



Virtual Platform(s) for Postgraduate Oral Project Defence in Science Education Department, University of Nigeria, Nsukka: Implication for Effective Assessment

Innocent E. Okereke ^a, Sunday E. Amaja ^a, Kenneth E. Okpe ^b & Ileigo E. Alfa ^a

^aDepartment of Science Education, University of Nigeria, Nsukka

^bPeaceland College of Education, Enugu

Corresponding author: amajasunday@gmail.com

Abstract

The study explored the use of virtual platform(s) for postgraduate (PG) oral project defence in Science Education Department, University of Nigeria, Nsukka (UNN). A case study research design was adopted. The study was conducted in the Department of Science Education, UNN using a purposively drawn sample of thirty PG supervisors. Data were collected via a structured questionnaire with the overall reliability of 0.81 determined using Cronbach Alpha. Data were quantitatively analyzed. Results revealed the virtual platform(s) in use for PG oral project defence in the Department of Science Education, UNN; its extent of use; challenges limiting the effective use of virtual platform(s) for PG oral project defence and solutions. It was recommended among other things that the School of Postgraduate Studies, UNN should encourage departments that have not adopted virtual oral examination for PG project defence to start it as a non-pharmaceutical intervention geared towards reducing the spread of the COVID-19 pandemic.

Keywords: Virtual Platform, Oral Project Defence, COVID-19, Assessment

Introduction

The outbreak of covid-19 and the news of its spread in 2020 became viral on social media platforms, newspapers, radio and televisions. To contain the spread, many governments the world over including Nigeria introduced and started adopting some non-pharmaceutical interventions to minimize its spread (Nigeria Centre for Disease Control [N.C.D.C], 2020); World Health Organisation, [WHO], 2020). The non-pharmaceutical measures/interventions are those measures aimed at reducing the community spread of COVID-19 that do not necessarily involve the use of drugs (Okereke, Dim & Nzewi, 2021). Among the non-pharmaceutical measures adopted include hands-washing with water and soap, use of hand sanitizers, wearing of a face shield, social distancing up to two metres as well as avoiding some practices like hand-shaking and hugging (N.C.D.C. 2020). In most countries like Nigeria, there was a lockdown that delayed travel and gathering in public places (Presidential Task Force [P.T.F], 2020). The lockdown order affected public places such as markets, churches and schools among others as activities involving large crowds were discouraged (P.T.F, 2020). In schools, for instance, students and teachers at all levels of education avoided physical classroom contact. This led to the indefinite postponement and/or cancellation of already scheduled numerous academic events or activities such as seminars, conferences, workshops and oral project defence in Universities. Because

prolonged postponement of academic activities would hurt the students' learning outcomes, there was a paradigm shift to online teaching and learning through virtual learning/meeting platforms.

Virtual learning/meeting platforms are video applications and software that are capable of bringing people who have similar interests together for interactions over the internet. The software may comprise a form of video conferencing that contains tools like chat, reactions and screen sharing. Virtual learning/meeting is anchored on the Online Collaborative Learning (OCL) theory proposed by Harasim in 2012. The theory states that internet facilities provide learning environment that foster collaboration and knowledge building. The theory maintains that internet uses serve as a means to reshape education. The theory supports moving teaching and learning to the internet instead of face-to-face interaction. A few examples of software or virtual meeting platforms include zoom, webinar, Webex, google meet, skype, lifesize and Jami (Rio-Chillece, Jara-Monge, Andrade-Arenas, 2021; Chen, 2022). Zoom is among the commonest virtual platforms in use.

Zoom is a tool used for the synchronous online meeting that allows its users to work proficiently. It has several functions or features such as annotation tools, polls, meeting rooms and video as well as screen sharing (Kohnke & Moorhouse, 2020). It is very useful for a virtual meeting as it facilitates

communication with many people without making direct contact, and supports the learning needs in today's digital era (Pratiwi, Afandi & Wahyuni, 2019). Zoom application can be installed with devices such as laptop computers, android and smartphones among others. It is very helpful in communicating remotely, and all the lecturer's explanations can be conveyed directly without having to meet physically (Laili & Nashir, 2020). It also fosters discussion between lecturers and students as well as among students with direct communication through video conferencing which is supported by zoom features such as raise hand and group messages (Guzacheva, 2020). Also, it allows learning activities or discussions to thrive as obtained in face-to-face learning, and it encourages communication with many people irrespective of location and time without the need to meet physically. The aforementioned features make zoom adequate for use in the online classroom teaching and learning process. Thus, zoom meeting is one of the platforms that is widely used as a learning media (Guzacheva, 2020). Another virtual meeting platform that helps to facilitate teaching and learning is webinar.

A webinar is a virtual platform that is akin to a virtual lecture hall or auditorium. It is ideal for large audiences or events that are open to the public. Webinars are designed so that the host and any designated panellists can share their video, audio and screen (Support Zoom, 2022). In a webinar, the host can unmute attendees as in the zoom platform, and participants can interact via questions and answers as well as chats. Support Zoom further asserted that zoom is different from a webinar in that zoom has small to large groups with a minimum of two participants and above while a webinar is for large events, educational lectures and public broadcast that has a minimum of fifty participants and above. Again, in the zoom platform, all the participants can mute or unmute their audio while in a webinar, only the host and panellists can mute or unmute the participants' audio. Apart from a webinar, there is also Webex.

Webex is another online meeting platform. It is originally intended for businesses and helps businesses of different kinds to stay connected (Chen, 2022). Chen posited that by signing up for Webex's free plan, one can host virtual meetings or games with up to 100 people for any duration. This feature contrasts with zoom which limits one's meeting time to about forty minutes if three or more people are in such meeting. Google meet as a virtual meeting platform was offered by google as an alternative due to

zoom's surge in popularity. Google meet can host gatherings of up to two hundred and fifty (250) participants, and also offers attractive additions like live captions and anti-abuse features. If data security is a priority for one's business, then google meet is appropriate for such users, as long as everyone has a google account (Chen, 2022). Skype is yet another important example of a virtual meeting platform.

Skype mostly involves video calls. However, due to consumer complaints and the emergence of zoom, skype is no longer the only or primary option for meetings (Kingsley-Hughes, 2020). Skype application now offers meetings for up to 50 participants accessible by a generated link (Chen, 2022). Chen noted that no registration or download is required. Other virtual platforms are Lifesize and Jami. Lifesize is ideal for team-building activities because of its focus on high-definition videos. This makes the user have a feeling that his/her team members are in the same room with him/her during the meeting. Jami is a free and universal communication platform which preserves the user's privacy and freedom (Linux, 2022). The user can use the Jami platform for large groups so long as the meeting is run with strong computing power and bandwidth (Chen, 2022). The usage of the above-named virtual platforms appears to become prominent in Nigeria during the era of covid-19 pandemic and afterwards, and their usage is of immense advantages.

The virtual platforms foster social distancing which is among the non-pharmaceutical interventions to reduce the spread of covid-19 pandemic across the globe. Apart from encouraging social distancing, they help to reduce road hazards that may occur in an attempt to reach meeting venues. Also, their adoption as media for teaching and learning as well as examination enhances remote learning. These enormous advantages among others prompted some departments, faculties, schools and institutes in higher institutions of learning including the Department of Science Education, University of Nigeria, Nsukka to adopt virtual platforms for academic events as well as for oral examinations such as postgraduate project defence.

Oral project defence during a postgraduate(PG) programme is an oral examination and a form of assessment in higher institutions of learning in which a student makes an oral presentation of his/her project and orally answers the questions that may be posed to him/her by the examiners. Educational assessment which could be formative or

summative is the systematic process of finding out about a student's knowledge, experience, skills, and beliefs using empirical data with the ultimate goal of quantifying and documenting how much a student knows (Formplus, 2022). These include teacher observation and analysis of students' works, home works, tests, essays, reports, practical procedures and classroom discussion of issues (Amua-Sekyi, 2016). An examination is an example of summative assessment (Dunn, & Mulvenon 2009; Linder 2017) while oral project defence is a form of examination.

An examination is defined as a process of evaluating knowledge a candidate possesses in a subject area. It is an evaluation of understanding and a final product that measures as well as evaluates a set of objectives or a particular behaviour (Anuradha, 2017; Teachmint, 2022). It can be in the form of a written and oral examination (unwritten examination). The unwritten or oral examination is a form of examination whereby the candidate (student) is expected to be examined orally. At the postgraduate level of the Department of Science Education, there are provisions for coursework which can be assessed through written examination and unwritten examination (via seminar presentations) as well as a project which marks the end of such programme that is assessed orally. The project defence at the postgraduate level of the Department of Science Education occurs in three stages which include proposal defence, seminar defence and external defence. Only students who successfully completed the stages and other graduation requirements are expected to graduate. The adoption and utilization of virtual platform(s) for PG oral examination in the Department of Science Education have helped the department to graduate many postgraduate students, eliminate transportation, accommodation and security issues that may be encountered by the external examiners, boost students' morale towards completing and defending their projects, increase students' technological skills as well as reduce costs.

The foregoing advantages of using a virtual platform(s) for PG oral project defence in the Department of Science Education, UNN occasioned by the COVID-19 pandemic notwithstanding, their utilization has not been practised so far without some challenges as witnessed by PG supervisors. Challenges in this context, are impediments that deter the effective use of virtual platforms in the teaching and learning process. Although Narh, Boateng, Afful-Dadzie and Owusu (2019) opined that the use of virtual platforms

is challenged by institutional challenges, student-technological challenges and environmental factors, there is a need to explore not only the challenges of using virtual platforms for PG oral project defence but also to proffer solutions. This study, therefore, identified the virtual platform(s) in use in the Department of Science Education for the postgraduate oral project defence, examined the extent of utilization of such virtual platform(s), explored impediments to effective use of such virtual platform(s) and proffered solutions to ensure the effective use of the virtual platform for postgraduate oral project defence which may have implication for effective assessment.

Specifically, the study was to:

1. find out the documented virtual platform(s) in use for postgraduate oral project defence in the Department of Science Education.
2. determine the extent to which virtual platform(s) are used for postgraduate oral project defence in the Department of Science Education.
3. investigate the challenges to effective utilization of virtual platform(s) for postgraduate oral project defence in the Department of Science Education.
4. proffer solutions to ensure effective utilization of virtual platform(s) for postgraduate oral project defence in the Department of Science Education.

In line with the purposes, the study was guided by the following research questions:

1. What are the documented virtual platform(s) in use for postgraduate oral project defence in the Department of Science Education?
2. To what extent are virtual platform(s) used for postgraduate oral project defence in the Department of Science Education?
3. What are the challenges to effective utilization of virtual platform(s) for postgraduate oral project defence in the Department of Science Education?
4. What are the solutions to ensure effective utilization of virtual platform(s) for postgraduate oral project defence in the Department of Science Education?

Method

The research design adopted in this study was a case study research design. The design is deemed appropriate for the study as it is geared towards a

thorough understanding of a given social unit (Nworgu, 2015).

The study was carried out in the Department of Science Education, University of Nigeria, Nsukka, Enugu State. The Department of Science Education is chosen for the study because it is among the departments in the University of Nigeria, Nsukka that use a virtual platform(s) for postgraduate oral project defence. Thus, the staff of the department is expected to have the requisite experiences pertinent to address the objectives of this study.

The population of the study include the sixty-one (61) academic staff of the Department of Science Education, University of Nigeria, Nsukka in the 2020/2021 academic session (Data from the Head, Department of Science Education, University of Nigeria, Nsukka). The sample size for the study was thirty (30) postgraduate supervisors from the Department of Science Education, University of Nigeria, Nsukka who are also members of the academic board of the Department. The sample was drawn using the purposive sampling technique since the sample is the staff that are directly involved in the teaching of postgraduate courses as well as in the supervision of postgraduate projects.

The instrument for collecting pertinent data was a structured questionnaire developed by the researchers titled questionnaire on virtual platform(s) for postgraduate(PG) oral project defence (QVPPOPD). It has two sections namely: sections A and B. Section A is designed to collect data on the documented virtual platform(s) in use for postgraduate oral project defence in the Department of Science Education. Section B is divided into three clusters namely A, B and C. The three clusters respectively addressed specific purposes 2 to 4. Cluster A has response options of Very Low Extent(VLE), Low Extent(LE), High Extent(HE) and Very High Extent(VHE). The scoring pattern of the response options is 1 for Very Low Extent(VLE), 2 for Low Extent(LE), 3 for High Extent(HE) and 4 for Very High Extent(VHE). Clusters B and C had response options of Strongly Disagree(SD), Disagree(D), Agree(A) and Strongly Agree(SA). In scoring these clusters, Strongly Disagree(SD) was given a score of 1, Disagree(D) was scored 2, Agree(A) attracted a score of 3 while Strongly Agree(SA) was assigned a score of 4. Each of the clusters has an accepted (benchmark) mean value of 2.50.

In order to ensure that the instrument is useful in collecting the data it was meant to collect, the

questionnaire was face validated by three experts from the Department of Science Education, University of Nigeria, Nsukka. They validated the research instrument based on whether it is appropriate for answering the research questions. In addition, they checked whether the research questions are in line with the specific purposes of the study and the appropriateness of the items on the questionnaire. Their useful suggestions were effected before producing the final copies of the instrument used for the study.

To ensure that the questionnaire instrument for data collection consistently measure what it was meant to measure, the validated questionnaire instrument was trial tested using twenty (20) postgraduate supervisors from another Department who were not used for the actual study but shared common characteristics with the sample that was used for the study in terms of having the same academic calendar and teaching in the same university. Thereafter, the questionnaire instrument was scored and subjected to a reliability measure using the Cronbach Alpha formula since the items of the questionnaire are non-dichotomously scored. Through this, the reliability indices of 0.81, 0.83 and 0.75 were obtained for clusters A, B, and C of section B respectively and an overall reliability index of 0.81.

The study lasted for two months. The first month of the study was used for the development of the research instrument and a reconnaissance/preliminary survey for trial testing of the instrument to ascertain the reliability indices. In the second month of the study, the actual study commenced. The developed and validated questionnaire was put in google form (online questionnaire) with a link and posted to the postgraduate supervisors of the Department of Science Education via the departmental WhatsApp platforms with an instruction that it should be filled by only PG supervisors. The online questionnaire was considered appropriate since getting the respondents face-to-face was not easy because of the strike embarked upon by the academic staff union of universities (ASUU) in Nigeria within the period of this study. The participants responded to the questionnaire.

The data obtained from the participants were analyzed quantitatively. The data from section A of the questionnaire were analyzed using percentages and chart, while data from section B of the structured questionnaire were analyzed using mean and standard

deviation; all were run using the Statistical Package for Social Sciences (SPSS) version 21.

Results

The results are presented in tables and chart as illustrated below.

Table 1: Frequency and Percentage of the Documented Virtual Platform(s) in Use for Postgraduate Oral Project Defence in the Department of Science Education

Virtual Platform in Use for PG Oral Project Defence	Frequency	Percent
Zoom	28.00	93.30
Webinar	2.00	6.70
Total	30.00	100.00



Figure 1: Virtual platform(s) in use for PG oral project defence in Science Education Department

Table 1 above showed that twenty-eight respondents which amounted to 93.30% of the total respondents indicated zoom platform as the documented or accepted virtual platform in use for PG oral project defence in the Department of Science Education, University of Nigeria, Nsukka while only two respondents which are equivalent to 6.70% of the total respondents chose webinar platform for the same purpose. This is further elucidated in figure one where the zoom platform possesses a bar that is taller than the webinar platform. It means that the zoom platform is the documented virtual platform mostly in use for PG oral project defence in the Department of Science Education, University of Nigeria, Nsukka.

Table 2: Mean and Standard Deviation Scores on the Extent to which Virtual Platform(s) are used for Postgraduate Oral Project Defence in the Department of Science Education

S/N	Item Statements	Response Options				Statistics			
		VLE	LE	HE	VHE	N	\bar{X}	SD	Decision
1.	Using virtual platform(s) during proposal project defence in my department.	13.00	12.00	2.00	3.00	30	1.83	0.95	Reject
2.	Using virtual platform(s) during seminar project defence in my department.	12.00	13.00	3.00	2.00		1.83	0.87	Reject
3.	Using virtual platform(s) during external project defence in my department.	2.00	7.00	9.00	12.00		3.03	0.96	Accept
4.	Using virtual platform(s) in cases of re-presentation for failed proposals, seminars or external project defence in my department.	12.00	13.00	3.00	2.00		1.83	0.87	Reject
5.	Using virtual platform(s) in case of a pre-project oral defence with their supervisors in my department.	10.00	13.00	4.00	3.00		2.00	0.95	Reject
Grand Mean and Std. Dev.							2.11	0.67	Reject

In table 2 above, it is revealed that during PG oral project defence of the Department of Science Education, UNN, virtual platform(s) is extensively used only during external project defence. However, virtual platform(s) is rarely or not used at the stages of proposal project defence, seminar project defence, in

cases of re-presentation for failed proposals, seminars or external project defence and in the case of a pre-project oral defence with the student's supervisor. The grand mean of 2.11 which is below the cut-off point of 2.50 with an associated grand standard deviation score

of 0.67 shows that the extent to which virtual platform(s) are used for postgraduate oral project defence in the Department of Science Education is low.

Table 3: Mean and Standard Deviation Scores on the Challenges to Effective Utilization of Virtual Platform(s) for Postgraduate Oral Project Defence in the Department of Science Education

S/N	Item Statements	Response Options				Statistics			
		SD	D	A	SA	N	\bar{X}	SD	Decision
6.	Unstable power supply.	1.00	Nil	9.00	20.00	30	3.60	0.67	Accept
7.	Some students do not have a virtual platform(s) for oral project defence downloaded on their laptops.	2.00	7.00	13.00	8.00	.	2.90	0.88	Accept
8.	Students' inadequate knowledge of the available virtual platform(s) for PG oral project defence.	2.00	8.00	13.00	7.00		2.80	0.87	Accept
9.	Students' incompetence in carrying out basic operations like sharing screen, raising a hand, mute/unmute among others in the used virtual platform(s).	2.00	5.00	13.00	10.00		3.03	0.89	Accept
10.	Network issues.	Nil	Nil	8.00	22.00		3.73	0.45	Accept
11.	Poor attitude of some PG students, supervisors and examiners towards the use of the virtual platform(s) for oral project defence.	3.00	6.00	12.00	9.00		2.90	0.96	Accept
12.	Malfunction of any of the connected devices for the oral exam from the host institution(department).	1.00	2.00	14.00	13.00		3.30	0.75	Accept
13.	Lack of financial support for the ICT technical staff.	3.00	8.00	10.00	9.00		2.83	0.99	Accept
14.	The inability of the ICT technical staff to stay all through the exam.	5.00	6.00	12.00	7.00		2.70	1.02	Accept
15.	External interference such as noise from the host institution during the oral exam.	3.00	7.00	12.00	8.00		2.80	0.94	Accept
16.	Delay by the external examiner in sending his/her signed assessment report forms concerning the candidate's performance in the oral exam.	Nil	6.00	11.00	13.00		3.23	0.77	Accept
17.	The oral project defence through a virtual platform(s) lacks quality.	12.00	9.00	5.00	4.00		2.03	1.06	Reject
Grand Mean and Std. Dev.							2.99	0.55	Accept

Table 3 with respect to the challenges to effective utilization of virtual platform(s) for postgraduate oral project defence in the Department of Science Education reveals that the PG supervisors almost unanimously agreed that items 6-16 were the challenges to effective utilization of virtual platform(s) for postgraduate oral project defence in the

Department of Science Education and that oral project defence through a virtual platform(s) is of quality hence the issue of quality is not a challenge as shown in item 17. This is further shown by the grand cluster mean of 2.99 which is above the acceptable mean of 2.50 and a corresponding grand standard deviation score of 0.55.

Table 4: Mean and Standard Deviation Scores on the solutions to ensure effective utilization of virtual platform(s) for postgraduate oral project defence in the Department of Science Education

S/N	Item Statements	Response Options				Statistics			
		SD	D	A	SA	N	\bar{X}	SD	Decision

18.	Use of alternative power supply such as generator and/or solar energy.	1.00	Nil	5.00	24.00	30	3.73	0.64	Accept
19.	Students are encouraged to download the approved virtual platform(s) for oral project defence on their laptops.	1.00	1.00	12.00	16.00		3.43	0.73	Accept
20.	Creation of awareness on the available virtual platform(s) for PG oral project defence.	1.00	Nil	8.00	21.00		3.63	0.67	Accept
21.	Integrating virtual platform(s) and their usage during the annual compulsory PG orientation workshop for newly admitted students.	Nil	1.00	8.00	21.00		3.67	0.55	Accept
22.	Use of personal data.	6.00	7.00	10.00	7.00		2.60	1.07	Accept
23.	PG students, supervisors, and examiners should have a positive attitude towards the use of the virtual platform(s) for oral project defence.	Nil	1.00	10.00	19.00		3.60	0.56	Accept
24.	Provision of spare devices for changing any malfunctioned connected device during the oral exam.	Nil	1.00	12.00	17.00		3.53	0.57	Accept
25.	Giving financial support to the ICT technical staff.	Nil	4.00	15.00	11.00		3.23	0.68	Accept
26.	ICT technical staff should stay till the end of the exam.	Nil	Nil	15.00	15.00		3.50	0.51	Accept
27.	External interference such as noise from the host institution during the oral exam should be avoided.	Nil	Nil	12.00	18.00		3.60	0.49	Accept
28.	Electronic copies of the assessment report forms concerning the candidate's performance in the oral exam should be filled and signed by the external examiner and sent immediately after the exam.	Nil	Nil	9.00	21.00		3.70	0.47	Accept
29.	In the absence of electronic copies of necessary forms pertaining to oral examinations for external examiners to fill, external examiners should fill the hard copies of those forms and sign them manually after the exam, scan and send them electronically.	Nil	Nil	8.00	22.00		3.73	0.45	Accept
Grand Mean and Std. Dev.							3.50	0.36	Accept

Table 4 shows that the PG supervisors almost totally agreed to the solutions to challenges facing effective utilization of virtual platform(s) for postgraduate oral project defence in the Department of Science Education in items 18-29.

Discussion

The documented virtual platform in use for postgraduate oral project defence in the Department of Science Education, University of Nigeria, Nsukka is the

zoom platform. Webinar platform though mentioned has a percentage that is smaller than the acceptable percentage. This is in line with Guzacheva (2020) who stated that the zoom meeting platform is one of the platforms that is widely used as a learning media. This could be because of some nice features that the zoom platform possesses among which are sharing screens, raising a hand and group messages that make users of the platform a feeling of face-to-face interaction in a learning environment even though they are remotely positioned.

Support Zoom (2022) added that the zoom platform enables each participant to mute or unmute his/her audio and this distinguishes it from the webinar platform where only the host and panellists can mute or unmute the participants' audio. Consequently, the adoption and use of the zoom virtual platform in the Science Education Department for PG oral project defence enable users to enjoy the already established benefits.

Furthermore, although the zoom platform is the documented virtual platform for PG oral project defence in the Department of Science Education, University of Nigeria, Nsukka, its extent of use is generally low. This is because zoom, as a virtual platform, is only used in the department during external project defence but rarely or not used at other stages of PG oral project defence such as in proposal project defence, seminar project defence, in cases of re-presentation for failed proposal, seminar or external project defence as well as in the case of a pre-project oral defence with the student's supervisor. Considering that other stages of PG oral project defence are important and their successes will lead to the final stage which is the external project defence while maintaining COVID-19 protocol, it is appropriate that the Department of Science Education extends the use of the zoom virtual platform to other stages of the PG oral project defence to promote efficiency irrespective of the students' location.

However, the use of a virtual platform(s) such as zoom for PG oral project defence in the Department of Science Education, University of Nigeria, Nsukka has met certain challenges. These challenges include unstable power supply, some students do not have virtual platform(s) applications downloaded on their laptops, students' inadequate knowledge of the available virtual platform(s) for PG oral project defence, and students' incompetence in carrying out basic operations like share screen, raise a hand, mute/unmute among others in the used virtual platform(s), network issues, poor attitude of some PG students, supervisors and examiners towards the use of the virtual platform(s) for oral project defence, malfunction of any of the connected devices for the oral exam from the host institution(department), lack of financial support for the ICT technical staff, the inability of the ICT technical staff to stay all through the exam, external interference such as noise from the host institution during the oral exam, as well as delay by the external examiner in sending his/her signed assessment report forms concerning the candidate's performance in the oral exam. Some of the stated challenges corroborate the findings of Narh, Boateng, Afful-Dadzie and Owusu (2019) who maintained that the use of virtual platforms is challenged by institutional challenges (ineffective orientation of students by service providers, systems

failures, and speaking patterns); student-technological challenges (poor computer skills and self-efficacy, inadequate knowledge and skills in the use of online handles, and poor time management by students); and environmental factors (poor internet connections, lack of advanced ICT technologies to support e-learning). In a situation where the above-stated challenges are not remedied, the effective use of virtual platforms such as zoom for PG oral project defence and learning generally, becomes a delusion. Tackling the aforesaid challenges, this study came up with some useful solutions.

The solutions proffered by this study to be implemented to ensure that virtual platform(s) are effectively utilized for PG oral project defence and learning in general include the use of alternative power supply such as generator and/or solar energy; students are encouraged to download applications of the approved virtual platform(s) for oral project defence in their laptops; creation of awareness on the available virtual platform(s) for PG oral project defence during the departmental PG orientation, integrating virtual platform(s) and their usage during the compulsory annual university PG orientation workshop for newly admitted students; use of personal data; PG students, supervisors, and examiners are encouraged to have positive attitude towards the use of virtual platform(s) for oral project defence; provision of spare devices for changing any malfunctioned connected device during the oral exam, giving financial support to the ICT technical staff; ICT technical staff should stay till the end of the exam; external interference such as noise from the host institution during the oral exam should be avoided by ensuring that only the concerned persons are allowed into the venue with cell phones on silent mode; electronic copies of the assessment report forms concerning the candidate's performance in the oral exam should be filled and signed by the external examiner and send immediately after the exam; and in the absence of electronic copies of necessary forms pertaining to oral examinations for external examiners to fill, external examiners should fill the hard copies of those forms and sign them manually after the exam, scan and send electronically. Some of the stated solutions align with the findings of Colman (2020) who upheld that remote learners should have a quiet workspace to avoid distractions as well as start the session a little early and leave a buffer of time during which one can address any login or access issues as solutions to the technical challenges limiting the use of virtual platforms for learning. The adoption and application of the above-stated solutions will go a long way in ensuring that the use of virtual platforms such as zoom for PG oral project defence becomes more expedient and goes on well

without unnecessary hitches. Again, the external examiner's copy of the student's project is expected to be forwarded to the host department via speed post such as Courier service to enable the student to effect the corrections promptly when the ideas identified by the external examiner are still fresh in the student's memory.

Implication for Effective Assessment

An effective assessment is conducted with ease. It is also one that is always appropriate to its purpose and able to be readily administered by the practitioner (Department of Education and Training, Victoria, 2019). In sequel to the view that an effective assessment is readily administered, the use of a virtual platform(s) such as zoom for PG oral project defence makes the assessment be promptly fixed and conducted as soon as the external examiner is ready. The external examiner stays in his/her comfort place and gets the candidate(s) who are also in a comfortable venue in their host institutions examined without missing any aspect of the assessment rubric set by the host institution. The use of virtual platforms in PG oral project defence hastens the assessment process with the quality in face-to-face PG oral project defence still being maintained. Their use help to reduce logistic issues emanating from road hazards, flight disappointments due to weather condition or any other environmental condition, accommodation challenge that may not be to the preference of the external examiner and even security apprehensions that are almost stifling economic and academic activities in different parts of the country. It also has cost implications as it is cost-effective. Finally, the use of virtual platforms for PG oral project defence will have an implication for the completion rate of PG programmes. With the use of the virtual platforms for PG oral project defence, students whose project works are ready for defence are not kept waiting but scheduled for such exercise. Such practice will increase the completion rate of students' PG programmes without compromising the quality.

Conclusion

The adoption and utilization of virtual platform(s) for PG oral project defence in the Department of Science Education, University of Nigeria, Nsukka are quite innovative. Zoom platform is the virtual platform in use for PG oral project defence in the Department of Science Education as identified, and its extent of use was low as it is only used extensively during the external project defence stage. The challenges deterring its effective use were determined by solutions proffered. Therefore, the use of a virtual platforms such as zoom for PG oral project defence is geared toward promoting effective assessment; and as a non-pharmaceutical intervention,

helps to reduce the spread of the COVID-19 pandemic and minimize security apprehensions in Nigeria.

Recommendations

The following recommendations are made:

1. The School of Postgraduate Studies, University of Nigeria, Nsukka should encourage departments that have not adopted virtual oral examination for postgraduate project defence to start it since as a non-pharmaceutical intervention, it is geared toward reducing the spread of the COVID-19 pandemic and minimizing security apprehensions in Nigeria.
2. The use of the virtual platform for PG oral project defence should not only be for the external defence stage but also should be extended to the proposals, seminars and other aspects of the PG project defence.
3. The Department with the approval of the School of Postgraduate Studies of the University of Nigeria, Nsukka should design and send electronic copies of the necessary forms for oral examinations for external examiners to fill electronically.
4. In the absence of electronic copies of necessary forms for oral examinations for external examiners to fill, efforts should be made by external examiners to fill the hard copies of those forms and sign them manually after the exam, scan and forward same to the Head of the Department of the host institution later the day of the examination.
5. Training workshops on the use of the virtual platform(s) for PG oral examinations should be periodically organized for postgraduate supervisors as well as integrated same as among the themes to sensitize the postgraduate(PG) students on during the annual PG orientation workshop for newly admitted students.

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