Individual Self-assessment Using Feedback System to Improve e-Learning in Case of Corona 19 Pandemic

Mohammad H. Allaymoun and Samer M. Shorman

Abstract—COVID-19 pandemic is affecting people all over the world, and its health effects have prompted authorities to issue a warning and implement strict measures such as banning and preventing gatherings, moving to social distancing, imposing anti-vaccines, and tightening restrictions and health measures to stem the spread. Most governments decided to close educational institutions such as universities and schools in order to avoid congestion and virus transmission. This is a quantitative study based on statistical applications; data was collected from people selected using a purposive sampling strategy using a questionnaire (with closed-ended questions). This research suggests an individual self-assessment using a feedback system that is utilized in a questionnaire to analyze the appropriateness of feedback for students on their work. Using the Pearson Chi-Square test and mean to describe the interdependent relationships, this study proved the reliability of data and its importance of the association of variables. The findings reveal that students are aware of the importance of feedback and eLearning platforms. As the results show, the value of the eLearning System and the students' and peers' feedback on one other's work in virtual courses is significant.

Index Terms—Elearning, Moodle, COVID-19, individual self-assessment.

I. INTRODUCTION

COVID-19 is a disease caused by the developing coronavirus CORONA-SARS-2, according to the World Health Organization. After a series of cases of viral pneumonia were reported in Wuhan, China, the WHO initially recognized this novel virus on December 31, 2019 [1]. Furthermore, the Covid-19 outbreak has caused the world's largest educational interruption in history, affecting around 1.6 billion schoolchildren in over 190 nations across all continents. 94 percent of kids around the world were affected by school and other learning facility closures [2]. Furthermore, because of the unpredictability of educational institution closures, authorities have proposed remote teaching in emergency situations to ensure that students are not left without an education [3]. To put it another way, the complete shift to e-learning to complete the educational process, so that e-learning became a significant alternative to conventional education, and as a result, e-learning was transformed from a support tool for traditional education to a viable alternative. As a result, conventional (face-to-face) methods have been superseded by e-learning over the Internet [4].

By providing the right atmosphere for cooperative education, e-learning has aided in the development of educational approaches, which has contributed to the enhancement of teaching styles and methodologies [5]. Rather than being an afterthought, e-learning aspires to be a viable alternative to traditional education. As a result, e-learning helps to build learning strategies while also bringing enjoyment and motivation to instructional approaches [6]. Education, on the other hand, has contributed to the educational process focused on the student. And the change from student to part of the presentation of knowledge is significant.

Computer-Supported Collaborative Learning (CSCL) is a collaborative interactive system totally based on information technology that provides many technical tools to cover most educational activities [7]. It is a crucial component of e-learning and is a collaborative interactive system fully based on information technology that provides many technical tools to cover most educational activities. The CSCL provides an electronic platform for course management that is conveniently available over the Internet. In addition, CSCL has successfully built test and assessment management solutions. One of the benefits of CSCL is that it allows for the creation of virtual educational groups that are very similar to the original educational groups, as well as the provision of tools that allow these groups to review educational materials in a fun and effective manner, making education more interesting and enjoyable than traditional methods [8]. It also allows for the faster exchange of information between learners. The role of knowledge transmission has altered as a result of CSCL; learners have become an integral element of knowledge transfer, and teachers now have supervisory, assessment, management, and intervention responsibilities [9].

By encouraging students to gain new skills such as conversation and exploratory learning, and most importantly, to rely on themselves in the creation and transmission of knowledge, CSCL and its tools effectively contribute to the development of educational abilities and skills of students. Chat is the process of a group of individuals exchanging talks (text, audio, and video), which can be synchronous or asynchronous [10]. Chat is one of the most essential technical instruments for knowledge transmission given by e-learning. Recently, there has been a surge in interest in chat, and attempts have been made to enhance and improve its features. The most significant tool for properly transferring and exchanging knowledge among learners is CSCL chat [11]. By giving all effective choices for integrating the student and activating his role in talks, the chat aims to make him the most significant aspect of the educational process and to

focus on him in managing dialogues. Because CSCL chat allows students to effortlessly transfer their knowledge into virtual groups, this is the case. However, the Chat tool has issues and obstacles, one of which is the lack of a system for tracking talks, grading students' engagement, and gauging their attention and focus on their peers' conversations.

As a result, this study proposes a technical solution to this challenge, which involves evaluating students' interactions using the immediate feedback paradigm. This is accomplished by using a self-evaluation technique for each student's performance. In other words, after the educational session, students are asked to evaluate their interactions and conversations. Then you'll obtain the feedback assessment results. As a result, a general impression of student performance is formed, which aids in determining the extent of interaction and comprehension of the topics discussed, as well as the outcomes, which enable students to improve and develop their methods of knowledge transfer in order to reach successful educational groups.

On the other hand, the framework of evaluating chats through feedback on students' dialogues aids in improving student performance by encouraging each student to strive to be a successful presenter of study topics, as well as increasing student focus and attention within the chat, and providing a reason for students to know ahead of time that they will be asked questions. Finally, each student aspires to enhance his or her tools and strategies for imparting knowledge, as well as the recipients' grasp of the issues covered. Teachers can use the data to evaluate individual students' and educational groups' performance, along with develop appropriate educational curricula to improve performance of underperforming students and educational groups or maintain the output of successful educational groups.

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II. LITERATURE REVIEW

CSCL is one of the most essential success factors in using current information technology and the Internet to improve teaching and learning, and it is also one of the most vital computer-based educational sectors [12]. One of the most important factors contributing to its spread is its greater ability to improve and develop the educational process, as well as a focus on cooperation through the use of teamwork, allowing learners to communicate their ideas and present their opinions, and focusing on varying e-learning tools to become more interactive and collaborative [13].

By attempting to create an educational environment that provides multiple learning methods and is collaborative, such as working in educational groups and providing tools that are interested in participation and exchange of ideas, CSCL contributes to the development of learning methods so that the student becomes the center of the process [14]. Finally, it encourages students to seek knowledge from a variety of sources and formats, as well as to develop skills in the use of information technology [15].

Many modern technical solutions are available in the CSCL environment, with the goal of facilitating collaborative teaching approaches. Educational platforms that provide multimedia, experiential simulation, computerized learning

resources, and dialogues are among these uses [16].

Chats are the most important and well-known tools in the CSCL environment, and they are digital groups based on traditional classrooms, linked to a communication network, allowing students to be in the virtual presence at the same time with simultaneous communication, and from various locations, and one of the most significant benefits offered by the chat is the ability to conduct educational dialogues easily, freely, interactively, and cooperatively [9]. According to scientific research, chat aided in the development of students' individual talents in the interchange of ideas and knowledge, resulting in a cooperative educational atmosphere. Cooperative discourse is defined as giving all students the opportunity to participate in and speak about academic issues or solve problems [17]. As a result of the Corona19 pandemic motivating many educational institutions to find and develop assistive techniques, solve the problem of social distancing, and end traditional education, chat emerged as an efficient performance in guaranteeing knowledge transfer and exchange, and the transition to productive and collaborative e-learning [18].

One of the most significant issues facing the CSCL environment, particularly the chat, is the lack of technical tools to assess students' performance within the chat. Some models, such as ALLAYMOUN and Trausan- Matu's, attempted to address this issue by developing tools to assess students' automatic interaction within chat. This study, "Analysis of Collaboration in CSCL Chat Using Rhetorical Schemas," proposes a methodology for evaluating individual and collaborative involvement in CSCL chats, which aids teachers in the analysis and evaluation of conversations. Based on Mikhail Bakhtin's dialogism theory and Stefan Trausan-Matu's polyphonic model [11], the suggested approach assesses individual participation by finding the most relevant threads mentioned by each respondent in the chat.

This study investigates traditional ways of evaluation tools and converts them to e-learning as an auxiliary tool in order to establish a mechanism for evaluating students' performance. As a result, the mechanism for measuring individual participation is based on the concept of immediate feedback during chat talks. One of the most crucial auxiliary tools is feedback. It is dependent on the participants' reactions and input during the educational process. In regarding education, feedback is one of the most important methods for developing education and reflecting the effectiveness of teaching sessions, in addition to playing an important role in motivating students to learn and contributing to behavior modification, the development of positive qualities, and understanding strengths and weaknesses in the educational process [19]. The feedback system displays students' performance levels during educational dialogues in order to encourage them to improve their methods by fixing the mistakes they make, which they learn about through the feedback provided by the participants. Feedback is not advice; it is information about what you are doing in order to achieve the educational process's desired goal. Feedback, on the other hand, is one of the most crucial components in helping students improve their learning [20].

The study looked into the effects of using peer feedback in e-learning. One of the potential educational tools for improving students' learning results is online peer feedback. The findings of the study demonstrate that peer feedback can help students enhance their writing quality [21]. The influence of feedback on boosting the quality of education, as well as improving the educational techniques of students of EduTech users, was concluded by Saeed and colleagues, and this research demonstrated the students' academic supremacy by getting feedback [22].

Impacts of a Digital Guided Peer Feedback System on Student Learning and Satisfaction, by Omid Noroozi and colleagues, used a technical education structure that provides student feedback and involves students in the learning and writing process about educational topics, and the system is designed suggestively, which contributes to motivating students to exchange points of view. This study also examines the feedback method, which is focused on evaluating a student's performance in dialogues rather than an assessment based on the data gathered. Moreover, the student wants to know what the other participants think about the best manner to get feedback. This feedback includes signs that indicate whether their performance is satisfactory or needs to be improved [23], [24].

The proposed individual evaluation intends to measure students' performance and acquire findings, allowing them to adjust their approaches and the way they present scientific concepts based on these results. As well as increasing pupil attentiveness in the conversation room. In addition, there's a purpose for the students to know ahead of time that they'll be asked questions during the dialogue, so they can assess each other's performance. On the other hand, to guarantee that the information is conveyed and comprehended by the pupils, as well as to provide a baseline from which the teacher may subsequently assess the educational groups' performance. Feedback is information on a person's performance. This technique is designed to help students improve, develop, and review their performance rather than criticize it. It also improves students' pleasure with their work, their confidence in their explanations, and their ability to create collaborative learning groups.

The planned Moodle platform will be modified, particularly the chat function, by introducing a feedback-based individual assessment system. Moodle is an e-learning platform and learning management system that helps teachers create courses and track evaluations, promoting interaction and collaboration with online students [25]. Create a simple and effective approach to achieve the goal of self-evaluation of students' performance in educational groups that use chat, as well as to improve e-learning, particularly in the Corona 19 pandemic. The new tool is an individual assessment tool for students' conversation productivity, and it works by requesting individual self-assessment once each student finishes explaining the topic. The question (Did you comprehend what I explained?) occurs in a message to all pupils with multiple-choice answers. The solution is provided in the form of a multiple-choice question to thank Emotions (I understand, I did not understand, a point of contention). Based on the educational studies, the usage of animated shapes promotes student participation to answer questions

[26]. The response was chosen to be in the form of emotion to create a sense of enjoyment.

Individual feedback assessment will assist students increase their focus and attention in conversation, as well as reduce distractions, because students will be aware that they are being exposed to providing feedback on the performance of the student who has completed his discussion of the educational issue. As a result, the students' behavior in the chat will reflect this, and they will be more engaging and cooperative. The system, on the other hand, enhances the student's performance in transferring knowledge because he realizes that his performance will be evaluated by his peers. As a result, student engagement and cooperation have risen, and their performance in transferring knowledge and explanation, as well as focus in dialogues, has improved.

Furthermore, this technique aids in the progressive transformation of students' educational behaviors and the development of confidence. Each student understands that it is his obligation to impart knowledge in a way that is appropriate for his peers' cognitive abilities. To put it another way, the student is responsible for how he explains and conveys knowledge, and the students in the discourse are responsible for understanding the issue.

The feedback-based individual assessment method provides for three levels of evaluation. The first level: The result is good, indicating that all students said they understood the issue discussed, indicating that all participants comprehended the topic, and that the technique of sharing knowledge was simple and easy to understand. The second level, if the result is negative, it means that the majority of the students did not understand the part that was explained, and feedback is requested so that the student can repeat the explanation, change the method, or add illustrative examples to make it easier for the participants to understand. The last level, a point of disagreement, refers to the current issue of disagreement. If the student re-explains and still receives a negative response, the students request that the teacher intervene later in the re-explaining process. As can be seen from the three levels reflected in the system's outcomes, it assists students in automatically and simply evaluating their work. It also offers teachers with results that can be reviewed and analyzed in order to assist them improve their e-learning groups.

Furthermore, the individual assessment system through feedback systems examines the students' behavior during talks, such as the number of times the student requested and received feedback on his performance, the number of re-explanations, and the number of areas of disagreement. This table assists teachers in evaluating students' conduct and determining who the best student explains the topic, as determined by high results from his peers' evaluations. If the score is low and the number of re-explaining points is high, this suggests a difficulty for this student, namely that he is unable to communicate his knowledge to his peers. As a result, the teacher steps in to stimulate the student and adjust his teaching style, as well as re-explaining subject to the students. As a result, this technique makes it easier and more effective to improve group performance and evaluate them. If the score is low and the number of re-explaining points is large, it indicates that this student is having trouble communicating his knowledge to his peers. As a result, the teacher intervenes to motivate the student, alter his teaching method, and re-explain the subject to the students. As a result, this method makes it easier and more effective to develop and analyze group performance.

III. RESEARCH METHODOLOGY

This study is significant because it introduces the concept of individual assessment through feedback as a technique to assist CSCL chats in improving students' performance in the e-learning system and its environment. The purpose of the feedback is to offer learners with information so that they may ensure that they are using the correct method of knowledge transmission, as well as to make necessary modifications and improvements. Typically, feedback is measured by the extent to which the learners comprehend the information and the extent to which they cooperate throughout the discussion. Furthermore, the study was conducted in order to improve the educational process and to address the issue of appraising individual participants. As a result, this study contributes to the development of approaches that assist e-learning in order to achieve an integrated and successful educational model. The foundations and techniques needed to help construct a prototype of the proposed system were determined using past studies linked to the research issue. In addition to studying and assessing a variety of assistive e-learning programs, particularly third-party applications, in order to develop a broad understanding of how to incorporate technology tools into the e-learning environment.

An online questionnaire was used in this research, which was separated into three parts. Part A is about demographics, Part B is about online learning, and Part C is about the effects of feedback. The questions are structured so that the first six test students' opinions of online learning, while the next four measure the influence of feedback on learning performance. The survey used a 5-point Likert scale in which respondents ranked their level of agreement with five factors ranging from 5 to 1, with 5 representing great agreement and 1 representing low agreement. There were 46 students who responded to the survey.

Interviews and general talks were used to collect primary data and create the model. Semi-structured interviews with academics and e-learning professionals were undertaken for this study. Semi-structured interviews allow the researcher to ask more questions as needed, limit general perceptions of a system prototype's design, and link technical features to predicted outputs to test effectiveness. Face-to-face semi-structured interviews were undertaken. More details regarding the model and the mechanism for measuring students' dispersal and concentration were supplied. In addition, the model must be checked and verified at all phases to guarantee that it can be used and produce the required results.

IV. RESULTS ANALYSIS AND DISCUSSIONS

This section explains how to create an interactive

environment for experimentation, as well as the processes and stages that e-learning experts imposed, as well as the most frequent techniques of creating an individual assessment system through feedback. A study involving 46 students was done using an e-learning system (see Table I to Table IV). The findings of the analysis on the individual evaluation system will be discussed in this section, which will follow the analysis of the questionnaire results, explain the outcomes and indicators that may be researched, and link them to the efficacy of e-learning development. The results of the questionnaire analysis, which were delivered to students and teachers in order to determine the amount of satisfaction and goal achievement, will be reported in this section.

TABLE I: STRUCTURE OF DATA FOR SEX

Statistics	Sex	Year
Valid	46	46
Missing	0	0
Male	20	43.5%
Female	26	56.5%
Total	46	100.0

TABLE II: STRUCTURE OF DATA FOR YEAR

Year		Frequency	Percent
Valid	1	15	32.6%
	2	18	39.1%
	3	9	19.6%
	4	4	8.7%
	Total	46	100.0

TABLE III: STRUCTURE OF DATA FOR DURATION OF EXPERIENCE IN USING ELEARNING

Duration of experience in using eLearning		Frequency	Percent
Valid	1-Year	14	30.4%
	2	24	52.2%
	3	8	17.4%
	Total	46	100.0

TABLE IV: STRUCTURE OF DATA FOR TYPE OF ELEARNING DO YOU USE IN ELEARNING

What type of eLearning do you use		Frequency	Percent
Valid	synchronization	40	87.0%
	Not synchronization	6	13.0%
	Total	46	100.0

TABLE V: RELIABILITY STATISTICS

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.895	.900	10

Cronbach's alpha is a statistical test that writers frequently employ to show that tests and scales created or adapted for research projects are fit for purpose [27]. Table V reveals that the data dependability is 0.895, indicating that the data is very

reliable for this study.

Chi-Square Analysis

Within COVID 19 classrooms, Pearson's chi-square test was used to find significant relationships between student demographics, eLearning systems, and feedback. The tables below show the SPSS results and how they were interpreted. Table VI.

TABLE VI: PEARSON'S CHI-SQUARE TEST

Variable	Value	P. Value.	Significant Value
1. Gender vs e-learning platform	1.47	0.687	Not Sig
7. Gender vs Feedback through e-learning	3.14	0.207	Not Sig
1. Year vs e-learning platform	3.26	0.952	Not Sig
7. Year vs Feedback through e-learning	11.09	0.085	Not Sig

The factors for the importance of feedback and gender are independent in this study, according to Ho, and the variables for the importance of feedback and gender are not independent, according to H1. The results will be analyzed by Ho and H1.

Table VI illustrates the results of the chi-square test based on the preceding hypotheses, which indicated that gender had no bearing on e-learning platform efficiency. It resulted in equal possibilities for both genders to learn through virtual classes, implying acceptance of the Ho hypothesis. Furthermore, the data reveal that gender has no significance when it comes to e-learning feedback, implying that males and females have strong equality effects in feedback, supporting the Ho hypothesis.

TABLE VII: PEARSON'S CHI-SQUARE TEST

Variable	Value	P. Value.	Significant Value
Feedback through e-learning Vs e-learning platform,	19.10	0.003	Significant
Feedback through e-learning Vs The e-learning platform	17.97	0.006	Significant

The result of the chi-square test to clarify the relationship between Feedback and the e-learning system is shown in Table VII. Its protests are against Ho: Feedback through e-learning enhances my learning performance and e-learning platform are independent variables that accept H1: Feedback through e-learning enhances my learning performance and e-learning platform are not mutually exclusive variables.

TABLE VIII: MEAN AND STD. DEVIATION

Descriptive Statistics	Q1	Q2	Q3	Q4	Q5
Mean	4.587	4.652	4.522	4.304	4.435
Std. Deviation	0.717	0.526	0.691	0.840	0.779
Descriptive Statistics	Q6	Q7	Q8	Q9	Q10
Mean	4.543	4.543	4.326	4.239	4.413
Std. Deviation	0.657	0.585	0.701	0.923	0.717

Table VIII provides the Descriptive Statistics for the experiment findings obtained from the questionnaire; the

mean results are greater than 4.2, indicating that all of the items were firmly agreed upon. The questions in this survey were about using eLearning tools and getting feedback. The eLearning system questions received scores of 4.587, 4.652, 4.522, 4.304, 4.435, and 4.543, while the feedback questions scored 4.543, 4.326, 4.239, and 4.413, which are similar to the prior questions.

V. CONCLUSION

The Corona outbreak and what caused it to impose social distance, as well as the transition to e-learning, increasing hurdles, and the fact that e-learning was formerly one of the beneficial instruments for traditional education, but has now become an alternative to traditional education. And the move to dealing with all e-learning tools but evaluating students' performance and behavior in chat groups is challenging. This paper proposes a mechanism for individual assessment by feedback systems via eLearning platforms, so that each student can receive direct feedback on his performance after completing his task, and through results that help deduce the student's performance, whether it is good or needs re-explanation, or the teacher's interference when needed, which helps students' confidence in their performance, or The results of the survey show that there is a considerable relationship between feedback and e-learning systems. The proposed method will be integrated into online educational processes in the future.

CONFLICT OF INTEREST

During the research, we state that there is no conflict of interest.

AUTHOR CONTRIBUTIONS

Both authors made effective contributions to the completion of this research. Mohammad Allaymoun presented a research proposal, preparing the methodology. Samer Shorman, research design, data collection, and statistical operations. Both authors collaboratively wrote the article.

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