, and suitability and some minor adjustments were made.

**Eighth / research tool (preparation for the progress test):**

Achievement test is defined as a structured procedure for determining the level of learners' outcomes of information or skills in a specific educational content previously learned. (Al-Mahasneh and Muhaidid, 2013: 110). However, the current research requires preparing a progress test after completing the experiment to show the effect of the flipped learning strategy or lack of its effect. Because there are no honest and consistent readymade tests, the researcher has prepared a progress test according to the steps followed in setting the test:

**1- Preparing the schedule for specifications (optional map):** The test preparation depends on the specifications table to show test validity, especially the degree of internal consistency and inclusivity of the topics. The researcher has prepared a test map of the topics that will be studied in the experiment and the behavioral goals for the first three levels in the cognitive field from Bloom's classification (remembering - understanding - application). The subjects content and the goals levels are calculated depending on the number of behavioral goals in each level according to the goals of each topic to the total number of goals. Then the number of test items are (30) objective items divided on the optional map as shown in Table (6):

Table (6)

Optional map

Test part				Behavioral goals				Content importance rate	Chapter
Total	Application	Understanding	Remembering	total %100	application %20	understanding %35	Remembering %45		
14	3	4	7	35	7	12	16	%35	Conditions of the Arabian Peninsula
10	2	3	5	35	7	12	16	%35	History of Mecca before Islam
6	1	1	4	30	6	10	14	%30	The Prophet Muhammad (peace and blessings be upon him) in Mecca
30	6	8	16	100	20	34	46	%100	Total

## **2- Formulation of test items:**

The researcher chooses objective tests of the multiple choice type, which is one of the most flexible tests and can be used to evaluate educational goals of different levels of knowledge. It can help to overcome the problem of correcting a large number a multiple-choice question. It also reduces guess opportunity, increase consistency in honesty and is less time consuming. The researcher prepares test consisting of (35) test items. Each item (4) is followed by options. The test is presented to a group of experts to ensure its validity, some are modified, and five parts are deleted. Thus the number of parts become (30) test items with (80%) agreement of the experts.

### **3- Test Instructions:**

A- Answer instructions as follows:

- Write the name and class on the question paper.
- Do not choose more than one option.
- Give an illustrative example of how to solve the test part.
- Circle the correct alternate letter.

B - Scoring Instructions: Only one grade is assigned to the part whose answer is correct and zero for the wrong and the abandoned paragraph is deemed incorrect.

### **4- Honesty:**

The researcher has verified the validity of the test and to make it accurately measure what is set to measure, and achieve the goals for which it is designed. To confirm the apparent honesty and sincerity of the content, the researcher presents the test items to a number of experts and specialists in teaching methods and educational and psychological sciences to express their opinions and observations on the validity of the parts. Some of the items are modified and 5 are omitted because they do not get 80%approval of the experts in.

### **1- Exploratory experience:**

The test is applied to an exploratory sample from the second -grade students in the Asian secondary school for Girls in the Khalis District Center. This sample has the same specifications as the original sample for research in order to test the level of clarity of the test items, the level of difficulty, the strength of their discrimination, the effectiveness of options, stability and the time spent in answering. The survey sample is 100 female students, and after the end of the test, the average time taken to answer is calculated, which was (50) minutes.

### **6- Statistical analysis of the test items:**

This analysis aims to determine the level of difficulty, strength, discrimination, and effectiveness of the options to the parts. The parts are scored and then arranged in descending order from part with the highest scores to the lowest score parts. Then the two extreme samples are selected: the highest and lowest at a rate of (27%). The two extremes are considered the best groups to represent the whole sample, and Statistical analysis procedures are as follows:

- Part difficulty factor: After calculating the difficulty factor for each part using the equation of difficulty factor, its value ranged between (0.372 - 0.730).
- The discriminatory power of the parts: The calculation of the discriminatory power of each part with the equation of distinction shows that it ranges between (0.42 - 0.79). The test items are therefore good.

- The effectiveness of option: When the test is a multiple choice type, the wrong options are supposed to be attractive to prove that they play the role assigned to them in distracting students who do not know the correct answer, and not relying on chance.

- The researcher investigates the validity of the (30) wrong alternatives items, meaning that the number of individuals who are drawn in the lowest scores category is greater than the number of individuals who are attracted in the high score category. Accordingly, all the choices are considered effective and valid.

Consistence of the test: Stability of the test means the accuracy and consistency of its items with each other in measuring the characteristic to be measured (Ebel, 1972,409).

The test consistency is calculated using the half-way method using the Pearson correlation coefficient, as it reaches 0.86. Then it is modified using the Spearman Brown equation (0.68).

#### **Chapter Four**

##### **First: results**

The research comes up with the result after applying the test and scoring the answers of the two groups of the progress test items, as shown in Table (7):

Table (7)

Arithmetic mean, standard deviation, variance, and T value of the two research group scores in the achievement test in social studies

Statistical significance (0.05)	T value		Degree of freedom	standard deviation	Arithmetic mean	Sample size	group
	Tabular	Calculated					
Statistical significance of the experiment group	2	3.391	62	4.043	33.165	32	Experiment
				4.144	28.122	32	Control

Table (7) shows that the arithmetic mean of the experimental group was (33,165), while the for control group was (28,122). The calculated T value is (3,391), which is greater than its tabular value which is (2) at the level of significance (0.05) and degree of freedom (62). This indicates that there are statistically significant differences in the average degrees of students and in favor of the experimental group that was studied according to the flipped learning strategy and thus we reject the zero hypothesis and accept the alternative hypothesis.

##### **Second: Interpretation of the result:**

The result shows that the experimental group students were superior, over the control group students. There are several reasons for this superiority:

1- the flipped learning is one of the modern strategies unfamiliar to female students in studying social studies, and this strategy can be successful if applied.

The inverted learning strategy centers on the students in the educational process, and enables them to implement activities in a scientific way. Thus, the educational process becomes enjoyable and thus increases motivation towards learning academic outcomes

**Third: Conclusions:** Based on results, the researcher inferred the following:

- 1- The use of the flipped learning strategy makes the lesson vitality and increases the enthusiasm and interaction with the nature of the subject.
- 2- This strategy helps to increase the level of academic achievement of social studies.
- 3- Female students in the cooperative groups feel that they perform their class duties in a cooperative team group. Also, they feel they are responsible for carrying out their duties in their groups to achieve educational goals that made them more receptive to the learning process and more motivated

**Fourth: Recommendations:**

- 1- The Ministry of Education institutions need to generalize the use of cooperative learning strategies, including flipped learning strategy and training teachers it.
- 2- The necessity of informing the social studies teachers, educational supervisors, and specialists about the use of flipped learning strategy in teaching history.
- 3- Male and female teachers of social subjects should be trained to the use of the flipped learning strategy, and not be limited to teaching methods that rely on memorization and preservation.
- 4- Preparing the classrooms, lessons and teaching aids necessary to assist male and female teachers in teaching using the flipped learning strategy.
- 5- Introduce students of the Faculties of Education to flipped learning strategy and train them on using it in their working life.

**Fifth: Suggestions:**

- 1- Carrying out similar studies on universities and secondary schools.
- 2- Carrying out similar studies to determine the validity of using the flipped learning strategy in other variables such as developing thinking, acquiring and retaining concepts, developing trends, and others.
- 3- Conducting a study to identify the obstacles that prevent the application of flipped learning strategy and solving them.

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