EXPLORING ONLINE TEACHING LEARNING IN MATHEMATICS: A CASE STUDY

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Abstract - The research aimed to explore the Online Teaching Learning in Mathematics. This is important to teachers and students to adapt in the new normal. This research will provide the information about the challenges and solutions such as in technology advancement, communication and practices. Different references were used such as journals, publications, articles and internet to come up with data needed for the survey, questionnaire, interview and study in general. A survey questionnaire and interview were done with 16 Mathematics Teachers. There are ways to support the online education such as professional development, attending webinars, and more educational TV programs.

Keywords: Online Education, Professional Development, Technology

I. INTRODUCTION

Technology development is a reality and is reflected in the community, may it be in the work, or home. It undoubtedly bestows to the improvement of life, as it is innovative in many factors. Moreover, it is influential in the field of education as it directly influences the development of teaching-learning processes, provides handy tools and opportunities for teachers, and introduces more teachers to the online learning education.

Online teaching learning has gotten a significant model in today’s situation because of the arising concerns of global pandemic, declared as the public health emergency. Online learning has become a generally favored choice due to its
opportunities and flexibility (Newby et al., 2006). Despite having advantages and disadvantages such as the possible low interaction in the teaching-learning environment, exclusion of fun activities, less social skills, web connection costs, inadequate capabilities in different tools and general negative mentalities towards innovation. The level of interaction between teacher and learner is fundamental on improving the quality of Online Teaching Learning in Mathematics.

In Education, it becomes ground breaking when educators and students integrate learning and skills in different fields. Teachers can build such potential outcomes for Mathematics in which students are urged to expand their abilities to intricate ideas, communicate, construct arguments, solve problems, and think critically, and analytically. Teaching a Mathematics subject online is completely different from a physical classroom as it requires the use of new techniques, methods and approaches that vary depending on the learning environment. The transition to online teaching in Mathematics gives rise to complication such as the difficulty in providing authentic teaching and mentoring experience, technical concerns, passive interaction and, evaluation.

The effective realization of the student-teacher interaction and the presentation of mathematical concepts, issues and measure steps of the solutions are two factors that affect outcomes (Karal et al., 2013). In determining alternative solutions in the challenge of online teaching, educators must know the roots of the problem. There is a total transition from face to face to online teaching where teachers must use computer screens and webcams instead of chalkboards and whiteboards and the expectation of always giving the best quality of Education at all times.

The development of online teaching learning in Mathematics doesn’t happen overnight. The issue is not how the internet has essentially changed the way people speak with each other just as how they share, access and manage information. It is the point of utilizing the innovation to help educate the world and comprehend the centrality of online proficiency as it plays a role in the success of teaching-learning environment.
Moreover, the success of online learning has several needs that teachers must meet, as learners depend the way their teachers challenge them cognitively.

The goal of education is to produce lifelong learners and that they must keep on growing into whoever they choose to be. With this, teaching as a profession is designed to provide exclusive service to help the society and individual meet their educational needs. There might be problems that cause setbacks for all teachers, just like the struggles in adapting in the online teaching, educating the people will always be the priority because this is why teachers exist. This paper, therefore, tries to explore the online teaching-learning in Mathematics to maintain the quality of education.

OBJECTIVES OF THE STUDY

The overall aim of this study is to investigate the online teaching learning in Mathematics with the focus on the teachers’ perspective regarding the effects, impact, challenges and opportunities of online teaching.

It will mainly identify and assess the different teaching methods, strategies, techniques and approaches that affect the teaching-learning processes.

MATERIALS AND METHODS

In this investigation, the researcher picked a qualitative methodology for a few reasons. Qualitative research methods are valuable in finding the effect or importance on the events that individuals experience (Bogdan & Biklen, 2003; Denzin & Lincoln, 2000).

The fundamental reason for this study is to explore the Online Teaching Learning in Mathematics in Bataan for the School year 2020-2021. At the point when the idea of research questions requires investigation, which is the purpose of the study, a qualitative approach is guaranteed.
This study will utilize the case study, exploration, interviews, and observation. Case study design is utilized to create an in-depth understanding or when the study requires the use of in-depth investigation. The Case study method enables a researcher to examine the data intently. In most cases, it chooses set number of people as the center or subjects of the study.

The researcher’s research instruments in this study are questionnaires, interview and observation. The study embraced the information triangulation procedure by utilizing a variety of methods including a review survey and a progression of meetings. The study will also have a documentary analysis and observation aside from questionnaires and interviews as the main instruments. The method on for this study involved online observations to the classes, and online interviews with the teachers, followed by a questionnaire. Primary data were obtained from the interviews, questionnaires and observations.

In exploring the experiences of the teachers in teaching mathematics online, interviews, observations, and questionnaires were used. Secondary data were gathered from different research libraries, or relevant sources including publications, articles, journals, books and theses to ensure the results.

RESULTS AND DISCUSSION

The survey questionnaire of this study was adapted from the Division of Undergraduate Education of Office of Information Technology, School Education Gateway and TIMSS-R. After conducting the said survey to 16 Mathematics teachers, the results are the following:
Estimated number of hours spend per week using a computer for educational purposes:

- 50% or half of the respondents uses computer for more than 10 hours per week.
- 31.3% or 5 of the respondents uses computer for 6-10 hours.
- 12.5% or 2 respondents for 1-5 hours and 6.3% or 1 respondent for less than an hour.

Figure 2 Experience in Online Teaching

Thinking of your school, which statement best describes your experience in online teaching?

- I have extensive experience with online teaching
- I have some previous experience with online teaching
- This is my first experience with online teaching
- The School has not switched to online/distance learning

Figure 2 Experience in Online Teaching
Statements about Distance/Online Education

Majority of the teachers can easily access the internet easily for their class, while some found difficulty due to the internet connectivity. Online Education made them comfortable in communicating electronically, knowing their previous background or experiences which is really helpful in their profession. Despite the challenging times brought by pandemic, teachers assured that they are still able to manage their time effectively and easily when it comes to completing the modules, assignments, checking activities, and preparing lesson plans.

They also expressed that teaching online is not the same in face-to-face because teachers don’t receive quick response from the students during internet activities.

Attitudes towards technology

Teachers believe that technology helps students in understanding concepts in Mathematics, explore unfamiliar problems, and improve attitudes towards mathematics.

Effectiveness of Online Teaching Compared to meeting regularly in a classroom setting

Online teaching is effective in offering convenience, meeting individual learning needs but less effective when it comes to communication, participation and interaction.

The respondents also expressed the things that surprised them in online education such as the flexibility, wide range of tools, innovation and accessibility.
Also, the respondents believed that the major challenges in switching to online teaching learning are the following:

- **Student’s access to technology**

  Students who don’t have enough resources and access to technology were struggling to attend their classes.

- **Communicating with students**

  Unlike face to face, online education limits the possibility of communication.

- **Teacher’s access to technology**

  Since online education is somehow new to most of the Schools in the Philippines, teachers are also having difficulties when it comes to technology. In a traditional classroom setting, teachers maximize the use of chalkboard and whiteboard. The sudden switch to online education, risked the readiness of the teachers to provide quality education due to the lack of knowledge in manipulating technology.
• Communicating with parents

Parents play a major role in the performances of the students such as in motivation and preparedness. Online Education affected the communication of the teachers and the parents. Since there are protocols that needs to be followed, schools can’t have meetings with parents and that is a challenge.

Low level of students ‘digital competence

There are still students who don’t have access to technology and that made them struggle digitally.

Here are some of the minor challenges in switching to online education;

• Time management and organization
• Assessing student’s progress
• Increased workload
• Content preparation
• Keeping students ‘motivation and engagement.
In your own opinion, what have been the main challenges for teachers in switching to online/distance learning? Choose up to five options.

16 responses

- Teachers' access to technology (computer, etc.)
- Communicating with students
- Low levels of students' digital competence
- Supporting students with special needs
- Assessing pupils' progress
- Little direction or support given by the school
- Time management and organization
- The school has not switched to online/distance learning

Figure 4 Challenges in Online Teaching Learning
Applications and Websites used in Teaching Mathematics Online

Figure 5 Apps and Websites

Khan Academy, Math is Fun, GeoGebra, Mathway and Photomath are the applications mostly used in Teaching mathematics online.

CONCLUSION AND RECOMMENDATION

The study presented the major challenges in Online Education such as the Teachers access to Technology, Poor communication with the students and parents, low level of student’s digital competence, time management and organization.

There are ways to support the online teaching learning such as Professional development, webinars for teachers to share ideas and challenges, easy contact with
experts, websites with lists of useful resources, video clips/lesson plans and more educational TV programs where students can access easily.

Teachers can also use text chart during the class, provide quick feedback, build a collaborative work and allow students to explain their ideas.

Online learning is difficult and challenging compared to face to face learning knowing that students can’t easily adapt on the new normal schooling. Also, everything can turn out great with dedication and perseverance.

References:


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