



## The Impact of Different Forms of Teacher's Presence in Synchronous E-Discussions Based on Virtual Teams on Quality of Discussion, Achievement among Educational Technology Students, their Participation, Motivation, and Perceptions

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### Abstract

The research aimed to reveal the impact of the teacher's presence in three forms (identified participant - anonymous participant - anonymous non-participant) in synchronous e-discussions based on virtual teams on the quality of discussions, achievement, participation, motivation of students, and their perceptions about each of synchronous e-discussions, and teacher's presence. The research sample was divided into three experimental groups, where the professor of the course (the researcher) appeared in the discussions of the first experimental group with a known identity. In the second experimental group, the teacher appeared with an anonymous participant. In contrast, an unknown non-participant appeared in the discussions of the third experimental group in eight e-discussions based on virtual teams. The research tools were quality of discussion measurement, achievement test, participation scale, motivation scale, and two questionnaires to measure students' perceptions of synchronous e-discussions and teacher presence. The results favored the first group, and the results also confirmed the positive students' perceptions about the importance of the teacher's presence in synchronous e-discussions.

**Keywords:** *the presence of the teacher, synchronous e-discussions. Virtual Team, Quality of discussion. Achievement, Participation, Motivation, Perceptions.*

## أثر اختلاف شكل ظهور المعلم في المناقشات الإلكترونية القائمة على الفريق الافتراضي على جودة المناقشات والتحصيل لدى طالبات تكنولوجيا التعليم ومشاركتهن ودافعتهن وتصوراتهن

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### المستخلص:

تُعد المناقشات الإلكترونية التي تقوم على الفريق الافتراضي أحد الاستراتيجيات التفاعلية التي انتشرت بشكل كبير في أنظمة التعلم الإلكتروني عن بعد، خاصة مع ظهور العديد من منصات التعليم عن بعد وأدوات الاتصال المتزامنة، ومن ثم فإن هناك أهمية للبحث في أنسب طرق تنظيم هذه المناقشات، وحيث أن المعلم هو أحد أهم عناصر التعليم، والتعلم، فيجب الاهتمام بالطريقة الأنسب لتواجهه وظهوره في تلك المناقشات، ومن ثم هدف البحث الحالي إلى الكشف عن الشكل الأفضل لظهور المعلم في المناقشات الإلكترونية القائمة على الفريق الافتراضي، للإجابة على التساؤل، هل الأنسب لظهوره بهويته مع المشاركة في المناقشات، أم تواجده وظهوره دون الإعلان عن هويته مع مشاركته في المناقشات كأحد أعضاء الفريق الافتراضي، أم الأنسب هو عدم تواجده ومن ثم عدم المشاركة في المناقشات والاكتماء بمتابعتها دون الإعلان عن هويته؟ وهو ما يبحثه البحث الحالي بطرق تجريبية. ومن أجل الإجابة على ذلك اهتم البحث الحالي بثلاثة أشكال لظهور المعلم في المناقشات الإلكترونية القائمة على الفريق الافتراضي (مشارك معلوم الهوية- مشارك غير معلوم الهوية- غير مشارك وغير معلوم الهوية)، والكشف عن أثر ذلك على جودة المناقشات الإلكترونية، والتحصيل بمستوياته المعرفية الستة لدى طالبات عينة البحث، ومشاركتهن في المناقشات، ودافعتهن نحو التعلم، وتصوراتهن نحو كل من المناقشات الإلكترونية، وشكل ظهور المعلم. وقد تمثلت عينة البحث في طالبات الفرقة الثالثة التربوية شعبة تكنولوجيا التعليم، وتمثلت أدوات البحث في: مقياس جودة المناقشات الإلكترونية، اختبار تحصيلي يقيس المستويات المعرفية الستة (المعرفة- الفهم- التطبيق- التحليل- التركيب- التقويم)، مقياس مشاركة الطالبات في المناقشات الإلكترونية المتزامنة، مقياس الدافعية، ومقياس تصورات الطالبات نحو كل من المناقشات الإلكترونية، وشكل ظهور المعلم. وقد كشفت نتائج البحث عن تفوق طالبات المجموعة الأولى التي ظهر فيها المعلم بهويته وشارك فيها، كما أبدت الطالبات تصورات إيجابية نحو أهمية ظهور المعلم في المناقشات الإلكترونية ومشاركته فيها.

**الكلمات المفتاحية:** شكل ظهور المعلم، المناقشات الإلكترونية، الفريق الافتراضي، جودة المناقشات، التحصيل، المشاركة، الدافعية، التصورات.

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### **Introduction:**

Despite its importance, e-learning was not widely used in educational institutions until the Covid 19 outbreak caused a shift away from face-to-face and blended instruction and toward fully online education. As a result, different methods, approaches, and apps were used. E-learning technologies enable new forms of collaborative learning, improving student performance (Seethamraju, 2014). These entrances include electronic discussions, which complement traditional education since they promote discourse, reflection, knowledge acquisition, and self-assessment (Gafni & Geri, 2010).

The online discussion format has been shown to increase student engagement and improve learning outcomes (Xu, Chen & Chen, 2020). Electronic talks fall into two categories: synchronous and asynchronous. Asynchronous discussions are when the student and his classmate and the student and the teacher do not meet simultaneously. Students are divided due to the complete transformation of e-learning brought about by the expansion of the Covid-19 pandemic and its impacts, which opposed to direct interactions with classmates and teachers. The issue is then resolved through synchronous discussions. Additionally, multiple studies have compared synchronous and asynchronous talks, concluding that synchronous discussions are preferable (Dahlstrom-Hakki et al., 2020; Malik & Fatima, 2017). As a result, this study will concentrate on synchronous e-discussions.

When discussing electronic discussions in general and synchronous discussions in particular, the critical nature of the teacher's presence and participation becomes clear, as there is no agreement on the level of instructor intervention necessary to facilitate student participation and to learn in online discussions effectively. On the other hand, the evidence on the effect of teacher participation on student engagement in discussions is inconsistent. While some studies have identified a positive correlation between teacher and student

placements (Jiang & Ting, 2000), others have not (Jiang & Ting, 2000). (Mazzolini & Maddison, 2003). Instructor participation in online arguments has even been proven to have a detrimental effect in several studies (Murphy & Fortner, 2014).

Therefore, this study aimed to explore whether synchronous e-discussion based on the virtual team with three different types of teacher's presence improved the quality of discussion and increased achievement, participation, and motivation.

## 2- THEORETICAL FRAMEWORK

### 2-1 Synchronous e-discussions

Students describe isolation, loneliness, and disconnectedness due to the lack of face-to-face interactions in online education. The idea of synchronous communication and conversation has become a reality as new technologies are developed; synchronous discussion occurs in real-time, on a specified day at a specific time (Molnar & Kearney, 2017). A permanent separation (of place) of the learner and instructor during planned learning sessions when instruction occurs in real-time was termed by Martin et al. (2017) as synchronous discussion. According to Rinekso and Muslim (2020), the synchronous learning environment refers to real-time online learning that allows students and teachers to communicate concurrently or live. Students can get rapid feedback using synchronous online (Sidhu et al., 2019). Also according to Spencer and Hiltz (2003), synchronous learning happens when participants communicate with one another using video and audio in real-time. However, synchronous learning is not limited to video and voice in a virtual learning environment.

Synchronous online learning is gaining more excellent traction than asynchronous online learning at the moment. Synchronous online learning, which uses advanced technology, has several benefits, including increasing students' sense of connection to teachers. Other students viewed synchronous online interactions positively because of the quick feedback and contact with peers and instructors, resulting in increased student engagement in an online learning environment (Francescucci & Rohani, 2018). Students gathered multiple perspectives, engaged with learning content, and practiced workplace-relevant skills through peer-to-peer contact (Siddiqui et al., 2019). Teachers and students in synchronous web-based environments go online simultaneously and use

network synchronization platforms such as audio or video conference, electronic whiteboard, chatroom, and stream media for real-time interactive learning (Molano & Polo, 2015). According to Cela et al. (2015), interaction is the cornerstone to effective learning and information transmission. The main feature of synchronous web-based learning is using audio and video interaction technologies to simulate face-to-face contact. Teachers could use multimedia to send materials, sound, and images to students during the synchronous discussion, while also collecting audio and video replies from students. Such a multimedia presentation breaks through text-based communication, allowing students and teachers in distant locations to communicate more effectively, minimizing the sensation of isolation associated with individual learning and boosting the learning effect (Ruan, 2018).

It overcomes the barrier of space, provides rapid and various communication channels, and generates an alternative creativity learning environment, in addition to the synchronous e-discussion mentioned above (Ruan, 2018). Members of synchronous learning, as opposed to asynchronous learning, can (a) find limited ways of contact, (b) tend to stay focused, (c) have a more incredible feeling of contribution, and (d) experience improved assignment/course completion rates, according to many research (Malik & Fatima, 2017). Synchronous e-discussion is one way to strike a compromise between some teachers' preference for online learning and the necessity for synchronous discussion and contact to facilitate learning and development (Hjalmarson, 2017). Students and teachers participate in synchronous learning in an online forum to learn together at the same time despite the distance (Bower et al., 2015). Students and instructors spontaneously communicate as if they were physically present, despite being thousands of miles apart (Murphy et al., 2011).

Despite the benefits of synchronous talks and their educational value, only a few studies, primarily empirical ones, have been conducted on them. According to Brown et al. (2016), there is a general lack of research on online learning, particularly distant learning, and efficient synchronous online engagement. Wang (2005) pointed out that research focusing solely on constructing online synchronous discussion tactics in educational settings is scarce. The cognitive process during students' online, especially synchronous learning, received little attention (Wang & Chen, 2007).

On the other hand, the shift to online education imposed by the Corona pandemic and its consequences has increased the importance of synchronous discussions. It compensates for the complete absence of direct interaction between individuals and limits their isolation and loneliness during learning. Asynchronous online discussions can also be designed to promote knowledge construction among learners and encourage active use of thought (Luhrs & McAnally-Salas, 2016).

+Moore's (1993) definition of dialogue reflects constructivist educational theories of learning in which the learner builds knowledge through the exchange of ideas with the instructor or other students and relates to the notion of instructor feedback on student papers as dialogue, which is part of contemporary approaches to feedback in composition pedagogy. The role of the writing teacher as facilitator and guide rather than evaluator exemplifies the concept of feedback as dialogue in composition studies, in which the instructor is advised to avoid overtaking students' papers through excessive directive commentary. The notion of one-on-one student-instructor conferences as the most effective approach to feedback in composition pedagogy also stems from constructivist theories of learning as dialogue.

That can lead to the current research interest in studying synchronous discussion and the variables that may make it more effective, such as the teacher's appearance and virtual teams' participation in collaborative learning.

The synchronous e-discussion in this research is defined as a distance learning strategy in which virtual teams of students interact in a collaborative learning environment to exchange opinions using synchronous communication tools to answer open questions about the topic of discussion.

## **2-2 Teacher presence in synchronous e-discussion**

When classroom discussion takes place online synchronously, however, there is a need to re-examine the influence of the teacher's role, presence, and participation. The online environment, mainly when it involves synchronous discussion, changes the dynamics of teacher-student and student-student interactions, with the teacher's influence and power over the direction of exchanges potentially reduced. There is a sizable body of work on the teacher's role and impact on the debate, but findings do not yield a clear consensus; the



instructor's participation in online discourse can range from "prominent sage" to "staying low" (Schaller et al., 2015). [Rodgers et al. \(2006\)](#) defined presence as a state of mindful awareness, receptivity, and connectedness to the mental, emotional, and physical workings of both the individual and the group in the context of their learning environments. Additionally, it refers to the degree to which a person on the other side of a screen (or computer) is viewed as real (Rehn et al., 2016). Teacher presence and fast feedback in synchronous online sessions increased students' engagement in the emergency remote teaching environment and their motivation to finish assignments and connect with their classmates (Khlaif et al., 2021). By examining the perspectives of over 1,000 students on professors' presence in online learning environments. Shea et al. (2006) discovered that when teachers properly construct a project, equip students with enabling conversation, and occasionally offer direct instruction such as question raising and discussion summarizing, students regard it as an essential factor. Additionally, they provide feedback and emphasize the value of a well-developed learning community, including trust, common goals, support, and cooperation.

On the other hand, numerous studies indicated a dearth of research into how students perceive teachers' participation in their online discussions (Wu, 2017). Xu et al. (2020) emphasized the importance of conducting future studies about the moderating effects of teaching experience and student leaders. Also, Rodgers et al. (2006) reported that little empirical research exists about how teacher presence affects student learning.

Recent technological developments, such as the Internet and its increasing bandwidth, along with video devices such as web cameras and microphones, have made it increasingly possible to organize online learning in a different way: through synchronous online video conferencing environments. In such environments, students and teachers interact in real time, through video conferencing software that includes video, audio, and instant messaging (Martin, Ahlgrim-Delzell, & Budhrani, 2017; Pursel et al., 2016). Most of these environments nowadays also come with additional features, such as interactive whiteboards, interactive polling, and breakout rooms, which further enrich two-way communication (Racheva, 2018). Due to the demands that real-time interaction places on educators, synchronous online videoconferencing environments are generally used to provide instruction to relatively small groups of students, especially when compared to asynchronous online environments

(Kaplan & Haenlein, 2016). According to previous research, real-time video-based interaction makes synchronous online learning environments more conducive to creating a positive learning climate, facilitating rich social interactions and the formation of sustainable social relationships. As such, it has been argued that moving to online synchronous video conferencing environments can help overcome the disadvantages that are characteristic of asynchronous online learning environments (Racheva, 2018).

### 2-2-1 Forms of teacher presence in synchronous e-discussion

Many studies have dealt with the forms of teacher appearance and participation in e-learning and in synchronous e-discussions (Golding & Bretscher, 2018; Rehn et al., 2018; Moorhouse, Li, & Walsh, 2021) among the most important of these forms: a) identified participant, b) anonymous participant & c) anonymous non-participant. as follow:

- a) **identified participant:** In it, the teacher appears in the electronic discussions with his identity and description, and then he plays his role as a teacher and participates in the discussions, as he guides, counsels, organizes the discussions, and provides support and immediate feedback.
- b) **anonymous participant:** In which the teacher appears in the electronic discussions under another name as one of the students, and participates, as he presents the same as he presented in the first form, but without disclosing that he is the teacher.
- c) **anonymous non-participant:** In which the teacher appears in the discussions anonymously and does not participate in the discussions but is satisfied with observing the learning without interfering in the discussions.

In the first and second forms of teacher presence (identity known participant - anonymous participant), there are multiple roles and participation of the teacher in electronic discussions, and table (1) summarizes some of these roles (Grammens, et al., 2022).



table 1

*Framework of teacher roles for synchronous discussion*

Roles	Description
Instructional	Concerned with knowledge of the basic elements of designing effective instruction, and provides the pedagogical foundation of teachers' work
Managerial	Focuses on the practical organization of learning and establishing protocols and rules
Technical	Geared toward handling the technical aspects of the synchronous online videoconferencing environment
Communicational	Centers on the facilitation of clear and smooth communication
Social	Aims to facilitate social interaction and the development of durable relations, taking into account cultural differences between students

Racheva (2020) added that in synchronous virtual teaching, the instructor's expertise and role of a counselor and facilitator in learning is of great importance for the acquisition of knowledge, skills, and competences and in terms of student satisfaction. Over the course of the virtual session, the tutor should encourage the students to participate every 3-5 minutes. This can be achieved by a variety of activities such as brainstorming, small group discussion, collaborative and individual tasks, Q&A sessions, hands-on experience, etc. Discussion between students and tutors is a necessary part of a class, is crucial for supporting the negotiation of meaning that leads to knowledge construction, and is essentially a social cognitive process.

As for the third form of the teacher's presence, there are studies that confirmed the effectiveness of students' free discussion because social experiences and perceptions of others' beliefs, attitudes, expectations, and behaviors influence expectancy and task value (Rosenzweig, Wigfield, & Eccles, 2019; Wigfield & Eccles, 2020), This indicates that online students' interpretations of social partners' messages can influence their motivation (Edwards, & Taasobshirazi, 2022).

However, in spite of this, there are multiple studies that emphasized the importance of the presence and participation of the teacher in simultaneous electronic discussions, and the fulfillment of his multiple roles, and they

considered this a condition of the success of those discussions (Grammens, et al., 2022; Lindberg, 2020).

On the contrary, some studies believe that the presence of a teacher hinders the freedom of some students to express their opinions and participate in discussions, which leads to their reluctance to participate and their motivation to learn to decrease (Juárez-Díaz, & Ojeda-Ruiz, 2021; Wang, Huang, & Quek, 2018).

Based on the above, it is clear that there is a clear difference about the form of the teacher's presence and participation in synchronous e- discussions, which means the need for more research in this field to determine the best form for the teacher's presence and participation in e-discussions, which prompted the researcher to conduct the current research in an attempt to reach the best form of the teacher's presence and participation in electronic discussions based on the virtual team (identified/ participant - anonymous/participant – anonymous/non-participant) and reveal its impact on the quality of discussions, learners' achievement, their motivation to learn, and the extent of their participation in discussions if the teacher appears as him and if he does not appear, and their perceptions of electronic discussions, as well as the presence of the teacher.

### 2-2-2 Forms of teacher emergence in current research

- The appearance of the teacher with a known identity - participant: where the teacher (researcher) appears in his capacity and person, participates in the electronic discussion based on the virtual team, and plays his role, as the roles included: 1) organizing the discussion, 2) encouraging the students to participate, 3) providing immediate feedback, 4) Adjusting discussions to achieve their goal, 5) Using multimedia, 6) Providing support and assistance, 7) Answering students' questions if they need it.
- The appearance of the anonymous teacher is a participant: where the teacher appears under a pseudonym as a female student, participates in the discussions, and performs the same roles as in the first figure, as he helps in organizing the discussion, provides assistance and guidance as a member of the team, and also comments on the female students' responses.

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- The teacher appears anonymous and not participating: The teacher appears under a pseudonym as a member of the virtual team, and does not participate in the discussion at all. He is content with being present and observing the discussions.

figure (1) shows the roles of the teacher in each of the three forms and their disadvantages.

Figure 1

shows roles of teacher in the three forms and their disadvantages

	An identified teacher is a participant.	Anonymous teacher participant	Anonymous non-participating teacher
Teacher's Roles	<ul style="list-style-type: none"> <li><input type="checkbox"/> Creating an integrated learning environment.</li> <li><input type="checkbox"/> Providing support to students.</li> <li><input type="checkbox"/> Providing immediate and timely feedback.</li> <li><input type="checkbox"/> Organizing discussions.</li> <li><input type="checkbox"/> Attracting the students' attention and encouraging them to participate.</li> <li><input type="checkbox"/> Students' confidence in the information provided by the teacher.</li> </ul>	<p>Appears and acts as a student, doing the same roles as follow:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Providing support to students.</li> <li><input type="checkbox"/> Providing immediate and timely feedback.</li> <li><input type="checkbox"/> Organizing discussions.</li> <li><input type="checkbox"/> Attracting the students' attention and encouraging them to participate.</li> <li><input type="checkbox"/> Students' confidence in the information provided by the teacher.</li> </ul>	<p>appears as a student and does not participate in discussions at all.</p>
Disadvantages	<p>Some female students feel shy, which negatively affects their participation and learning.</p>	<p>Most female students do not take what the teacher presents seriously because he appears to be a student like them. Which reduces their benefit from the guidance, support, guidance, and feedback provided by the teacher.</p>	<ul style="list-style-type: none"> <li>- Students' deviation from the goal of the conversations,</li> <li>- some students' reluctance to participate and attend regularly,</li> <li>- problems and inquiries arising during discussions that require the teacher's intervention.</li> </ul>

### 2-3 Virtual teamwork

virtual team is described as "the formation of a shared identity around a certain subject or collection of problems." By contrast, participation offers access to a diverse array of information flows that can be beneficial for locating resources, identifying solutions, or initiating dialogues during focused or untargeted searches (Wenger et al., 2011). While engagement in a community requires a significant and continuous commitment, participation in a network can be spontaneous, surprising, and accidental (Macia & Garcia, 2016). Additionally, it is defined as a collection of people who join together for a specific purpose or meet particular needs; they are governed by official and/or informal policies and aided by computing technology (Hur & Brush, 2009). Weatherby (2017) reported that virtual communities are designed by someone and use technology as a gathering point for online communities of practice.

On the other hand, they emerge naturally from within a virtual community. Hertel et al. (2005) referred to them as teams that predominantly use digital media to communicate and coordinate their work with at least one of the team members working at a different location and/ or in a different time zone. Virtual teams are made up of remote workers who are not co-located but have a common purpose and interdependent team goals for which they are mutually accountable.

A virtual team is described as "the formation of a shared identity around a certain subject or collection of problems." By contrast, participation offers access to a diverse array of information flows that can be beneficial for locating resources, identifying solutions, or initiating dialogues during focused or untargeted searches (Wenger et al., 2011). While engagement in a community requires a significant and continuous commitment, participation in a network can be spontaneous, surprising, and accidental (Macia & Garcia, 2016). Additionally, it is defined as a collection of people who join together for a specific purpose or meet particular needs; they are governed by official and/or informal policies and aided by computing technology (Hur & Brush, 2009). Powell et al. (2004) said that virtual teams represent one such form that could revolutionize the workplace and provide organizations with unprecedented flexibility and responsiveness. Virtual teams are essential mechanisms for those seeking to leverage scarce resources across geographic and other boundaries and represent a large pool of new product know-how, which seems to be a promising source of innovation.

Munkvold & Zigurs (2007) added that virtual teams are more distributed across time, space, and culture. These dimensions correspond to challenges that can significantly impact the productivity of virtual teams and the quality of the interpersonal relationships of their members.

In this virtual study, a team of female students from different provinces work together collaboratively in a synchronous e-discussion using google apps and carry out collaborative activities together and individual activities.

## **2-4 Dependent Variables**

This study included four dependent variables, namely, discussion quality, Achievement, participation, Motivation, and perceptions.

### **2-4-1 Discussion quality**

Discussion quality is the reciprocal discussion activity that contributes to knowledge construction (Kim et al., 2011; Ke & Xie, 2009; York & Richardson, 2012).

It is defined procedurally as discussions achieving the educational objectives set for them through the students' commitment to starting and ending the discussions, serious and effective participation, the discussion's connection to the goal and the educational content it covers, the diversity of the students' roles, its absence of comical sentences, going out of context, the use of various media, and the expression of all students. Express their opinions and respect each other.

### **2-4-2 Academic Achievement**

Academic achievement is the grade a student receives for coursework or assignments (Planchard, et al., 2015).

It is defined procedurally as the score obtained by female students on the achievement test.



### 2-4-3 Participation

It is defined procedurally as the participation of female students in electronic discussions with positivity and activity that continues throughout the discussion and is measured by the degree that the student obtains on the participation scale.

### 2-4-4 Motivation

Motivation refers to a network of interrelated ideas that elicit participation behavior. When students are moved, or motivated, to participate in discussions, they engage in participation action.

***Intrinsic motivation.*** The term “intrinsic” relates to an internal drive, therefore intrinsic motivation refers to behavior that is performed out of inherent interest. According to Ryan and Deci (2000), students may be driven to succeed out of the interest and value they place on knowledge of specific topics. In the context of this study, students who are intrinsically motivated to participate in discussions do so because of an internal drive to learn in collaborative environments.

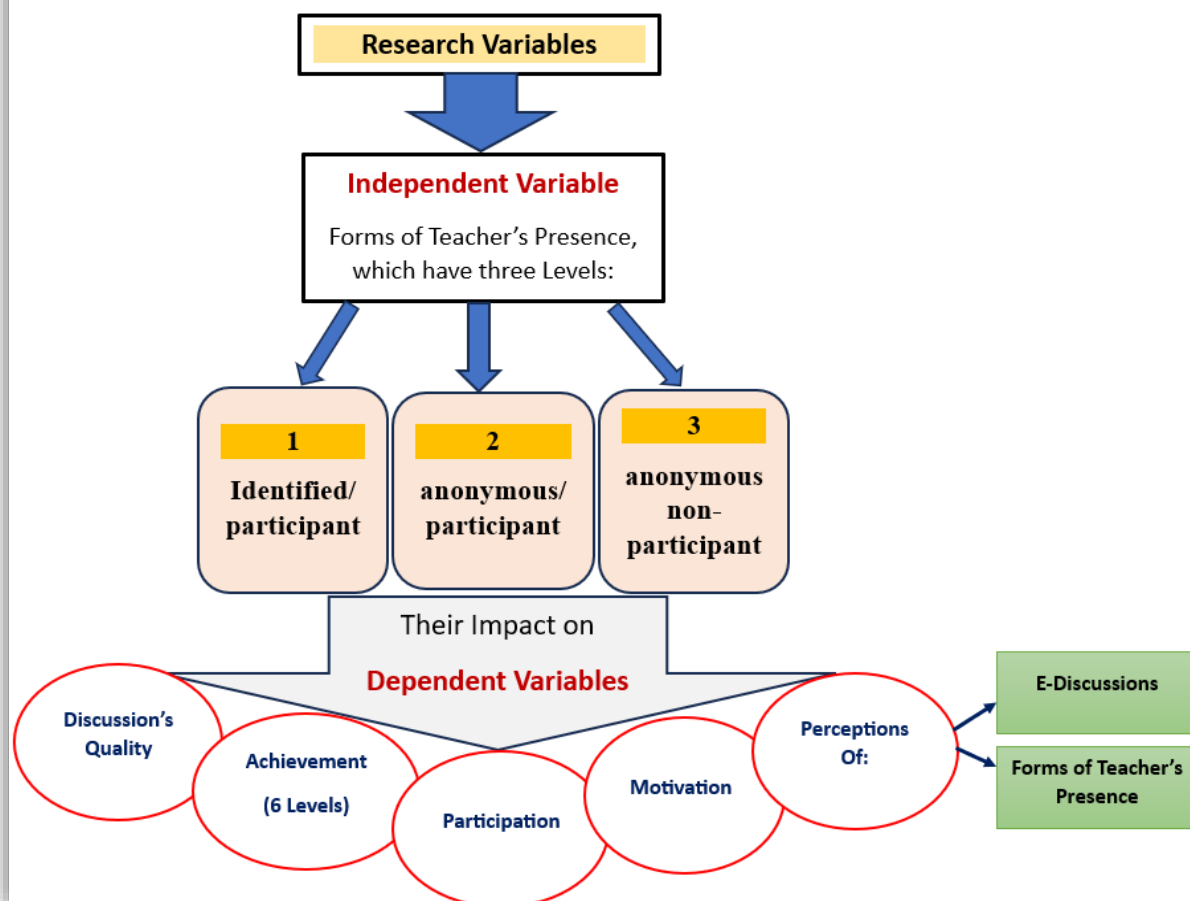
It is defined procedurally as the students’ motivation to complete electronic discussions effectively, actively, and with positive participation, and is measured by the score the student obtains on the motivation scale.

### 2-4-4 Perceptions

It is defined procedurally as the students’ perceptions of both electronic discussions and the form of the teacher’s appearance in electronic discussions. The first part included the students’ perceptions, which are reflected in their opinions about the students’ feeling of satisfaction and effectiveness during electronic discussions, engaging in them, and playing their role positively, while the second part includes the students’ perception. Towards the appearance of the teacher, and the best form from their point of view, and it is measured by the total scores of the students on both parts of the questionnaire. Figure (2) shows the research variables.



Figure 2  
research variables



### 3- Research Questions

This study aimed to determine whether a teacher's presence and participation in synchronous e-discussion would make any difference and investigate what kind of influence the teacher may have on the quality of discussion and students' achievement, participation motivation, and perceptions. The following question guided our research on the instructor's role in online discussions:

- What is the impact of different forms of the teacher's presence (identified - anonymous participant - anonymous non-participant) in synchronous e-discussions on:

1- The quality of discussions?

2- Overall achievement?

- 3- Bloom's cognitive levels of the achievement test?
- 4- Students' participation in the synchronous e-discussions?
- 5- Students' motivation towards learning?
- 6- Students' perceptions of synchronous e-discussions?
- 7- Students' perceptions of teacher presence in the synchronous e-discussions?

### 3- Research hypotheses

This study intended to verify the following hypotheses:

- 1- There are no statistically significant differences at a  $\leq 0.05$  level between the mean scores of the students of the three experimental groups on *the quality discussions measurement* in the post-application.
- 2- There are no statistically significant differences at a  $\leq 0.05$  level between the mean scores of the students of the three experimental groups *on the achievement test* in the post-application.
- 3- There are no statistically significant differences at a  $\leq 0.05$  level between the mean scores of the students of the three experimental groups on *Bloom's cognitive levels of the achievement test* in the post-application.
- 4- There are no statistically significant differences at a  $\leq 0.05$  level between the mean scores of the students of the three experimental groups on *the participation scale* in the post-application.
- 5- There are no statistically significant differences at a  $\leq 0.05$  level between the mean scores of the students of the three experimental groups on *the motivation scale* in the post-application.
- 6- There are no statistically significant differences at a  $\leq 0.05$  level between the mean scores of the students of the three experimental groups on *the questionnaire measuring students' perceptions about synchronous e-discussions* in the post-application.
- 7- There are no statistically significant differences at a  $\leq 0.05$  level between the mean scores of the students of the three experimental groups on *the questionnaire measuring students' perceptions about the teacher's presence* in the post-application.

#### 4- Limitations

The search was limited to:

- A sample of third-year students from the Department of Education and Information Technology, Faculty of Women - Ain Shams University.
- The first semester of the academic year 2020/2021.
- The topic of "Infographics" from the course "Open and Distance Education."

#### 5- Research Methodology:

The current research is developmental in educational technology. Therefore, the descriptive-analytical method was used in the problem definition, analysis, and planning stages from a model (developed by the researcher) for educational design and the experimental process when measuring the impact of independent variables on dependent variables in the evaluation stage.

##### 6-1 Research variables

###### Independent variables

- Three forms of teacher's presence.

###### Dependent variables

- Quality of discussions.
- The students' achievement.
- Student Participation in e-discussions.
- Motivation of students towards learning.
- Students' perceptions of electronic discussions and teacher's presence.

##### 6-2 Research Sample

Twenty-one participated in this study of synchronous e-discussions. In Year 3, of Education and Information Technology Department, Faculty of Women - Ain Shams University, in the academic year 2020/2021.

Despite the small size of the sample (it represents all female students in the third year of the Education and Information Technology Division after excluding the exploratory sample), it was appropriate for the nature of the discussions, which are more effective in small groups, which on the other hand enabled the researcher to follow up on all the discussions throughout the application period.

### 6-3 Experimental design

Considering the independent variable under the current research and its methods, the experimental design **Extended One Group "Pre-Test, Post-Test Design**, was used in three treatments. The research sample was selected and divided into three equal groups. **Error! Reference source not found.** shows the experimental design of the research.

Table 2  
*experimental design*

Group	Pre-application	Process	Post application
1 <sup>st</sup> group		An identified teacher was participating in synchronous discussions.	- Discussions Quality measurement.
2 <sup>nd</sup> group	- Achievement test - Motivation scale	An anonymous teacher was participating in synchronous e-discussions.	- Achievement test. - Motivation scale. - participating scale.
3 <sup>rd</sup> Group		An anonymous teacher was not participating in synchronous e-discussions.	- motivation scale. - perceptions questionnaire.

### 6-4 Research tools

The researcher developed tools represented in:

- discussions quality measurement ([Appendix B](#)), the validity of the tool was verified and presented to specialists.
- achievement test ([Appendix C](#)), the validity of the tool was verified and presented to specialists, a table of specifications was also created to determine the knowledge levels of the topics and the percentages of the questions ([Appendix D](#)).

- Participation scale (Appendix E), the validity of the tool was verified and presented to specialists.
- motivation scale, (Appendix F), the validity of the tool was verified and presented to specialists.
- two questionnaires to measure students' perceptions of synchronous e-discussion & teacher presence (Appendix G & H), the validity of the tool was verified and presented to specialists.

Table 3 shows the reliability of the research tools.

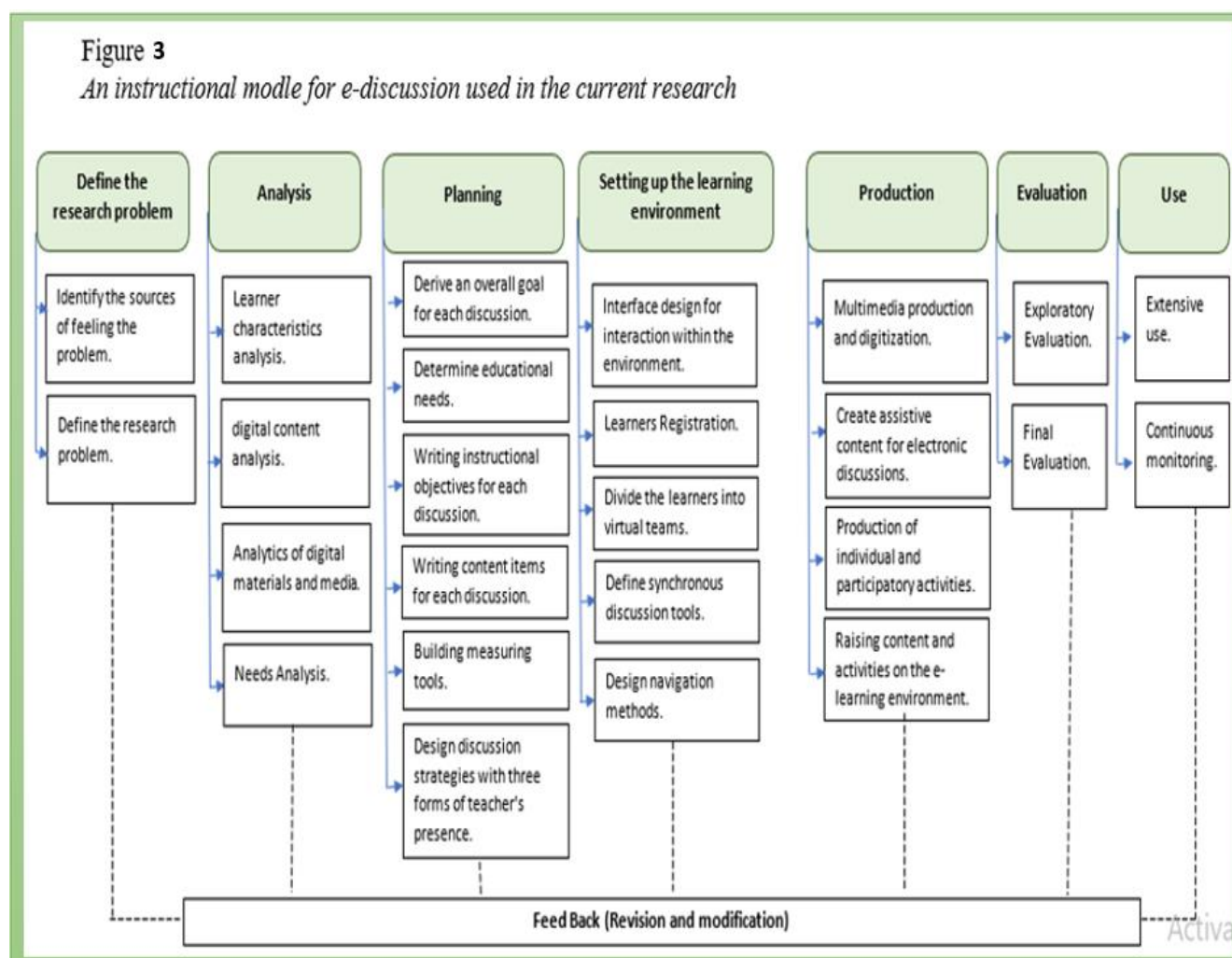
Table 3  
*Reliability of the research tools*

Tool	Reliability (Cronbach's Alpha)
Achievement test (total items)	0.93
Knowledge level	0.84
Comprehension level	0.80
Application-level	0.87
Analysis level	0.91
Synthesis level	0.92
Evaluation level	0.97
Quality of discussion measurement	0.87
Participation scale	0.92
Motivation scale	0.90
Questionnaire 1	0.91
Questionnaire2	0.72

It is clear from Table 3 that Cronbach's alpha ranges between (0.72: 0.97), which indicates good reliability of the research tools.

## 6-5 Research procedures

The researcher reviewed many educational design models (El Dousok, 2012, ElGazzar, 2014, Khamees, 2007), then extracted a set of stages and added steps that fit the nature of synchronous e-discussions based on the virtual team to reach the form of the educational design model illustrated by **Error! Reference source not found.**



## 6-6 Conducting research experiment:

The research experiment was conducted according to the following steps:

- 1- The topics of electronic discussions were prepared. Each debate started with an open question around which the discussion revolves, auxiliary content on the discussion topic, and references related to the issue of discussion. They were uploaded to Moodle by a discussion every week, each followed by a set of individual and collaborative activities and tasks.
- 2- An introductory session was held in the first week of 2020/2021 to introduce the Moodle environment to the students (**Error! Reference source not found.**), the discussion system, and determine the discussion schedule, then the usernames and passwords for entering Moodle were distributed.



Figure 4  
*Moodle website used in this study*



- 3- The research sample was divided into three virtual teams. Each team represented an experimental group, and a coordinator was identified; she was changed every discussion until all the students exercised the role of the coordinator. The role of the coordinator was determined. The functions of the members of each team and the work strategy through synchronous e-discussion were defined.
- 4- Ensuring homogeneity of groups: the results of the pre-application of the achievement test and the measures were analyzed before starting the fundamental experiment of the research. And then, any differences after experimenting can be traced back to the effect of independent variables.
- 5- The course included synchronous weekly e-discussion using a Chat room, Google meeting, as well as the use of other web-based learning tools.
- 6- The researcher continued conducting the discussions according to the set strategy, as follows:
  - 6-1 Raising the discussion topic in the form of an open question, with a theoretical part on the discussion on Moodle. Also, collaborative and individual activities and references were available on Moodle, **Error! Reference source not found.**

Figure 5  
Example of discussions on Moodle



6-2 Determining the time of the talks for the three groups through the schedule of meetings, the students used chat room in Moodle and google-meeting, **Error! Reference source not found.**

Figure 6  
Chat rooms on Moodle and Google Meeting



6-3 Determining a discussion coordinator changed every discussion; her role was organizing it and writing a detailed report.

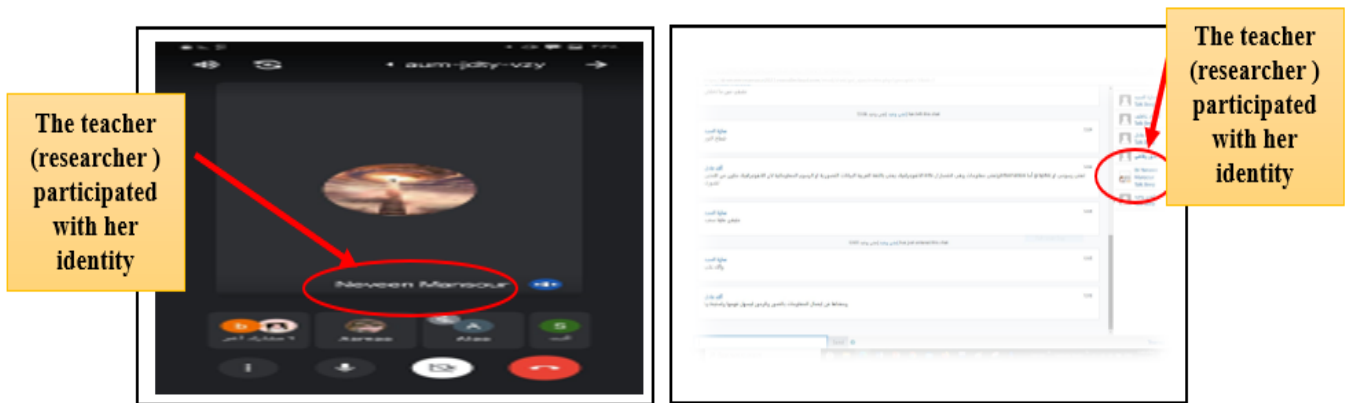
6-4 The team members carried out the collaborative activities and submitted them to the course professor. Each team member performed the individual movements and assembled them at the team coordinator, who submitted all the team's work to the course professor.

6-5 The course professor examined the work of the team members, then wrote comments on the activities and raised the individual action of each individual and the participatory activity of the whole team.

7- The presence of the professor in the three groups was as follows:

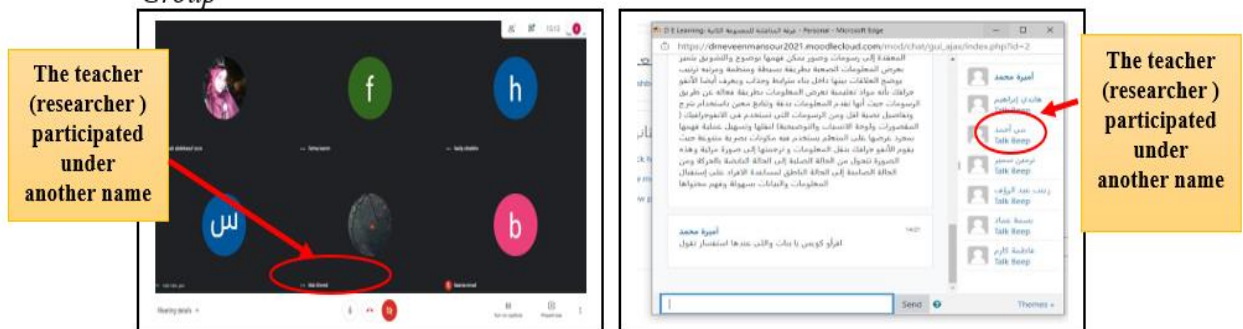
7-1 In the first team: the researcher appeared with her identity and was a participant in the team members when needed, as she directed the students, gave feedback, and answered their questions .

Figure 7  
appearance of the teacher with her identity in the discussions of 1<sup>st</sup> Group



7-2 In the second team: the researcher was anonymous, appeared under another name, participated as a student, and presented the same as she did with the first team **Error! Reference source not found.**

Figure 8  
appearance of the unidentified teacher participating in the discussions of the 2<sup>nd</sup> Group



7-3 The third team: The professor was anonymous and didn't participate with the team members but was satisfied with watching and listening **Error! Reference source not found.**

The Impact of Different Forms of Teacher's Presence in Synchronous E-Discussions Based on Virtual Teams on Quality of Discussion, Achievement among Educational Technology Students, their Participation, Motivation, and Perceptions

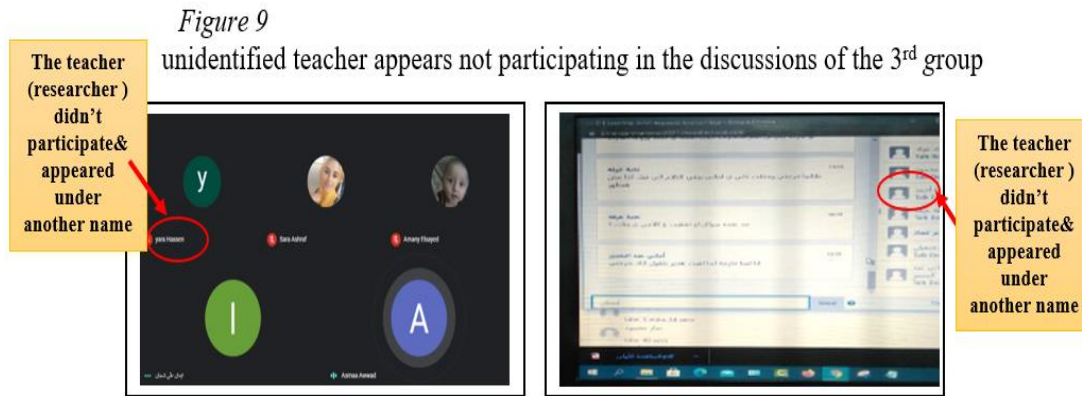
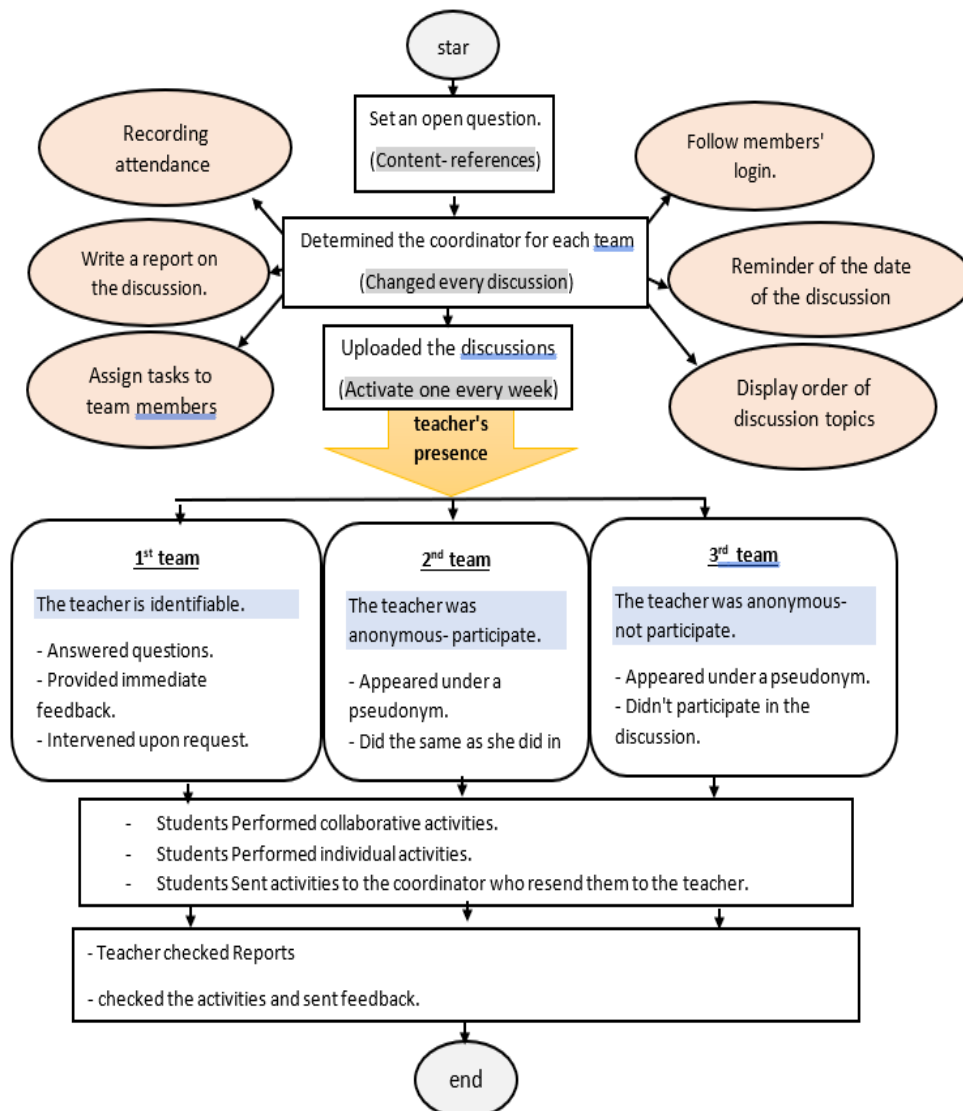


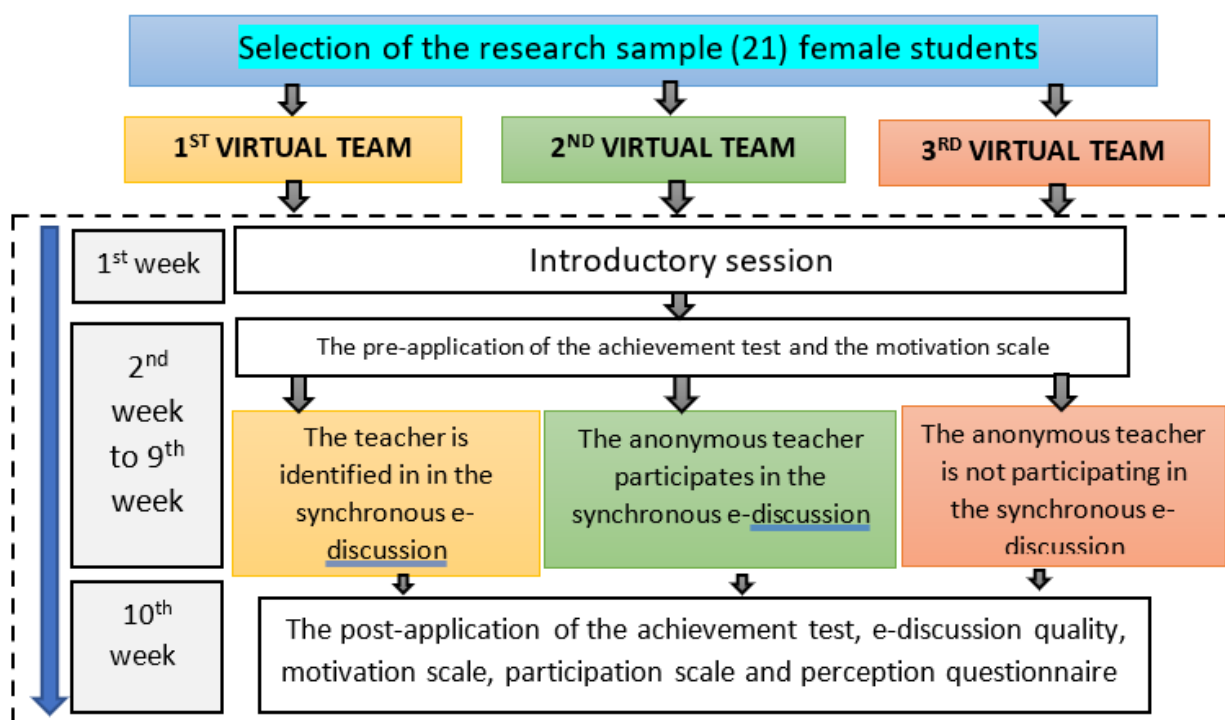
Figure (10) shows the strategy of synchronous e-discussion with three forms of teacher's presence.

Figure 10  
strategy of synchronous e-discussion that was applied in the current study



- 8- The post-application of the research tools: the post achievement test, the discussion quality measurement, the students' participation scale, the motivation scale, and the students' perception questionnaire were applied.
- 9- Correction and monitoring of grades: The researcher corrected the research tools; figure (11) shows the steps of the research experiment.

Figure 11  
steps of the research experiment



## 6- FINDING AND DISCUSSION

- 1- To answer the first research question and test the first statistical hypothesis, it was first ascertained that the scores of the research sample were moderately distributed on the discussion's quality measurement using the One-Sample Kolmogorov-Smirnov Test. Sig. (2-tailed) = 0.56 indicates that the scores are moderately distributed, so the One-Way ANOVA test was used to analyze the post discussions quality measurement using the SPSS program. The results were as shown in Table4.

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Table 4

*F-value and statistical significance of the post discussions quality mean scores for each experimental group*

Group	Number	Arithmetic Mean	Std. Deviation	df	F	Sig
1st Experimental Group	7	59.75	0.92	2		
2nd Experimental Group	7	41.67	1.40		68.25	0.00
3rd Experimental Group	7	45.00	1.02	21		

It is clear from table 4 that the (F) value is statistically significant at a  $\leq 0.05$  level at degrees of freedom (2, 18), which indicates that there are statistically significant differences between the mean scores of the students of the three experimental groups on discussions quality measurement. A Tukey test was conducted to find the source of these differences, and the results were as in table 5.

Table 5

Multiple comparisons Tukey HSD

Group	Mean Difference	Std. Error	Sig
1st Group 2nd Group	18.08	1.62	0.00
1st Group 3rd Group	14.75	1.73	0.00
2nd Group 3rd Group	3.33	1.68	0.141

\*The mean difference is significant at a  $\leq 0.05$  level

It's clear from table 5 that there are statistically significant differences at a  $\leq 0.05$  level between the first experimental group students' mean scores and the second and third experimental groups in favor of the first experimental group. At the same time, there is no statistically significant difference between the second and third experimental groups' mean scores. Hence, the null hypothesis (H1) was rejected.



2- To answer the 2<sup>nd</sup> research question and test the 2nd statistical hypothesis, it was first ascertained that the scores of the research sample were moderately distributed on the achievement test using the One-Sample Kolmogorov-Smirnov Test table 6, which shows the results of this test.

Table 6  
*one sample Kolmogorov-Smirnov test*

Test	Asymp. Sig. (2-tailed)
Total Achievement test	0.37
Knowledge	0.28
Comprehension	0.42
Application	0.79
Analysis	0.30
Synthesis	0.25
Evaluation	0.81

It is clear from **Error! Reference source not found.** 6 that all test scores are more significant than the significance level of (0.05), *which indicates that the scores are moderately distributed.* Then the One-Way ANOVA test was used for the statistical analysis of the achievement test, where the results were as shown in table7.

Table 7  
*ANOVA to identify the difference in students' scores on each experimental group's post-achievement test*

Group	Number	Arithmetic Mean	Std. Deviation	d.f	F	Sig
1st group	7	62.14	5.34			
2nd group	7	38.29	5.47	2	60.38	0.00
3rd group	7	37.86	2.97	18		

It is clear from **Error! Reference source not found.** 7 that the (F) value is statistically significant at a  $\leq 0.05$  level at degrees of freedom (2, 18). That indicates statistically significant differences between the mean scores of the students of the three experimental groups, and *A Tukey test was conducted to find the source of these differences.* The results are as in table 8.

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Table 8  
*Multiple comparisons Tukey HSD*

Group	Mean Difference	Std. Error	Sig
1st group	23.86*		.000
2nd group			
1st group	24.29*	2.52964	.000
3rd group			
2nd group	0.43		.984
3rd group			

As shown in table 8, there are statistically significant differences between the mean scores of the students of the first experimental group and the second and third experimental groups in favor of the first experimental group. In contrast, there is no significant difference between the mean scores of the students of the second and third experimental groups. H2 is thus disproved.

3- To answer Q3 and test H3, the One-Way ANOVA test was used to analyze the achievement test levels, where the results are shown in table 9.

Table 9  
*F-value and statistical significance of the Levels of post-achievement test*

Group	N	Levels of test	Arithmetic Mean	Std. Deviation	d.f	F	Sig
1 <sup>st</sup> group	7	Knowledge	26.57	2.82	2	44.83	0.00
2 <sup>nd</sup> group	7		17.00	1.732			
3 <sup>rd</sup> group	7		17.14	1.77			
1 <sup>st</sup> group	7	Comprehension	9.86	1.35	2	15.69	0.00
2 <sup>nd</sup> group	7		5.14	2.34			
3 <sup>rd</sup> group	7		5.71	1.25			
1 <sup>st</sup> group	7	Application	8.00	.000	2	62.48	0.00
2 <sup>nd</sup> group	7		4.29	1.38			
3 <sup>rd</sup> group	7		2.71	0.76			
1 <sup>st</sup> group	7	Analysis	6.29	2.14	18	1.17	0.33
2 <sup>nd</sup> group	7		4.86	1.95			
3 <sup>rd</sup> group	7		5.29	1.81			
1 <sup>st</sup> group	7	Synthesis	10.43	1.62	2	19.1	0.00
2 <sup>nd</sup> group	7		5.00	2.58			
3 <sup>rd</sup> group	7		4.86	1.35			
1 <sup>st</sup> group	7	Evaluation	9.00	1.53	2	11.23	0.001
2 <sup>nd</sup> group	7		5.43	1.51			
3 <sup>rd</sup> group	7		4.86	2.19			

It is noticed from table 9 that there are statistically significant differences between the three groups in five cognitive levels (knowledge, comprehension, application, synthesis, and evaluation). In comparison, there are no statistically

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significant differences between the three experimental groups at the level of analysis. A Tukey test was conducted to find the source of these differences. The results are as in table 10.

Table 10  
Multiple comparisons Tukey HSD

Group	Levels of test	Mean Difference	Std. Error	Sig
1st group	Knowledge	9.57*	1.159	0.00
2nd group				
3rd group				
1st group	Comprehension	9.43*	0.918	0.00
2nd group				
3rd group				
1st group	Application	0.143	0.486	0.99
2nd group				
3rd group				
1st group	Synthesis	4.71	1.03	0.00
2nd group				
3rd group				
1st group	Evaluation	4.14	0.95	0.01
2nd group				
3rd group				
1st group	Evaluation	5.29*	0.95	0.00
2nd group				
3rd group				
1st group	Evaluation	1.57*	0.95	0.01
2nd group				
3rd group				
1st group	Evaluation	5.43	0.95	0.00
2nd group				
3rd group				
1st group	Evaluation	5.57	0.95	0.00
2nd group				
3rd group				
1st group	Evaluation	0.14	0.95	0.99
2nd group				
3rd group				
1st group	Evaluation	3.57	0.95	0.004
2nd group				
3rd group				
1st group	Evaluation	4.14	0.95	0.001
2nd group				
3rd group				
1st group	Evaluation	0.57	0.95	0.82
2nd group				
3rd group				

It is evident from *table 10* that there is a statistically significant difference at a  $\leq 0.05$  level between the first experimental group and the second and third groups at all cognitive levels in favor of the first experimental group. Also, there is no statistically significant difference between the mean scores of the students of the second and third experimental groups in cognitive levels except for the application level. The *second group of students* outperformed the students of the third experimental group. H3 is thus disproved.

4- To answer Q4 and test H4, first, a One-Sample Kolmogorov-Smirnov test was conducted *Asymp. Sig. (2-tailed) = 0.80* indicates that the scores are moderately distributed, so the One-Way ANOVA test was used for the statistical analysis of the participation scale, where the results were as shown in table 11.

Table 11

*F-value and statistical significance of the post participation scale mean scores for each experimental group*

Group	Number	Arithmetic Mean	Std. Deviation	df	F	Sig
1st group	7	130.9	15.14	2		
2nd group	7	126.7	11.4		2.03	0.16
3rd group	7	116.6	14.13	18		

As shown in **Error! Reference source not found.** 11, the value of (F) is not significant at a  $\leq 0.05$  level at degrees of freedom (2, 18), which indicates that there are no statistically significant differences between the mean scores of the three experimental groups of students on the participation scale. Then the null hypothesis (H4) was accepted.

5- To answer Q5 and to test H5, first, a One-Sample Kolmogorov-Smirnov test was conducted, *Asymp. Sig. (2-tailed) = 0.81*, which indicates that the scores are moderately distributed. The One-Way ANOVA test was used for the statistical analysis of the motivation scale, where the results were as shown in table 12.

Table 12

*F-value and statistical significance of the post motivation scale mean scores for each experimental group*

Group	Number	Arithmetic Mean	Std. Deviation	df	F	Sig
1st group	7	114.57	9.43			
2nd group	7	105.43	6.70		2	0.026
3rd group	7	99.57	11.47	18	4.52	

It is noted from table 12 that the (F) value is statistically significant at a  $\leq 0.05$  level at degrees of freedom (2, 18), which indicates that there are statistically significant differences between the mean scores of the students of the three

experimental groups on motivation scale. A Tukey test was conducted to find the source of these differences. The results are as in table 13.

Table 13  
Multiple comparisons Tukey HSD

Group	Mean Difference	Std. Error	Sig
1st group	9.14		0.19
2nd group			
1st group	15.00	5.03	0.021
3rd group			
2nd group	5.86		0.49
3rd group			

As shown in table 13, it is noted that there is a statistically significant difference between the first and third experimental groups in favor of the 1<sup>st</sup> group. In contrast, there are no statistically significant differences between the first, second, and third groups on the motivation scale. H5 is thus disproved.

- 6- To answer Q6 and to test H6, first, a One-Sample Kolmogorov-Smirnov test was conducted, *Asymp. Sig. (2-tailed) = 0.80*, which indicates that the scores are moderately distributed, the One-Way ANOVA test was used for the statistical analysis of the questionnaire1, where the results were as shown in table 14

Table 14  
F-value and statistical significance of the post questionnaire1 mean scores for each group.

Group	Number	Arithmetic Mean	Std. Deviation	d.f	F	Sig
1st group	7	107.14	10.42			
2nd group	7	97.43	10.92	2	3.64	0.047
3rd group	7	91.00	12.38	18		

It is clear from table 14 that the (F) value is statistically significant at a  $\leq 0.05$  level at degrees of freedom (2, 18). That means statistically significant differences between the mean scores of the students of the three experimental groups on the questionnaire that measures students' perceptions about

synchronous e-discussion. A Tukey test was conducted to find the source of these differences. The results are as in table 15.

Table 15  
Multiple comparisons Tukey HSD

Group	Mean Difference	Std. Error	Sig
1st group 2nd group	9.71	6.02	0.27
1st group 3rd group	16.14		0.039
2nd group 3rd group	6.43		0.55

As shown in table 15, it is noted that there is a statistically significant difference between the first and third experimental groups. At the same time, there are no statistically significant differences between the first and second or between the second and third groups on the questionnaire. H6 is thus disproved.

7- To answer Q7 and to test H7, first, a One-Sample Kolmogorov-Smirnov test was conducted, *Asymp. Sig. (2-tailed) = 0.21*, which indicates that the scores are moderately distributed. The One-Way ANOVA test was used for the statistical analysis of the questionnaire2, where the results were as shown in table 16.

Table 16  
F-value and statistical significance of the post questionnaire2 mean scores for each experimental group

Group	Number	Arithmetic Mean	Std. Deviation	d.f	F	Sig
1st group	7	49.57	2.64			
2nd group	7	43.43	4.69	2	4.52	0.048
3rd group	7	4.00	5.20	18		

It is noted from table 16 that the (F) value is statistically significant at a  $\leq 0.05$  level at degrees of freedom (2, 18), which indicates that there are statistically significant differences between the mean scores of the students of



the three experimental groups on the questionnaire2. A *Tukey test* was conducted to find the source of these differences. The results are as in table 17.

Table 17  
Multiple comparisons Tukey HSD

Group	Mean Difference	Std. Error	Sig
1st group	6.14		0.04
2nd group			
1st group	2.57	2.31	0.52
3rd group			
2nd group	3.57		0.29
3rd group			

\*The mean difference is significant at the 0.05 level.

As shown in table 17 it is noted that there is a statistically significant difference between the first and second experimental groups in favor of 1<sup>st</sup> group. At the same time, there are no statistically significant differences between the first and third and the second and third groups on questionnaire2. H7 is thus disproved.

Table 18 shows the percentages of female students' perceptions about the teacher's presence in electronic discussions clearly show that most students see the importance of the teacher's presence in synchronous e-discussions. They reported that the teacher organized the discussion time and provided immediate feedback. Answers questions, they trust her answers, don't feel embarrassed while she's in the discussion, and can express their perceptions freely in her presence, while they don't trust their female colleagues' information much.

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Table 18  
Percentage of students' responses towards teacher presence

Items	Groups					
	1 <sup>st</sup> group		2 <sup>nd</sup> Group		3 <sup>rd</sup> Group	
	Agree	Disagree	Agree	Disagree	Agree	Disagree
1- I prefer having a course professor in electronic discussions for better learning.	100%	0%	100%	0%	100%	0%
2- I prefer to limit the discussions to my colleagues only, without the course professor.	14.2%	85.8%	0%	100%	0%	71.4%
3- The presence of a course professor helps in organizing electronic discussions.	100%	0%	100%	0%	100%	0%
4- The presence of the course professor in the electronic discussions makes me feel confused and ashamed.	14.3%	71.5%	42.9%	42.9%	28.6	71.4%
5- I like to ask questions to the course professor during electronic discussions.	100%	0%	85.7%	14.3%	100%	0%
6- I don't trust much of the information in discussions from my female colleagues.	57.2%	14.3%	42.9	28.9%	85.7%	14.3%
7- Having a course professor saves time in electronic discussions.	57.2%	0%	71.4%	14.3%	85.7	0%
8- The absence of the course instructor from electronic discussions makes it free to express opinions.	28.6%	57.2%	42.9%	42.9%	28.6	71.4%
9- Electronic discussions with the presence of the course professor reduce the opportunity for conversations between my colleagues and me.	0%	100%	42.9%	42.9%	14.3%	71.4
10- I trust the answers of the course professor during electronic discussions.	100%	0%	71.4%	0%	100%	0%
11- I like to discuss with my colleagues to reach the answers without the help of the course professor.	0%	85.7%	42.9%	57.1%	0%	100%
12- It is best to have the course professor present to receive immediate feedback during electronic discussions.	100%	0%	100%	0%	100%	0%
13- Learning by discussing with my colleague makes learning more persistent in memory.	100%	0%	14.2%	85.8	0%	100%

## 8- Discussion

This study aimed to assess the impact of different forms of teacher's presence on quality of discussions, students' achievement, participation in meetings, motivation to learn, and their perceptions of synchronous e-discussions and teachers' reality. The three questions guided this study. The data analysis was: What is the best form of teacher's company in synchronous e-learning that affects the quality of discussions and increases students' achievement, participation in meetings, and motivation towards learning? Is the appearance of the teacher with known identity in the electronic discussions and then participate in organizing the conferences, guiding the learners, and answering the questions better, or anonymous with the participation itself, or is it better that teacher is not present or participates in the discussions? Which form will be effective in the intended learning outcomes, and which format will the learners themselves prefer?

Results indicated that the presence of the teacher in his capacity and his person had the best impact on the quality of discussions and the overall achievement of students on the five cognitive levels (knowledge - comprehension - application - synthesis - evaluation) and on increasing their motivation towards learning. The students also expressed positive perceptions of synchronous discussions, and they also stressed the importance of the teacher's presence and participation in these discussions, this can be explained as follows:

**Firstly, regarding the results of the quality of the discussion, which showed that the discussions were better by a significant difference in the first and second groups, in which the teacher was present and participated, and this can be attributed to**

- The Advantages of virtual synchronous e-discussions, the synchronous virtual learning environment provides an abundance of opportunities, especially when combined with technologies, In which the teacher participates and performs his educational roles.
- unlike synchronous discussion in which the teacher isn't present or in asynchronous learning environments, the synchronous one allows for instant feedback, direct teacher-student interaction, and engaging activities to increase motivation and active participation (Racheva, 2020).
- Also, the characteristics of synchronous virtual learning, which are
  - Interactivity.
  - Collaborative learning.
  - Student-centered instruction
  - Multimodal content representation and a variety of learning activities.
  - Psychologically safe environment.
  - Timely and constructive feedback.
  - Teacher control over group interaction.
- These results can also be explained in the light of transactional distance theory, which is defined as "a concept describing the universe of teacher/learner relationships that exists when learners and instructors are separated by space and/or by the time." Transactional distance theory considers the distance between participants in these transactions, the

relationships formed between participants, the frequency of their communication, and even the formality/structure of such interactions and how such aspects of a distance education course may promote or discourage learner autonomy. Moore (1993) identified three elements of learning that establish a high or low level of transactional distance: dialogue, structure, and learner autonomy. Here, discussion refers to the instructional communication between teacher and students. Structure refers to the course design, how the course is delivered through a specific communication media, and how that design may/may not allow for dialogue; learner autonomy refers to the potential for students to take ownership of their learning (Moore, 1993).

This finding is consistent with results from other studies, which indicate that instructor social presence may predict instructional efficiency (Christophel, 1990). The teacher's presence affected the dynamic online discussion system (Schallert et al., 2015). Additionally, the learner's perception of the teacher's absence results in isolation and loneliness, and students feel isolated. It presents a considerable barrier to online teaching and learning. This isolation can exacerbate feelings of frustration, uncertainty, and discouragement when problems or queries emerge, resulting in diminished motivation to complete course work and sometimes resulting in students leaving the class (Sapp et al., 2005).

### **Second, regarding the third group's superiority in achievement**

The superiority of female students in the third group in achievement can be explained by:

- Social constructivism stresses the importance of feedback for constructed behavior to help learners construct their own reality or knowledge, and this constructed knowledge is formed through learners' interpretation of previous experiences of the external world, mental structures, and beliefs (Jonassen, 1994; Pear & Crone-Todd, 2002). According to social constructivist theory, both learners and teachers learn by engaging in a dialogue and by interacting verbally with others to construct meaning (Pear & Crone-Todd, 2002).

- The social presence theory also explains the superiority of the first experimental group, this theory has its origins in telecommunications research, first proposed by Short, Williams, and Christie (1976). The underlying assumption was that the nature of telecommunication media influences the quality of communication. The authors argued that presence of teacher is a vital element of a communication medium. If a medium had a high social presence, participants of teacher would view it as warm and sociable, and vice versa (Edwards, & Taasoobshirazi, 2022).
- Also, students and instructors were able to interact synchronously using features such as audio, video, text chat, interactive whiteboard, application sharing, instant polling, emoticons, and breakout rooms, this can help to deepen learning and improve achievement levels (Martin, & Parker, 2014).
- Students participated in various individual or group activities while having the feeling that they can still interact as if they were meeting face to face, while the teacher is available (Martin, & Parker, 2012).
- The students had tools to present learning content in different formats, as well as to implement collaborative and individual activities. In this type of interaction, the teacher has the particularly important role of moderator who guides the learning process and supports group activities and discussions. These interactive elements are unavailable in an asynchronous course.
- It is clear from the students' views in all the experimental groups the importance of the teacher's presence and participation in the electronic discussions. They all agreed on the sentences " I prefer having a course professor in electronic discussions for better learning" and " It is best to have the course professor present to receive immediate feedback during electronic discussions." Most of them indicated that they needed to ask the course professor questions during electronic discussions. They all trust information from the teacher and emphasize that the teacher helps organize the meetings. Also From the student's perspective, synchronous virtual learning allows for immediate feedback in the form of "justin- time clarification and information." The participants can immediately correct themselves and strengthen their learning.

- It can also be explained the superiority of the electronic discussion group in which the teacher attended and participated in the roles played by the teacher. The teacher helped improve achievement by emphasizing basic information, answering students' questions immediately, providing immediate feedback, enhancing learning, and deepening knowledge. On the other hand, the teacher's presence in the discussions contributes to the commitment of students to attend and actively participate in discussions, commit to a time, and each student does his part. Encouraging students to provide feedback and reinforcement increases students' effectiveness towards learning. That affects their opinions and perceptions towards discussions and the teacher's presence and participation in the debate.

So, it's clear that the key role of the teacher in e-discussion was to create an atmosphere of positive feedback by guiding the group's interaction. The need for feedback, which acknowledges the positive aspects of the learners' performance and provides valuable comments and recommendations for improvement, benefits the education and progress of the students. It also builds the habit in the group of trying to maintain a positive and constructive tone. All these factors are vital in assisting the learners to overcome their mistakes without feelings of negativity, as well as by fostering confidence and inspiring them to achieve their full potential.

students of the three teams in the level of analysis on the achievement test, which may be due to students' participation in information gathering and analysis. Also, there were no differences between the students' average scores of the three teams on the participation scale. This result can be returned to the students' enthusiasm for participating in the discussions and finding them interesting and attracting attention, which was evident through their perceptions of synchronous e-discussions.

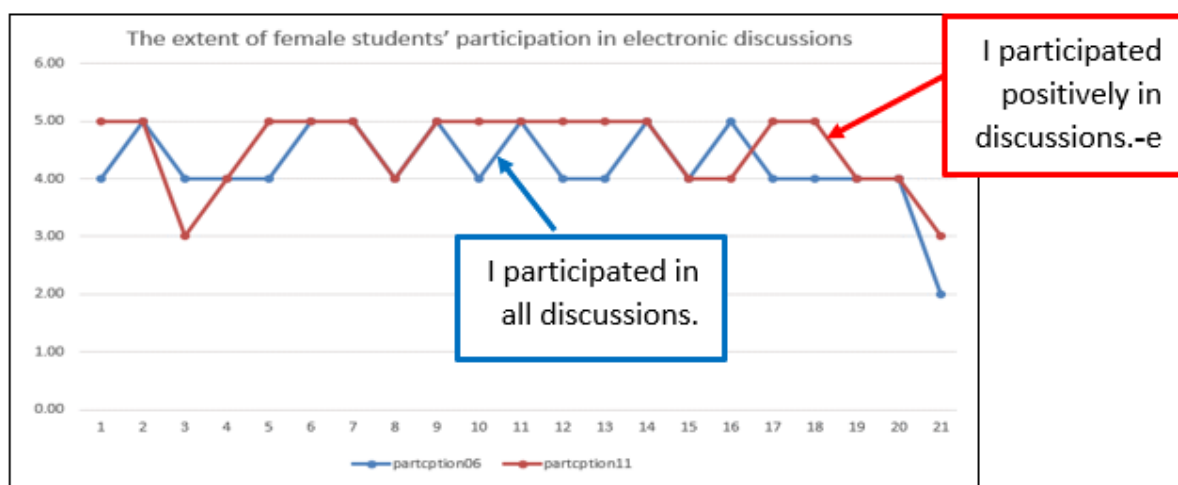
These findings are consistent with the study of Meneses et al, (2023), which aimed for teacher involvement to be more effective in children's learning of reading skills. Also, the study of Sum et al. (2022) which showed that teachers' commitment to participation in professional development may have a sustained influence on student affective learning outcomes.



### Third Regarding the results of female students' participation in synchronous electronic discussions

It became clear from the research results that there are no statistically significant differences between the three experimental groups, which indicates that all female students participated to similar degrees. This is due to the fact that electronic discussions are characterized by being attention-grabbing, as they provide a learning environment based on encouraging female students to participate, and it was shown from The results of the female students' participation scale showed that most of the female students participated in the discussions, as shown in the figure (12), It is noted that most of the responses were at the maximum levels, which indicates that most of the female students participated in all discussions seriously.

Figure 12  
*Students' responses towards participating in discussions*



### Fourthly, the results of female students' motivation towards learning

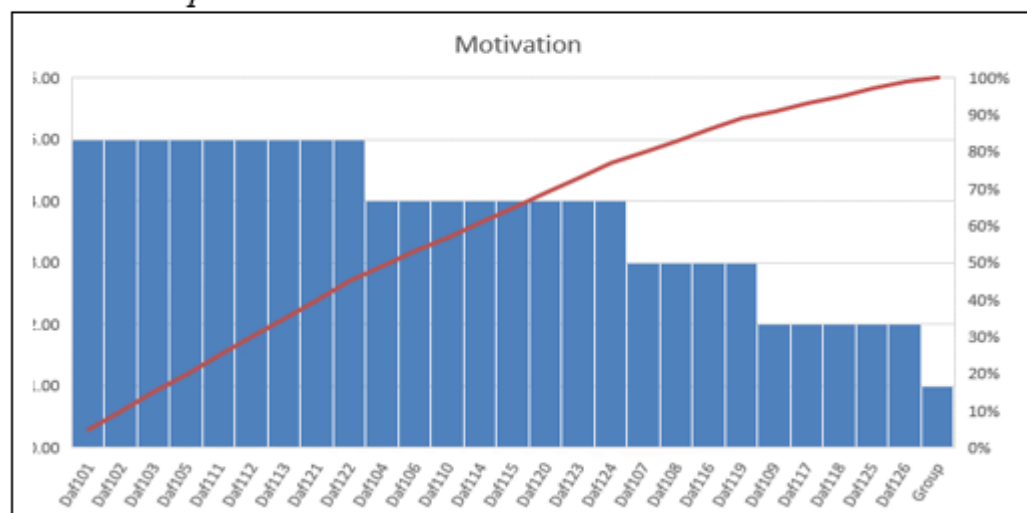
The results of the research showed increased the motivation of the first group compared to the second and third groups, which can be explained as follows:

Electronic discussions with the presence of the teacher and his participation helped increase the students' motivation towards learning, completing discussions, and completing tasks and assignments, as Shroff, Vogel, and Coombes (2008) studied individual factors that work to support intrinsic motivation in e-discussions and found that engagement in collaborative discussions positively related to higher levels of perceived competence, more

positive feedback from teacher, greater perceived choice, and supported students' curiosity in learning. These factors relate to students' innate desires and interest in materials, which reflect components of intrinsic motivation more than extrinsic motivation.

It is also clear from the students' responses to the motivation scale that they had great motivation to complete the discussions and learning, which is shown in the figure (13), which shows that most of the students' responses were agreement that they had great and continuous motivation during the discussions and that they enjoyed them and felt satisfied with them.

Figure 13  
*Students' responses on motivation Scale*



### **Finally, the results of female students' Perceptions**

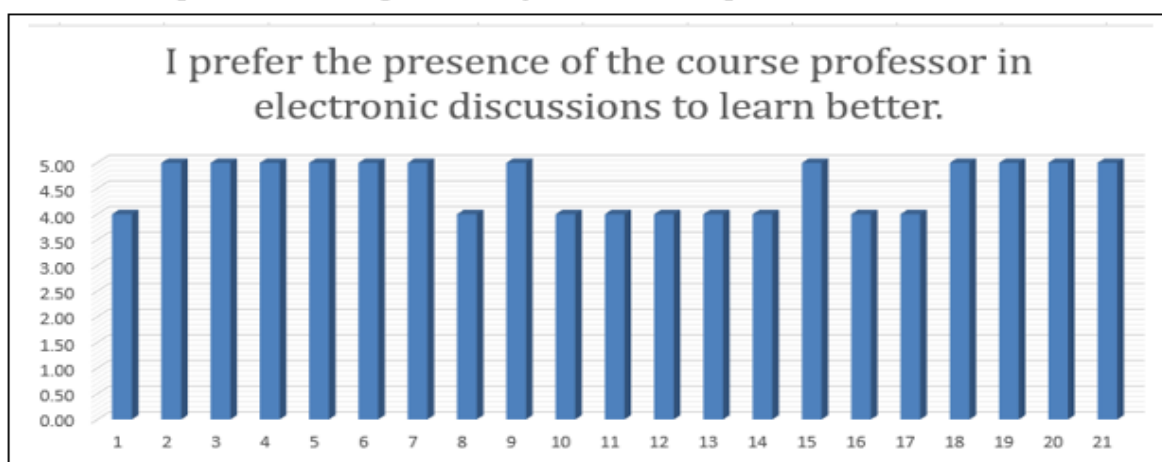
The results of the research showed that female students had positive perceptions towards electronic discussions because of their advantages and capabilities, which were explained previously.

It also became clear that female students preferred the teacher's appearance and participation in electronic discussions.

Figure (14) shows the female students' response to the sentence "I prefer the presence of the course professor in electronic discussions to learn better," which shows that most of the responses came in strong agreement and agreement with that.

figure 14

*Students' response to the importance of the teacher's presence in discussions*



One of the essential findings of the research is that despite the teacher's presence and her participation in the second group under another name (anonymous), she did not have the same effect when her identity was known in the 1<sup>st</sup> group. The students ignored her directions, answers, and information as she is a student like them. That indicates that the teacher's influence appears when the identity is obvious.

## 9- Conclusion

This research defined the importance of electronic synchronous e-discussions, teachers' presence and participation, and virtual teams. It was clear from the empirical results of the study the importance of the teacher's presence in developing achievement, improving the quality of discussions, increasing students' motivation towards learning, and the positive impact on students' opinions about synchronous e-discussions and the teacher's presence and participation. Hence, the study emphasizes the importance of the teacher's presence and participation in electronic synchronous e-discussions and the entire exercise of his roles.

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