

Integrating Virtual Teaching Techniques in Improving Quality of Learning in Emerging Global Challenges

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Abstract:- In early 2019, the world was confronted by the covid-19 pandemic which ravaged nations of the world and crippled even first world economies. In order to adjust to this emerging global challenge, it became expedient to adopt a new way of living, interaction, communication and socialization since the major means of spread of the pandemic is from person to person. The hitherto termed 'new normal' way of living has to be adopted in all spheres of life in order to kick-start socio-economic activities which is necessary in revamping the economies of the world. The idea of reducing physical contact informed this paper. The purpose of this research is to subject students to both virtual and physical classes and assess the impact of the two techniques. A Technical Drawing class of 82 students was subjected to physical and virtual classes for a semester; topics were selected at random and taught either physically or virtually. The physical classes are our conventional board and marker teaching and demonstration modules, while the virtual teaching involved video simulations and demonstrations shared with students through WhatsApp and Xender applications. Seven examination questions were set for the students to attempt any five, three of which were from the virtual classes while four were questions derived from physical classes. The results showed that the percentage maximum attempt for questions derived from the physical classes was 57.3%. On the other hand, all the questions derived from the virtual classes had highly appreciable percentage attempts of 98.9%, 92.7% and 76.8 respectively. It was therefore concluded that virtual teaching techniques can readily be integrated side by side with our contemporary physical teaching methods in order to improve on the quality of learning and towards adhering to reduced physical contact, which will alleviate the menace of covid-19 that has hitherto become a global challenge. It was therefore recommended among others that there is no better time than now to adopt virtual teaching methods in order to enhance improved quality of learning in the wake of emerging global challenges that confront us.

Keywords:- Virtual class, physical class, global challenge, learning.

I. INTRODUCTION

The covid-19 pandemic impacted on literarily every aspect of life and livelihood globally. Even though the impact was generally devastating, it offers other forms of opportunities to leverage on its effects to device other convenient means of interactions in order to reduce person to person contact towards curbing the menace. This saw to the promotion of virtual meetings and other forms of

electronic communication as against the usual physical meetings and interactions that have characterized our norm. Physical distancing is the conscious effort to maintaining distance between oneself and other people as a way of mitigating the spread of diseases (Chinwe, et. al., 2021).

Veronica, (2018) posits that a virtual classroom is an online learning environment that allows for live interaction between the tutor and the learners as they are participating in learning activities. In other words, the virtual classroom is a shared online space where the learners and the tutor work together simultaneously. Usually, these interactions take place through videoconferencing. The participants have tools to present learning content in different formats, as well as to implement collaborative and individual activities. In this type of interaction, the teacher has the particularly important role of the moderator who guides the learning process and supports group activities and discussions. The most common tools you can find in a virtual classroom are:

- Videoconferencing
- Online whiteboard for real-time collaboration
- Instant messaging tool
- Participation controls
- Breakout rooms

Synchronous virtual classrooms have the potential to provide significant added value to online learning by addressing the needs of the learners as they relate to social interaction and psychological safety. They can also create a new standard in the learning experience that goes above and beyond the physical space of the classroom and traditional teaching methods.

The virtual classroom provides an abundance of opportunities, especially when combined with self-study platforms (learning management systems) or when used in addition to traditional classroom learning activities. Unlike asynchronous learning environments, the synchronous virtual classroom allows for instant feedback, direct teacher-student interaction, and engaging activities to increase motivation and active participation. Immediate communication favors relationship building within the group, as well as a sense of community.

Although teaching and learning in a virtual classroom provide an experience similar to the physical one, it requires new pedagogical approaches and a redesign of the instructional model that includes the following characteristics:

- Virtual Classroom's high Interactivity
- Collaborative Learning
- Student-Centered Instruction

- Variety of Content Presentation and Learning Activities
- Psychologically Safe Environment
- Positive and Constructive Feedback

The VC service represents the interface between the students and a virtual professor and provides personalized learning materials to the users. Personalized learning materials can be created only if the system adapts to the student needs shown in the student's interaction process. That process is supported with the help of several mobile agents with different specialty, such as an agent responsible for student classification and a set of agents responsible for supporting learning activities such as finding the learning material relevant to student's needs.

Andrey, (2018) says that communication in real time in the virtual classroom gives the learning process a completely different dynamic. Students can ask me questions. They can see each other and can see me, which eliminates the feeling of talking to a nickname or profile picture. Online learning is famously flexible. When we think of learning online, it's usually the asynchronous activities such as presentations and quizzes that spring to mind first. There is another important element to online learning, though, and that's the live, synchronous element.

Live learning increases engagement by adding a human element. It is especially beneficial for learners who are not so self-sufficient or who are used to the traditional 'teacher and class' model of education. Live online lessons are particularly important in any course as it gives the learners the chance to receive feedback on elements of their learning which are impossible to measure in a self-marking quiz.

In some ways, live online lessons are similar to traditional face-to-face classes — a teacher can present information and interact with a group of people in real time — in other ways, there are some important differences (Vladimir, et al., 2000). Let's take some time to explore them.

The first essential difference is in classroom management. In a physical classroom, the teacher is free to move the learners around, grouping them in different ways and laying out the class in a way that will make the activities run smoothly. Most online classes use conferencing software which can make breakout groups and different arrangements of learners possible in the classroom. However, in reality, the most effective way to conduct online lessons is often for the teacher or presenter to manage the group as a whole. Because of this, online classes work best when they are kept to a smaller number of people.

Another difference is in the use of back channels. Back channels are particularly popular in educational situations, such as lectures, where the audience is expected to sit and listen for a longer period of time. In the past lecturers often banned mobile phones from the Lecture Theater, but nowadays progressive lecturers might even set up a twitter hashtag as a back channel for the audience. Online classrooms usually have a text function built in which can

act as a back channel for the audience to make sure they are engaged. For this reason, it's common to have both a presenter and host in lecture-style online lessons.

In online classes, lack of visual feedback is a common challenge for teachers. When presenting directly to an audience in the same room, we are able to adapt our delivery depending on visual feedback from the audience. A room full of bored faces is a sure sign to a presenter or teacher that they need to introduce a more interesting activity or adapt their delivery to engage the audience more. In the online classroom, a more astute presenter will make full use of the tools available to get similar feedback. Regular questions to the audience which they can respond to with voting tools are a useful way to check that the attendees are engaged in a live online session.

The anonymity of not being physically present in a classroom can also be a benefit to learners attending online sessions. Learners who feel afraid to speak or raise their own issues in a physical classroom may often feel braver when they know they can't be seen by other members of the class. Likewise, learners with a physical disability which limits their participation in traditional classroom activities are at no disadvantage in a virtual classroom where all participants are equal.

To sum up, while there are differences between physical and online learning, in the hands of a well-trained teacher, both delivery methods can be used to achieve the same goals. Which one you choose depends on the logistics of delivering your training as much as the subject matter being taught. However, in a more and more globalized workplace, live online lessons are becoming an increasingly obvious choice for any professional development program.

A. AIM

The aim of this study is to integrate virtual teaching techniques towards improving quality of learning in Federal Polytechnic Mubi in the midst of Covid-19 challenges.

B. OBJECTIVES

The following are the objectives of this study

- Subject a class of students to a semester of teaching by treating some topics in physical classes and others in virtual classes
- Subject students to optional examination questions derived from both physical and virtual classes
- Evaluate their rate of attempts of questions in both physical and virtual classes, and
- Determine their performance in both classes

II. METHODOLOGY

A Technical Drawing ND1 class from the Department of Architectural Technology was selected for this study. The class population is 82 students. Technical Drawing teaching curriculum for 2020/2021 academic session was interchangeably split into two groups. One group of topics was treated in the physical classes, while the other was treated in the virtual class session.

While the physical class has been the preexisting norm, the virtual class was prerecorded video clips of drawings, sketches and illustrations of treated topics shared with students through a WhatsApp group platform. Students download and share through Xender Apps. Students were urged to send correspondence via the same medium.

Though the entire assessment was physical, students were expected to attempt 5 questions from a total of 7 questions derived from both Physical and Virtual classes as shown in the Table 1.

Questions	Category
Q 1	Virtual
Q 2	Virtual
Q 3	Physical
Q 4	Physical
Q 5	Virtual
Q 6	Physical
Q 7	Physical

Table 1: Categorization of Examination Questions

Source: Author Work (2021)

III. RESULTS

Having subjected the 82 students to examination questions as presented in Table 1, the questions attempted by each candidate as shown in Table 2. The table also shows the frequency of attempts of both physical and virtual questions; in what question(s) did each candidate performed the best.

CANDIDATES	Q1	Q2	Q3	Q4	Q5	Q6	Q7	PHYSICAL	VIRTUAL	BEST SCORE
1	√	√		√	√		√	2	3	2
2	√	√		√	√		√	2	3	1,2,7,5
3	√				√		√	1	2	5
4	√		√		√		√	2	2	3
5	√	√			√	√	√	2	3	1
6	√	√		√	√			1	3	1
7	√	√			√			0	3	1,5
8	√	√	√		√	√		2	3	1,2,3,5,6
9	√	√	√					0	2	2
10	√		√		√	√		2	2	1
11	√	√			√	√	√	2	3	1,2,5,6
12	√	√			√			0	3	1,2,5
13	√	√		√			√	2	2	1,4
14	√	√		√			√	2	2	1,2
15	√	√	√			√	√	3	2	2
16	√	√	√	√		√		3	2	1,2
17	√	√		√	√		√	2	3	2,4,5,7
18	√	√	√		√			1	3	1,2
19	√		√		√			1	2	1,4
20	√	√			√	√	√	2	3	1,7
21	√	√		√			√	2	2	2
22	√	√		√	√	√		2	3	5
23	√	√		√	√		√	2	3	1
24	√	√		√		√	√	3	2	1
25	√	√		√			√	2	2	1
26	√	√	√				√	2	2	2,7
27	√	√	√			√	√	3	2	1,6
28	√	√	√	√	√			2	3	1,2
29	√	√		√	√			1	3	1,5
30	√	√		√	√		√	2	3	2,5
31	√	√	√	√		√		3	2	6
32	√	√	√			√		2	2	1,2,6
33	√	√		√		√	√	3	2	1,6
34	√	√		√	√	√		2	3	1,2,5,6
35	√	√		√	√	√		2	3	5
36	√	√			√			0	3	1,5
37	√	√	√	√	√			2	3	2,3,5
38	√	√			√	√	√	2	3	2,5,6
39	√	√		√	√	√		2	3	5
40	√	√		√		√	√	3	2	2

41	√	√			√		√	1	3	1,2,7
42	√	√	√	√	√			2	3	2
43	√	√	√	√	√			2	3	1
44	√	√		√	√	√		2	3	1,2,5,6
45	√	√			√	√	√	2	3	2,5
46	√	√		√	√	√		2	3	5
47	√	√	√		√		√	2	3	2,5
48	√	√		√	√		√	2	3	2
49	√	√			√	√		1	3	1,5
50	√	√		√	√		√	2	3	2
51	√	√	√	√				2	2	2,3,4
52	√	√		√	√	√		2	3	1
53	√	√		√	√	√		2	3	1,5
54	√	√	√	√	√			2	3	1,2,3,4
55	√	√			√	√	√	2	3	5
56	√	√			√	√	√	2	3	1,6
57	√	√	√		√			1	3	2
58	√	√		√	√		√	2	3	1,2
59	√	√		√	√	√		2	3	2,5
60	√	√			√	√	√	2	3	1
61	√	√		√	√	√		2	3	1,2
62	√	√			√		√	1	3	2,5
63	√		√	√	√	√		3	2	1,3
64	√	√			√	√		1	3	2,6
65	√	√		√	√			1	3	1
66	√	√			√			0	3	5
67	√	√		√	√		√	2	3	1,5,7
68	√		√		√			1	2	1
69	√	√	√		√	√		2	3	1
70	√	√		√	√		√	2	3	1,2
71		√	√		√			1	2	3,5
72	√	√		√	√	√		2	3	5
73	√	√		√	√	√		2	3	2,5
74	√	√	√	√			√	3	2	3
75	√	√		√	√	√		2	3	4
76	√	√			√	√		1	3	5
77	√	√		√	√	√		2	3	2
78	√	√		√			√	2	2	2
79	√	√			√	√	√	2	3	2,5
80	√	√		√	√	√		2	3	1
81	√	√	√		√	√		2	3	1
82	√	√	√	√		√		3	2	1,2,3
RATIO	81/82	76/82	27/82	47/82	63/82	41/82	36/82			
PERCENT	98.8	92.7	32.9	57.3	76.8	50.0	43.9			

Table 2: Questions attempted by the Candidates

Source: Author Work (2021)

Statistical analysis of each question was carried out to ascertain the number of candidates who scored best in each question. The details are shown in Table 3. It is how ever worthy of note that there are candidates who scores best in more than one question.

Questions	Q1	Q2	Q3	Q4	Q5	Q6	Q7
Frequency of best scores	44	41	9	6	32	11	6

Table 3: Best Score Analysis

Source: Author Work (2021)

IV. FINDINGS

Naturally, a candidate's choice of questions is informed by the candidate's understanding and the confidence to answer such questions. The following were deduced from this study'

- From Table 2, candidates who attempted all 3 questions from Virtual classes are 56/82 representing 68.29%. While 0 candidate attempted all 4 questions from Physical classes, only 10/82 candidates representing 12.19%
- The same table showed that all 82 candidates attempted at least 2 questions derived from virtual classes while 14 candidates attempted only 1 question and 5 candidates made 0 attempts at the questions generated from physical classes.
- Upon evaluation of each question from Q1 to Q7 in analyzing candidates' attempt, questions 1,2 &5 which are the derivatives virtual classes recorded (81/82 = 98.8%), (76/82 = 92.7%) and (63/82 = 76.8%) respectively.
- Flipping over to the questions derived from the physical classes which are Q3, Q4, Q6 & Q7, candidates' attempts were recorded thus; (27/82 = 32.9%), (47/82 = 57.3%), (41/82 = 50.0%) and (36/82 = 43.9%)

Using Table 3 to analyze candidates' best scores in questions they attempted, the following were deduced;

Questions 1,2 & 5 which are prepared from virtual classes had the following frequency of best scores 44, 41 and 32 respectively while,

Questions 3, 4, 6 & 7 of the physical class extraction have the following frequency of best scores 9, 6, 11 and 6 respectively.

V. CONCLUSION

Based on the above findings, it is clear that integrating virtual learning methods in the current system of physical class contact in Federal Polytechnic Mubi will not only improve students' performances in learning, but also limit physical contact in line Covid-19 protocol of ensuring social distancing is adhered to. The students were able to replay videos and illustrations on their appliances and have improved understanding. (Vladimir, et al., 2000) posit however, in a more and more globalized workplace, live online lessons are becoming an increasingly obvious choice for any professional development program.

RECOMMENDATIONS

The following are therefore recommended for action in order to improve quality of learning in emerging global challenges.

- Schools Management should focus on integrating virtual learning methods in order to adhere to the global covid-19 protocols and to leverage on viable alternatives of delivering better quality of education in contemporary times.
- Schools leadership must ensure accessible internet facilities to staff and students in order to make this migration feasible and effective.

- Obsolete education curriculum should be reviewed to be in vogue with the present realities in global educational evolution,

REFERENCES

- [1.] Andrey B. (2018): Power of the Virtual Classroom. VEDAMO's virtual classroom highlight.
- [2.] Chinwe S.A., Kingsley E. A., Rosemary N. O., (2021): Traditional Housing and Infection Control in South East Nigeria.ACADEMIA.Letters
- [3.] Veronica Racheva(2018):Benefits of Blended Online Training. VEDAMO's training programme.
- [4.] Vladimir T., Danco D., Goran K., Zaneta P., (2000): Web - Based Virtual Classroom. California, USA.