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Nearpod use as a learning platform to improve student learning motivation in an elementary school

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ABSTRACT

Education sector is heavily affected by COVID-19 pandemic, leading to reduced learning motivation among students. Factors including dismal learning environment, stress, and anxiety are believed to be the reasons of students' lower motivation among students. This study investigated the use of Nearpod in an elementary school to improve student learning motivation during online learning. In this qualitative experimental research with thematic analysis, three classes with a total of 51 students and three teachers were participating for one week. The results of the study showed that gamification and interactivity of Nearpod help build up and develop students' learning interests, leading to greater attention, engagement, and improvement of student attendance rates. Some suggestions on how to effectively integrate gamification in learning are postulated.

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1. INTRODUCTION

The COVID-19 pandemic began to spread globally in early 2020 [1]. Many sectors, including education, were heavily affected by the pandemic. Education institutions are forced to adapt to distance learning with little or no preparation [2]. Consequently, some teachers are struggling to quickly adapt to online learning [3], [4]. Lack of technology competence and experience led to a worsening learning environment for the students, causing demotivation among them. Students admit that most of the online learning activities they attend feel dull and stressful due to several factors, one of which is due to the incompetent use of the technology by teachers [5]. The situation is even worse in the elementary school level, especially in several schools with a low level of accreditation. Teachers endure problems including a low level of attendance, lack of motivation, and little to no engagement in the class.

Thus, this study proposed Nearpod to improve student learning motivation in elementary school during online learning. Nearpod is an interactive learning platform that facilitates active learning for students through utilizing quizzes, polls, gamification, interactive video, and collaboration boards [6]. Many studies have been conducted to see the effectiveness of Nearpod to improve engagement and motivation of students during distance learning and conventional learning. The study from Rios-Zaruma *et al*. [7] showed an increase in interaction and engagement in a learning process with students satisfied as they used Nearpod. Another study from McClean and Crowe [8] revealed a positive response from the students during the use of Nearpod with concern over connection problems and limitation of the license for a large scale class. Both of those studies were conducted in higher education. While the use of Nearpod in higher education has been extensively researched, the use of Nearpod in elementary school setting environments during online learning

remains undeveloped. One of the limited studies in this elementary school setting [9] focuses only on the impact of Nearpod in the reading setting through bring your own device (BYOD) approach. With that, this study would expand on Nearpod as an alternative way to improve students' motivation in elementary setting.

This study is based on the theoretical framework of Interest Driven-Learning (IDL) and the Four-Phase Model of Interest Development. IDL is a theory proposed by Edelson [10] emphasizing on interest-driven learning activities in constructivist learning. Edelson, in his IDL, believes that learning activities highlighting students' interest and active engagement would lead to robust learning in the process. IDL framework has been used and combined with other theoretical frameworks in various education environments to improve students and individual motivation and engagement [11]–[13]. Four-Phase Model of Interest Development is an interest-related theory which describes four phases in the development and deepening of learner interests: triggered situational interest, maintained situational interest, emerging (less-developed) individual interest, and well-developed individual interest along with affective as well as cognitive factors [14]. In order to trigger situational interest, the instructional condition and learning environment should include stimulating activities and media such as group work, puzzles, and computers. In this particular study, Nearpod is used as the medium to trigger students' situational interest since it is expected to help enhance the interest of students until the well-developed individual interest phase. As proposed by Edelson, high interest in students would lead to better engagement and attention among students which indicates an increase in learning motivation. Hence, the purposes of this study were to investigate: i) The use of Nearpod in the elementary school setting during online learning; ii) The use of Nearpod to enhance students' motivation in the elementary school setting during online learning.

2. RESEARCH METHOD

This research was conducted in a private elementary school in Malang, Indonesia. The participants of the study were the first-grade (n=15), second-grade (n=18), and fifth-grade students (n=18) of elementary school as seen in Table 1 and homeroom teachers of the respective classes (n=3) as seen in Table 2. Table 2 presents the data of the teachers who joined the Nearpod training and volunteered to be the subjects of this study. Pseudonyms were used for confidentiality of the participants.

Table 1. Students sample

No	Class	Male	Female	Total students
1.	1	9	6	15
2.	2	10	8	18
3.	5	13	5	18

Table 2. Teachers sample

No	Name	Class	Level of education	Experience
1.	Teacher X	1	Bachelor degree of elementary education	25 Years
2.	Teacher Y	2	Bachelor degree of elementary education	5 Years
3.	Teacher Z	5	Undergraduate student of primary education	1 Year

This study applied qualitative experimental design with observation sheets, logbooks, and interview guides used as the instruments to gain in-depth information. Qualitative experimental design is a methodological hybrid that combines experimental design elements with qualitative methodologies to investigate mediated communication [15]. Figure 1 illustrates the process of this research.

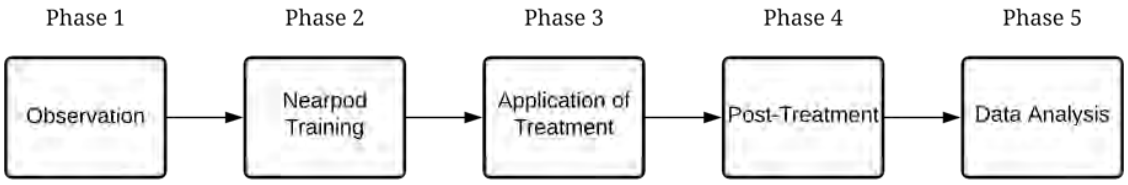

Figure 1. Qualitative experimental research design

Observations were conducted to take notes, analyze the learning process, and identify the problems in class during online learning. Next, the researchers trained the teachers on using Nearpod, which they would later use in the teaching activity. The training was conducted for two days outside the active study hours. The scope of the training includes how to create a Nearpod account, navigate through the web dashboard, create, edit and share a lesson, and assess the score of students in Nearpod. After the training, the teachers used Nearpod for one week in their class to see the effect of Nearpod on their students' learning motivation. The teachers then filled in the provided daily logbook or directly interacted with the researchers to record and monitor the progress while using Nearpod. The last step of this study was an evaluation through interviews with the students and teachers.

The interview was conducted based on the interview framework for qualitative education research Patton on [16] to gain deeper information about the use of Nearpod in enhancing students' learning motivation. Group interview was conducted with the students using clinical interview technique. Clinical interview technique is an informal interview conducted toward children which takes direction from children's responses to understand children's cognitive domain with a predetermined series of questions applied in a standardized way [17]. Meanwhile, for interviewing the teachers, a deductive approach was conducted using the dimensions [10] and [14]. The interview data were later analyzed using thematic analysis [18]. As illustrated in Figure 2, the researchers interactively move among the four nodes such as data collection, data display, data condensation and drawing/verifying conclusion to analyze the collected data. The data were engaged by re-reading the collected data to accomplish a deeper understanding of the data. The data were then synthesized, and the themes were presented based on the proposed theories and analyzed data.

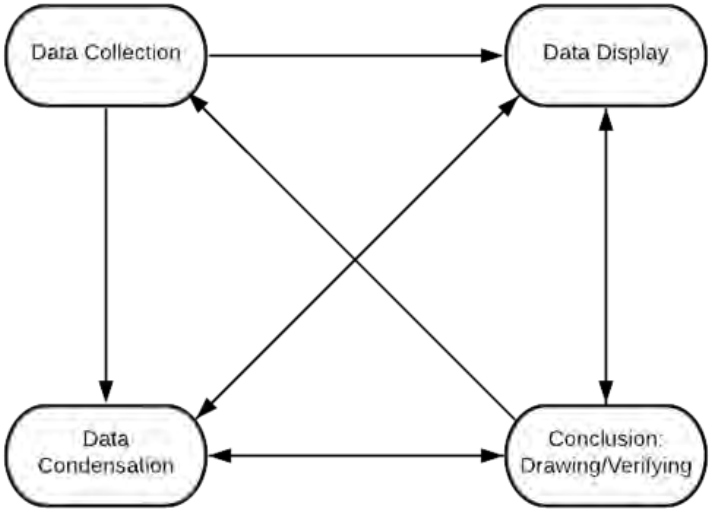

Figure 2. Components of data analysis (interactive model)

3. RESULTS AND DISCUSSION

By using a thematic analysis model to interpret the data, one predetermined theme based on the proposed theory and three themes emerged from the analyzed data such as students' motivation, future use, disadvantage and limitation and advantage. The data collected from notes, observation and interview provided by the teachers and students. The predetermined theme and emerged themes along with the sub-themes could be seen in Figure 3. Detailed analysis of the result would be explained more briefly in the next section along with the discussion.

In students' motivation predetermined theme, it would explain the process of the study with four sub-themes emerged from it such as interest from students, engagement, attention in class and attendance rate. Future use would briefly detail the teacher's perspective toward the use of Nearpod in the foreseeable future with two sub-themes derived such intention to use and face-to-face use. Disadvantages and limitations would be discussed which is the problem encountered by the teachers during the use of Nearpod. four sub-themes derived from the theme. such technical problems, device issues, cloud capability and unavailability of handbook. Advantages would explain the benefit of using Nearpod experienced by the teachers during the experiment. Four sub-themes derived from the theme such as easy to access students work, gamification, interactivity and easy to create materials.

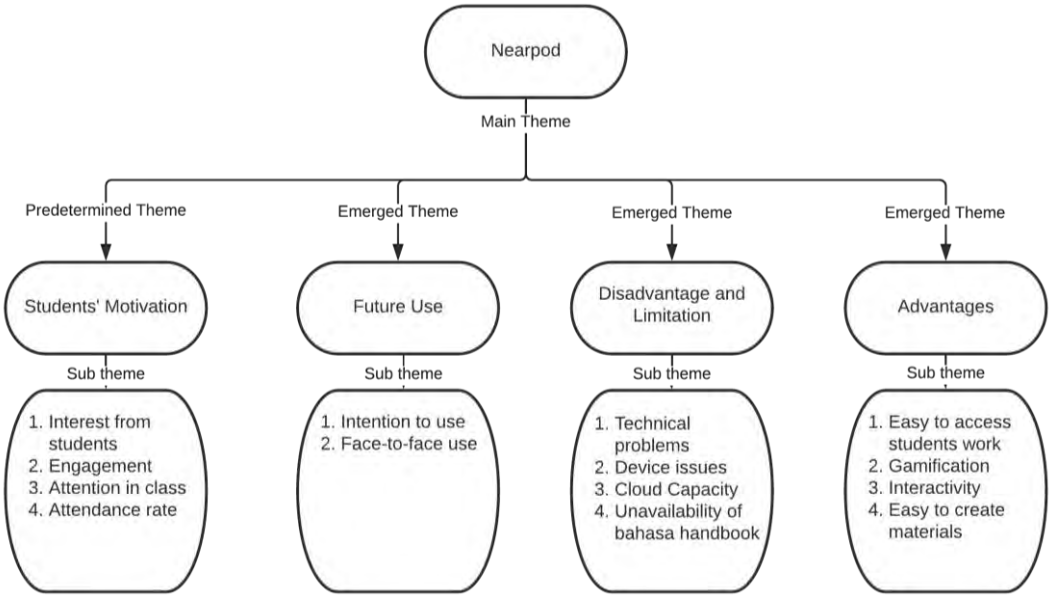

Figure 3. Predetermined themes and emerged themes

3.1. Students' motivation

3.1.1. Observation phase

From the online observation sessions at the pre-treatment stage, it was revealed that the motivation of the students was considered very low. During the observation through Zoom, numerous students did not attend their class. For instance, in first grade, there were only nine students out of 15 students who attended the class, and there was little to no engagement. The majority of the students did not answer the greeting from the teachers during the opening.

Furthermore, during the online learning activity, we also found that the teachers still used the conventional way of teaching in an online environment. The teacher used a photo placed in PowerPoint which was taken from a textbook. Holmberg [19] proposed a new approach in an online environment of distance learning/remote teaching which is different from what is usually used in conventional/face-to-face teaching. It is not a great recommendation for teachers to teach using conventional approaches in an online classroom due to the differentiation of aspects in the learning environment. Macedo *et al.* [20] argued that the lack of pedagogical skills from the teacher would hinder the interest of the students leading to demotivation among students. Researchers also found that most of the students turned off the camera during online teaching. According to Castelli and Sarvary [21], one of the factors that make students unable to turn on the camera is demotivation and anxiety during the learning activity.

Until the learning activity ended, there was still no significant engagement from the students which indicated the lack of interest from the students to learn. Edelson and Josep [10] in their study argued that "Problem occur when a learner's interest is not strong enough to drive deep engagement in activities, at least not with sufficient effort or attention to achieve the intended learning objectives." Align with that, little to no engagement during the observation phase might indicate that the interest of students is not powerful enough to allow them to engage in learning activities. The lack of engagement from the students led to the lack of motivation from the students, resulting in poor learning progress. The lack of motivation from the students during the online learning could also be seen from the low attendance rate of the class, the number of the students who were late joining the class, along with how they responded to the teacher in the class opening.

From our second and third observations in the second grade and fifth grade classes, the researchers found a similar case of unenthusiastic students in the online learning activity. Based on the observation, researchers believe that the lack of interest from the students is partially caused by the teacher's inability to design engaging and interactive online teaching activities by utilizing digital learning tools. Introducing educational platform with interactive learning media might help attract students' interest and engagement in the class which later would lead to better motivation among the students to learn. The study conducted by Gunawan *et al*. [22] found that an interactive learning activity through technology use would help students grasp the knowledge better. Nearpod would be use as the learning media to help support teachers in preparing better learning materials.

3.1.2. Nearpod training phase

After the observation phase was completed, the researchers conducted a basic training for the teachers on how to use Nearpod. The training was conducted for about two days outside of the active study hours. The scope of the training includes how to create a Nearpod account, how to navigate through the web dashboard, how to create, edit, and share a lesson, and how to assess student's learning in Nearpod. During the training process, some teachers experience several difficulties with the Nearpod interface. Some of these teachers argue that their lack of experience in using educational platforms and technology in general hinder their ability to learn new technology implementation in education. Although there were some difficulties encountered by the teachers in the early stages of training, all of the teachers were able to overcome it at the end of the training phase. After the training ended, all of the teachers werre expected to comprehend on basic use of Nearpod and ready to use it in their own classes.

3.1.3. Application of the treatment phase

During the use of Nearpod, all classes experienced an increase in student attendance rate as displayed in Tables 3-5. Based on the data, all of the class experienced an increase of attendance. Even though there was a slight reduction at the last day of the treatment phase, the overall increase of the attendance was still noticeable. The data present a slight increase in student attendance during the implementation of Nearpod within one week although it is yet uncertain whether or not the improvement is because of the use of Nearpod. Shehata *et al*. [23] also found similar results of an increase in student attendance during the implementation of Nearpod even though they did not intentionally measure the attendance level. However, despite the consensus that there is no significant evidence to support the claim that Nearpod would directly improve the attendance of students, the researchers believe that the effective use of Nearpod in teaching and learning might indirectly affect the attendance rate of the students by enhancing the students' interest.

Table 3. Teachers' logbook for first grade

Date	Lesson activity	Attendance rate
9/6/21	Physical Education, Al-Qur'an-Hadith and Thematic	9/15 (60%)
9/7/21	Arabic Language, Fiqh and Thematic	10/15 (67%)
9/8/21	English Language, Javanese Language and Thematic	11/15 (73%)
9/9/21	Islamic Faith & Morals, Religious Education and Thematic	14/15 (93%)
9/10/21	Thematic, Hijaiyah Writing System, Cursive Writing and Scout	12/15 (80%)

Table 4. Teachers' logbook for second grade

Date	Lesson activity	Attendance rate
9/6/21	Javanese Language, Islamic Faith & Morals and Thematic	11/18 (61%)
9/7/21	Physical Education, Thematic and Religious Education	10/18 (56%)
9/8/21	Arabic Language, English Language and Thematic	14/18 (78%)
9/9/21	Fiqh, Al-Qur'an-Hadith and Thematic	13/18 (72%)
9/10/21	Thematic, Hijaiyah Writing System, Cursive Writing and Scout	16/18 (89%)

Table 5. Teachers' logbook for fifth grade

Date	Lesson activity	Attendance rate
9/6/21	Math, Religious Education, and Thematic	14/18 (78%)
9/7/21	Math, Physical Education and Thematic	16/18 (89%)
9/8/21	Fiqh, Thematic, Arabic and Language	12/18 (67%)
9/9/21	Al-Qur'an-Hadith, Thematic and Math	18/18 (100%)
9/10/21	Islamic Faith & Morals, English Language, Thematic, Javanese Language dan Scout	16/18 (89%)

3.1.4. Post-treatment (interview) phase

Noticeable increase of engagement was reported by the teachers. Teacher Z stated that Nearpod helps attract students to pay attention to the lesson. Similar results are also reported by the other teachers. Teacher X added that Nearpod itself is not enough to help increase the students' motivation. An intrinsic motivation from the students itself is needed to help motivate the students. Attention is also attributed as the factor that increased during the treatment. Based on the logbook provided by Teacher Z, he stated the use of Nearpod drives students' curiosity about the learning materials which leads to better attention from the students. Likewise, Teacher X stated that the engagement among the students was noticeable, highlighting the students' high motivation when they were interested in the learning activity.

Similar results are also applicable for the second grade as Teacher Y stated that she noticed a slight improvement in engagement among the students. However, Teacher Y still needed to stimulate the students with positive feelings during the learning activity to help reduce students' anxiety. This improvement in student engagement was also found in the fifth grade, as claimed by Teacher Z. In the group interview, most of the students reacted positively toward the use of Nearpod. They believe that using Nearpod help them to keep engaged and compete with other students. Students also want to use Nearpod for the online learning experience as it helps them to keep focusing on the learning materials given by the teachers. However, several students' response that Nearpod application were incompatible with several low-end devices. They experience slow responsiveness during the use of Nearpod making an uncomfortable experience when using the platform. Even though several students experience issues within the use, it still overrides the positive outcome from using Nearpod. Nearpod could be used as an alternative platform to deliver materials toward students helping them to keep engaged and motivated to learn in the online learning environment.

3.2. Advantages of Nearpod

According to the teachers during the interviews, Nearpod has three significant advantages. It has the capability to make teachers able to assess students' learning effectively. Teacher Y in her logbook stated how Nearpod helps her assess students' assignments. Gamification also becomes one of the features which helps students actively participate in the learning activities. Some students feel highly motivated to reach the highest score during class by having their name at the top of the online board in Nearpod. In a group interview, students admitted that it is so thrilling because they could interact with the exercise directly from their smartphone. Some students stated that seeing their peer score in Nearpod makes them more enthusiastic to reach the top rank of the class in Nearpod. Interactivity is also reported by the students as one of the features that make them interested in learning. This result aligns with [24]–[26] as gamification improves students' motivation during learning activity. The interactivity feature provided by the platform might also play a major role in improving students' motivation to learn during online learning. Interactivity seems to allow the students to avoid the boredom during the learning activity by keeping the students engaged in the class. Interesting and attractive learning media would help the students eliminate boredom during the learning activity [27] since boredom and demotivation in learning would negatively affect students' achievement [28].

3.3. Disadvantages and limitation

When teachers were asked about the disadvantages of Nearpod, all of them mentioned connection, technical problems, and device performance issues during the implementation of Nearpod. In their logbook, all the teachers encountered Nearpod access issues experienced by several students. It is believed that the students' device was not compatible enough to run Zoom and Nearpod simultaneously. Another issue when using Nearpod is the limitation of cloud storage and no guidance book in Indonesian language to help senior teachers learn to use Nearpod independently. As written by Teacher Y in the logbook, limitations of the cloud storage make it difficult to add longer videos. During the interview, Teacher X stated that the absence of a guidebook made it difficult to use Nearpod. She considered herself a person with a lack of digital literacy (in this particular case, Nearpod). A Nearpod guidebook with comprehensive explanations in Indonesian would be a beneficial item added that can be used as guidance for teachers to use Nearpod.

3.4. Future use

The teachers were slightly hesitant when asked about using Nearpod in the future. From the given answers, all of them planned to use Nearpod in the future. However, some of the teachers felt uncertain about using Nearpod in the future because the learning activity would return to face-to-face learning in the following week. Teacher Z stated that she might use Nearpod in the future. However, intensive training with more specific focus is still needed to overcome the digital literacy problems. Apart from Teacher Z, the other teachers agreed that they might need more training on how to use Nearpod in face-to-face learning because not all teachers in the school could apprehend how to use technology without any guidance. Other than that, Teacher Z also stated that using Nearpod in face-to-face learning would be difficult as parents might restrict it due to concern over device used for other activities apart from learning activities by the students. Teacher Z also thought that it would be hard for parents to allow their children to bring their device to school.

3.5. Further analysis

Based on the post-treatment interview, teachers stated that they noticed an increase in attention and engagement during the learning activity. The increase in attention and engagement came from the interest shown by the students. A combination of external factors coming from the Nearpod and developed interest from the students to engage in the learning activities lead to a better engagement and attention from the

students. Other researchers have also found similar results, such as in [1] and [29]. This study also aligns with the study conducted by Rashid and Asghar in [30] as the right technology implementation would contribute to a better engagement from the students. This study also validates the study conducted in [31] about students and teachers perspectives of good teaching practices using technology. They stated that pedagogical integration with technology would succeed if technology is used to facilitate meaningful interaction and engagement rather than used as the end pedagogical use. The use of technology to support the pedagogical ability of the students in the classroom would lead to a better learning environment and experience for the students. The increase of attention and engagement, as believed in [10], indicated motivation growth among the students. In the group interview, students stated that they were happy and determined to learn using the Nearpod app. They believe that Nearpod interactivity features help them engage and contribute to the learning activities, making them keen to keep learning using the platform.

The curiosity of students to explore the app also plays an important role in the increase of the students' interest. Some of the teachers believed that students' curiosity about the platform helps students keep engaging with Nearpod. Curiosity is one of the factors that maintain the individual interest [32], [33]. In the study of curiosity in psychology by Loewenstein [34], curiosity has been confirmed as the influence of human behavior in a positive way to drive forward. Researchers assume that based on the interview, the factor that influences students' interest in learning using Nearpod is curiosity during the implementation of Nearpod. Gamification features in Nearpod also help students to be motivated in learning. Students stated that it drives them to compete and get better scores in the learning activity. It has been proven in numerous studies that gamification would encourage students to get a better achievement among other students [35]–[37]. With that, researchers suggest the use of gamification in Nearpod as a method to boost motivation among students. This study also suggests that Nearpod could be suitable for English language learning specifically English for K-12 as Nearpod provides English materials content through Nearpod's EL curriculum. Nearpod team argues that EL's curriculum are based on the latest research-based models [38]–[43]. Further study to investigate Nearpod's EL curriculum used in content materials is strongly suggested.

4. CONCLUSION

As online learning has recently become the new norm for the times being in the education institutions which lead to a lower rate of motivation among the students. Nearpod could be used as an alternative medium to enhance motivation and maintain interest of students in learning. This study is conducted to investigate the use of Nearpod to improve learning motivation among the students. The result of this study reported an increase in learning interest during the use of Nearpod, which led to better engagement and attention among the students for a week. The curiosity of students is suggested as one of the factors that drive students to take interest in learning. This study also found that gamification in Nearpod proved to help students actively engage during the learning activity. Because of that, using gamification to boost motivation among elementary students in learning activities is highly encouraged. Furthermore, most of the students give positive feedback during the treatment as Nearpod helps to create a competitive atmosphere among the students to reach a better score among the students keeping their motivation at peak.

Although the use of Nearpod would eventually lead to better learning motivation among students, teachers should implement various strategies during the learning activity to maintain the interest among students. Duration of the treatment and lack of participants are among the limitations of this study. Thus, researchers suggest that a longitudinal study of Nearpod use for one semester should be conducted to see the long-term effects of Nearpod on students' motivation in distance learning settings. Further research needs to be conducted on the effect of the E-learning medium in elementary students to set a broader understanding of factors affecting interest of students in using a platform.

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