*Virtual Face to Face* in Online Mathematics Learning: is it Important?

**Abstract.** Government policies in learning activities in the new normal era force teachers and students to carry out learning from home. All forms of learning activities that are usually carried out in traditional classrooms are now being changed and adapted by using technology into online learning. This study is descriptive qualitative research as the aims to this study is to describe and have an understanding of how stundents’ experience mathematics distance learning by online learning in this pandemic situation and give insight of what students need to improve their learning in this situation. The data is narrative transcripts derived from interviews of 20 students ( N = 20 ) that come from different level of educational stage and background. The results of the study found that students had difficulty learning mathematics online because of 3 things: 1) Lack of teacher explanation, 2) Too much task, 3) Lack of IT facility. In addition, the researchers also found that students still need face-to-face meetings with teachers even though it is online or what is also called virtual face to face.

1. Introduction

The existence of the Covid-19 virus which attacks almost all countries forces the government to make various new policies. In the field of education, Indonesia has implemented a home learning system policy since March 2020 [1]. This policy is also enforced in almost every country affected by this pandemic based on recommendations from the World Health Organization (WHO) and the United Nations Educational, Scientific and Cultural Organization (UNESCO). With the implementation of a new learning system suddenly, of course, teachers and students must adapt immediately. Although online learning is not new in the world of education, not all students and teachers are ready to do online learning as a whole []. Even so, thanks to various supports from the government, students and teachers can be helped to do learning from home.

In learning in the new normal era, although teachers are not required to complete all curriculum achievements for class promotion and graduation, the formation of meaningful learning is a must [1]. Meaningful learning occurs when students can understand the concept of the material being studied and are able to relate it to other material concepts that have been studied [2] [3] [4] [5]. In meaningful learning, it is needed not only the presentation of factual knowledge and tasks that only require students to remember or recognize, but also the occurrence of cognitive processes in the form of remembering, understanding, applying, analyzing, evaluating, and creating [2].

According to [6] blended learning can significantly improve learning significantly. Although the concept of blended learning is very broad and ambiguous as discussed by [7], he also concludes that essentially all types of education that include some aspect of face-to-face learning and online learning are the most influential blended learning definitions. As stated [8] that blended learning is learning that combines face-to-face learning with a distance delivery system involving the internet. Today the term blended learning seems to be more popular than ever. It seems to have become a mainstream term that describes modern education that aim to take advantage of online technologies.

Furthermore, [9] stated that blended learning is more than just a simple combination of face-to-face learning with e-learning. The integration of communication tools with different degrees of synchronicity (simultaneity) in the learning scenario opens up various options in the design of the learning scenario. Furthermore [9] states that the main advantage of blended learning is that all technology-based learning can be implemented for all variations of learning, and can be synchronous or asynchronous in the online learning section and still has the potential for interpersonal communication and building social relationships in the face-to-face learning section. .

But as this paper mentions in the first paragraph that currently in several countries affected by Covid, the traditional face-to-face learning system in schools is reduced or even temporarily eliminated. In Indonesia, the government has implemented a discourse to gradually reopen schools in the Covid-19 green zone in September 2020. Quoting from the press release: Implementation of the New Academic and Academic Year Learning in the Covid-19 Pandemic Period by the Ministry of Education of the Republic of Indonesia, there are 94% of students in the red zone who have not been allowed to enter school. This means that 94% of these students must carry out distance learning through online learning only. Meanwhile, based on research [10][11] that online learning alone is less effective than blended learning that combines traditional face-to-face learning.

Based on this description, further research is needed on steps to make online learning more effective during the pandemic, given the conclusion of research by Luo [12] that the COVID-19 pandemic is a wicked problem and the predictions for its course of development are meant to be inaccurate. Means no one know when this pandemic will gone fro sure. So, what are eventually and fundamentally needed are the robustness, flexibility, resilience, creativity and entrepreneurship of people, organizations and governments, as well as sharing and collaboration across disciplines, professions and regions, to deal with any unpredictable undesirable future scenarios. Therefore, in this paper we will discuss how the impact of online mathematics learning on teachers and students by focusing on the face-to-face aspects of activities.

1. Method
	1. Contex and Participants

Merriam and Tisdell in [13] said that the most common form of qualitative research is the descriptive qualitative design wherein its main goal is to give meaning to a person’s experience. Thus, this study is descriptive qualitative research as the aims to this study is to describe and have and understanding of how stundents’ experience mathematics distance learning by online learning in this pandemic situation and give insight of what students need to improve their learning if this situation is going on for a long time. The data is narrative transcripts derived from interviews of 20 students( N = 20 ) that come from different level of educational stage and background. Those twenty participants were selected through purposive sampling from 2 level of educational stage: junior high school and senior high school, 2 level of background: city school and rural school, and 3 level of grades. The reason for choosing participants from different criteria is to enrich the findings in this study so that the further research can be done. Identifying information of the participants was deliberately reformed to ascertain secrecy.

* 1. Data

After getting permission dan approval from their teacher, the researcher began the interview by utilized an interview protocol in gathering the data. As Patton said in [14] that a researcher’s interview protocol is an instrument utilize by the researcher to get answer from his or her participant. It contains information related to the study and also directs the flow of the interview process. The protocol aimed to report the exposure of the participants from the time they started to distance learning and to find what are they need to improve learning. The questions in interview protocol were

* How do you think of mathematics learning by online learning, is it become easier or more difficult?
* What makes you think like that?
* What do you expect teacher to make mathematics online learning more easier?

Due to pandemics data are obtained by interview via whatsapp. Researcher giving one by one question to the participants. Participants responded each question by answering it. The questions were asked in the same order. They were open type questions and participants had the opportunity to express their views on certain problems or occurrences. During the interviews, additional questions were introduced to clarify participants’ views.

Data then underwent thematic analysis. Braun and Clarke [15] explained that thematic analysis is a flexible analytic method wherein the researcher may create and establish meaningful patterns using rich descriptions of data to form thematic networks. Furthermore, the researchers followed a coding process using six phases: 1) transcribing data and taking note of important events 2) initial coding of data gathered, 3) looking for similar themes among codes generated, 4) creating a concept map of combined themes, 5) finalizing themes and defining them, 6) creation of the final write-up.

1. Result

From the interview, researcher find that 100% students find that learning mathematics by online learning is become more difficult than learning mathematics by traditional way in classroom. The asnwer for reason is vary, but researcher code it to 3 themes: 1) because of the Lack of teacher, 2) because too much task given, and 3) because of lack of IT facility. The Table 2 is show the detail of each participants reason.

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| **Tabel 2.** Detail of Participants Reason |
| **No** | **Pseudonym** | **Sex** | **Level of Education** | **Background** | **Reason** |
| 1 | Agung | M | Senior High School | City School | Too Much Task |
| 2 | Beni | M | Senior High School | City School | Lack of teacher explanation |
| 3 | Cika | F | Senior High School | City School | Lack of teacher explanation |
| 4 | Dita | F | Senior High School | City School | Lack of teacher explanation |
| 5 | Eni | F | Senior High School | City School | Lack of teacher explanation |
| 6 | Farhan | M | Senior High School | Rural School | Too Much Task |
| 7 | Gilang | M | Senior High School | Rural School | Lack of teacher explanation |
| 8 | Hani | F | Senior High School | Rural School | Lack of teacher explanation |
| 9 | Intan | F | Senior High School | Rural School | Lack of teacher explanation |
| 10 | Jessi | F | Senior High School | Rural School | Lack of IT facility |
| 11 | Kindi | M | Junior High School | City School | Too Much Task |
| 12 | Leo | M | Junior High School | City School | Lack of teacher explanation |
| 13 | Mira | F | Junior High School | City School | Lack of teacher explanation |
| 14 | Nita | F | Junior High School | City School | Lack of teacher explanation |
| 15 | Oki | F | Junior High School | City School | Too Much Task |
| 16. | Pandu | M | Junior High School | Rural School | Too Much Task |
| 17 | Qian | M | Junior High School | Rural School | Lack of IT facility |
| 18 | Riska | F | Junior High School | Rural School | Lack of teacher explanation |
| 19 | Sinta | F | Junior High School | Rural School | Lack of IT facility |
| 20 | Tiffani | F | Junior High School | Rural School | Lack of teacher explanation |

Based on the Tabel 2, we can see that 60% students’ reason for feeling the mathematics learning become more difficult is because of the Lack of teacher explanation about learning topics, 25% because of too much task given, and 15% because of lack of IT facility.

* 1. Lack of Teacher explanation

The lack of face to face learning makes students have no choice but to follow the flow of teacher instruction by online. And most of the participants said that teacher only give them youtube link for learning the subject, and only few that also get e-modul.

Participant number 7, Gilang, said that *the youtube link that teacher sent to them as explanation of the learning topic often not giving them much insight about the topic.*

Participant number 13, Mira, said that *there isstill much things I don’t understand yet just by watching the youtube video.*

Participant number 18, Riska, said that *the video is not clear enough to describe all the things.*

Based on the level of education, the percentage students from senior high school that give ‘lack of teacher explanation’ as their reason is 70%, while the percentage students from junior high school is 50%.

Based on the background of school, the percentage students from city school that give ‘lack of teacher explanation’ as their reason is 70%, while the percentage students from rural school is 50%.

In the end, they said that they need teacher to explain more about the topics after watching the video.

* 1. Too Much Task

Because of the absence of face to face learning, teacher can’t control of students’ learning, so they often give more task to practice.

Participant number 1, Agung, said that *too much practice is made me bored and tired.*

Participant number 6, Farhan, said that *task, task and task. Is there no interesting activity that teacher can give us but task?*

Participant number 8, Hani, said that *I don’t learning much, but teacher give much task.*

Participant number 16, Pandu, said that *.I don’t mind to do task, but please also give us feedback and explanation.*

Based on the level of education, the percentage of students from senior high school that give ‘too much task’ as their reason is 20%, while students from junior high school is 30%

Based on the background of school, the percentage of students from city school that give the ‘too much task’ as their reason is 30%, while students from rural high school is 20%..

In the end, they also feel that beside doing task, they need an interaction with teacher and other student as feedback or just discussion.

* 1. Lack of IT Facility

Sure there are more students out there that also struggle for the IT facility to online learning. Device like smartphone or pc/tablet is the most important things students need for online learning. Not all people can afford it. But device is not only facility that must be have to be able to learn by online. The other things student needs are the available of internet quota, signal network, and the electricity.

Participant number 10, Jessi, said, that *“I have 3 siblings that also need the device to online learning, but my parents can afford only one smartphone.”*

Participant number 17, Qian, said, that *“I am using my parents smartphone for online learning, so it’s quite uncomfortable.*

Participant number 19, Sinta, said that “*I don’t have money to buy internet quota”*

Based on the level of education, the percentage of students from senior high school that give ‘lack of IT’ as their reason is 10%, while students from junior high school is 20%

Based on the background of school, the percentage of students from city school that give the ‘too much task’ as their reason is 0%, while students from rural high school is 30%..

In the end, they said they just hope that the school can be open as soon as possible.

When the researcher give the last question, all participants is almost have the same answer that lead to teacher giving explanation and feedback.

1. Discussion

Based on the findings, that most reason students find distance learning is make mathematics learning become more difficult is because of lack teacher explanation. As Calfee [16] quote that “Good teaching is good explanation”. This quotation reflects the belief that the capacity to explain is critically important in teaching [17]. According to Behr [18], the art of explaining - the ability to provide nderstanding to others - is the central activity of teaching. Therefore, to achieve the goal of teaching, the teacher must adopt effective teaching methods that can lead to learners understanding the subject being taught.

The main objective of explanation in teachingis to enable the learners to take intelligent interest in the lesson, to grasp the purpose of what is being done, and to develop their own insight and understanding of how to do it [19].

Further to Brown and Atkins [20] identified three types of explanation used in daily communication: descriptive, interpretive, and reason giving. Interpretive explanations interpret or classify an issue or specify the central meaning of a term or statement; descriptive explanations describe the processes, structures and procedures; and reason giving involves giving reasons based on principles or generalizations, motives or value.

In the context of education, good explanation in teaching is essential for unlocking the students’ understanding of the subject. It develops students’ logical thinking, and provides guidance by inductive judgment to generalising [21].

The lack of teacher explanation in this study is the effect of the lack of face to face activity which is caused by disctance learning. Disctance learning caused teacher absence in many activities of online learning. Altough there are many technology that can presence teacher virtually to students like video converence, not many teacher use it. From reseacrher slight discussion with various of teachers, the main reason teachers are not doing video conference in online activity is because they think it’s not important.

Video conference in online learning is like face to face activity but virtually. In video conference or virtual face to face learning, the teacher is presence in front of the student’s screen. This at least can make students feel the presence of teacher and also can have live intercaction with teacher.

When a course is delivered by videoconference, students see their teacher almost daily for a scheduled

block of time, during which, the teacher uses direct instruction in a live format to explain content and tasks, and engage learners through interactive activities. As in online learning, there is a geographical distance between the teacher and student, which leads to both a real and a perceived barrier to communication and connection [22].

Presence is generally considered to be a sense of awareness, receptivity, and connectedness to the mental, emotional, and physical workings of the individual and the group in the context of their learning environments[23]. Presence has also been defined as ‘the perceptual illusion of non-mediation’ [24], which means that presence gives participants who are geographically dispersed the feeling of being there and being together. Gunawardena and Zittle in [25] refer to this as the degree to which a person on the other side of a screen (or computer) is perceived as being ‘real’.

Teaching presence is defined as ‘the design, facilitation and direction of cognitive and social processes for the purpose of realising personally meaningful and educationally worthwhile learning outcomes’ [26]. Therefore, teaching presence serves to initiate and maintain an environment where social presence, and therefore cognitive presence, can flourish. Teachers are responsible for creating the conditions in which students feel connected, supported, and safe to construct meaning, and this requires deliberate effort [27]. In the context of videoconferencing, teachers need to develop presence across a screen and across a distance.

1. Conclusion

Overall, this study explored the stundents’ experience mathematics distance learning by online learning in this pandemic situation and give insight of what students need to improve their learning in this situation. The study found that students had difficulty learning mathematics online because of 3 things: 1) Lack of teacher explanation, 2) Too much task, 3) Lack of IT facility. In addition, the thisstudy also found that students still need face-to-face meetings with teachers even though it is online or what is also called virtual face to face for creating the conditions in which students feel connected, supported, and safe to construct meaning so that student motivate and can improve their mathematics learning.

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