

# Virtual Class Style (Synchronous / Asynchronous) and Its Effectiveness in Developing Learning Engagement Skills among Instructional Technology Students

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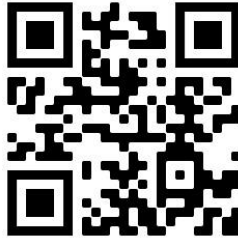
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## Abstract:

The current research aims to develop the skills of engaging in learning among students of Instructional technology by revealing a pattern of the virtual classroom (synchronous / asynchronous) in that, Follow up on the use of technological innovations in the teaching and learning process.

The research sample consisted of three experimental groups of fourth year students, Department of Instructional Technology, Faculty of Specific Education, Minia University. The research variables also included the independent variable in virtual classrooms with different Style (synchronous / asynchronous / synchronous and asynchronous), while the dependent variable represented the learning engagement skills of students of Instructional Technology, Faculty of Specific Education, Minia University, and the research group consisted of band Students fourth, department of Instructional Technology, Faculty of Specific Education, Minia University, consisting of (90) male and female students, who were divided into three experimental groups that used the virtual classroom according to the following (synchronous / asynchronous / synchronous and asynchronous).

Results of the research concluded that members of the virtual class style group, which used simultaneous communication, outperformed others in the skills of engaging in learning. therefore, the most important recommendations of research came to use the simultaneous style in other variables such as enhancing the motivation of academic achievement among learners.

## Keywords:

Virtual classroom, Synchronous Style, Asynchronous Style, Learning Engagement Skills

## Introduction:

Strength and progress of society increase through the strength and awareness of its children. The current era does not only need learners who are able to read and write, but also needs learners who are productive of knowledge themselves. The past ten years have witnessed radical technological and educational changes that have greatly affected the needs and capabilities of the learners. their needs differed from those of the

learners of previous years. there is a need for a generation that is flexible and adapts to the continuous developments in all areas of life. therefore, it is necessary to know what methods and methods help in its involvement. in the learning process (Taylor & Parsons2011)<sup>1</sup>.

Learner in education and e-learning is not passive, but actively participates actively in the educational process, which is greatly reflected in his involvement and integration in the learning process, therefore, involvement in e-learning and education is a basic requirement, many contemporary educational theories have indicated the importance of the learner's involvement in learning, Learners who are integrated in learning tasks have the opportunity to benefit more from the content that is offered to them. They also enjoy a strong relationship between them and their peers and the Teacher objective, and their determination to bear challenges and obstacles increases (Baker, clark & Maier et al., 2008; Decristofaro, ford & Klein, 2014), according to the engagement theory for both Kearsley & Shneiderman (1998) and engagement theory (tinto long, 2012) ford points out that the use of modern technology can help engage in learning materials through the use of e-mail, online training, web databases, and training via video conferencing, and these tools can be used to increase the ease of engagement among learners, and technology provides electronic learning methods that help in supporting the involvement of learners in the different educational stages and enriching it.

Engagement in learning requires learners to have several basic skills, including cognitive, emotional, behavioral and psychological skills. Research and studies have indicated the learners' need for these skills and the necessity of developing them. (Baker, Clark, Maire & Viger, 2008); (2011, Taylor & Parsons) Shernoff, 2013 ), 2010); Trawler) (Fredricks, et al., 2011).

Engagement in learning can be developed through electronic learning environments in general and virtual classrooms in particular, as this requires providing support to learners in one way or another and providing appropriate and continuous assistance.

The virtual classroom in all its forms is one of the most important applications of educational technology, and these classrooms are classified

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<sup>1</sup>The American Psychological Association (APA) sixth-generation documentation system

as one of the main means in interactive education and e-learning systems, as several international institutions specializing in information and communication technology have developed interactive virtual classrooms in which the basic tools needed by both the teacher and the learner are available.

(Parker & Martin, 2010,144) confirm that the level of achievement of learners who receive their learning through the virtual classroom is significantly higher than that of learners who receive their learning traditionally or in a blended form. (Parker & Martin, 2010,146) justifies this by the fact that the virtual classroom provides learning at any time and any place, and that there is an increase in interaction among learners, and that it contributes to learning how to deal with new technological tools, and teachers become more positive and interact with educated.

Many previous and related research and studies have dealt with the importance of using virtual classrooms in teaching and learning contexts, such as achievement, increasing motivation, raising learning efficiency, developing learners' skillful performance, self-regulation skills for learning, self-efficacy, level of satisfaction with learning, the trend towards e-learning, and other variables related to the learning outcomes that you seek. To achieve better learning, and to know the advantages that virtual classroom technologies enrich the teaching and learning process compared to e-learning technologies in particular, and the educational value in general, (Ishraq Al-Ajaji, 2017; Hikmat Alyan, 2016; Mustafa Abdel-Aal, 2016; Halima Al-Mantashari 2015; Howaida Syed, 2015; Yenika-Agbaw, 2015; Tariq Al-Najjar, 2014; Hamdan, 2014; Iman Shaarawy, 2013; Raghda Cloudy, 2013; Sameh Al-Ajrami, 2013; Karaman, 2013; Ramy Fouad, 2012; Adel Saraya, 2012; Woodall, 2012; Muhammad Al-Maradani, 2011; Ibtisam Al-Qahtani, 2010), most of which agreed that the virtual classroom contributes to facilitating teaching and learning processes. The tasks of teachers, lecturers and supervisors, to present their educational, training and professional materials through these classes, and they are also learning aids for learners and trainees.

## Research problem:

According to the results and recommendations of previous conferences, studies and research, and the exploratory research conducted by the researcher with the aim of determining the extent to which learners need to engage in learning, through an electronic questionnaire via Google Drive that was applied to a sample of (30) male and female students from the fourth year students, Department of Instructional Technology, Faculty of Specific Education, Minia University. The results showed that (30%) have the skills of engaging in learning, and (70%) do not have these skills. The unstructured interviews showed that the students of the Faculty of Specific Education, fourth year, specializing in educational technology, have a low level of skills for their involvement in participating in the content and activities. / asynchronous / synchronous and asynchronous) may contribute to the development of learning engagement skills among fourth year education technology students, and the effectiveness of these patterns in developing the cognitive, emotional, behavioral and psychological aspects of learning engagement skills is known.

in an attempt to address this problem by answering the following main question: What is the effectiveness of the virtual classroom pattern (synchronous / asynchronous / synchronous and asynchronous) in developing the skills of engagement in learning among students of educational technology, fourth year, Department of Education Technology, College of Specific Education, Minia University The following questions branch out from the main question:

- 1- What are the criteria for designing a virtual classroom environment?
- 2- What is the proposed educational design model for the virtual classroom pattern (synchronous / asynchronous / synchronous and asynchronous) in developing the skills of learning engagement among students of educational technology?
- 3- What is the effectiveness of the synchronous virtual classroom pattern in developing the skills of engaging in learning among students of educational technology?
- 4- What is the effectiveness of the asynchronous virtual classroom pattern in developing the learning engagement skills of educational technology students?

5- What is the effectiveness of the virtual classroom style (synchronous and asynchronous) in developing learning engagement skills among educational technology students?

### **Research objectives:-**

The objective of the current research, in general, is to improve the level of skillful performance of the students of the research group in the skills of engaging in learning, by revealing the effectiveness of the virtual classroom style in developing the skills of engaging in learning and knowing the following:

1. Standards for designing a virtual classroom environment.
2. The proposed instructional design model for the virtual classroom style (synchronous/asynchronous / synchronous and asynchronous) in developing learning engagement skills among educational technology students.
3. The effectiveness of the synchronous virtual classroom pattern in developing the learning engagement skills of education technology students.
4. The effectiveness of the asynchronous virtual classroom style in developing learning engagement skills among education technology students.
5. The effectiveness of the virtual classroom pattern (synchronous and asynchronous) in developing learning engagement skills among education technology students.

### **The importance of research**

The importance of the current research was as follows:

#### **First - for the learner:**

- It may preserve the effect of learning on the learner, in addition to keeping him away from the traditional Education.
- Qualifying graduates of the Education Technology Department to fulfill an important part of their job requirements.

#### **Secondly, for the teacher:**

- It may work to save the teacher's time and effort, which it takes to deliver specific information to the learner, and to benefit from this time in any other educational activities, and to contribute to the development of the method used in teaching the course.
- Designing a virtual classroom (synchronous - asynchronous) in developing the skills of engaging in learning on a fully individualized

system that serves the functional tasks carried out by students of educational technology in educational institutions after their graduation.

### **Third - for course designers:**

- Providing a standardized measure of learning engagement skills for students of educational technology in the faculties of specific education, Minia University.

### **Fourth - For planners of educational technology curricula:**

- Providing them with technologically programmed educational content that achieves general goals in the field that benefit the learner/teacher after his graduation and work in the field of teaching.
- Presenting a model for a virtual classroom that helps in developing the skills of engaging in learning.

### **Research Methodology:-**

The current research relied on:

1. The analytical descriptive approach: with the aim of analyzing previous studies and literature related to the virtual classroom, learning engagement skills; With the aim of preparing the theoretical framework and preparing research tools.
2. The semi-experimental approach: The researcher used the semi-experimental approach, which aims to investigate the effect of one or more independent variables on one or more dependent variables. This is to measure the effectiveness of the virtual classroom style (synchronous / asynchronous) in developing the skills of engaging in learning (cognitive / skill / emotional) among students of educational technology.

### **The quasi-experimental design of the research:**

According to the independent variable of the research and its patterns, the pre/post-experimental design was selected for the experimental groups.

### **Search limits:-**

The current search was confined to:-

1. **Content limits:** - The design of the training content was limited to the skills of engaging in learning by using the virtual classroom pattern (synchronous - asynchronous - synchronous and asynchronous) for students of educational technology, and the use of the virtual classroom



pattern based on the learning and content management system Canvas was limited.

2. **Temporal limits:** - The temporal limits were limited to students of the fourth year, Department of Education Technology, Faculty of Specific Education, Minia University, first semester.
3. **Spatial Limit:** Laboratories of the Faculty of Specific Education at Minia University for those who do not have a computer - home - a place where internet access is available.

### **Research variables:-**

#### **First - the independent variables:**

it is represented in presenting the content through the virtual classroom style through the Canvas learning and content management system, and the content is presented in the form of three styles as follows:

- Synchronous Virtual Classroom Style.
- Asynchronous Virtual Classroom Style.
- Virtual Classroom Style (Synchronous/ Asynchronous ).

#### **Second: the dependent variable:**

Learning engagement skills:

- The cognitive aspect of the skills of engaging in learning.
- The skill side of the skills of engaging in learning.
- The emotional aspect of the skills of engaging in learning.

#### **The research sample:-**

The research sample consisted of (90) students from Instructional Technology - Faculty of Specific Education - Minia University, who were divided randomly and equally into experimental research groups, so that each group includes (30) students.

#### **Research tool:-**

The research tools were as follows:

##### **First - data collection tools.**

- List of engaging learning skills.

##### **Secondly, the experimental treatment material:**

The subject of the experimental treatment was design virtual classroom (synchronous - asynchronous - synchronous and asynchronous) for developing the skills of engaging in learning using the platform based on the learning and content management system Canvas.

### **Third - Measuring tools:**

The scale of engagement in learning with its three dimensions (cognitive - skill - emotional).

### **Research hypotheses :**

According to indicated previous studies results, the following hypotheses could be formulated:

1. There is no statistically significant difference at the level of  $\leq (0.05)$  between the mean scores of the students of the three experimental groups in the cognitive dimension of the scale of engagement in learning among students of educational technology.
2. There is no statistically significant difference at the level  $\leq (0.05)$  between the mean scores of the three experimental groups in the skill dimension of the Engagement in Learning scale for students of educational technology.
3. There is no statistically significant difference at the level of  $\leq (0.05)$  between the mean scores of the three experimental groups in the emotional dimension of the scale of engagement in learning among students of educational technology.
4. There is no statistically significant difference at the level of  $\leq (0.05)$  between the mean scores of the three experimental groups students in the overall learning engagement scale for educational technology students.

### **Theoretical framework and previous studies:-**

#### **The first chapter: Virtual Classrooms.**

Virtual Classrooms are a new form of interactive learning that uses the vast capabilities of computer and communication technology with learning strategies that reflect the contemporary roles of teachers and learners by dealing with educational content via the Internet, as well as being more flexible in learning and determining the time and place of learning. It has several names, including: E-Classrooms; online Classrooms; The Web Open Classrooms; Smart Classrooms; And WWW Classrooms (Mohamed Abdel Maksoud Hamed, 2010). (Muhammad Al-Maradani, and Naglaa Mukhtar, 2011, p. 786) pointed out that there are main features in these definitions, and common denominators among them, including:

- an integrated interactive educational system for distance learning available via the Internet, consisting of inputs, processes, outputs and feedback.

- it includes the two methods of interaction (synchronous and asynchronous) in the process of teaching and learning between the learner and the various sources of learning, and between him and his peers through various communication and interaction tools.
- Uses interactive electronic teaching aids to communicate between the learner and the teacher on the one hand, and between the learner and the content on the other hand.
- it includes a system of educational support for the learner in forms and tools for educational support provided through it, such as feedback.
- Focuses on the elements of the educational process (goals, content, information sources and methods of presentation, assessment activities and tools, various learning resources, appropriate evaluation methods, modernization and management of the learning environment.

### **Advantages of the virtual classroom:**

Virtual classrooms have many advantages that have made them the preferred educational and teaching method for various types of educational institutions. To provide participatory content, seminars and training courses, so that the virtual classrooms, with their advantages, become a virtual environment rich in all the tools of interaction and remote communication. Saad Hindawi, 2016; Muhammad Badawi, 2016; Nasser Al-Shahrani, 2016 (); Small et al, 2012; Dikmenli & Unaldi 2013; Martin, et al, 2013; Abdel rashid Sharaby, 2015; Salha & Abdurrahman, 2015; Kurcu & Arslan), and the most important advantages of virtual classes can be presented as follows:

1. Advantages associated with trainees: Virtual classes offer trainees many advantages; The most important of which are:
  - It allows them to participate in lectures and training courses without incurring the hardships of travel and transportation.
  - Allows training for all with the same capabilities without discrimination related to the gender of the trainees or their location.
  - Take into account the various conditions that hinder participation in training.
  - Enable them to benefit from the abilities of the trainer, regardless of his gender (male or female) or where he is.

- It provides them with quick access to information directly through synchronized virtual classrooms.
- Advance education and training in an interactive environment without fear or shame.
- Achieve for them to take advantage of the participants' electronic capabilities and equipment, which may not be available in traditional lecture halls.
- Achieve their training by employing a wide variety of content in form, multimedia, and surfing on the Internet.
- Availability of a wide range of communication and collaboration tools and means of expression during training; To make the trainee a continuous participant in the learning process.
- It enables them to express and share audio, written dialogue, pictures, video files, video camera, interactive whiteboard, sharing applications, attaching files, and sharing links to websites.
- Refine their knowledge and skills through the immediate sharing of dictionaries, encyclopedias, and global information bases via the Internet, and by following up on the supporting files published through specialized websites and audio and video presentations.
- Develop their virtual social skills, collaborative work, and positive participation.
- It enables them to benefit from lectures and training courses for some distinguished experts who are present in other places or universities.
- raining sessions are provided to participants directly in synchronized virtual classes.
- Allows them to record the sessions to watch them again and refer to them for review and to hone some skills when needed.
- Transforming the trainee from the role of the recipient of knowledge and skills to the role of the participant in the information, keeping pace with modern learning strategies, making the trainee an explorer, a researcher and a participant in the learning industry

## 2- Features associated with the educational institution:

Virtual classrooms offer educational institutions many features that facilitate the process of providing education and training and managing the

educational and training process with the highest degree of efficiency and at the lowest cost, and the most important of these features are:

Saving training costs by saving the cost of:

Equipment, laboratories, devices, information networks, blackboards and tools. • Nakanat for the trainer and the trainees.

- Printing books and training bags.
- Maintenance of devices and equipment.
- Manpower working in the field of coordination, follow-up and management Hospitality and what it includes of foods and drinks.

### **Improving the training process through:**

Provide immediate and continuous feedback to participants through interactive communication tools.

- Continuously updating the content of the training programs during training in the virtual classes.
- Benefiting from the training competencies of experts and specialists located in other countries.
- Recording the trainees' responses and storing their assignments and work, which facilitates the evaluation and follow-up process.

### **3- Addressing training provision problems through:**

- Providing training through all trainers and all trainees without regard to the gender of the trainer or the learners.
- Providing training opportunities for a large number of trainees from different geographical areas.
  - Provide training for those with excuses
  - Provide security during training through a safe environment from risks when conducting experiments.

### **4- Reducing training burdens through:**

- Easy to manage virtual training sessions; Interaction, response and follow-up are done in a manner
  - Coherent electronic.
- Reducing the burden of the assessment process; It provides a continuous assessment tool to assess learners in the virtual classroom. By employing remote assessment methods

## **Types of virtual classes:**

Most studies, previous research and related literature classified classrooms into two basic types:

- **Synchronous Virtual Classroom:** These are virtual classrooms that provide education/training to the participants directly at the same time; Where the trainer and trainees are present to interact and share about the content at one time, and the available tools are activated, dialogue with voice, image, video and text chat, interactive whiteboards, sharing applications, exchanging opinions on the subject of training and skills, and providing feedback directly and immediately, it is classroom-like classes traditional; In which the trainer and the trainees use the training content in real time, so that the trainees and the trainer can communicate and interact as if they were face to face in the traditional classes.
- **Asynchronous Virtual Classroom:** These are virtual classes that provide training to the participants indirectly, so that the trainer himself is not required to be present during the training sessions. There is no restriction of place or time, so a participatory design is made in the form of asynchronous forums, blogs and discussion boards through the Internet, so that the trainees can enter, participate and interact freely without the need for their presence at one time; It gives them absolute freedom to choose the appropriate learning time for each trainee. Two studies: Nader, Shimi (Abdulrashid & Sharaby 2015) added a third type, which is the (Blended Virtual Classroom) style; Which combines and integrates the two patterns of synchronous and asynchronous classrooms together, where education / training is provided to the participants in both synchronous and asynchronous patterns.

## **The Second Chapter : engaging in learning**

### **a)What is engagement in learning?**

The definitions that dealt with engagement in learning are based on the studies of: (Din & Orey, 2018; Naglaa Fares, 2016; Shernoff et al, 2016; Bigatel & Williams, 2015; Ahmed Abdel-Maguid, 2014; Rafa Al-Zoubi, 2013; Malik, 2013; Junco, 2012; NSSE, 2012; Ouweneel et al, 2012; Saeed & Zyngier, 2012; Fredricks et al, 2011; Kuh, 2009; Baker et al, 2008;

Coates, 2007; Glanville & Wildhagen, 2007; Fredricks, Bulmenfeld & Paris, 2004; Willms, 2003; Tsui, 2002; Skinner & Belmont, 1993) as:

- Time and positive energy expended by students in practicing educational activities related to the completion of learning tasks.
- The charge of feelings that push the student to take the initiative to start and continue the learning activity.
- Effective perception of enjoyment, interest and motivation to complete an academic task. • Student participation in activities and tasks that are likely to result in high-quality learning.
- A desire to learn and work with others, which is expressed in students' feelings that they belong to the educational institution and in the extent of their participation in educational activities.
- Learner interaction with different aspects of learning.
- A broad structure that includes the following (active cooperative learning - participation in activities - communication with others (teacher or peers) and aims to enrich the learner's experience in academic and non-academic aspects with the support of educational institutions.
- A multiple concept consisting of dynamically interdependent components in the sense that they work with each other and result from the interaction between students and the learning environment.
- A psychological process that refers to attention, interest, investment of capabilities, and effort by students during the learning process.
- The amount of effort exerted by the learners in participating in the various tasks and activities, and the formation of tendencies, attitudes and positive feelings towards learning, and it is measured by the degree that is obtained using the scale prepared for that.
- A multi-faceted structure that includes several sub-groups, each with its own indicators.
- Quality of effort and participation in productive learning activities.
- The amount of time and effort that the student spends in completing his studies, which lead him to experiences and results in his success.
- The amount of physical and psychological energy a student devotes to the academic experience.



- The experience that results from spending more time on learning with the learner's focus, interest, and enjoyment of performing educational activities.
- The active performance of the learner in order to improve his behavior and cognitive performance in the learning environment.
- The student's preoccupation with an activity directly related to the learning process through attention, participation, effort and commitment to the teacher's instructions.
- A general concept that includes many behaviors and positive attitudes towards learning.

**B- Skills of Engagement in Learning: The skills of engagement in learning are as follows:**

- 1- Behavioral skills are divided into: Behavioral engagement. Academic engagement. - Determination. Avoid violence.
- 2- Emotional skills are divided into:  
Emotional involvement. Psychological Engagement:  
The Learner-Professor Relationship.  
Psychological engagement:  
the learner-peer relationship.  
Psychological involvement: the learner-family relationship.  
- Responding to challenges.
- 3- Cognitive skills are divided into:
  - self management.
  - Deep cognitive strategy.
  - Cognitive strategy Shaloo
  - Future goals and ambition

**Research procedures:-**

- 1- Preparing a list of basic skills to engage in learning: After completing the content analysis, a list of skills related to this aspect was prepared.
- 2- Preparing the environment for the virtual classroom: The experimental treatment material was represented in developing the skills of engaging in learning, and the Vaughan Tay (1996) model was chosen as one of the educational design models. Interaction, production, evaluation.



- 3- Preparation of measurement tools: The measurement tools in the current research include: a standardized measure of the skills of engaging in learning prepared by the researcher.
- 4- The pre-application of measurement tools: where the researcher applied the research tool to ensure the equality of the groups.
- 5- Conducting the basic experiment: Each of the research groups was studied according to the default class pattern (synchronous / asynchronous / interaction between the pattern)
- 6- Post application of the research tools: where the researcher applied the research tools dimensional to the three experimental groups.
- 7- Statistical treatment: The researcher used the Statistical Package for Social Sciences (SPSS) program for statistical treatment.

### **Research results:-**

The application of the research tools beforehand: to ensure the equivalence of the experimental groups, a scale of engagement in learning was applied beforehand in order to ensure the equivalence of the three experimental groups. The results of the pre-application were as follows:

The equivalence of the three experimental groups was calculated by using one-way ANOVA analysis of variance to identify the significance of the differences between the three experimental groups as follows: A- Calculating the statistical description of the pre-measurements of the three sub-experimental groups:

**Table (1) Statistical description (the mean and standard deviation) of the pre-measurements of the experimental groups.**

standard deviation	the middle arithmetic	Number	groups	Variants
1.80	24.07	30	Synchronous	measure of engagement in learning (150)
1.64	23.70	30	Asynchronous	
2.08	24.63	30	synchronous and asynchronous	
1.87	24.13	90	Total	

(b) Calculation of one-way analysis of variance between the pre-measurements of the three subgroups.

**Table (2) One-way analysis of variance between the pre-measurements of the students of the experimental groups in the learning engagement scale according to the default classroom style (synchronous - asynchronous - synchronous and asynchronous)**

significance level	F	mean of squares	degrees of freedom	Total squares	source of contrast	Variants
0.150	1.942	6.633	2	13.267	between groups	measure of engagement in learning
		3.415	87	297.133	within "wrong" groups	
			89	310.400	Total	

The results of Table (1, 2) showed that there were no statistically significant differences between the mean scores of the students of the tribal groups for the experimental groups (synchronous - asynchronous - synchronous and asynchronous) in the scale of engagement in learning, which indicates the equivalence of these groups in those variables, and after the completion of the tribal application And to ensure the equivalence of the three sub-experimental groups, the basic experiment of the research was carried out.

### The answer to the search hypotheses

There is no statistically significant difference at level  $> (0.05)$  between the mean scores of the three experimental groups in the cognitive dimension of the Engagement in Learning scale for students of educational technology. The results of the cognitive dimension of the measure of engagement in learning were analyzed for the experimental groups, in order to identify the significance of the differences between the groups in relation to the degrees of the cognitive dimension, and one way analysis of variance was used to identify the significance of the differences between the groups in the degrees of the dimension. The cognitive scale of the engagement in learning in relation to the means and the standard deviations.

**Table (3) Statistical description (arithmetic mean and standard deviation) of the dimensional measurements of the experimental groups in the cognitive dimension of the learning engagement scale.**

standard deviation	Arithmetic mean	Number	المجموعات	variants
1.62	45.73	30	Synchronous	The cognitive dimension of the scale of engagement in learning (50)
1.53	46.13	30	Asynchronous	
1.59	46.03	30	Synchronous and asynchronous	
1.57	45.97	90	Total	

Table (3) shows the results of the descriptive statistics of the three groups in relation to the cognitive dimension, and it is noted that there is a

difference between the mean scores of earnings in relation to the independent variable under current research, as the average score of students in the simultaneous virtual class style was (45.73), and the average score of students in the class style was (45.73). The default is asynchronous (46.13) and the average score of students in the default synchronous and asynchronous classroom style is (46.03).

**Table (4) One-way analysis of variance between the post-measurements of the experimental groups in the cognitive dimension of the learning engagement scale**

indication type	significance level	F	Mean of square	Degrees of freedom	Total squares	source of contrast	variants
not indicative	0.60	0.52	1.300	2	2.600	Between groups	The cognitive dimension of the scale of engagement in learning (50)
			2.48	87	216.300	within the error groups	
				89	218.900	Total	

It is clear from Table (4) that the value of (F) came (0.52) at the level of significance (0.60), which means that there are no statistically significant differences between the mean scores of students in the cognitive dimension of the engagement in learning scale as a result of the difference in the pattern of the virtual classroom, and therefore the hypothesis is accepted the first .

There is no statistically significant difference at level  $> (0.05)$  between the mean scores of the three experimental groups in the skill dimension of the Engagement in Learning scale for students of educational technology.

The results of the skill dimension of the engagement in learning scale were analyzed for the experimental groups, in order to identify the significance of the differences between the groups, and one way analysis of variance was used to identify the significance of the differences between the groups in the degrees of the skill dimension of the scale of engagement in learning. This is for the means and standard deviations, Table (5) shows the results of this analysis.

**Table (5) Statistical description (arithmetic mean and standard deviation) of the dimensional measurements of the experimental groups in the skill dimension of the learning engagement scale.**

Standard deviation	Arithmetic mean	number	Groups	Variants
1.47	46.10	30	Synchronous	The skill dimension of the scale of engagement in learning (50)
1.53	45.27	30	Asynchronous	
1.34	48.73	30	synchronous and asynchronous	
2.06	46.70	90	Total	

Table (5) shows the results of the descriptive statistics for the three groups with regard to the skill dimension, and it is noted that there is a difference between the mean scores of earnings in relation to the independent variable under current research, as the average score of students in the simultaneous virtual classroom style was (46.10), and the average score of students in the classroom style was (46.10). The default is asynchronous (45.27), and the average score of students in the default synchronous and asynchronous classroom style is (48.73).

**Table(6)One-way analysis of variance between the post-measurements of the experimental groups in the skill dimension of the learning engagement scale.**

Indication type	Significance level	f	mean of squares	degrees of freedom	Total squares	source of contrast	Variants
	.000	46.846	98.233	2	196.467	between groups	The behavioral dimension of the scale of engagement in learning (50)
			2.097	87	182.433	within the error groups	
				89	378.900	Total	

It is clear from Table (6) that the value of (F) came (46.84) at the level of significance (0.001), which means that there are statistically significant differences between the mean scores of students in the skill dimension of the engagement in learning scale as a result of the difference in the virtual classroom style (synchronous / asynchronous / synchronous and asynchronous) and to find out the direction of the differences in favor of which groups, the averages were referred to in Table (6) to show that the higher average was in favor of the third experimental group (synchronous and asynchronous together) with an average score of (48.73). There is a statistically significant difference at the level of  $> (0.05)$  between the mean scores of the students of the three experimental groups in the skill dimension of the learning engagement scale for educational technology students in favor of the third experimental group with the synchronous and asynchronous virtual classroom pattern.

There is no statistically significant difference at level  $> (0.05)$  between the mean scores of the three experimental groups students in the emotional dimension of the learning engagement scale for students of educational technology The results of the emotional dimension of the scale of engagement in learning were analyzed for the experimental groups, in order to identify the significance of the differences between the groups, and one way analysis of variance was used to identify the significance of the differences between groups in the degrees of the emotional dimension of the

scale of engagement in learning. For the averages and standard deviations, Table (7) shows the results of this analysis

**Table (7) Statistical description (arithmetic mean and standard deviation) of the post-measurements of the experimental groups in the emotional dimension of the learning engagement scale.**

standard deviation	Arithmetic mean	number	groups	variants
1.87	47.53	30	synchronous	The emotional dimension of the scale of engagement in learning (50)
1.56	47.97	30	asynchronous	
.61	48.03	30	synchronous and asynchronous	
1.45	47.84	90	Total	

Table (7) shows the results of the descriptive statistics of the three groups with regard to the emotional dimension, and it is noted that there is a difference between the mean scores of earnings in relation to the independent variable under current research, as the average score of students in the synchronized virtual class style was (47.53), and the mean score of students in the class style was (47.53). The default is asynchronous (47.97), and the average score of students in the default synchronous and asynchronous classroom style is (48.03).

**Table (8) One-way analysis of variance between the post-measurements of the experimental groups in the emotional dimension of the learning engagement scale**

indication type	significance level	F	mean of squares	degrees of freedom	Total Squares	source of contrast	variants
Not indicative	0.35	1.04	2.211	2	4.422	between groups	The emotional dimension of the scale of engagement in learning (50)
			2.108	87	183.400	within the experimental groups	
				89	187.822	Total	

It is clear from Table (8) that the value of (F) came (1.04) at the level of significance (0.35), which means that there are no statistically significant differences between the mean scores of students in the emotional dimension of the engagement in learning scale as a result of the difference in the pattern of the virtual class, and therefore the hypothesis is accepted Third . There is no statistically significant difference at the level of  $> (0.05)$  between the mean scores of the three experimental groups in the overall learning engagement scale for educational technology students. The results of the learning engagement scale were analyzed for the experimental groups, with the aim of identifying the significance of the differences between the groups, and one way analysis of variance was used to identify the significance of the differences between the groups in the scores of the learning engagement scale with respect to the averages and deviations standard, and Table (5) shows the results of this analysis.

**Table (9) Statistical description (arithmetic mean and standard deviation) of the post-measurements of the experimental groups in the learning engagement scale**

standard deviatio	Arithmetic mea	Total	Groups	variants
4.21	139.37	30	synchronous	measure of engagement in learn (150)
3.10	138.43	30	asynchronous	
2.51	142.80	30	synchronous and asynchronous	
3.69	140.51	90	Total	

Table (9) shows the results of the descriptive statistics for the three groups in the engagement scale as a whole, and it is noted that there is a difference between the mean scores of earning relative to the independent variable subject of the current research, as the average score of students in the simultaneous virtual class style was (139.37), and the average score of



students in the style of The virtual classroom is asynchronous (138.43), and the average score of students in the synchronous and asynchronous virtual classroom is (142.80).

**Table (10) One-way analysis of variance between the post-measurements of the experimental groups in the learning engagement scale**

Indication type	significance level	f	mean of squares	Degrees of freedom	Total Squares	Source Of contrast	variants
Indicative	0.00	10.500	117.878	2	235.756	Between groups	measure of engagement in learning (150)
			1.227	87	976.733	within the error groups	
				89	212.489	Total	

It is clear from Table (10) that the value of (F) came (10.50) at the level of significance (0.001), which means that there are statistically significant differences between the mean scores of students in the engagement in learning scale as a result of the difference in the default classroom style (synchronous / asynchronous / synchronous and asynchronous) and to find out the direction of the differences in favor of which groups, the averages were referred to in Table (11) to show that the higher average was in favor of the third experimental group (synchronous and asynchronous together) with an average score of (142.80), and therefore the fourth hypothesis was rejected and directed, that is There is a statistically significant difference at the level of  $> (0.05)$  between the mean scores of the students of the three experimental groups in the scale of learning engagement as a whole among students of educational technology in favor of the third experimental group with the synchronous and asynchronous virtual class style together.

### **Interpretation of the results:-**

- Virtual classrooms (synchronous / asynchronous) provide a rich and meaningful environment for learners, where learners participate in learning tasks and activities in a way that makes the learner positive throughout the learning time.
- The learner's sense of self-responsibility for learning.
- Satisfying the learner's need for knowledge and information in a manner commensurate with the learners' tendencies.
- Giving the learner an opportunity to express his views and hear opinions and other opinions through participating in discussion panels, whether this discussion is synchronous as in the dialogue rooms or asynchronous as in the forum and e-mail with the aim of reaching solutions to problems by the teacher, when dealing with ready-made programs and producing presentations presentation or access to information about the content, and since there is no study within the researcher's knowledge that has dealt with the effect of using virtual classrooms (synchronous / asynchronous) in developing attitudes towards virtual classrooms.
- The methods of dialogue used in synchronous / asynchronous virtual classes are similar to the actual dialogue in the classroom, but in a more effective way, because it encourages learners to talk, express opinions, and ask for inquiries boldly and courageously, and helps them overcome some problems such as: shyness, introversion, fear of expressing an opinion, or Asking for inquiries, and this makes them more involved in forming more relationships, whether with their colleagues or with the teacher.
- Electronic conversations helped to consolidate the relationship between the teacher and the learners and between the learners and each other, and to provide an atmosphere of warmth and acceptance.
- The use of virtual classes (synchronous / asynchronous) that is accompanied by guidance and assistance that motivates the learner, increases his motivation for learning, and thus increases their involvement. in learning, because the relationship between motivation and engagement is direct, and the higher the motivation, the greater the engagement. It reflects positively on the cognitive achievement of learners. Therefore, engagement is a distinct predictor of the level of learners' achievement.

- The design of the virtual classroom environment "Canvas" also contributed to ease of use, and thus facilitated the involvement of learners in it.
- The learner's relationship with the learner within the environment. The stronger the relationship between them, the more it plays an important role in asking for help, which in turn helped in developing the emotional skills of the learner's relationship with his peers, and thus increased their involvement in learning.
- Making electronic content available to the learner in the form of interactive electronic resources through the virtual classroom environment (synchronous / asynchronous) "Canvas" helped increase their involvement.
- Accepting the opinion of the other and not issuing judgments. The learner deals with a presumption without relying on the preconceived image, where the presumption is listened to and all that he does is respected and said and done, and he deals with all his peers equally without discrimination. Which in turn helped develop the skill of avoiding violence, and thus increased their involvement in learning.

### **Research recommendations:-**

According to the current research results, the researcher recommends the following:

- Encouraging faculty members to use synchronized virtual classrooms in education.
- Holding training workshops for faculty members on how to use synchronized virtual classes.
- The need to train computer teachers and Instructional technology specialists to create synchronous virtual classrooms.
- It is necessary to refer to the list of criteria for designing synchronous virtual classrooms when designing any synchronous virtual classroom.
- The need to conduct a training course for the learners to introduce them to the virtual classroom and the interaction tools available in it, and how to use them, with each learner having his own e-mail.
- The necessity of having an E-mail for every teacher who teaches through the virtual classes so that they can communicate with the learners even after the end of the virtual class session.

- Adopt the Instructional design model that the research reached in designing other virtual classrooms.
- Reconsidering the electronic content provided through the virtual classes.

## 2- Proposals:

According to the results of the current research, the researcher recommends conducting research in the following:

- Studying faculty members' attitudes towards teaching using synchronized virtual classrooms.
- Studying learners' attitudes towards learning through synchronized virtual classes.
- Studying the instructional design of virtual learning environments.
- Applying standards for designing synchronous virtual classrooms that were reached on large student samples in different disciplines.
- Studying the effect of synchronized virtual classes on other variables such as enhancing the motivation of academic achievement among learners.
- A study similar to the current research in other fields of study and other educational stages, and the same research, with the support of virtual classrooms with educational scaffolding, with a change in the research sample.
- Measuring the effectiveness of virtual classrooms as an educational system in the growth of cognitive achievement and innovative thinking among general certificate students.

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