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Research Article

Learners Lived Experiences in Mathematics ‟Modular Distance Learning Delivery: an Interpretative Phenomenological Analysis

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Abstract

This paper presents an in-depth discovery of experiences of senior high school students in modular distance learning in Mathematics when COVID-19 affected the face-to-face encounter of teachers and students. Interpretative Phenomenological Analysis (IPA) helps in exploring the feelings, attitudes and behaviors of students given the new shift in learning delivery. Semi- structured interview was conducted on-line and transcripts were analyzed using IPA. Three themes came to light: the conceived struggles and challenges, the adaptive and driven self and the longing for interaction and interconnectedness.

Keywords: in-depth discovery of experiences, modular distance learning in Mathematics, Interpretative Phenomenological Analysis (IPA), semi-structured interview

Introduction

In order for learning to continue in the public school system in the Philippines amidst the pandemic, the Department of Education introduced the Basic Education- Learning Continuity Plan (BE-LCP) and most parents chose modular distance learning delivery (DepEd, 2020 as cited in Alicamen & Abadiano, 2020) in the absence of face-to-face classes. Modular distance learning makes use of Self Learning Modules (SLMs) in print or digital format or other learning resources like activity sheets, Learner‟s Materials and textbooks where learners can utilize and interact with.

Mathematics as one of the subjects to complete the basic education curriculum, has always been perceived as difficult and complicated subject by majority of learners (Gafoor & Kurukkan, 2015; Langoban, 2020). Attitude towards it (Hart, 1989; Tahar, et.al. 2010; Mistima, et.al. 2010; Bramlett & Herron, 2009) and the shift to modular distance learning (Dangle & Sumaoang, 2020) may add to the complexities of the subject that they may have experienced.

Literature Review

There were studies on the use of modules in Mathematics instruction but were conducted during face-to-face and of quantitative- experimental, case study designs. Like Columbano (2019) formulated that module as supplementary learning materials, were effective to further improve students‟ learning in Mathematics. They are effective for students‟ knowledge adaptation and showed suitability to the level of the students (Guido, 2014). Furthermore, Melad (2016) said, module as a remedial teaching material in Mathematics, significantly increased the achievement level of low performing students. Paspasan (2015) also generalized that Self-Paced Modular Approach (SPMA) made the students learning styles more independent because students prefer to work at their own pace and it also help them improve their level of performance in relation to plane trigonometry regardless of their mathematical abilities.

Nevertheless, according to Kaino, (2012), that looked into the performance of one mathematics module written on 2010, offered through open distance learning (ODL), though mathematics student-teacher had a general good average score, they had not achieved high level of cognition needed for critical thinking and problem-solving skills. That ODL delivery in mathematics does not make a significant difference in face-to-face interaction. Even in the study of Cortez, C.

(2020) on senior high school student‟s perception on blended, distance, electronic learning; majority of students “agreed” that they learn more in video tutorials in Mathematics but they still need validation from their teacher.

These studies posed several challenges and effectiveness of Mathematics instruction through the use of modules. But none explored the lived experiences of learners in Mathematics modular distance learning delivery. Thus, this study will make a great contribution in education as to understand the plight of learners in public school system in the new normal of Mathematics instruction that no one has ever traverse.

Statement of the Problem

This study seeks to explore the lived experiences of senior high school students in Mathematics modular distance learning delivery.

Research Methodology

In order to understand how participants‟ experience and interact with their social world, and how they give a rich meaning to it, qualitative approach is appropriate to use (Merriam, 2002).

Moreover, qualitative research seeks to understand and make sense of the phenomena from the participants‟ point of view.

Research Design

Interpretative Phenomenological Analysis (IPA) was employed in the conduct of this study in order to explore the lived experiences of the learners in the new normal of learning delivery in Mathematics. It guided the researcher into a detailed examination of how participants perceived their „life world‟. It is an interpretative work on the part of the researcher and it offered an orderly approach to doing it (Smith, 2007). Each participant‟s responses were examined closely before a general claim was made in order to fully interpret their experiences. IPA has been used extensively in health psychology, pain and rehabilitation; it is particularly useful where the topic under study is **new**, active, complex, subjective and issues are relating to self and sense-making (Smith, 2004 as cited in Osborn & Smith, 2008).

Sampling Technique

Purposive sampling was utilized to select participants to give meaning to the study of interest. Rich information can be gathered from these samples because they experienced these issues of central importance to the purpose of the study (Merriam, 2002). The researcher asked the assistance of the advisers in contacting prospect participants. The researcher asked for the facebook account of the participants to express invitation for them to participate in the study. Several were invited but fourteen of them willingly participated to be part of the study following the set inclusion criteria: 1.) He/she is a Grade 11 student from Canduman National High School; 2.) Has taken General Mathematics subject in the first semester, school year 2020-2021; 3.) Has a cellphone or a gadget to be used for the on-line interview and for further consultation; 4.) Can speak and understand English.

Data Gathering Procedure

Since all qualitative research seeks for essence and discernment, the researcher is the primary instrument of data collection and analysis (Merriam, 2002). After the consent was sought, semi- structured interview through video call (google meet); with the agreement of both the researcher and the participant; was conducted and recorded. The interview was free flowing, participants were probed on important issues that arose and verbatim

transcripts (raw data) were made after each conduct of the semi-structured interview. Participants were contacted for some inaudible responses because of intermittent internet connectivity. The researcher was guided by the reflected interview schedule in encouraging participants to express in detail their experiences.

Data Analysis

Data was analyzed using Interpretative Phenomenological Analysis (IPA). The analysis followed closely the four-stage process described in detail in Smith and Osborn (2007, 2008). Analysis began with a close interpretative reading of the first case to identify themes; cross-examining and making connections between them. The process was repeated for each case. Then in the final step, group themes were transformed into a narrative account describing the lived experiences of the participants.

Research Rigor

Establishment of credibility and trustworthiness was observed by taking into account the criteria formulated by Lincoln and Guba (1985, 1994). These are credibility, dependability, conformability, transferability and authenticity. Credibility was established through following the inclusion criteria of the participants and interview protocol. Use of field notes to capture the essential contexts of the experiences and transcripts of interviews were added to the credibility criterion. Multiple methods of data collection (triangulation) were utilized (Casey & Murphy, 2009). These includes interviews, observation, notes, and journals of research processes all throughout the study (Cope, 2014). Exposure of the researcher in the modular distance learning

in Mathematics further provide in-depth interpretation of data. Sandelowski (1986) said that to enhance credibility in a study, "investigators should describe and interpret their own behavior and experiences as researchers in relation to the behavior and experiences of their participants." Preservation of an audit trail can establish dependability of the study ((Ryan-Nicholls & Will, 2009). Audit trail is a cluster of interview transcripts, process notes, data analysis and frame of the final information that can be reviewed by another researcher to draw the same study conclusions. Conformability was demonstrated by establishing detailed and accurate conclusions and interpretations (Cope, 2014); countering owns biases in the study. Transferability was established through providing adequate information about the participants – following inclusion criteria, research context to allow the reader to evaluate the appropriateness of the findings.

Authenticity was observed through an honest and detailed interpretation of the researcher of the feelings and emotions experienced by the participants (Polit & Beck, 2012).

Ethical Consideration

Ethical considerations were observed in the conduct of the study. Approval of the study protocol was sought from the accredited Ethics Review Board by providing enough evidences for its acceptance and was approved. The purpose of the study and design, and a copy of participants and parents‟ informed consent were presented to the school administrator before seeking for her agreement to conduct the study. After the approval and through the help of the advisers; prospect participants were given informed consent after seeking parents‟ assent. Internet load was given to participants as a token of appreciation and to compensate for their time and effort in responding to the interview.

Results

After reading and rereading the transcripts, three essential themes were generated from the lived experiences of the fourteen participants in the study.

Theme 1: The conceived struggles and challenges

All of the participants expressed their hurdles and challenges encountered in modular distance learning in Mathematics. Varied reasons came to play that caused these difficulties. It is clearly evident that the pandemic caused tremendous adjustments in the learning process of the students. Most of the learners have a hard time answering the modules especially in Math. Like in the study of Dangle & Sumaoang (2020), most students had a hard time accomplishing their modules in a week added with the number of subjects in the level they are in, thus

piling of exercises, tests, assignments, outputs to be accomplished made a tremendous effect on the hardships that they had encountered.

I experienced thinking to quit school. Because of the pandemic, it is really hard to adjust…the environment, the mode of class… (P7)

I struggled a lot to keep up with my Math modules. It is really difficult… (P3)

Tiring because it takes me a long time to answer in Math… (P13)

It gives me pressure in answering the modules in Mathematics. I felt sad and fearful about the situation… (P1)

At the beginning of class was just okey, I was not pressured but now, I am very much pressured because of so many tasks to do with little time allotted. (P4)

Some went beyond physical tiredness; emotional turmoil as well was prevalent for them to think of stopping school. They felt helpless because of the situation thus resorted to actions that made them guilty of doing. As P9 & P11 said:

I thought of stopping school sometimes because I think that we are doing our best just to look for answers instead of learning. (P9)

…what I experienced was really hard. Most of the time I couldn't understand anything, most of the time I get to "pm" half of my teachers just to ask more and more discussions because the thought of being able to do it wasn't the thing that I had encountered. I was really depressed at most times and stressed all the time and it bothered me because I was not like this before… (P11)

According to Kandola (2020), „emotional distress is a state of emotional suffering" and some of the symptoms include: feeling guilty, feeling overwhelmed, helpless or hopeless.

Many times, I thought of quitting school … (P10)

Being alone, with no one to interact with – no teacher, no classmates, ambiguity of the subject, cognitive capability and with unlimited resources (internet connectivity) made a toll to the hardship that they had experienced.

…very difficult… that you are the only one solving. (P4)

I experienced…thinking of quitting because I burned my midnight candle viewing and reviewing video lessons. Internet connection is not good, not cooperative with our need. (P6) Difficult especially at this time, lessons and topics are getting difficult and numerous.

(P8)

Difficult, because it's really different when there is a teacher teaching you, discussing to

you. (P12)

I was surprised and find it hard because I'm not good in Mathematics and I always have a hard time analyzing solutions and different equations because I'm not really into Math and I didn't find it really helpful in my life. (P14)

Very difficult, also we don't have internet connection…I find it difficult to answer the module. I thought of stopping school…(P5)

Several studies pointed several factors that influence student"s difficulty in learning. Classroom and school factors (Lamb & Fullarton, 2001) and teachers (Mcber, 2000). Though classroom and school setting may not be applicable to consider at this time of the pandemic, the home environment where learners process their learning had contributed to the difficulty they have experienced. As P3 said:

Difficult to understand if there is no discussion from the teacher. In our house there are distractions ….my younger siblings, neighbors having karaoke, so I cannot concentrate.

One of them expressed his struggles in terms of his parent‟s inability to help him with the lesson. As P2 conveyed, "I *am an only child, no one can teach me because my mother has not experienced that kind of lesson*." Parental involvement is a determining factor in the performance (Hill & Tyson, 2009); and continuity of students attending school (Henderson & Berla, 1994; Henderson & Mapp, 2002 as cited in Hall & Quinn, 2014).

My motivation to graduate and my family influence me to continue learning. (P3)

Theme 2: The adaptive and driven self

Though all participants stressed their feelings of difficulty and hardship, they managed to adapt in the situation. Thinking of their future; how they will respond to the situation – whatever action they may take may affect their dreams and aspirations. That education can shape the ways of their life; for betterment and improvement of the family‟s situation. Being educated, having earned a degree will be able to compete in the competitive nature of the labor market (Donald, et.al. 2018).

Instead of being down, I choose to think of my future; the goodness of my future, my dreams. (P1)

At first, very difficult but as the days progressed, at this time…it becomes okay because we don't have a choice anyway but to continue….it's the way of modular. I am trying to have good grades…it is needed to have good grades…. To be educated in the future, to grow, to know things…because of the difficulties of life at this time especially in our family. For our self in the future. I need to adjust, for my future. (P7)

Participants became independent and resourceful. They learn to self-learn, to use technology to alleviate their hardships in understanding and answering Math modules.

I already started this. I adapted to it, independent study about lessons in Math. Actually, in Math you need to focus. For example, I watched a video in the subject, when I stop it …I need to watch it all over again because I forgot the process. I just consistently watch them, they provide everything. If you keep watching, understand, they discussed and advantageous because you can replay, you can pause, how he solves. (P6)

Self-learning has developed in me. Before the pandemic, I listen to teachers in order to understand. Now, you have to do it yourself in order to answer the module. (P2)

…during modular distance learning is that I was trained how to be independent, how to find solutions to my problem alone …(P3)

Sometimes, I read the module in order to answer, sometimes searching the google, watching video lessons. (P5)

…I research about it, watch you-tube about it…how to solve. We need to be independent, not to rely on others. (P7)

Because of the pandemic, for me, we need to continue studying so that we have something to learn… In answering my module, I do search, seek help from friends, they are helping. I developed hard work...I did my best to pass my module on time. (P8)

I manage to answer the modules through on-line and help. I search through internet, so far that's the advantage now, to use internet if ever I have something not understood in the subject. (P9)

I become eager to learn something even without someone to teach me, not to rely on others, I became independent, eager to answer on my own. (P10)

I learn to solve by myself… I got motivated and inspired to study more and work hard despite having this pandemic. (P11)

I do research about the topic or I look for information about the topic. (P12)

Self-learning is pressing at this 21st century setting in order to reach aspirations and stay in tune to the ever-evolving society (Reader, 2018); technology and connectivity of people is the key to wrestle this uncertainty brought about by the pandemic, as what these participants have experienced.

Theme 3: The longing for interaction and interconnectedness

Even though participants manage to adapt and self- learn despite tremendous difficulties, they are still anticipating that face-to-face interaction will resume sooner, but if not, at least even with modular mode of learning, interconnectedness must have been valued. They wish for a Math instruction they experienced since when they first set foot in school. This can be vividly deciphered through their rejoinders:

...It's really different when there is a teacher teaching you. (P1)

On-line class every week is needed especially in Math so that there will be interaction – can immediately ask questions if cannot understand. It"s very difficult especially in Math if left alone with us because we cannot solve immediately and we haven"t encountered that lesson. (P2)

If there is no face-to-face, blended learning or on-line is better, just like this, there is an interaction between teacher and student, somehow, we can understand a little. If like this, self- learning…a bit effective maybe for intelligent students but to those who are struggling like me, this is ineffective. (P3)

I want that face-to-face will return because there is physical interaction then teacher can teach you well. (P4)

I want that face-to-face will return. I can learn when teacher discusses the lesson. This time, teacher gives module only, it's difficult. (P5)

It's better to have face-to-face because there is a teacher who discussed the lesson thoroughly. If ever there is a quiz or seatwork, I can immediately determine in which area I got wrong. The next time, if there is a summative test or periodical so you will be careful especially…'oh it should be negative', it was processed. (P6)

… why there's no teacher who discusses to us?". I like that there is a teacher, I can learn easily…I can approach personally to ask questions. This time, teachers are difficult to reach.

Sometimes they reply, sometimes messages just piled up in the group chat, no reply from them. It's really hard to approach teachers. (P7)

I like face-to-face because there is learning not like this time, directly giving of modules only. Seldom having a google meet, mostly reading. (P8)

I like to have face-to-face because I am not an introvert. I like to mingle and enjoy with barkada but what it makes good at this time is, I become more focus in answering, has better grades because of focusing…at home only, unlike if outside, there are distractions like hanging out. (P9)

Maybe, much better that there should be on-line classes, there is a teacher, especially in Math that is difficult. I really find Math hard. (P10)

Before, I was really productive, not procrastinating in anything. I was active in my studies, now I am not. I rarely do study…modules help…but when it comes to hard subjects, I find it hard to learn it by myself. I find Math more difficult compared with other subjects. If students have the courage to be more confident to ask and approach teachers rather than sitting there alone and…like stressing themselves when they can…not waste their time and ask for guidance and teachers as well not to be…coz some teachers are…not connected with the students, a little distant, so it's hard for us and for teachers as well to connect one another. (P11)

I am not that good in Math, but I am not that slow but sometimes I get confused especially with formula, problem solving. I asked help from my elder sister or brother or friends in order to manage answering my modules. Sometimes module lack information, like need to discuss because there are complicated terms. (P12)

Math needs discussion from the teacher through google meet so that learners can understand. (P13)

Despite the situation, I learn something. I found it helpful because I learn a little.

Sometimes I asked my classmates or schoolmates what the answer is because it is so hard to understand the equation, you have to read it. Imagine even in face-to-face, you can't truly understand, you're confused, how much more if you'll just read. (P14)

Participants admitted that they have learnt in modular distance learning but they need the presence of the teacher to fully comprehend the concept and for them to validate their learning. Indeed, teachers‟ presence is crucial because it is there where they communicate their identity, belief in teaching and learning, passion to learners; excitement and enthusiasm in imparting content and it is associated with creating a "community of inquiry where interaction and reflection are sustained; where ideas can be explored and critiqued; and where the process of inquiry can be scaffolded and modelled" (Garrison & Cleveland-Innes, 2005 as cited in Vigil, 2014). Immediate assessment can also be done thus doubt about the validity of the learned concept by the learner can be answered right away because learners always believed that teachers are infallible.

Discussion

The study richly described the lived experiences of senior high school students in modular distance learning delivery in Mathematics. Cognitive and affective factors added with the shift in teaching delivery with limited learning resources at home had made a great contribution to the hardships and challenges experienced by all participants. Dangle & Sumaoang (2020) said that learners are having difficulty in this new learning modality that majority of them had a hard time answering their modules. In fact, half of the learners do not have enough time to accomplish all their modules within a week and the subject that they are having greatest difficulty with is Mathematics.

Though all participants stressed their feelings of difficulty and hardship, they managed to adapt in the situation and were driven to continue learning. The power of self-motivation and influence of friends and family helped them through it and considering the outcome of their actions to their future; what education can do in the ways of their life. They believed that through education, they can take part and gain access to the competitive labor market (Donald, et.al. 2018).

Interaction and interconnectedness were their battle cry in the midst of hardships they experienced. Though they admitted that they have learnt in modular distance learning and they have adapted to it, they still need interaction and interconnectedness to fully comprehend the concept and for them to immediately validate their learning. Social Interaction is indeed crucial in the learning process (Hurst, B. et.al., 2013) for students learned from others, created a positive working environment, provided a means to view topic from multiple perspective and enhances learners critical thinking and problem-solving skills. These participants still longed for Mathematics instruction they experienced not so long ago.

„The conceived hardships and challenges‟, „The adaptive and driven self‟ and „The longing for interaction and interconnectedness‟ are the essential themes collated in this study.

Conclusion

Looking into learners lived experiences, relevant plans can be put into action and reality. Teachers, parents, school administrators, education officials and stakeholders in general can contemplate and take proper plans and actions in responding to these phenomena.

Recommendations

Schools should have a well-defined plan incorporating „teacher-learner‟, „learner-learner‟,‟ learner-content‟ interaction in the conduct of modular distance learning delivery not only in Mathematics subject but also with other subjects as well.

Teachers can design strategies and provide materials that can address learners‟ individual differences in Mathematics modular distance learning delivery.

There should be a constant communication with the learners not just to impart knowledge but to reassure them – to let learners feel that they are not left behind to learn on their own. It is believed that learning can best be achieved through doing with the guidance and care of a mentor.

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