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Levels of learners' participation in the implementation of distance learning tasks and activities and its impact on their performance

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Abstract:

The aim of the research is to explore the impact of the different levels of participation of distance learners (individual versus group) in the implementation of distance learning activities and tasks in the asynchronous virtual classroom environment and on the learners' performance.

The researchers adopted the developmental research method, including description, development and experimentation. The experimental method was also adopted to measure the impact of the difference between the levels of individual and group learners' participation during the implementation of distance learning tasks in the virtual classroom environment. Pre-Posttest with tow Experimental Group Design was used. The research sample consisted of (49) students from the College of Education at Imam Abdul Rahman bin Faisal University in the Kingdom of Saudi Arabia, they were selected intentionally. The skill performance evaluation scale and the satisfaction scale with the training and distance learning environment were built, and their statistical characteristics were verified. The necessary experimental treatments were also built to achieve the purpose of the study.

The results revealed a positive impact with a large effect size for the participation of learners during the implementation of distance learning tasks and activities in the virtual classroom environment, regardless of the level of individual or group participation in improving their performance in designing and producing fixed visual learning materials, and improving their satisfaction with the training and learning environment for after. With regard to the impact of the different levels of participation (individual versus group) in the implementation of distance learning tasks and activities in the virtual classroom on the performance of learners, the results revealed that the learners who implemented learning tasks at a level of collective participation in the form of small work groups have achieved better results in their performance to implement Learning tasks, achieving higher levels of satisfaction with the virtual training and distance learning environment compared to those who implemented learning tasks with an individual level of participation. In light of these results, the study presented some conclusions, recommendations, and suggestions regarding the design of distance learning environments and the levels of learners' participation in them, for adoption by professors, instructional designers, and researchers.

Keywords: Corona Pandemic (Covid-19); distance learning , E-Learning , Virtual Learning Environment, Synchronous and Asynchronous Training, Students' Satisfaction, learners', Design and Production of Digital Learning, Resources, Visual Learning Aids.

1. Introduction:

Universities are increasingly seeking to improve classroom learning experiences by integrating virtual distance learning environments on campus. This is not due to the Corona pandemic (Covid-19), but because the value of virtual distance training has been recognized as

appropriate learning opportunities to acquire skills and professional competencies. The intern has the opportunity to gain experience working in a virtual environment; thus, virtual training adds special value to traditional learning and training.

Virtual classes of all kinds represent one of the most important applications of distance education and learning. These chapters are classified as one of the main tools in interactive e-learning systems. These classrooms include tools that increase the diversity and effectiveness of the teacher's role, increase the learner's role in the learning environment, seek collaboration with peers participating in the virtual class, and enable teachers and learners to interact as if they were face to face in traditional classrooms, but with more effective procedures and processes, commensurate with the virtual learning environment (Mercimek, & Çaka, 2022; Martin & Parker, 2014).

Virtual classes offer the best means of simulating the positive qualities of face-to-face teaching due to their synchronous and asynchronous nature (Derboven, Geerts, & De Grooff, 2017). The virtual classrooms also benefit learners in acquiring diverse knowledge and skills, developing learners' motives for achievement, and helping them to participate in teamwork and cooperation in a way that enhances the joint construction of knowledge. These chapters also contribute to the development of skills related to interaction that results in more significant learning processes (Herrera-Pavo, 2021).

The Asynchronous Virtual Classroom allows indirect interaction between all learners in the class, and does not require their presence simultaneously during the course's practical skills training. There is freedom in the time of each individual's participation without linking this to the presence of other individuals. Asynchronous interaction does not occur in real time, but rather allows for more learning time, as learners have the opportunity to spend more time thinking before carrying out learning tasks and interacting with others. It also achieves the flexibility of self-communication, which is undoubtedly one of the main advantages of asynchronous learning (Ruggiero, & Boehm, 2016; Bower, et. al., 2015; Martin & Parker, 2014)

The use of virtual distance learning environments in educational processes is no longer in question, as it has been proven effective in many educational situations at different levels of study. Previous studies revealed the effectiveness of distance training through virtual classes with different learning outcomes. The results of a study conducted by (Zwart, Goei, Noroozi, et. al., 2021) showed that virtual learning environments have provided useful educational tools for training nursing students to carry out professional duties and tasks and facilitate additional support for sports medicine learning. The results of the study conducted by (Balasubramaniam, Bhargava, Agrawal, et. al., 2018) confirmed the effectiveness of the virtual training model in improving key nursing skills for a group of nursing assistants; The study of (Crane, 2017) also demonstrated that synchronous and asynchronous training of employees through virtual classrooms succeeded in providing them with practical practices in the hospital environment. The study of (Yilmaz, 2015) revealed positive effects of simultaneous virtual classes on students' achievement in their distance learning physics at Istanbul University. The study of (O'Flaherty, & Laws, 2014) examined the evaluation of nursing students to experience virtual classes to support learning of biological sciences, and the results revealed Studying the existence of a strong relationship between general satisfaction with the course and the final grades, in addition to the diversity of their experience in the virtual classroom; A study conducted by (Moazami, Bahrampour, Azar, et. al., 2014) concluded that virtual training methods have improved medical skills among dental students compared to traditional education in an Iranian university.

On the other hand, the levels of practicing distance learning activities in virtual classrooms vary into: individual participation, bilateral participation between an individual and an individual, participation between an individual and a group of individuals, and participation between groups and groups. The individual level of participation is defined as the individual's action on a specific task, in which his goal is to focus on individual achievement, whereas the level of collective participation is meant, as the act of collective action by a group of individuals for a specific task, so that the achievement of the work or task is collective (Coutinho, 2009).

Some learners prefer to build their knowledge in virtual learning environments by interacting and sharing with a group of peers. On the other hand, there are learners who tend to learn and complete their tasks and activities independently and do not prefer teamwork, as these learners do not find what satisfies their desires during interaction and participation with the rest of their peers, so they refrain from learning and do not respond to what is offered to them (Madelin, 2008).

Although there are many levels of participation suitable for use in virtual distance learning environments, in particular, between individual, pair or group participation. The results of research and studies have not determined which of these levels is more appropriate in achieving the different learning outcomes. The results varied and conflicted about the priority levels of participation in the implementation of learning activities and tasks in virtual environments or digital environments, where learning resources were dealt with by design, production, use, and evaluation. While the results of some studies confirm the preference levels of group participation, including but not limited to studies of (Pürcher, et. al., 2016; Zhao & Chan, 2014; Johnson, et. al., 2010; Madelin, 2008;). The results of other studies as (Huang, 2010) see the advantage of individual participation in the completion of learning tasks; While the results of third studies indicate a strong discrepancy between the effectiveness of the level of individual and group participation on learning outcomes, including studies of (MacNeill, et. al., 2014; Sears, & Reagin, 2013; Mazzoni, et.al., 2010). Hence, there is an urgent need to show which level of learners' participation in the implementation of distance learning tasks is appropriate to improve learning outcomes, which researchers seek to verify through the results of this research.

2. Theoretical framework

2.1. Levels of learners' participation in the virtual learning environment: characteristics and theoretical foundations.

Educational activities are an important area for developing the student's personality, enriching his experiences, acquiring skills and mastering them, and they must be included in the educational design of any of the different educational situations. Salmon (2002) defines e-activities as activities carried out by online learners that encourage interactive learning through their participation by sending contributions among themselves, as well as responding to others' contributions through synchronous and asynchronous communication tools.

Learning activities via virtual classrooms provide innovative solutions to increase achievement and motivation towards learning by increasing knowledge, making it accessible to all, and sharing, sharing and applying knowledge. In this context, many studies have been concerned with designing electronic activities via the Internet and measuring their effectiveness in improving various learning outcomes, and among these studies are the studies of (Silva, 2017; Bilbao, Varela, Bravo, et. al., 2014).

Learning activities through virtual classrooms fall under four levels of participation: individual participation; one-to-one sharing; sharing between an individual and a group of individuals; Participation between groups and groups (Bilbao, et. al., 2014).

• Individual participation: It is a form of self-participation that provides the opportunity for the learner to carry out the activity individually to achieve his own goals in light of his own capabilities. It is defined as specific educational activities and assignments or the study of an integrated educational program that is self-reliant and independently, according to his own ability and speed of learning. This style of learning is suitable for achieving many educational goals such as learning facts and concepts, application and problem solving (Khamis, 2003, p.177-178).

Characteristics of learning based on individual participation: The level of individual participation in the implementation of educational activities is characterized by allowing the learner to proceed in his learning at the speed and rate appropriate to his abilities away from the assessments of others. It includes several characteristics, including: the learner's self-responsibility in the event the learner participates in positive activities; proceeding with learning according to the individual's own pace; controlling and controlling the level of

mastery of the material; and self-direction of the learner.

Theoretical foundations of individual participation: One of the theories that support this trend is the Self-Determination Theory, which directs this theory to internal motivation on autonomy. Individuals are internally motivated to develop their competence, and feelings of adequacy increase internal interest in activities, but they add another innate need, which is the need to enjoy self-determination, as scholars of this theory assume that individuals are innately inclined to desire to believe that they participate in activities based on their own will, not By forcing them to participate in activities (Zaid, & Irne, 2015)

• Group participation: (MacNeill, et. al., 2014) defined collaborative participation as: any activity in which two or more people work together to create meaning, explore a topic, or improve skills. Students work in group participation with each other in small groups, helping each other to achieve a common learning goal, and to bring all group members to a level of proficiency. The performance of the group of students is evaluated according to pre-established criteria. Peer-based activity refers to the evaluation of a person's work by one or more peers who are similar to them in a specialty. The purpose of this activity is to provide learners with an opportunity to improve their reading, writing, critical thinking, and learning skills, and how to collaborate effectively with other students in undertaking projects, tasks, and group learning activities.

Characteristics of Participation and Group Learning: It is learner-centered because it includes group activities carried out by learners such as assignments, projects, case studies, and presentations. The role of the teacher in collective participation is limited to building different learning activities, directing learning and group learning activities; Group participation also increases learning motivation and curiosity, improves higher-order thinking skills, and self-evaluation skills (Khamis, 2003, p.271-268).

Theoretical foundations of group participation: This trend supports social constructivism, which sees learning as an active process that often occurs in a social context, and social constructivism focuses on learners constructing their own meaning through their own view of knowledge. And that learner is active and not passive in the educational process, they build their understanding, and the learner in it is in constant need of social interaction to clarify his understanding of knowledge and access to meaning. , which makes the teacher follow non-traditional teaching methods such as interactive discussions and participatory activities (Garrido-Inigo & Rodriguez-Moreno, 2015; Wang, et.al. 2017). Thus, this theory emphasizes the effectiveness of collective participatory activities in building and absorbing knowledge, and accordingly it supports collective participation rather than individual participation.

2. 2. Learners' participation in learning activities and their relationship to learning outcomes

There are conflicting results of research about the preference of any of the individual versus group levels on learning outcomes, especially those related to performance in the skill side of practicing learning activities and tasks in virtual environments. Some learners prefer to build their knowledge in the virtual classroom by interacting and sharing with a group of peers. On the other hand, there are learners who tend to learn and complete their tasks and activities independently and do not prefer teamwork, as these learners do not find what satisfies their desires during interaction and participation with the rest of their peers, so they refrain from learning and do not respond to what is presented to them (Madelin, 2008).

It was revealed (Pürcher, et. al., 2016) that participants who learn collaboratively are more motivated to learn and succeed than those who learn individually. This study concluded that learning in the virtual environment; it seems that the collaborative group participation is more effective than the individual participation. Zhao & Chan (2014) also examined the dynamics of collective versus individual knowledge building in the context of a higher education course in China, in which 102 students participated. The results showed that groups of students who participated in work and group discussions performed better than those who participated in the individual mode in academic writing skills. Also, the results of the study (Shebl, 2015) indicated the superiority of students who used the participatory learning style, compared to the

performance of students who used the individual learning style in practicing activities in the e-learning environment in cognitive achievement and skill performance, as well as in self-regulation skills, and student teacher satisfaction at the Faculty of Education.

(Escudero, Leó, Perry, et. al., 2013) has studied the effect of the time variable on the performance of collaborative versus individual tasks in the virtual learning environment. The results of the ANOVA did not show any significant effects of time or task type variables on the performance of the task. Students in learning activities via the virtual environment, but analysis of student feedback revealed that students are more willing to engage in collaborative work. The results of studies by Johnson et al. (2010) indicated that students who interacted with online content tools In the participatory learning style, they were higher than those who interacted individually with electronic content. The study of (Madelin, 2008) found that students, who worked collectively writing and editing posts together, gave better results than those who worked alone.

The results of other studies have seen the opposite. David's study (Huang, 2010) indicated that it is more appropriate to design e-learning activities in an individual learning style, as he noticed the low level of students who worked collaboratively in the performance of e-learning tasks and activities. He attributed this to deliberate sabotage by the learners, misunderstanding, and the attempt of some learners to impose their opinion and way of thinking on others, and to resort to modifying the contributions of others within the group.

And a third group of studies found a discrepancy between the levels of student participation in the practice of learning activities in the virtual environment (individual versus group participation). In a study conducted by (Coutinho, 2009) to examine the impact of the difference of individual style versus group style in the design and production of computer-based concept maps as a constructivist learning strategy. Their results showed the variance in the design of the maps, as the maps prepared by the students of the individual participations were more diverse in terms of visual representation, while the maps prepared collaboratively from the group participations showed other aspects that distinguished from the performance of the students in the individual mode. A study was conducted by MacNeill, et al., 2014 in which fifteen multidisciplinary health professionals participated in a 12-week online training course, in which they were asked to study some modules electronically, and to engage in some tasks and learning activities either online individually or as a group. Tasks and homework were used to hold engagement and group sessions. The results revealed that the participants individually valued the importance of flexibility and control over the practices of the learning activities, but they had a decrease in the motivation to learn; Whereas, in practice learning activities, participants collectively value the importance of immediate feedback from their participating peers. The study concluded that individual online learning is more suitable for short and simple educational interventions such as knowledge acquisition, while group activities online appear to allow for richer and deeper learning in complex and professional learning experiences.

They also examined (Sears, & Reagin, 2013) the effect of individual participation versus pairwise participation when solving problems in mathematics (simple versus complex). The results revealed that the performance of individuals was much better than the performance of pairs in solving complex level problems, while the performance of pairs was much better than the performance of individuals in solving simple mathematical problems. Also, (Mazzoni, et.al., 2010) compared group versus individual participation in the digital environment through the Moodle web platform for 236 students studying a course in “Scientific Literature and Language” to accomplish tasks related to scientific production (writing an abstract of a scientific paper , blind reviews of two other abstracts, and completion of the abstract after receiving reviewers' comments). The results revealed a discrepancy between the performances of the two groups, where there was a clear improvement on the students who participated cooperatively in accomplishing the learning tasks in some academic writing skills compared to the individual participation who had an improvement in other aspects in the academic writing skills. The study suggested further research to achieve a clearer understanding of this finding, and to understand the nature of individual versus group participation in the digital environment.

The design of virtual distance learning environments needs to develop strategies that aim at the quality of educational participations that contribute to the practice of learning tasks and activities, and based on the criteria that govern the quality of their design, in order to help learners achieve the learning outcomes targeted from them. The quality of the interactive participations using the virtual classroom tools can be judged by the extent to which they contribute to achieving or accomplishing the requirements of the educational activity. The current research is a step to meet that need, by looking at the best level of learners' participation in the implementation of distance learning activities and tasks; Is the level of individual participation, or the level of collective participation, better in achieving the targeted learning outcomes for students of the College of Education when designing and producing visual learning materials in the asynchronous virtual classroom environment?

2. 3. Satisfaction with the virtual learning environment

Learner satisfaction levels are an important aspect by which the quality of the virtual learning environment can be assessed (Virtanen, Kääriäinen, Liikanen, et. al., 2017; Mukhtar, et.al., 2015). Learner satisfaction is defined as "the learner's perceived value of their experiences in the educational environment" (Bollinger, & Erichsen, 2013, p.5) It is also defined as a short-term attitude resulting from students' evaluation of their educational experiences, services and facilities (Mukhtar, et.al., 2015), Satisfaction is generally seen as a result of experience, and satisfaction is one of the most desirable outcomes when employing new technologies and services. Previous studies have examined learner satisfaction in various educational settings including virtual distance learning environments as the main outcome of technology use (Wang, Han, Liu, et.al. 2021; Virtanen, et. al., 2017).

The literature and previous research results varied about the main factors affecting learners' satisfaction with the virtual learning environment, including, but not limited to, studies as (Wang, et.al, 2021; Cidral, Oliveira, & Di Felice, et. al, 2018; Mtebe). & Raphael, 2018; Al-Samarraie, Teng, & Alalwan, et. al., 2017; Chen, & Yao, 2016; Richardson, Maeda, & Caskurlu, 2017; Kauffman, 2015). There have also been conflicting results from previous studies as (He & Huang, 2017; Wang, et.al., 2017; Guest, et. al., 2018; Nortvig, Petersen, & Balle, 2018) about the effect of students' participation patterns across virtual classrooms on their degree of satisfaction about the learning environment.

There is a relationship between distance training patterns and different learning outcomes, where asynchronous virtual learning environments facilitate access to knowledge, interact with it, and share it, enhance learners' motivation, and provide the freedom to train and learn at the appropriate time and place for the learner. And also provide opportunities to practice learning activities and its tasks in different modes of participation, whether individually or collectively. Whereas, the design and production of visual learning materials requires many steps, procedures and skills, most of which are done collectively and some individually. Therefore, the current research explores the impact of the different levels of learners' participation (individual versus group) in implementing distance learning activities and tasks in improving their satisfaction with the virtual training and learning environment.

3. The study Problem and its Questions:

In light of the previous review of previous studies on the levels of participation of distance learners through the virtual classroom environment, and the experience that researchers have in teaching. It has been observed that there is a difference in the levels of participation of educated students at the College of Education during the process of shifting to distance education through virtual classrooms and educational platforms during the Corona (Covid 19) pandemic in training and learning to perform the activities and skills of the courses they study, and to solve this problem, the researchers saw the importance of intensifying the increase Training learners on practical skills using the distance training mode through the asynchronous virtual classroom to accomplish learning tasks and activities. Since the implementation of learning tasks may be at levels of individual participation or group participation, each of them has its advantages

and preferences for learners; Therefore, the current research explores the best level of participation of remote learners from students in carrying out learning activities and tasks through the virtual classroom environment. Is the individual level of participation, or the level of collective participation, better in achieving the targeted learning outcomes? To answer this, the following research questions were formulated:

Q1: What is the impact of the participation of distance learners in the implementation of learning tasks and activities in the asynchronous virtual classroom on improving?

a. Design and production skills of persistent visual learning materials; B. Satisfaction with the virtual training and learning environment?

Q2: What is the impact of the different level of participation of distance learners (individual versus group) in implementing learning tasks in the asynchronous virtual classroom on students' skills in designing and producing fixed visual learning materials.

Q3: What is the impact of the different level of participation of distance learners (individual versus group) in implementing learning tasks in the asynchronous virtual classroom on satisfaction with the virtual training and learning environment?

4. Method and procedures

4.1. Research Methodology:

Since the current research is a developmental research, the descriptive method was used in this study in the study and analysis processes. The systematic approach was also used in the design and development of experimental treatment materials for research. The experimental method was also used to examine the impact of the different level of learner participation (individual versus group) in implementing learning tasks in the asynchronous virtual classroom environment, on developing both: skills of designing and producing static visual learning materials, and satisfaction with the training and virtual learning environment.

Thus, the independent variable is, the level of participation of distance learners in the implementation of learning tasks (individual versus group); The dependent variables are: skills of designing and producing static visual learning materials, distance learners' satisfaction with the virtual learning and training environment. In light of the research method and its variables, the experimental design with two experimental groups was adopted with pre- and post-test with tow Experimental Group Design, according to the following figure (1):

Post test	**المعالجة التجريبية (مستويات المشاركة)**	**Pre test**	**Experimental groups**
- -The skill performance evaluation scale. - - satisfaction with the virtual learning environment scale	Individual participation: Students receive asynchronous training, interact with the learning content, and carry out the required learning tasks individually.	-The skill performance evaluation scale . -satisfaction with the virtual learning environment scale	**Group (1)**
	Group participation: Students who receive asynchronous training, interact with the learning content, and carry out the required learning tasks collectively.		**Group (2)**

Figure (1); Experimental design for research

4.2. Research sample:

The research community consisted of all students of the College of Education. The research sample was intentionally selected (49) students (17 Males, 32 Females) after excluding 5 students who did not adhere to the instructions of the experiment. The sample consisted of students registered to study the courses: Educational Techniques (EDUM 301N), production and use of educational aids (EDUM 196N), and computer applications in education (EDUM 301N), with mean age of (20.1) years,

and a standard deviation of (0.84). They were divided according to the experimental design of the research into two experimental groups: the first experimental group (21) who interacted with the learning activities in the virtual classroom and carried out the learning tasks with individual participation; And the second experimental (28) with, one group = 4, and they are the ones who interacted with the learning activities in the virtual classroom and carried out the learning tasks with group participation.

4.3. Research hypotheses

Hypothesis 1: There is no effect for the participation of remote learners during the implementation of learning tasks and activities in the virtual classroom on improving their performance in the skills of designing and producing visual learning materials, and their satisfaction with training and learning in the virtual environment.

Hypothesis 2: There are no statistically significant differences at the level (0.05) between the mean scores of the students of the two experimental groups in their post-performance on the performance evaluation scale in the skills of designing and producing visual learning materials due to the influence of the learner's participation level variable (individual versus group) in implementing the activities of Learning and its tasks through virtual classrooms.

Hypothesis 3: There are no statistically significant differences at the level (0.05) between the mean scores of the students of the two experimental groups in their post-performance on the measure of satisfaction with training and learning through the virtual classroom due to the influence of the learner's participation level variable (individual versus group) in implementing learning activities and tasks via virtual classrooms.

4. 4. Preparing the research tools:

For the purpose of the research, the skill performance evaluation scale and the learner's satisfaction measure with the virtual asynchronous training and learning environment were prepared.

(A) Skill Performance Evaluation Scale: an objective to measure learners' behavioral performance (product or performance assessment) in the skills of designing and producing visual learning materials using the necessary computer software. The theoretical frameworks and directions and previous studies related to the foundations of visual content design were reviewed (Kimball, 2013 Collins, Hass, Jeffery, et. al., 2015; Bestley & Noble, 2016; Pedwell, Hardy, & Rowland, 2017), and using them in determining the aspects of measurement that included ten basic skills that must be available in the visual product; Each skill includes a number of behavioral performances that the student should implement sequentially, with specific accuracy, in order to obtain the degree of behavioral performance implementation, and those skills are: 1- Clarity of the general goal (message) of visual content design; 2- Choosing design elements that support and reinforce the design message; 3- The design shall take into account the principle of focus; 4- The design is balanced; 5- The design achieves the principle of convergence of similar elements; 6- The design takes into account the principle of arrangement of the elements; 7- The design takes into account the principle of contrast between the visual elements; 8- The design was amazed by the accuracy of choosing colors and degrees of color saturation; 9- The design creates harmony between the visual elements used. 10- Design sponsor for spelling and grammatical errors).

Performance is rated on a four-step scale: Advanced: Design meets all skill requirements, score 8 Proficient: Design meets most skill requirements, score 6 Partially-Proficient, design meets design best Out of one of the 4 skill requirements, Non-Proficient Design meets one or none of the 2 skill requirements. Where the performance evaluation included (10) basic skills, so the maximum score for the performance evaluation scale becomes = 80 degrees, which expresses the professional (excellent) performance of the student's skills in designing and producing fixed visual learning materials, and the minimum degree = 20 degrees, which reflects poor performance (Weak) of the student's skills in designing and producing fixed visual learning materials.

To calculate the validity of the performance evaluation scale; It was presented to a group of specialists to determine its suitability for the purpose of the current research, the accuracy of its formulation, and its comprehensiveness of

the skills represented in it, and the necessary modifications were made in the light of the arbitrators' opinions. The researchers also applied a scale when evaluating the products of the exploratory study sample who had previously studied this course without the basic research sample, and the internal validity of the scale was calculated by calculating the matrix of correlation coefficients between its dimensions and its total degree, and the values of the correlation coefficients ranged between (0.431-0.857)), which are function values at the level (0.01) and indicate the consistency of the internal construction of the scale. To calculate the stability of the scale; The researcher observed the performance of the students of the exploratory sample and evaluated their products, then two other colleagues observed the performance of the same sample, and the stability was calculated through the Cooper equation; To calculate the percentage of agreement and disagreement between the two observers. The percentage of agreement among the observers in the performance scale ranged between (87.2%: 94.7%), which indicates the stability of the scale. Thus, the performance rating scale in its final form became usable for the purpose of the current study.

(B) Distance learners' satisfaction scale about the virtual training and learning environment: an objective to measure learners' satisfaction with the virtual training and learning environment. In order to determine the dimensions of the scale and its vocabulary, the frameworks, theoretical trends and various definitions in the field of distance learning in virtual learning environments were reviewed, and the factors affecting the satisfaction of distance learners when using technological innovations in general, and e-learning in particular; And to benefit from the set of previous studies and the measures and tools that were used in them (Cidral, et. al., 2018; Mtebe & Raphael, 2018; Al-Samarraie, Teng, & Alalwan, et. al., 2017; Chen, & Yao , 2016; Richardson, et. al., 2017; Kauffman, 2015). The scale included 50 statements that came in four main areas (technological satisfaction, educational satisfaction, personal satisfaction, and general satisfaction), from which ten dimensions are branched (Appendix 2). The scale is designed so that the level of satisfaction of learners is measured on a five-point graduated scale; Very Satisfied = 5 scores; significantly = 4; Medium=3; weak = 2; With a very weak degree = 1, then the maximum degree of satisfaction scale becomes = 50 phrases x 5 = 250 degrees, which expresses the level of learners' satisfaction to a very large degree, and the minimum degree = 50 phrases x 1 = 50 degrees, which expresses the level of learners' satisfaction with a degree of Very weak.

With regard to the statistical characteristics of the scale: it was presented to five professors who are specialists in the field of educational statistics and distance education; To determine its relevance to the objective of the current research, the accuracy of its formulation, and its comprehensiveness to the axes represented in it. The necessary amendments were made in light of the opinions of the arbitrators. The researchers also applied the scale to a small sample of students who studied this course in this way in the previous semester, without the main research sample. Also, the internal validity of the scale was calculated by calculating the matrix of correlation coefficients between the dimensions of the scale and its total score to show the internal consistency of its components. The values of the matrix correlation coefficients ranged between (0.371 - 0.807), all of which were significant values at the level (0.01), which is an indication of the extent of the validity of the scale's expressions and axes in measuring learners' satisfaction with the virtual training and distance learning environment. To calculate the stability of the scale; The researchers evaluated the performance of the exploratory sample students on this scale, and found Cronbach's alpha coefficient, which reached (0.898), a value suitable for the purpose of the current research. Thus, the measure of satisfaction with the virtual learning environment in its final form became valid for application in the current research.

4.5. Experimental processing design for the study .

Experimental treatments consisted of: preparing an instructional design for asynchronous virtual classroom sessions according to two different levels of learners' participation (individual versus group) to train in the skills of designing and producing visual learning materials; It was designed and developed by following the General Model of Instructional Design (ADDIE), which is the most commonly used and common in

developing learning products (Branch, 2009), according to the following stages:

(a) Analysis stage:

Identification of learners and their educational needs: Learners of College of Education students who are enrolled in: Instructional Technologies (EDUM 152Tec), Production and Use of Instructional Aids (EDUM 196N), and Computer Applications in Education (EDUM 301N). One of the main learning outcomes of these courses is: Student Acquisition The knowledge and skills needed to produce static visual learning resources using computer software. So; The need to train them on practical skills was estimated using the training pattern through the asynchronous virtual classroom according to the different levels of participation of the learners (individual versus group). The current research explores the best level of student participation in the implementation of distance learning tasks and activities through the asynchronous virtual classroom environment in achieving the targeted learning outcomes.

Analysis of educational tasks and prerequisites: The main educational task was to: Provide learners with the skills of designing and producing visual learning materials. This task requires previous practical experiences and skills that learners can use before using experimental treatments, such as mastering computer skills, and dealing with various digital multimedia production software (computer optics production software) such as: (Publisher Program, E-presentation, and graphics processing program). And educational images Photoshop and the educational graphics production program Edrawmax .The researchers verified the knowledge of the research sample of these skills through the virtual classroom before carrying out the research experiment.

Determining Tools for the Training Environment across the Virtual Classroom, Blackboard Learn was relied on to manage learning content and activities in the asynchronous virtual classroom. It is the system adopted at Imam Abdul Rahman bin Faisal University, and every professor and student at the university has the authority to access the learning management system and practice learning activities and tasks.

(b) Design stage:

Formulation of educational objectives: The experimental treatment subject in the Educational Visualization Production Unit aimed to provide the learners of the College of Education with the following learning outcomes: (- Determining the elements and principles of visual design necessary for the production of visual learning materials; - Demonstrating knowledge of the elements and principles of visual design through learning and visual communication processes - Acquiring the skills of designing and producing visual learning materials according to the foundations and standards of visual design; - Identifying examples of visual design elements and principles in the work of other learners, - Translating understanding of the elements and principles of visual design into the design and production of visual learning materials.

Define Learning Content Structure: Determine the appropriate learning content for the Experimental Processing material based on the course description.

Designing learning activities and tasks: The following learning tasks were identified: Task 1: Designing an educational infographic; Task 2: Design a visual educational board for a topic chosen by the learner; Task 3: Design an educational poster for a topic of the learner's choice; Task 4: Design an electronic presentation for a tutorial provided that the learner implements these tasks during the learning time in accordance with the terms and standards of designing fixed visual learning materials.

Experimental treatments design: The asynchronous virtual classroom sessions, learning activities, learners' tasks and time plans for their implementation were designed in light of two different levels of learners' participation (individual and group), and were organized in two experimental treatments: the first experimental treatment (individual participation style): students receiving asynchronous training, they interact with the learning content and activities, and carry out the learning tasks required of them individually; The second experimental treatment (group participation mode): Students receive asynchronous training, interact with the learning content and activities, and carry out the learning tasks required of them collectively.

(c) Development stage:

The Blackboard Learning Management System was used to place learning content and confiscation in the asynchronous virtual classroom as well as video clips for recordings of the teacher's explanations, and to manage learning tasks and various activities according to learners' participation levels (individual vs. group).

(D) Implementation stage:

- The research sample was divided into two groups, one of which is the first experimental one in which the learners perform the learning tasks in the asynchronous virtual classroom individually; And the second experimental one, in which the learners carry out the learning tasks in the asynchronous virtual classroom collectively (7 working groups, each group consisted of 4 learners), each group identified its work mechanisms to implement the learning tasks.

- Applying tribal measurement tools and experimental treatments to the two research groups that were implemented for eight weeks during the first semester of the academic year 2021/2022 AD, then the post-measurement of measurement tools.

(e) Evaluation stage:

This stage is concerned with continuous evaluation processes to develop experimental treatments for research, and final evaluation to reveal the impact of the different level of learner participation (individual versus group) in implementing learning tasks in the asynchronous virtual classroom environment on learners' performance.

5. Results of the study

5.1. To answer the first question:

What is the impact of the participation of distance learners in implementing learning tasks and activities in the asynchronous virtual classroom on improving: a. their skills in designing and producing static visual learning materials; B. Satisfaction with the virtual training and learning environment?

The researchers calculated the arithmetic means, and standard deviations, of the scores of the learners in the two experimental groups (experimental 1, experimental 2) in their performance on the (skill performance assessment scale, and the measure of satisfaction with training and learning in the virtual environment), before and after training in the asynchronous virtual classroom and participating in the implementation of tasks The significance of the differences between the averages was then calculated using the T-test for the correlated samples, and the effect size using Cohen's equation (d) for the correlated samples (Cohen, 1988; Bakker et al., 2019), and the results were as shown in the following table (1):

Table (1) the arithmetic mean, standard deviation, and the significance of the differences between the degrees of the tribal and remote measurements of the performance of the research sample members on the (skill performance assessment scale, learners' satisfaction with training and learning in the virtual environment)

Dependent variables	**Participation levels**	**Pretest**		**Posttest**		**df**	**T**	**Sig.**	Cohen's (d)	Effect size
		Mean	SD	Mean	SD					
Skills Scale = 80	individual, N=21	25.76	3.54	62.38	3.83	20	33.31	0.000	7.21	large
	group, N=28	24.96	4.06	75.25	2.30	27	48.46	0.000	10.68	large
	Total, N=49	**25.31**	**3.84**	**69.73**	**7.01**	**48**	**37.21**	**0.000**	**5.32**	**large**
	individual, N=21	187.33	13.42	208.62	8.66	20	12.81	0.000	1.14	large

Satisfaction Scale= 250	group, N=28	184.36	12.39	239.29	6.21	27	13.99	0.000	4.30	large
	Total, N=49	**185.39**	**12.79**	**226.14**	**18.39**	**48**	**12.45**	**0.000**	**1.77**	**large**

The results presented in Table (1) show that there are statistically significant differences at the level (0.01) between the mean scores of the pre and post measurements of the performance of the learners in the two experimental groups on the (skill performance assessment scale, and the measure of satisfaction with training and learning in the virtual environment) in favor of the post-measurement for both groups, whether The level of individual participation or the level of group participation. Overall - regardless of the level of participation, unique or collective - the mean performance of the learners in the post-measurement of visual learning materials design skills was (69.73), with a standard deviation of (7.01), while their mean performance in the pre-measurement was (25.31) with a standard deviation of (3.84) ; Also, the total mean performance of the learners in the post-measurement of satisfaction with the virtual training and learning environment was (185.39) with a standard deviation of (12.79), while their mean performance in the pre-measurement was (226.14) with a standard deviation of (18.39). The effect size was also calculated to indicate the differences between the tribal and remote performance using Cohen's equation (d) for the correlated samples, and the effect size values reached (5.32) in the skill performance and (1.77) in the performance on the measure of satisfaction with the virtual learning environment, which are values with an effect size big. This indicates that there is a significant impact of the participation of learners, whether individual participation, or group participation during the implementation of learning tasks and activities in the virtual classroom environment, on improving their performance. This means rejecting the validity of the first hypothesis, which states that "there is no effect of the learner's participation during the implementation of learning tasks and activities in the virtual classroom on improving their performance in designing and producing visual learning materials, and their satisfaction with training and learning in the virtual environment."

5. 2. To answer the second question:

What is the impact of the different level of participation of distance learners (individual versus group) in implementing learning tasks and activities in the virtual classroom environment on students' skills in designing and producing fixed visual learning materials?

Arithmetic means, standard deviations, and significance of differences between the scores of learners in the two experimental groups in their performance on the performance evaluation scale for design and production skills of visual learning materials were calculated. Then the significance of the differences between the means was calculated using the T-test, and the effect size using "Eta squared" (η2) for the independent samples (Cohen, 1988; Bakker et al., 2019), and the results are shown in Table (2).

Table (2); Arithmetic averages, standard deviations, and the significance of the differences between the scores of the learners in the two experimental groups in the post-measurement of the skills of designing and producing visual learning materials

Dependent variables	**Individual Participation**, N=21		**group Participation,** N=28		**df**	**T**	**Sig.**	**η2**	**Effect size**
	Mean	SD	Mean	SD					
Skills Scale = 80	62.38	3.83	75.25	2.30	47	15.84	0.006	0.842	Large

The results presented in Table (2) reveal that there is a statistically significant difference at the level of significance (0.01) between the mean scores of the learners in the first experimental group that participated and carried out the learning tasks individually in the asynchronous virtual classroom environment with a mean of (62.38) with a standard deviation of (3.83) And among the students of the second experimental group that participated and implemented the learning tasks collectively, with an arithmetic mean of (75.25) and a standard deviation of (2.30), in their performance on the skill performance assessment scale for designing and producing visual learning materials; This was in favor of the performance of the learners in the second experimental group who participated in the implementation of the learning tasks collectively. The effect size of the differences in performance between the two experimental groups was calculated using (η2) for independent samples, and its value was 0.842, which is a value with a large effect size. This result indicates that there is an effect of the level of learners' participation during the implementation of the learning tasks in the virtual classroom on the skill performance of designing and producing visual static learning materials in favor of the performance of the learners who participated in the implementation of the tasks collectively; This means rejecting the validity of the second hypothesis, which states that "there are no statistically significant differences at the level (0.05) between the average scores of the learners in the two experimental groups in their post- performance on the performance evaluation scale in the skills of designing and producing visual learning materials due to the influence of the learner's participation level variable (Individual versus group) in carrying out learning activities and tasks through virtual classrooms.

5.3. To answer the third question:

What is the impact of the different level of participation of distance learners (individual versus group) in implementing learning tasks and activities in the virtual classroom environment on learners' satisfaction with the virtual training and learning environment?

Arithmetic means, standard deviations, and significance of differences were calculated between the scores of the two experimental groups in their performance on the measure of satisfaction with the training and learning environment in the virtual classroom. Then the significance of the differences between the means was calculated using T-test and Effect size using (η2) for the independent samples, and the results are shown in Table (3).

table (3); Arithmetic averages, standard deviations, and the significance of the differences between the scores of the learners in the two experimental groups in the post -performance on the scale of satisfaction with the training and learning environment in the virtual classroom.

Dependent variables	**Individual Participation**, N=21		**group Participation,** N=28		**df**	**T**	**Sig.**	**η2**	**Effect size**
	Mean	SD	Mean	SD					
Satisfaction Scale= 250	208.62	13.99	239.29	6.21	47	10.345	0.000	0.695	Large

The results presented in Table (3) reveal that there is a statistically significant difference at the level of significance (0.01) between the mean scores of the learners in the first experimental group that participated and carried out the learning tasks individually in the asynchronous virtual classroom environment with a mean of (208.62) with a standard deviation of (13.99) And between the second experimental group that participated and implemented the learning tasks collectively with a mean of (239.29) with a standard deviation of (6.21), in their

performance on the scale of satisfaction with the training environment and virtual learning; This was in favor of the second experimental group, who participated in the implementation of the learning tasks collectively. The effect size of the performance differences between the two experimental groups was calculated by calculating equation (η2) for the independent samples. Its value is 0.695, which is a value with a large effect size. This result indicates that there is an effect of the level of learners' participation during the implementation of learning tasks in the virtual classroom on their performance measure of satisfaction with the training and virtual learning environment in favor of the learners who participated in the implementation of the tasks collectively; This means rejecting the validity of the third hypothesis, which states that "there are no statistically significant differences at the level (0.05) between the average scores of the learners in the two experimental groups in their post-performance on the measure of satisfaction with training and learning through the virtual classroom due to the influence of the learner's participation level variable (individual, versus group) in carrying out learning activities and tasks through virtual classrooms.

6. Discussion

• With regard to the impact of the distance learner's participation in the implementation of learning tasks and activities in the asynchronous virtual classroom, regardless of the level of individual or group participation, on improving students' skills in designing and producing fixed visual learning materials; Satisfaction with the virtual training and learning environment. The results revealed a positive impact of a large impact size of the learner's participation during the implementation of learning tasks and activities in the virtual classroom, regardless of the level of individual or group participation, in improving students' skills in designing and producing fixed visual learning materials, and improving their satisfaction with the virtual training and learning environment.

This result explains that remote training on practical skills through the asynchronous virtual classroom has contributed to: Enabling learners to share all educational activities and interact with educational materials and resources that were made available in the asynchronous virtual classroom and to reuse them at a later time. This provided all learners with various opportunities to learn according to their different circumstances, inclinations and abilities; And flexibility in the time of training and learning, whether for individual participation or group participation granted to practice learning activities and carry out its tasks. This feature has provided greater and more diverse opportunities for learners to enhance their learning, providing the longest period of time in which the training and learning space can be increased, and seeking to practice and master practical skills. Giving time to learning, regardless of the time factor that may not allow the learning process to be completed effectively, had the greatest impact on improving students' practical skills and achieving high levels of satisfaction with the asynchronous virtual learning environment, regardless of the level of learner participation, whether individual or group.

• Regarding the impact of different levels of participation (individual versus group) in implementing learning tasks and activities in the virtual classroom on learners' performance in designing and producing fixed visual learning materials. The results revealed a statistically significant difference at the level of significance (0.01) between the average learners' performance due to the effect of the different level of learner participation (individual versus group) in implementing learning activities and tasks across the virtual classroom, with a large effect size; This is in favor of the performance of learners who implemented learning tasks at a group level of participation compared to those who implemented learning tasks at an individual level of participation; And that in their performance on a scale assessing the skills of designing and producing fixed visual learning materials.

This result explains that the learners in the group participation were working with each other in small groups, helping each other to achieve a common learning goal, and the achievement of all group members to the level of mastery of the skills of designing and producing visual learning materials. Also, the steps of designing educational optics are difficult, and you need to participate in ideas, especially when defining the message of design, designing content, and

taking into account the principles and principles of educational optical design, and then production and development. All these steps and skills require cooperation, dialogue and mutual discussion among the members of the joint working groups. The collective participation has increased the motivation to learn and curiosity and improve their practical skills which is not available in the individual participation mode when carrying out the learning tasks. Therefore, the performance of the learners in the participatory work groups was better than the performance of the learners in carrying out the learning tasks individually.

• Regarding the impact of the different level of learner participation (individual versus collective) in implementing learning tasks and activities in the virtual classroom on satisfaction with the virtual training and learning environment. The results revealed a statistically significant difference at the level of significance (0.05) between the averages of learners' performance due to the effect of the different level of learners' participation (individual versus group) in implementing learning activities and tasks across virtual classrooms, with a large effect size; This is in favor of the performance of learners who implemented learning tasks at a group level of participation compared to those who implemented learning tasks at an individual level of participation; And that in their performance on the scale of satisfaction with the virtual training and learning environment.

This result explains that one of the characteristics of group learning is that it is learner-centered because it includes group activities carried out by the learners such as assignments, projects, case studies and presentations. This contributed to increasing students' motivation towards achievement and learning, and then achieving high levels of student satisfaction with learning in the virtual environment. It can be said that cooperation or perceived learning with others, and information exchange and sharing through work groups, have the greatest impact on learners' satisfaction with the virtual learning environment. Social presence and the ability to perceive others in an online learning environment influence student motivation and participation (Richardson, et.al, 2017).

The results of the current research are consistent with the results of a number of previous studies, (Verstegen, Dailey-Hebert, Fonteijn, et.al., 2018) found that virtual teams that made an effort to maintain a positive atmosphere work better, provide assistance with technology, and demonstrate understanding to those who cannot always contribute to the work required. The results of a study (Barrós-Loscertales, et. al., 2107) also showed that the practice of educational activities via the virtual environment within the graduate programs, and the cooperative group participation of students in the forums as dynamic educational activities are positively correlated with the overall satisfaction of the students. A study (Pürcher, et. al., 2016) revealed that participants who learn collaboratively are more motivated to learn and succeed than those who learn individually. (Zhao & Chan, 2014) showed that groups of students who participated in work and group discussions performed better than those who participated in individual style in academic writing skills. (Johnson, et. al., 2010) found that students who interacted with electronic content tools in a participatory learning style had a higher level than those who interacted individually with the same electronic content. And he reached the same conclusion (Madelin, 2008) that students who worked collectively to write and edit posts together, gave better results than those who worked alone.

This finding is supported by Social Constructive Theory, which sees learning as an active process that often occurs in a social context, and social constructivism focuses on learners constructing their own meaning from their own view of knowledge. Learners are active and not passive in the educational process, they build their understanding, and the learner is in constant need of social interaction to clarify his understanding of knowledge and access to meaning. The theory emphasizes that the learner is at the center of the learning processes as he interacts with his peers in building his knowledge and experiences, and designing the educational process according to the constructivist direction, which makes the teacher follow non-traditional educational methods such as interactive discussions and participatory activities (Wang, et.al, 2021; Wang, 2009).). This was supported by the result of the current research and what happened when learners interact with learning activities in the

form of working groups that design and produce learning tasks represented in the design and production of fixed visual learning materials, with the required steps and procedures that require participation and cooperation to obtain better results and distinct in the quality of their production.

This result is also supported by some principles of Cognitive Theory and Situational Learning Theory, where these theories are based on the fact that individuals are active elements who purposefully seek to build knowledge in a meaningful context, and that knowledge rests primarily on the elements of the learning environment from which it is obtained. on knowledge. At the level of group participatory learning, experiences are transferred between members within the group in a participatory manner without restrictions of time and place, which had a clear impact on the development of self-organization skills and the satisfaction of students in the participatory learning group about the individual learning group.

7. Conclusion

The results revealed a positive impact with a large impact size for the learner's participation during the implementation of learning tasks and activities in the virtual classroom, regardless of the level of individual or group participation in improving learners' performance in designing and producing fixed visual learning materials. As well as improving their satisfaction with the virtual training and learning environment with regard to the impact of different levels of participation (individual versus group) in carrying out learning tasks and activities in the virtual classroom on the performance of learners. The results revealed that students who implemented learning tasks at a level of collective participation in the form of small work groups have achieved better results in their performance to implement the tasks learning, achieving higher levels of satisfaction with the virtual training and learning environment compared to those who implemented the learning tasks with an individual level of participation. In light of these results, and what was indicated by the previous set of studies included in this research, the researchers reached some of the following conclusions:

- The effectiveness of distance learning via the asynchronous virtual classroom is determined by the optimal participation of the learners. This participation is achieved through factors that enhance learning, such as: focus of learners' interest and commitment to their learning, and the presence of motivation and desire for them to accomplish the required learning task, as these are the two factors that direct learners towards participating in the content and helping them to learn new skills.

Strong learning engagement puts learners at a high energy level to engage in their learning and ultimately have positive outcomes for carrying out learning tasks; The instructional design of the asynchronous virtual classroom should include facilitating learners' involvement in learning, promoting participatory behaviors, and supporting independence in managing their own learning.

-Peer learning through a virtual, asynchronous classroom provides learners with an opportunity to interact and learn from each other with a positive impact on academic achievement and satisfaction with the expected outcome of the assignment.

-Teamwork or small group work succeeds when learners share a common goal.

-Learners work in small groups on a blueprint to carry out the required work task. Some of these tasks are too large to be accomplished by one student alone, which requires division of work and frequent discussion about the implementation of the work tasks required of students.

- Working in a collective team needs: forming or forming a team, organizing and leading the team’s work, defining the team’s work style such as dividing tasks and interaction, using technology and communication tools in the virtual classroom effectively.

-Based on the results, the current study recommends a set of educational recommendations and applications, to take advantage of them as practical applications for teachers and educational designers when designing virtual distance learning environments. Which:

-Attention to design virtual distance learning environments according to educational

foundations and standards aimed at achieving various learning outcomes.

- Activating the teaching of practical courses, using the distance education system through virtual classrooms, because of this effective impact in providing learners with practical and applied skills in a better way.

-Diversity in the design of learning activities and tasks in virtual environments with various levels of participation (individual, bilateral, or group) to suit students' preferences in learning, joint work and cooperation in the implementation of learning activities and tasks.

In view of the increasing recognition by universities of employing virtual distance learning in training and learning, we suggest to complement the results of the current research conducting future research on: educated. We also suggest examining the impact of the difference in the source of support in virtual classes (teacher - colleagues) and the pattern of training in providing courses for undergraduate students; In addition, revealing the relationship between the optimal time for submitting work (individual - group) and the type of task and its impact on the final performance of the product.

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