

# Attitudes Of Science Teachers In Private Schools Towards Using The Flipped Learning Strategy In Jordan

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## Abstract

This study aims to identify the trends of science teachers in private schools towards the use of the inverted education strategy in Jordan and in order to achieve the objectives of the study was based on the descriptive analytical approach, and was based on a questionnaire distributed to a sample and consisted of (100) science teachers, and they were selected in a random way, and after retrieving the questionnaires were entered and processed statistically using the social packet program (SPSS) and the use of the single variance analysis test and the test (T) of the two independent samples and the Cronbach alpha equation in addition to The results of the study showed that the attitudes of science teachers in private schools towards the use of the inverted education strategy in Jordan were average, and it was found that there are no statistically significant differences at the level of significance ( $\alpha = 0.05$ ) between the responses of the members of the study sample about their attitudes in private schools towards the use of the inverted education strategy in Jordan attributed to each of the variables (gender, educational qualification, years of experience) (The most important recommendations were to work on training science teachers to use modern technology methods while explaining lessons.

**Keywords:** trends, science teachers, private schools, inverted education strategy.

## Introduction

It has become necessary to rely on modern teaching methods that are more flexible, contribute to strengthening the learner's self-esteem, meet his needs and activate his role in the educational process, as well as support the role of the teacher in being a facilitator

of the teaching and learning processes. One of the modern strategies that contribute to the achievement of these roles: the strategy of the inverted classroom, which is based on visual blogging, based on giving the learner scientific content before receiving it in the traditional classroom, which gives an

opportunity within the traditional classrooms to practice educational activities and discussion, and the inverted class depends on the employment of modern technology in the teaching and learning processes; where it works to mix technology with traditional methods within the classroom while maintaining correct and sound practices, and it is also called: Inverted learning, reverse education, The inverted classroom, the inverted classroom, but they all focus on blending technology with all elements of the curriculum and especially the content (Hassan, 2015).

The strategy of the inverted classroom is characterized by many features represented in the good employment of modern technology and its tools in the educational process, the development of the role of the indoctrinator teacher to shout mentor, motivator, mentor and assistant, and the participation of the student in the educational process to become a teacher, participant and researcher, also help students to self-learn according to their abilities and individual differences, as it suits students shy of asking for a partial repetition of the lesson, they can repeat the lesson many times, and make good use of the class time and provide an interesting and enjoyable learning environment that helps attract students to learn, in addition to To develop higher thinking skills such as critical thinking and twenty-first century skills, other than helping to take into account the individual differences between students,

whether the speed of learning or the method of learning or that, the students of the same class among them have many individual differences, among them the attentive fast-learning is enough once to understand the words of the professor, another needs repetition in order to absorb the lesson, the third visual learning needs images and representation to understand what is intended, and the fourth auditory and so on.(dripy,2016)

The teacher can vary in the use of different influences in presenting his lesson to suit the different characteristics of students Strengthen the relations between the student and the teacher within the classroom through the teacher's participation of students in various language activities and his direct supervision. Develop collaborative learning skills, by dividing students in class into groups and assigning them competitive activities and applications that encourage students and train them to work together, and transforming the student into a researcher of his sources of information, so that he can search and refer to information he has already studied in previous classes and review it if he forgets it as if he hears it directly (Ali, 2015)

### **Study Questions:**

**The current study seeks to answer the following questions:**

1. What are the attitudes of science teachers in private schools towards

using the inverted education strategy in Jordan?

2. Are there statistically significant differences at the significance level ( $0.05 \leq \alpha$ ) between the average responses of the study sample members towards the attitudes of science teachers in private schools towards the use of the inverted education strategy in Jordan according to the gender variable?
3. Are there statistically significant differences at the level of significance ( $0.05 \leq \alpha$ ) between the average responses of the study sample members towards the attitudes of science teachers in private schools towards the use of the inverted education strategy in Jordan according to the variable of educational qualification?
4. Are there statistically significant differences at the level of significance ( $0.05 \leq \alpha$ ) between the average responses of the study sample members towards the attitudes of science teachers in private schools towards the use of the inverted education strategy in Jordan according to the variable years of experience?

#### **The importance of the study:**

The importance of the study lies in the fact that this study is an enrichment for the Jordanian library and the Arab library because it carries with it new results related to inverted learning, and it is a scientific

addition to the existing studies on this subject. The study also has practical significance and is to provide teachers with results related to the use of inverted learning, and the results can contribute to improving the performance of education, the development of human cadres, material potentials and trends in the selection of teaching patterns and teaching methods followed. Moreover, this study could be the beginning of a new type of study that relates to inverted learning strategies in the current era.

#### **Objectives of the study:**

**The current study seeks to achieve the following objectives:**

1. Identify the trends of science teachers in private schools towards the use of the inverted education strategy in Jordan.
2. Identify if there are statistically significant differences between the average responses of the study sample members towards the attitudes of science teachers in private schools towards the use of the inverted education strategy in Jordan according to the gender variable.
3. Identify if there are statistically significant differences between the average responses of the study sample members towards the attitudes of science teachers in private schools towards the use of the inverted education strategy in

Jordan according to the variable of scientific qualification.

4. Identify if there are statistically significant differences between the average responses of the study sample members towards the attitudes of science teachers in private schools towards the use of the inverted education strategy in Jordan according to the variable years of experience.

### Terminology of study

**Trends:** It is a state of psychological neurological predisposition, through which the person's experience is organized and has a guiding or dynamic effect on the individual's response to all the topics and situations that provoke this response (Al-Anzi, 2020).

**The concept of inverted education:** It is an educational model that aims to use modern technologies and the Internet, in a way that allows the teacher to prepare the lesson through videos, audio files, or other media; for students to see in their homes or elsewhere, using their computers, smartphones, or tablets before attending the lesson; while lecture time is devoted to discussions, projects, and exercises (Al-Khalifa and Mutawa, 2015).

**Science Teachers:** They are all teachers with specializations (biology, general sciences, physics, chemistry) who teach in private schools in the governorate of Al-Mafrouq.

### Study Limits:

The study is limited to the following limits:

1. **Human Frontiers:** Science teachers in private in Mafraq governorate.
2. **Temporal Boundaries:** This study was applied during the second semester of the academic year 2021-2022.
3. **Spatial Boundaries:** Private schools in Mafraq Governorate.

### Previous studies

The study of Zumiah(2021) aimed to identify the trends of science teachers towards the use of the inverted classroom in education, and in order to achieve the objectives of the study was used descriptive and analytical methodology, the sample of the study consisted of (150) teachers. The researcher prepared a questionnaire to identify the attitudes of science teachers towards the use of the inverted class in education, in addition to the responses of the sample members showed that the use of the inverted class develops students' self-learning skills, questioning skills, and access to classes at any time with ease. It also enables communication between learners. Obstacles to the application of the inverted class include: the lack of equipping the classrooms to suit the use of the inverted class, the need to improve the level of Internet connectivity, and the lack of interest of some students in reviewing scientific materials before attending the lecture.

The study of Khalil, Al-Tamran and Hashemi (2021) The study aimed to identify the repercussions resulting from the use of the strategy of the inverted class in the mathematics classes at the primary stage on the teaching practices of its teachers and the performance of their students, where the study used the qualitative approach (multiple case studies), and included the sample (2) of mathematics teachers in the primary stage and (42) students of the sixth grade primary, through the following tools: The study used thematic analysis (deductive, inductive) to analyze the data, and the study reached a set of results including: The strategy of the inverted class contributed to the development of mathematical achievement, classroom interaction, and the trend towards teaching and learning mathematics, in addition to contributing to the opportunity for teachers to address a set of lesson ideas, use many strategies during the class, planning and appropriate preparation of the lesson, and recommended the importance of training teachers to employ techniques in the classroom. Teaching mathematics, and producing educational videos (videos) of math lessons. Sanussi (2020) conducted a study aimed at investigating "the impact of using an inverted separation strategy on the development of written expression skills in eighth grade primary students," the researcher used the semi-experimental approach. The community consisted of 895 students in public schools (boys) of the Department of Education in East Nile

Governorate in Khartoum State, where the research sample was selected in an intentional way and consisted of 66 students, where it was divided into two groups (experimental and controlled). The results of the research found the effectiveness of the inverted classroom strategy in developing the skills of content in written expression among the students of the experimental group, and there is a significant impact on the teaching of written expression by means of the inverted classroom strategy.

Assiri (2020) conducted a study aimed at "discovering the extent of the impact of the method of processing linguistic income on the acquisition of linguistic structures in learners of Arabic as a second language", and the research was based on the semi-experimental approach on a sample of (49) learners at the second level at the Institute of Arabic Language Education at Imam Muhammad Ibn Saud Islamic University in Riyadh, and they were randomly distributed into two groups, an experimental group consisting of (25) learners, and a control group consisting of (24) learners, and the results of which showed the results of Research that there is a positive impact of the method of processing linguistic income in the acquisition of linguistic structures more than the traditional method, and therefore this model may help in the process of teaching the Arabic language.

Al-Amer Study (2020) The aim of the research was to measure the impact of teaching using the method of inverted

separation in the development of French grammar skills in the student of the first band in the English language division and learners of French as a foreign language at the Faculty of Education at the University of 6 October in the light of the actual entrance and the research was applied to a sample of 66 students divided into two groups, one of which is an officer and the other is experimental, where the control group learned in the traditional prevailing way and the two experimental groups learned in the inverted separation method and the results of the research resulted in On the effectiveness of using the inverted classroom method in teaching French grammar skills in the light of the actual entrance.

Salim study (2019) This study aimed to identify the trends of teachers of the basic stage towards the strategy of the inverted classroom among students with learning disabilities in the schools of Nablus governorate, and to achieve the goal of the study was developed a questionnaire consisting of (30) paragraphs, which was distributed to (191) teachers of the basic stage and was confirmed by its honesty and stability by a committee of judges with specialization, and after the process of distributing and collecting questionnaires was encoded and entered into the computer, and processed statistically using the statistical package for social sciences, the study has shown There are great trends for teachers of the basic stage towards the strategy of the inverted classroom among students with learning disabilities in the

schools of Nablus governorate, as it was found that there are no statistically significant differences at the level of significance ( $= 0.05$ ) in the attitudes of teachers of the basic stage towards the strategy of the inverted grade among students with learning disabilities in the schools of Nablus governorate attributed (gender, scientific qualification, years of experience, specialization in bachelor's degree) and based on the results of this study, the researcher recommended recommendations of the most important of which are: The need to diversify in teaching strategies with learners from the category of learning disabilities and the need to train teachers in a continuous manner.

Shrair (2017) conducted a study aimed at finding out "the effectiveness of a learning environment based on reversed learning in the development of grammar and orientation towards it among ninth grade students in Gaza." The study sample consisted of (67) ninth grade students in Gaza, and the results showed: There is a statistically significant difference between the average scores of the experimental and control group in the dimensional application of the grammar skill test, and the absence of a difference between the average estimates of the students of the experimental and control group in the measure of orientation towards grammar.

Al-Duraibi's study (2016) sought to identify the attitudes of undergraduate students at King Saud University towards the

application of inverted classroom in education. The sample of the study consisted of (52) female undergraduate students at King Saud University. The researcher prepared a questionnaire to measure the trend towards the application of inverted separation and the shortcomings of its application, in addition to five open-ended questions measuring perceptions. The results of the study revealed positive trends among undergraduate students regarding the use of inverted classroom in education. The inverted classroom is a modern way of developing collaborative learning environments, and allows the teacher to spend more time interacting with students rather than lecturing. This is more commonly done using videos that the teacher prepares, and that students watch outside of classroom times. One of the shortcomings of the application of inverted classes is that they require prior preparation and the student may not be able to watch the presentation beforehand, and the teacher may not give his educational material adequately as in traditional education, and does not touch on all the details in the educational video, and the application of inverted classes needs more time compared to the traditional method.

### **Study Methodology:**

In order to achieve the objectives of the study, the descriptive analytical approach was used, which is based on the study of the case or phenomenon but in its real form that exists in reality, and the descriptive approach is interested in studying that phenomenon accurately without any increase or decrease, and then works to clarify its characteristics in terms of quality, while in quantitative terms it describes the phenomenon digitally through numbers and tables whose main task is to clarify the amount of that phenomenon or even its size or the extent of the relationship of this phenomenon with others of phenomena.

### **Study population and sample:**

The study population consisted of all science teachers in the schools of Al-Mufraq Governorate, from whom an available sample of (110) teachers was selected, and a questionnaire was distributed to them from which (100) questionnaires were retrieved valid for analysis, and the following is a description of the characteristics of the study sample according to its variables:

**Table (1) Distribution of the study sample according to its variables**

Variable	Type	Repetition	% percentage
Gender	Male	53	53.0
	Female	47	47.0

	total	100	100.0
Years of Experience	Less than 5 years old	16	16.0
	From 5-less than 10 years old	59	59.0
	more than 10 years	25	25.0
	total	100	100.0
Qualification	Higher diploma or less	26	26.0
	Master's	53	53.0
	Master's	21	21.0
	Total	100	100.0

### Study tool:

The researchers relied on the study tool used in the study (Salim, 2019) after reviewing the literature of the study and previous studies related to the topic, and the questionnaire included two sections, the first section is metadata, while the second section included the data of the study variables where the number of paragraphs of the tool (20) paragraphs, and was designed on the basis of the five-dimensional Likert Scale, and the paragraphs were built in a positive direction, and weights were given to the paragraphs as follows: Strongly agree: five degrees, OK: four degrees, Neutral: three degrees, Disagree: two, and Not Agree at all: one degree.

### Validity of the tool:

The authenticity of the tool has been verified by presenting it to a group of arbitrators with competence and experience in the field of educational sciences and teaching methods

and asked them to express an opinion on the paragraphs of the questionnaire by deleting, amending and proposing new paragraphs and appropriate to the tool for the subject of study, and based on the observations of the arbitrators the study tool was modified to become in its final form a component of (15) paragraphs, and accordingly the tool enjoys the honesty of the content.

### Tool stability:

In order to extract the coefficient of stability, the researcher used the equation of alpha Cronbach, the coefficient of stability reached (0.92) and these values reached for the coefficients of stability are appropriate and meet the purpose of study.

### Statistical processing:

After collecting, coding and processing the data by appropriate statistical methods, using the SPSS Social Science Statistical Program, the researcher used frequencies, arithmetic averages, standard deviations,



Cronbach alpha equation, test (T) for two independent samples, and single variance analysis test.

### Results

This study aims to identify the trends of science teachers in private schools towards the use of the inverted education strategy in Jordan and in order to achieve this the researcher used a questionnaire consisting of (15) paragraphs distributed to a sample of (100) teachers of science in Mafraq governorate, and to interpret the results of the study the researchers used the following arithmetic averages (Alawneh, 2020)

- Less than 2.5 degrees of application is low

- 3.5-2.5medium application degree
- Greater than 3.5 degree of great application

**The results of the study are presented below:**

### **First question: What are the attitudes of science teachers in private schools towards using the inverted education strategy in Jordan?**

In order to answer this question, the arithmetic averages and standard deviation of each paragraph of the instrument were extracted, and the following is an indication of this:

**Table No. (8) Arithmetic averages and standard deviations of the paragraphs of the attitudes of science teachers in private schools towards the use of the inverted education .strategy in Jordan**

Item number	Rank	Item	Mean	Std. Deviation	Level
8	1.	I am bothered by the flipped classroom strategy that it reduces the chances of dialogue with my fellow teachers because the student does not depend on the explanation in the lessons.	3.66	0.890	Big
11	2.	I rely on the flipped classroom strategy because it provides students with learning disabilities with immediate feedback in the class	3.49	1.202	Medium
1	3.	The use of the inverted class strategy bothers me because I have	3.45	0.936	Medium

		no experience with modern techniques			
13	4.	It bothers me about the flipped classroom strategy that it creates boring and apathy for students with learning difficulties	3.39	1.014	Medium
4	5.	I would like to use the flipped classroom strategy because it gives an incentive to the students with learning difficulties and prepares before class time	3.28	1.129	Medium
2	6.	It comforts me to use the Flipped Classroom strategy with students with learning disabilities	3.15	1.029	Medium
5	7.	I am comfortable using the flipped classroom strategy because it provides the student with an interesting and enjoyable learning environment that helps to attract the student to the learner	3.14	1.054	Medium
3	8.	The use of the flipped classroom strategy with students with learning disabilities exhausts me due to the lack of the necessary equipment	3.09	1.164	Medium
6	9.	I am happy to use the flipped classroom strategy because it gives students with learning disabilities complete freedom	3.01	1.078	Medium
14	10.	I want to constantly use the Flipped Classroom strategy	2.89	1.024	Medium
7	11.	It bothers me about the flipped classroom strategy that it creates depression for the demands of	2.72	1.083	Medium

		people with learning disabilities when they do their homework			
15	12.	I like to use the Flipped Classroom strategy because it increases the chance of collaborative learning when doing homework	2.69	1.125	Medium
9	13.	I am pleased with the Flipped Classroom strategy that it addresses the problem of student absence and loss of the opportunity to attend the lesson	2.43	few	Few
10	14.	I am concerned about the use of the Flipped Classroom strategy because it would overturn the traditional way I adhere to dealing with students with learning disabilities	2.42	few	Few
12	15.	I prefer to use the flipped classroom strategy because it develops higher-order thinking skills for the student	2.36	few	Few
<b>Total</b>			3.0113	0.65265	Medium

It is clear from the data in the previous table that the trends of science teachers in private schools towards the use of the inverted education strategy in Jordan are average, where the results indicated that the paragraphs related to the attitudes of science teachers in private schools towards the use of the inverted education strategy in Jordan were between large and few, the arithmetic averages ranged between (3.66) to (2.36), and the total score of the trends of science teachers in private schools towards the use of the inverted education strategy in Jordan

( 3.01) This score is significant, and this confirms that the attitudes of science teachers in private schools towards using the inverted education strategy in Jordan have been average.

**Second question: Are there statistically significant differences at the level of significance ( $0.05 \leq \alpha$ ) between the average responses of the study sample members towards their attitudes in private schools towards the use of the inverted education strategy in Jordan according to the gender variable?**

In order to answer this question regarding the gender variable, the T test was used for independent samples and the results of the following table illustrate this:

**Table No. (3) Results of the test (T) of independent samples to indicate differences in the attitudes of science teachers in private schools towards the use of the inverted education strategy in Jordan attributed to the gender variable**

variable	Tip		M	S.T	T	Sig
Gender	Male	53	3.0377	0.60433	0.428	0.67
	Female	47	2.9816	0.70864		

We note from the data in the previous table that there are no statistically significant differences at the level of significance ( $0.05 \geq \alpha$ ) between the average responses of the members of the study sample towards the trends of science teachers in private schools towards the use of the strategy of inverted education in Jordan according to the variable of sex, the value of the level of significance (0.67) and this value is greater than (0.05) and this result means that there are no statistically significant differences at the level of significance ( $0.05 \geq \alpha$ ) in the average responses of the sample members Study in the knowledge of the trends of science teachers in private schools towards the use

of the strategy of inverted education in Jordan to the gender variable,

**Third question: Are there statistically significant differences at the level of significance ( $0.05 \leq \alpha$ ) between the average responses of the study sample members towards the attitudes of science teachers in private schools towards the use of the inverted education strategy in Jordan according to the variable of scientific qualification?**

In order to answer this question regarding the qualification variable, the single variance analysis test was used for independent samples and the results of the following table illustrate this:

**Table No. (3) Results of the Single Variance Analysis Test for Independent Samples to Indicate Differences in the Attitudes of Science Teachers in Private Schools Towards the Use of the Inverted Education Strategy in Jordan Attributed to the Variable of Scientific Qualification**

Total	Contrast source	Sum of Squares	Df	Mean Square	F	Sig.

	Between Groups	0.239	2	0.119	0.276	0.759
	Within Groups	41.931	97	0.432		
	Total	42.169	99			

We note from the data in the previous table that there are no statistically significant differences at the level of significance ( $0.05 \geq \alpha$ ) between the average responses of the members of the study sample in the trends of science teachers in private schools towards the use of the strategy of inverted education in Jordan according to the variable of scientific qualification, the value of the level of significance (0.75) and this value is greater than (0.05) and this result means that there are no statistically significant differences at the level of significance ( $0.05 \geq \alpha$ ) in the average responses of the sample members Study in knowing the trends of science teachers in private schools towards the use of the strategy of inverted

education in Jordan to the variable of scientific qualification.

**Third question: Are there statistically significant differences at the level of significance ( $0.05 \leq \alpha$ ) between the average responses of the study sample members towards the attitudes of science teachers in private schools towards the use of the inverted education strategy in Jordan according to the variable years of experience?**

In order to answer this question regarding the variable of years of experience, the single variance analysis test was used for independent samples and the results of the following table illustrate this:

**Table No. (3) Results of the Single Variance Analysis Test for Independent Samples to Indicate Differences in the Attitudes of Science Teachers in Private Schools Towards the Use of Inverted Education Strategy in Jordan Attributed to the Variable Years of Experience**

Total	Contrast source	Sum of Squares	Df	Mean Square	F	Sig.
	Between Groups	0.155	2	0.077	0.178	0.837
	Within Groups	42.015	97	0.433		
	Total	42.169	99			

We note from the data in the previous table that there are no statistically significant differences at the level of significance ( $0.05 \geq \alpha$ ) between the average responses of the members of the study sample in the trends of science teachers in private schools towards the use of the strategy of inverted education in Jordan according to the variable years of experience, the value of the level of significance (0.83) and this value is greater than (0.05) and this result means that there are no statistically significant differences at the level of significance ( $0.05 \geq \alpha$ ) in the average responses of sample members Study in knowing the trends of science teachers in private schools towards the use of the strategy of inverted education in Jordan to the variable years of experience.

### Recommendations

**Based on the results of the study, the researchers came up with a set of recommendations that were as follows:**

1. The need to work on the use of appropriate strategies other than the strategy of inverted education in science teaching
2. Work on training science teachers to use modern technology methods during the explanation of the lesson.
3. Work to provide all the devices and supplies needed by science teachers during the explanation of the lesson.
4. Use more modern strategies in the teaching and learning process especially in science teaching.

5. Researchers should conduct further studies related to inverted learning and apply them to other disciplines not included in the current study.

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