

Emergency remote teaching experience: Challenges, actions and suggested measures of STEM research teachers in Pangasinan Philippines

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ABSTRACT

The Department of Education (DepEd) resorts to using Self-Learning Modules (SLM) with the alternative learning delivery modalities for various types of learners across the Philippines. This sudden change in the methodology of teaching is commonly known as Emergency Remote Teaching (ERT). Emergency Remote Teaching is a shift of delivering lessons due to crisis. This phenomenological qualitative research aims to determine the experiences of STEM Research teachers during Emergency Remote Teaching. On this premise, a phenomenological research design was conducted among the STEM Research teacher of Pangasinan Province, Philippines. The researchers seek information on the difficulties encountered, actions taken, and suggested measures of the STEM research teachers using an interview method. The participants were selected by the researchers via purposive convenience sampling since the study was conducted in the middle of a pandemic. Interview questions were done online and phone calls upon the availability of the respondents. The data were interpreted and analyzed after participants shared their experiences as research teachers at the time of the pandemic. The results reveal the following statements. The student's struggle of understanding the lesson and delivery of instruction is the main difficulties experienced by the respondent-teachers. This is supported by technical difficulties and struggle in monitoring and evaluation. The actions taken by the teacher-respondents to address this were constant and use of different modes of communication. This includes individual consultation and the use of blended learning. The research teachers suggested measures for the stakeholders are the organization of training and creating unified learning materials. While the teacher-respondents also suggested stakeholders' investment in scientific research.

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INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic has affected the health of people worldwide and all spheres of life, including education. Governments from all over the world have adopted preventive measures to restrain the extremely contagious COVID-19, (WHO, 2020) including isolation, social distancing, skeletal workforce, and the subsequent closure of the education systems worldwide. It caused nationwide school closures in 191 countries, which affected 1.6 billion students, about 90% of the world's student population. (UNESCO, 2020a). Moreover, as schools reopened again last October 2020 in the Philippines, there is an entire cancellation of face-to-face teaching including laboratories and other learning experiences as a mitigation step against the risk posed by the Coronavirus. Accordingly, various measures by the Department of Education have been initiated to implement social isolation strategies, online teaching, and modular distance learning followed by rapid curriculum transformation. However, due to time constraints, the curriculum transformation is anticipated to occur rapidly without sufficient preparation.

The global trend moved toward "Suspending Classes Without Stopping Learning" which is an emergency policy launched by the ministry of education in China. (Zhang, 2020), "*Suspending classes without stopping learning*" did not follow a normal policy-making process, thus implementation conditions, implementation process, and effects of the policy remain unclear. The Department of Education address the challenges in the basic education program during the covid-19 pandemic through its Learning Continuity Plan (LCP). A learning continuity plan aims to ensure that students' learning continues even in the face of natural disasters, such as hurricanes, fires, and pandemics. This overcomes the challenges posed by the pandemic through creative teaching and learning to keep students on pace with their studies. This sudden change in the methodology of teaching is commonly known as Emergency Remote Teaching (ERT). According to Hodges et. al. (2020), Emergency Remote Teaching is a temporary shift in instructional delivery to an alternate delivery mode as a result of an emergency situation.

Emergency Remote Education (ERE) is critical for meeting students' educational needs during this public health emergency as it offers dependable yet simple to implement instructional assistance (Hodges et al., 2020). This alternate mode of instruction occurs during times of crisis, such as the case of COVID-19, when structured online instruction is difficult to implement due to a looming pandemic. COVID-19 harmed face-to-face education and even blended learning, but the education sector must re-examine and calibrate its use of technology for emergency remote instruction between students and teachers. Thus, regardless of the outcome of emergency remote teaching, school institutions worldwide are forced to experience and accept tremendous and rapid changes (Hung, 2010). s it differs from an online distance education, to avoid wrong assumptions and wrong definitions that will make us more prone to errors along the road, using the word ERT effectively in the context of a crisis is important so that when things return to normal, they will not be mixed up in the poor examples from a period of crisis with the years of effort to illustrate the efficiency of distant education (Bozkurt & Sharma, 2020, p. ii).

The Chinese Ministry of Educations' "*Suspending classes without stopping learning*" initiative during the COVID-19 pandemic provided adaptable online learning to over 270 million students at home. (Huang et. al., 2020) The Philippines is unprepared for the implementation of emergency remote education. Meanwhile, in a study conducted by Ventayin (2018) on the readiness of DepEd Teachers to online teaching, despite the limited experience in distance education such as technical skills, time management, knowledge and attitude in online education, teachers were still able to cope with the trends in distance learning. Throughout this crisis, the country continues to struggle to provide alternative modes of education, as many schools in the Philippines operated in a conventional classroom setting prior to COVID-19. The time has come, however, as the country's educational system faces its greatest challenge to date, that of groping in an emergency remote education.

There are a number of advantages to implementing remote instruction via technology, including increased student engagement, access to current information, content sharing, and communication (Mathew & Iloanya, 2016). Apart from these, teachers and students can interact with others in a variety of institutions located throughout the world. For example, the University of the Philippines – Open University employs an open and distance e-learning strategy to reach out to its students. In comparison to traditional learning, online learning allows for more flexibility

(Daniel, 2016; Orr, Weller, & Farrow, 2019; Stone, Freeman, Dymont, Muir, & Milthorpe, 2019) in terms of when and where they can access learning resources. Additionally, it makes learning more convenient and conducive for students who live in remote areas or are working professionals, for example. While learning technologies are becoming an integral part of instructional integration in face-to-face classrooms, there is no doubt that they present unique challenges in developing countries such as the Philippines (e.g., Roberts & Hernandez, 2019). Slow or unreliable internet, high connection costs, technophobia, insufficient 21st-century technological skills, and lack of devices are some of the barriers to students' distance learning (Alvarez, 2020; Mathew & Iloanya, 2016; Lynch, 2020).

Regardless of the possible conflicting outcomes of emergency remote instruction, the goal is to create the most flexible, efficient, and effective instructional environment possible for educators and learners during COVID-19 (Duncan & Young, 2009). Globally, policymakers and practitioners are becoming increasingly interested in the effectiveness of interactive remote learning approaches and the conditions (U.S. Department of Education, 2010) under which emergency remote teaching is effective. This emergency remote teaching requires a shift in pedagogical thinking and practice, thus giving a new experience to the teachers. One significant impact in ERT is the shift in focus from teaching-centered practices toward more student-centered practices (Kearns, 2016; McQuiggan, 2012; Scott, 2016). Kearns (2016) discovered that as faculty converted their course materials and activities to fit the online medium, they became more critical and deliberate in their thinking about how students learn. Scott (2016) emphasizes the critical role that online teaching has played in changing faculty beliefs and practices, particularly when student preferences and experiences with online learning conflict with faculty expectations.

The circumstances surrounding the mandated switch to ERT in response to global health concerns provide a unique teaching context in comparison to studies conducted in non-emergency situations (Kearns, 2016; Kerres, 2020). Additionally, contemporary research has examined the impact of online education's practical implementation on society and education (Zhou et al., 2020). However, what is missing from the mainstream literature are the issues associated with remote teaching as experienced by teachers in subjects that require constant monitoring and individual guidance such as the research subject especially in public schools with a big population. As such, this article was conceptualized to examine the challenges associated with the transition from classroom-based education to distance learning environments by Science, Technology, Engineering, and Mathematics (STEM) research teachers. Pradas et al., (2021) conducted a case study of emergency remote teaching and students' academic performance in higher education during the COVID-19 pandemic. Findings show that students performed better under emergency remote teaching and has interesting implications for teaching practice. Flexible structures that facilitate decision-making, empowering instructors, allowing the availability of informal communication channels, and developing faculty members' digital skills have a positive effect when rapidly adapting teaching in the context of a crisis or paradigm shift.

A survey among chief online officers at colleges and universities conducted by Quality Matters and Eduventures® Research (Legon et al., 2020) found that while most thought the shift to remote teaching was a logistic success, most also admitted to some difficulty, citing low levels of faculty and student preparedness (in 75 percent and 62 percent of cases, respectively). Regional private universities, which attract students who want small classes and direct interaction with faculty reported the most unfavorable student reactions. Indiana University's eLearning Research and Practice Lab (2020) stated that two-thirds of instructors felt disconnected from their students and that teaching was more difficult after the school closed, while three-quarters of students felt they had lost contact and stated that completing course assignments took more effort. Teachers' psychological stress at this period was regulated by the education level handled and accessibility to resources, according to Paradowski and Jeliska (2021). The authors investigated the impact of forced remote teaching on the well-being of college and university instructors and revealed that the teachers' professional adjustment to the changed situations influenced their perceptions of how their students were dealing with the new situation. Lapada et al., (2020) investigation of teachers' opinions on their schools' readiness and response to the challenges of distance education in the Philippines revealed that the ability to adapt to distance education was strongly correlated with the length of teaching

experience as well as geographic location. These studies provide some insight into how individual teacher qualities may influence how the issue is handled.

However, what is missing from the mainstream literature are the issues associated with remote teaching as experienced by teachers in subjects that require constant monitoring and individual guidance such as the research subject especially in public schools with a big population. It is critical that we understand the difficulties that teachers face as the first responders to this educational crisis for they easily detect the changing resources, expectations, and has primary point of contact with students. When abrupt changes as a result of a crisis occur, coordinated efforts would take much too long to implement, particularly when bureaucratic rigidity limits the capacity to adapt by creating inflexible regulations. (Haveman, 1992). As a result, it is up to the teachers to decide which adaptation technique to use, from choosing among a variety of digital tools, support of synchronous and asynchronous, to changes in assessment activities or criteria. Whittle et al, (2020). This study looks into these decisions and suggested measures which might lead to a successful or unsuccessful implementation of Emergency Response Teaching.

OBJECTIVES

The purpose of this study is to ascertain Science, Technology, Engineering and Mathematics (STEM) research teachers' experience with Emergency Remote Teaching (ERT) during the new normal. Specifically, it sought to answer the following questions:

1. What are the difficulties experienced by the STEM research teachers during the ERT?
2. What are the actions done by the STEM research teachers for each difficulty during the ERT?
3. What would be are the suggested measures of STEM research teachers towards the improvement of research in ERT?

METHODS

Research Design

This study utilized a qualitative phenomenological research design to fully understand and explore the experiences of STEM research teachers during pandemic. Essentially, it comprehends a particular phenomenon as described by the participants (Dela Fuente, 2021; Creswell, 2014; Giorgi, 2012). This event will focus on the experiences of eleven STEM research teachers with regards to educational continuity in the face of pandemic. In phenomenology, to comprehend human experiences, it is necessary to penetrate an individual's thoughts and insights through the use of interviews or extensive discussions (Creswell, 2009; Giorgi, 2009). Because these were the participants' actual lived experiences with the phenomenon of remote teaching, they allow for a culmination of their interpretations (Creswell, 2009). For example, it entails the actual establishment of meanings through their lenses, which requires the researchers to gain a thorough understanding of the participants' perspectives. Similarly, it enabled the researchers to visualize the participants' situation concerning the phenomenon they encountered based on their actual shared experiences (Creswell, 2014; Giorgi, 2012).

Participants

Since this study was conducted during pandemic in which the entire island of Luzon, Philippines was under community quarantine, participants were chosen based on the availability of STEM research teachers in Schools Division of Pangasinan II. The participants were considered according to the convenience of the conditions within the principles of the purposive sampling method (Dela Fuente, 2019; Merriam, 2013). This study has certain limitations, this includes the specificity of the context, the choice of the institution and the subject was made by convenience. Specifically, they were purposively contacted via messenger. The participants needed in the study were selected according to the needs of the study; they were teachers in public schools in junior and senior high

school who teach STEM research. The study's primary data source is the opinion of teachers in the school during the Emergency Remote Teaching. Demographic information of the participants is given in Table 1.

Table 1. Demographic information of the participants

Participants	Gender	Highest Educational Attainment	Teaching Experience in Research	Research Trainings attended per year
T1	Male	Master's Degree	13	1
T2	Male	Master's Degree	10	2
T3	Male	Master's Degree	3	2
T4	Female	Master's Degree	2	2
T5	Female	Master's Degree	3	2
T6	Female	Master's Degree	4	0
T7	Female	Master's Degree	4	1
T8	Female	Master's Degree	2	1
T9	Male	Master's Degree	3	1
T10	Male	Doctoral Degree	3	1
T11	Male	Master's Degree	4	3

The participants' profile as reflected in table 1 shows that majority of STEM research teachers were master's degree holders and has 1-2 relevant training in research per year. Meanwhile, all of them have at least 2-4 years of experience teaching research.

Instrument

Data were collected from the research teachers using an interview guide that was developed by the researchers regarding emergency remote teaching. The questions were evaluated by another researcher who teaches science research and a research panellist for a doctorate program in a private university. After the evaluation of the interview guide, the researchers applied the interview and was conducted with the participants. The interview consisted of 12 questions, the first four of which were used to collect demographic data, specifically their highest educational qualification, number of years in teaching research, level of expertise, and number of trainings and seminars in research within a year. Other questions (three closed-ended and four open-ended) referred to the evaluation of the STEM Research Teachers' Covid-19 Emergency Remote Teaching period.

The teachers were asked about the challenges of distance learning amid the coronavirus pandemic in teaching research, their opinion about online distance learning, and their positive feedback in teaching research in the new normal- all of these sought answer for problem #1. They were also asked about their response to overcome the difficulties mentioned, ways to ensure quality of online and modular courses in research, and integration of technologies which sought answers for problem #2. Lastly, an open-ended question asking their suggestions to the Department, Government or Administration to improve the current situation in teaching research sought answers to problem #3. The Covid-19 Emergency Remote Teaching interview was conducted online via zoom meetings and phone calls with the participants. Eleven respondents responded to the survey between May 12 and June 1, 2021.

Data Analysis

The researcher analyzed the experiences of the STEM research teachers during ERT through the particular process of interpreting the data prescribed for phenomenology. The data analysis approach provided by Moustakas (1994) was rigorously followed, as stated in Greening (2019). The authors went through four major phases of data analysis: 1) transcribing, 2) defining units of general meaning, 3) grouping units of meaning to create themes, and 4) summarizing each interview, validating, and constructing a composite description of the teacher's experiences. The researchers measured the frequency and percentages of closed-ended questions. In the analysis of qualitative

data, content analysis was used. The purpose of content analysis is to "eliminate subjective effects associated with comprehension and interpretation of discourse." It enables the researchers to reveal the subliminal and covered content of the discourse instead of the obvious content which is easily perceived (Bilgin, 2006, p.1). For closed-ended questions, frequency and percentages were used.

The content analysis of this study involved coding all of the data gathered from the responses of the STEM research teachers. "In qualitative research, a code is typically defined as a word or phrase that possesses a summative, appealing, and reflective quality." (Saldaa, p.5). "Coding enables the researcher to classify the data into distinct categories or 'families' by grouping similarly coded data together based on their shared characteristics or (the start of a pattern)" (Saldaa, p. 9-10, 2019). As a result, codes are assigned to the category headings that are most closely related to them. After the data analysis, 10 codes were formed in three areas. Moreover, with the comments usually occurring such as "students' difficulty", "monitoring of students", "technical difficulties", on the challenges encountered, another code was formed. Also, teacher-respondents frequent answer on their suggested measures like, "conduct a training" were coded as these codes are important unit as a meaningful response to the findings. Additionally, as Merriam (2013) suggested, special attention was paid to ensuring appropriate and adequate participation in terms of internal validity, and direct quotations from participant responses were used. To ensure the research was audited, the following steps were taken: 1) code memos were written during data analysis, and all work completed by the two researchers individually throughout the research was dated and archived; and 2) codings were created and compared by two different researchers, and the final coding was verified by them.

FINDINGS

In this section, qualitative findings regarding the research questions "On what areas difficulties were experienced?", "What was done to overcome the difficulties?" and "What are the suggested measures in terms of the possible future experiences?" are presented.

Difficulties Experienced during Emergency Remote Teaching Period

In line with the research question of the study "On what areas difficulties were experienced?" the findings obtained are presented.

Table 2. Difficulties experienced by STEM research teachers during emergency remote teaching

Code	Frequency	Percentage
a technical difficulties (computer/internet connection)	2	18.18%
b students understanding and communication and delivery of instruction	5	45.45%
c monitoring and evaluation	4	36.36%
total	11	100%

The previous table shows the most frequent difficulties experienced by STEM Research teachers during emergency remote teaching based on the survey conducted by the researchers. The result revealed that the most frequent difficulty experienced in students' understanding of the lesson, delivery of instruction, and two-way communication with a total of 45.45%. This is followed by the teachers' difficulty of monitoring and evaluation of research outputs and technical difficulties such as internet connection.

Students Understanding and Communication and Delivery of Instruction

To exemplify the students understanding and communication and delivery of instruction subcategory, one of the teachers expressed, "the students are having difficulty in understanding the concepts in Research since its

modular learning”. Moreover [T4] states that “we are having difficulties regarding the quality of instruction. Another problem is the attitudes of the students in answering the learning modules.” Another research teacher [T6] says “the research is hard to explain while there is a difficulty in data collection.” In addition, [T9] emphasizes that the teacher experiences difficulties on accurate understanding of the students about the lesson. Based on the study of Hayat et. al. (2021), factors such as whether a course is theoretical or practical and clinical or nonclinical affect content virtualization and the mode of delivery. Moreover, their study shows that there are resistance to accepting online learning to some participants of their research.

Monitoring and Evaluation

In this category, research teachers emphasize the difficulty of monitoring and evaluating the research output of the students. [T1] a teacher III research teacher says “there is an inaccuracy of assessment and evaluation of results”. Another teacher [T5] says, “There is a difficulty in monitoring the students in conducting their research.” Another teacher [T10] stated that “there are problems on monitoring the students' progress, while there are communication difficulties among the teachers and learners”. We still doesn't have data on the number of students who have access to broadband internet, 4G smartphones, tablet, laptop or desktop computer necessary for online classes (Chaudhury, 2020).

Technical Difficulties

Only 18.18% of the respondents state that they suffer from technical difficulties during the pandemic. According to a 3-year research teacher [T3], “lack of internet connection and lack of resources online such as grammar checker are just some of the problems I encountered during this emergency remote teaching.” While [T8] says not all students are capable of joining the online class due to lack of internet access and gadgets to use. According to Saavedra (2020), many children do not have books, internet connectivity or a laptop at home. Vast inequality of opportunities will be amplified from middle-income to poor countries if not acted appropriately.

Table 3. Actions to overcome the difficulties of STEM research teachers during emergency remote teaching

Theme	Number of	
	code	Percentage
a blended learning	2	18.18%
b different modes and constant communication	7	63.63%
c individual solutions to problems	2	18.18%
total	11	100%

The table shows the frequency of the actions done to overcome the difficulties of the respondents. The most frequent answer shows that the respondents use different modes and constant communication among their students with a total of 63.63%. Aside from using different modes and constant communication, teacher-respondents also used blended leaning and individual solutions to problems as an action to overcome difficulties of students. This includes, but not limited to use of module and online learning, phone call and chat.

Different Modes and Constant Communication

Majority of the teacher-respondents answered the use of different modes of communication and constant follow-up to the students. [T3] and [T4] stated that they monitor the actions of their students via social media and they have a consistent monitoring respectively. Specifically, [T3] said, “I am giving my email address and allowing my students to send their research output through email for me to check it and will give feedback afterwards, We also do online consultation.” According to [T8], “I'm giving my students the freedom to ask questions and clarify anything about their research and modules”. Moreover, [T9] responded, “I always follow up and give feedback

with the parents every retrieval and distribution of modules”. In addition, [T10] and [T11] emphasizes the importance of the use of virtual research forum on the information dissemination. This is in corroboration with the study of Hayat et. al. (2021), online learning should be encouraged so that students should not feel separated. In line with the closure of schools nationwide, there must be a constant communication with the students to let them feel that they still need to learn and not to give up learning.

Blended Learning

Two of the respondents answered the use of blended learning as an action to solve the difficulties encountered during the emergency remote teaching. According to [T1], *“the use of multimedia technologies is of great help to fill the gap on this difficulties, I use SPSS, Mendeley, Google Meet, Grammarly and Zoom as forms on instruction for my students”*. Moreover, [T6] uses SPSS to enrich the mode of instruction for the students. Use of different sites and software could still obtain good outcomes with online learning. Students could still actively participate to the discussion. (Hayat et. al., 2021) Thus, the result on the interview regarding use of multimedia technologies to fill the gap on difficulties is correlated with the results of other researches.

Individual Solutions to Problems

Teacher-Respondent [T2] stated that the students shall be empowered to be active learners and have individual support and consultation. Meanwhile, [T7] says, *“I asked for help from the LGU to extend their help to each student. The LGU must put up internet connection in different places in their barangay so that it will be accessible to those in need”*.

Table 4. Suggested measures to overcome the difficulties of STEM research teachers during emergency remote teaching

	Theme	Number of	
		Code	Percentage
a	technological investment	3	27.27%
b	research forum and trainings	4	36.36%
c	unified research learning materials	2	18.18%
d	financial support to research studies	2	18.18%
	total	11	100%

The table shows the suggested measures to overcome the difficulties of STEM Research Teachers during Emergency Remote Teaching. The respondents were asked about their suggestions to the Government or Department regarding the measures needed to take in order to improve the teaching of research despite the pandemic. Majority of the teacher-respondents answered the organization of research forum and trainings for research advisers and students which comprises of 36.36%. Meanwhile, other teacher-respondents suggested the use of unified research learning materials, financial support to research studies and technological investments.

Research Forum and Trainings

Based on the answer of [T6], [T9], and [T11], there must be a seminar for teachers teaching research in the new normal. Handouts and learning materials are also suggested to the department for better instruction next school year. Quoted from the answer of [T4], *“we must share best practices on how we provide feedback mechanism on the learning progress of the learners”*. In addition, [T11] suggested the organization of a research club for advisers and teachers in the division for the improvement of each research teacher.

Technological Investment

Research teachers also suggested the funding for the improvement of technology and internet connection in order for them and their students to cope up with the new normal. [T2] and [T3] said there must be an enhancement on the connectivity and gadgets so that students can participate in online classes. Also, there must be an internet connection for the teachers and improvement and accessibility of online libraries. In many cases, there is only one 4G smartphone at home for many families, which would have to be shared by the earning members of the family. The children at home are left struggling for that only device. (Chaudhury, 2020) This statement is in corroboration to the result of the research about investment to technology. This does not only apply to students but to teachers as well.

Unified Research Learning Materials

Respondents recommended having unified learning materials for each adviser and student. Quoted from the statement of [T1], *“Instead of photocopying SLMs and giving additional tasks for teachers in making modules, there must be a unified research learning materials, may it be an actual book, e-book or recorded lessons.”* While [T8] explicitly answered, *“the department must provide materials needed to promote quality education”*. The study of Hayat et. al. (2021) is correlated with the result of this research. Both studies are concern with creating unified learning material based on the perception and experiences of respondents. In addition, Hayat et. al. (2021) states that, given the variety of and differences in courses offered in the medical field, the volume of virtualized content of a given course should be determined first, before content virtualization.

Financial Support to Research Studies

Two of the respondents answered the support of the department and the government in financing the research studies of the students. As emphasized on the answer of [T10], *“Research funding for the STE schools shall take into consideration. Improvement and monitoring of school laboratories shall also be considered in the next school years. I would also like to suggest an itemized laboratory technician for each research school.”* Meanwhile, [T5] answered, *“there must be financial support to research studies.”*

IMPLICATIONS

Distance education has carried some challenge; this was only amplified during the pandemic. This study only shows that the importance of education is not only about gathering information but transforming information to knowledge. Thus, teachers have the greatest role of transforming those available information to education. Education has the ability to train us to interpret issues and events in our lives. The research also implies the applied and tested methods to fill the gap in teaching research based on the experience of research teachers. These are the use of blended learning, individual actions to problems and constant communication. This study is beneficial therefore to the teachers who have been experiencing the same challenges for they could adopt the same strategies used by the respondents. This could also let the administration and department create plan of action based on the suggested measures of the respondents.

The study revealed the experiences of STEM research teachers in the Province of Pangasinan. The main challenge encountered by the respondents is students’ struggle of understanding the lesson and delivery of instruction. Moreover, teachers also have difficulties on monitoring and evaluating students’ output. They also experienced some technical difficulties. Teachers have created actions to fill the gap on the challenges experienced during the Emergency Remote Teaching. Mainly, they resorted to a constant communication with their students using different modes of communication. This is an effective strategy for the students to feel that they are not separated to the current education. They also shifted to blended learning which is a combination of modular and online learning compared to the Department of Educations’ learning continuity plan of using a modular learning. In addition, the respondents also acted an individual solution to problems to counter the challenges during the

pandemic. Based on the challenges and actions they experienced, the respondents suggested measures to the administrator and the department on how to enhance the teaching of Research in the new normal. These are production of unified learning material which could be used by all research teachers and students despite of their location. They also suggested a technological investment both for teachers and students to cope up with the changes of education in the new normal. Moreover, creating forums and seminars for better teaching and learning is highly recommended by the respondents with a financial assistance to research studies.

Under the circumstances, the researchers would like to recommend the readers to divert attention from the bleak probabilities to what needs to be done in a SMART way. First, it is vibrant that we accept that face-to-face learning is still a better mode for a quality teaching. But due to pandemic, it is highly recommended to shift the mode of learning from modular approach alone to blended learning. This could increase an active participation to the students and could enhance learning in Research. Second, a constant communication using different modes to reach the students regularly is an effective way for them not to feel separated in current education system, this is in line with the challenges in technology, monitoring and evaluation. Third, a unified learning material properly evaluated according to the perceptions and needs of the teachers and students in research should be developed for learning. Lastly, adequate financial resources should be allocated by the department for technological improvement, production of learning materials, training of teachers and student development, and testing of qualified researches.

LIMITATIONS

This study has certain limitations, this includes the specifically of the context, the choice of the institution, and the subject were made by convenience. Therefore, we do not dare to claim universal validity of our findings; rather, we present this case to allow for comparisons with other studies situated in contexts other than the one in this research. This study was also conducted during the first year of emergency remote teaching's implementation. Teachers who have experienced remote teaching in the latter times of pandemic may not have the same experiences as those described here. Therefore, teachers' experiences from a variety of times when emergency remote learning was used should be explored.

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