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Navigating the Digital Wave of Learning: Students' Perceptions on Emotional during Learning Process

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ABSTRACT

Digital learning involves exploring various learning platforms to create an interactive learning environment. The pandemic era has taught educators to adapt technology to various learning topics. Entering the post-pandemic era does not mean that the challenges in designing digital learning have been completely overcome. Emotions play a significant role in the learning process. This cross-sectional study aims to uncover students' perceptions of digital learning in terms of emotions. The study is conducted in the context of the post-pandemic era. The research subjects consist of 112 students aged 18-24 years, distributed in several regions of Indonesia. Data analysis is carried out using a multi-stage process and pattern coding of responses. The findings of this study are presented in thematic form, accompanied by student testimonies that support the themes. The results indicate the presence of themes related to both positive moments and emotional challenges experienced by students during digital learning. Based on these findings, this study suggests that lecturers should continue to practice recognizing students' contexts so that pedagogical strategies through the application of technology can be implemented to the fullest extent.

Keywords: digital learning, emotional aspect, students' perceptions, post-pandemic era

ABSTRAK

Pembelajaran digital melibatkan eksplorasi dari berbagai platform pembelajaran untuk menciptakan suasana belajar yang interaktif. Era pandemi menjadikan pelajaran bagi pendidik untuk mengadaptasikan teknologi ke dalam berbagai topik pembelajaran. Memasuki era post-pandemi, tidak berarti bahwa tantangan dalam mendesain pembelajaran digital sudah selesai teratasi. Emosi memegang peran yang cukup penting dalam proses pembelajaran. Penelitian dengan desain *cross-sectional* ini bertujuan untuk menyingkapkan persepsi peserta didik terhadap pembelajaran digital dalam aspek emosi. Penelitian ini mengambil konteks era post-pandemi. Subjek penelitian sebanyak 112 mahasiswa dengan rentang usia 18-24 tahun, dan tersebar di beberapa kawasan Indonesia. Analisis data menggunakan proses multi-tahap dan

koding pola jawaban. Temuan yang dihasilkan pada penelitian ini, dijabarkan dalam bentuk tema disertai sampel testimoni mahasiswa yang mendukung. Hasil temuan mengindikasikan adanya tema-tema yang berkaitan dengan momen positif maupun tantangan yang dihasilkan secara emosional terhadap mahasiswa selama pembelajaran digital. Berdasarkan temuan tersebut, penelitian ini menyarankan agar dosen terus berlatih dalam mengenali konteks mahasiswa agar strategi pedagogis melalui penerapan teknologi dapat terimplementasi secara maksimal.

Kata kunci: pembelajaran digital, aspek emosi, persepsi mahasiswa, era post-pandemi

INTRODUCTION

Digital learning is kind of learning that focuses on exploring various forms of visualization using information and communication technologies, such as educational presentations, visual aids, video materials, a portfolio of educational and creative works (Vlasova & Pisarenko, 2022). It provides a collaborative learning environment that encourages students to explore and solve problems themselves (Scott & Shelbourn, 2018). Nowadays, the benefit of maximizing the digital learning is helping teachers develop technological pedagogical content knowledge (TPACK) to effectively integrate technology in teaching (Lu, 2014). In general, effective digital learning requires a combination of pedagogical approaches, technological tools, and collaborative environments that can help students learn and teachers teach in a more engaging and effective way (Balandin et al., 2023; Hang et al., 2023).

Pandemic era is the moment of all educational stakeholders to get familiar with technology infused learning, as well as accustomed to immersing in digital learning. Several studies depict the impact of the prolonged yet not well-prepared digital learning among the world, such as mental health issue (Zis et al., 2021), burnout occurs to students and teachers (Saha et al., 2021), and low academic performances (Albakri & Albakri, 2020). Furthermore, these conditions are caused by several challenges during digital learning implementation, and the most highlighted factors are poor internet network as well as the lack of digital literacy (Saha et al., 2021). Currently, there have been numerous professional development activities performed to enrich teachers and students to be mastering the optimalization of digital learning. It is because the presence of digital learning cannot be avoided anymore, even though the pandemic period is gradually getting lower.

Referring to the facts, unfortunately, those cannot merely prevent many challenges during digital learning process. Various number of studies reveal about some potential long-term effects of digital learning on education. Several studies highlight that digital learning has potential for decreased quality of education, which tend to not be as effective as in-person learning for some students, and there is a risk that the quality of education could decrease if digital learning is not implemented effectively (Sivakumar & Wijikumar, 2022; Zis et al., 2021). On the contrary, the other study unfolds that digital learning has greatly possibility to increase access to education for students who may not have been able to attend traditional in-person classes due to geographical, financial, or other barriers (Albakri & Albakri, 2020). Moreover, the digital learning itself can lead to increased technological literacy and proficiency among students and teachers.

In the context of Indonesia, digital learning has become a trend in teaching and learning (Daud et al., 2022), but there are still challenges in its implementation. Some teachers face challenges in performing digital learning due to limited online infrastructure and competencies (Mahrani et al., 2022; Purmayanti, 2022). On the other hand, some students are also found to have difficulty in using digital learning platforms and tools, as well as lack of familiarity with digital technologies (Kamaliya et al., 2022). Despite of these obstacles, pandemic era has gradually taught educators and students in Indonesia to improve their digital skill and literacy. Along the way teachers and students deepen the mastery of digital learning, some studies demonstrate that digital learning implementation in Indonesia can be successful when appropriate digital learning platforms and models are utilized (Daud et al., 2022; Erlita et al., 2020).

This time, Indonesia has been through some enrichment processes to equip both students and teachers in mastering digital learning. During pandemic, and currently in a post-pandemic era, many schools and universities still perform digital learning mode. Therefore, this study focuses to observe and investigate students' perceptions on emotional aspect after being engaged in various experiences about digital learning implementation. This current study is distinct from the previous studies which look at their perception in the beginning and during pandemic period. This post-pandemic era has brought students into several conditions which make them more competence in familiarizing themselves with digital technologies. However, there is still a possibility that students may encounter some feelings or emotions to keep running with digital learning, although the pandemic is like almost over. Hence, all the findings in this study may be an evaluation for all educational stakeholders.

METHOD

The respondents who participated in this study were 112 university students (male = 23 students, female = 89 students), ranging from 18 to 24 years old. All participants were spread across several provinces in Indonesia, which was displayed in Table 1 as students' demography. In addition, the participants consisted of freshmen as first-year (34.82%), sophomore as second year (19.19%), junior as third year (24.56%), and senior as fourth year students (21.43%).

Table 1. Participants' Demographics (N = 112 students)

		N	Percentage
Gender	Male	23	20.54%
	Female	89	79.46%
Age	18	15	13.39%
	19	22	19.64%
	20	27	24.11%
	21	26	23.21%
	22	17	15.18%
	23	4	3.58%
Cohort	5 24	1	0.89%
	Freshmen (1 st year)	39	34.82%
	Sophomore (2 nd year)	21	19.19%
	Junior (3 rd year)	28	24.56%
	Senior (4 th year)	24	21.43%

Islands	Sumatera	34	30.36%
	Java	48	42.86%
	Kalimantan	6	5.36%
	Sulawesi	20	17.86%
	Papua	4	3.56%

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This current study conducted by a cross-sectional design because it engages students from various areas in Indonesia simultaneously to look at students' perception towards emotional aspect during digital learning process in the lens of post pandemic period. Researchers distributed the instrument in the form of questionnaire which was set up into Microsoft Forms. The question items were divided into two categories: category 1 (asking about participants' demography) and category 2 (asking about students' perception as main questions). Afterwards, researchers administered the questionnaire by sharing the form link to several particular lecturers, and then they forward it to students. The time estimation spent to fill out the questionnaire was about 30 minutes.

The total of 112 students have filled out the questionnaire. Furthermore, all responses were downloaded and converted to Excel to be analysed in detail. The data analysis was performed by conducting a multistage process of descriptive and pattern coding (Saldana, 2016). In a detail way, the analysis process was performed by investigating the pattern and taking note the frequent themes based on students' responses. The coding results were then reported in themes supported by the testimonies as the answers given by respondents.

RESULT AND DISCUSSION

The main questions of this study consist of investigating three things, which are: (1) what are the positive moments you experience during digital learning? (2) what are the challenging moments you experience during digital learning? and (3) in terms of emotions, what are the challenges that arise during digital learning? In order to ease the reports, researchers will organize systematically, point-by-point.

1) Positive moments that students experience during digital learning

The most frequent theme that emerge from students' responses is about its flexibility. Digital learning tightly attaches with the infusion of technology. In term of flexibility, some sub-themes are depicted. Several answers report about the time flexibility. Many students show happy emotions when experiencing digital learning because they can access the learning materials anywhere and anytime. Moreover, students can repeat the learning videos given by lecturers back and forth as many as they want. The other pattern unveiled is about working space flexibility. Generally, students respond that digital learning bring spacious space to explore many platforms in order to analyse, solve, and finish the assignments.

Besides, several responses also focus on communication during learning process. Digital learning brings a new, fresh, and interactive communication which are liked by most students. The terminology "communication" itself does not merely mean about the conversation tool orally, but also in written, like a discussion forum that is provided by lecturers to keep the students actively engaged. Students can jot down, take a note, even put their written feedback through learning forum. Those themes are elaborated in several sentiments which represent students' testimonies, as below:

- *I can explore a wide range of knowledge. It doesn't require much time for mobilization and allows for efficient learning.*
- *The precious moment is being able to learn anywhere and anytime. It means saving time. If we were to learn onsite, it would require time to travel to the classroom. However, for online learning, we can simply open our laptops and start. Everything is connected to the laptop, so it's simple. The learning sessions can also be recorded. So, if there is something we don't understand, we can replay the instructional videos.*
- *The happiness in digital-based learning is that it greatly assists in accomplishing various tasks, including assignments, and helps me in finding sources or references through videos, images, or audio.*
- *With digital learning, I can easily access materials on the internet, making it more convenient. Additionally, communication with classmates becomes easier and more effective.*
- *The joy I experience in digital-based learning is that I discover a variety of applications that can enhance the learning experience, making it more engaging and enjoyable. Each application or forum used is always creative and captures my interest, making the learning process less boring.*

Furthermore, some responses imply about the positive emotion because of the financial efficiency. This theme is supported by several testimonies which claim that digital learning can make effective and efficient about time and financial. Besides, students can also perform various home-task simultaneously, both from their lecturers and parents. As students do their assignment from lecturer, they can also help their parents at the same time. Lastly, this is quite a unique theme emerged, which shows the tendency of being lazy. For some students, they report that digital learning allows them to be relaxing, as they do not need to dress up completely. Here are shown several testimonies which support those patterns:

- *The joyful moment is being able to get to know and be closer to the home environment, being able to assist parents more, and not having to spend money on allowances and transportation costs for college anymore.*
- *It's relaxed, no need to go to campus and dress up neatly.*
- *Getting direct support from parents in the form of a suitable study space for digital learning.*
- *My joyful moment in digital-based learning is that I can assist my parents with their work from home.*

Referring to those findings, numerous studies also support the pattern of students' responses. The nature of digital learning itself is bring a flexibility (Deliktaş & Stojkowska, 2019), which is felt by students during the pandemic and post-pandemic era. The most frequent theme emerged is about flexibility, both in time and working space. Several studies support about these findings (El-ahwal & Shahin, 2020; Hollister et al., 2022; Soesanto & Dirgantoro, 2021). Other themes emerged are about the creative way of communication, both orally and in written. In a literature review study, it has been revealed that one of the benefits of digital learning implementation is about the communication provided (Kamaliya et al., 2022). During pandemic era, both students and educators learn to master the digital platforms for enduring the engaging communication (El-ahwal & Shahin, 2020; Galoyan et al., 2021). Some platforms are expected to be considered as pedagogical strategy for

maintaining optimal communication, and some educators successfully utilize them, such as Zoom and Learning Management System (Hollister et al., 2022; Komsiyah, 2021).

Despite of the positive findings, there has been found a tendency that digital learning gives potential for students to be lazy and procrastinating, even of their physical appearance. This tendency emerges as an effect of lack of educators' supervising (Wong, 2020). Other study states that being at home continuously in long periods of time can make students feel safe in exclusivity (Dewi et al., 2020). In addition, this condition may be dangerous because it can make students less motivation to enjoy learning process (Kalogeropoulos et al., 2021). Fortunately, in the post-pandemic era, educators have improved their technological mastery to accommodate effective digital learning.

2) Challenging moments you experience during digital learning

There is an obvious theme emerged as students' reports in accordance with the challenging moment during digital learning, which is the stability of internet network. This factor cause lack of effective learning process. The other pattern appears to unfold about the lack of digital mastery. Some students reports that their lecturers often use various learning platforms. Therefore, students have a difficulty to familiarize the interface of the platforms. Other theme as the responses pattern is about the compatibility of students' devices. That kind of difficulty provides an impact to the students, especially when they want to build communication with peers. This theme is quite critical since Indonesian students are spread across several island with various financial ability to purchase a compatible device in supporting digital learning. In terms of learning materials, some report that during a massive digital stream, students get difficulty in finding reliable resources. There are many hoaxes information, and students are difficult to distinguish them. For these findings, here are shown the representative of students' testimonies:

- *The frustrating aspect that hinders me from enjoying digital learning is the unreliable internet connection and inadequate devices.*
- *My lecturers often use new and different platforms. As a result, I am unaware of which features will be used. Additionally, poor signal quality also hinders my ability to fully enjoy digital learning.*
- *Despite being in an urban area, the inadequate network connectivity makes it difficult to communicate directly with friends during group work.*
- *It is difficult to understand the learning material, find reliable information, communicate, and get to know my friends.*

Problem of stability of internet network during digital learning has been experienced by many students, specifically in developed countries. This instability can cause several obstacles in the context of digital learning, and give the impact of low students' academic performance (Boerngen & Rickard, 2021; Komsiyah, 2021). It occurs because internet network holds a vital role in optimizing digital learning. The unstable connection during digital learning can cause disruption of learning process, making it difficult for students to access online resources, participate in live classes, and submit assignments (Nunes & Ozog, 2021). Furthermore, unstable internet connections can cause stress and anxiety for students, and lead to a feeling of being frustrated and disengaged from the learning process. Hence, internet network is one of essential key to ensure that digital learning can run well.

From pandemic toward post-pandemic era, it gives both teachers and students precious insight about thinking a way that can maintain good learning among hard situation in term of lack in internet connection. A recent study provides a simple yet meaningful way to deliver conducive atmosphere for digital learning, which is providing a recording video (Singh & Arya, 2020). This strategy has been done by most educators, including lecturers. This strategy can help students who experience connectivity issues during live classes to catch up on the material at a later time. Another study encourages educators to be flexible (Saeed et al., 2021). Students who experience lack of stability connection can be provided an alternative assignment. This idea can overcome the case of students who are unable to participate in online classes due to connectivity issues. It might be a good idea for implementing digital learning if teachers or lecturers face that kind of condition. It is expected that this strategy will reduce negative perceptions from students.

3) Challenges that arise during digital learning in the context of emotional aspect

In the context of emotional aspect, there are several themes that emerge from students' responses. Common pattern is about patience. If this pattern is elaborated, researchers find some sub-themes as the impact of students' patience. The first is caused by unstable connection. Students often feel unpleasant or uncomfortable if they can not upload their assignment smoothly. The other sub-theme is when they face with various learning platforms which are hard to get familiar with. During digital learning, lecturers tend to explore few learning tools to bring a creative atmosphere. Without lecturers realize, it has a potential to make students feel disturbed. Some students with minimal digital literacy must take extra time to familiarize with many platforms.

Other pattern reported is about digital fatigue. This condition happens because students tend to focus on screen for a long period. During class meeting, students must standby in the video conferencing session, and after class, they still focus on their screen to do and submit the assignment given. Moreover, this tendency can also affect students' patience if there is absence of internet connection. Those kinds of negative emotions bring some other themes. Feeling anxious emerges as one of the themes due to emotion issue. Students are reported to feel anxious easily when they face difficulty in uploading task. They are afraid if suddenly, the internet connection is down. If this occurs, students can easily feel sad and become less motivation. And that is drawn as other themes among students' responses. In detail, here are shown some samples of students' testimonies:

- *Emotionally, what I feel is exhausting and weary due to the constant focus on the screen. I often get angry when digital devices are slow. For example, when working on video assignments, uploading files is very difficult and time-consuming. The most frustrating part is when I have already waited for half of the upload and then there's a network error, causing the file upload to fail and requiring me to start the upload process all over again.*
- *I feel sad because the learners are more relaxed and tend to underestimate the importance of studying. When there are network issues, I sometimes feel emotional and lose the motivation to continue with the lessons.*
- *Sometimes I feel scared or anxious because I'm afraid of encountering difficulties or forgetting to complete assignments or fill out attendance forms before the due date.*

- *Feeling lazy and procrastinating. The challenge is to try not to get frustrated (to control oneself) when dealing with unreliable network conditions.*
- *Patience, in this case, is crucial. When attending online classes, accessing materials, completing assignments, quizzes, or exams, encountering technical issues or other challenges can easily put us in a bad mood, draining our reserves of patience.*

Emotions play a significant role in students' learning experiences within digital learning environments. However, research suggests that when confusion is persistent, it can become harmful, promoting learner frustration or boredom (Arguel et al., 2019). The emotional experiences of students concerning digital learning spaces can also impact their depth of learning, with negative emotions such as anxiety and fear leading to behaviours such as: avoidance, lack of engagement, and drop-out (Harkin et al., 2022; Huang et al., 2015). According to the findings, researchers found two common themes as the cause of inefficient digital learning, which were students' patience crisis and digital fatigue. Some findings indicate that connectivity put the prior thing as main cause that makes digital learning not conducive. Digital fatigue is indicated as majority of students tend to focus on a prolonged time through video conferencing. Lecturers must design an engaging activity so that the digital fatigue can be reduced gradually. Therefore, it is important to manage students' emotions in digital learning environments to enhance their learning experiences.

CONCLUSION

Nowadays, it is a must that technology collaborates with learning process. Indeed, the infusion of technology in learning activities has positive possibilities, or it can bring challenges at the same time. During post-pandemic era, the role of technology can not be removed from learning. Several themes have been proposed and discussed related to students' emotion during digital learning. Educators, whether teachers or lecturers, should keep practicing on improving digital pedagogical strategies for maintaining optimal learning. For a further study, there should be research which elaborates specifically about students' dispositions towards digital learning in the context of post-pandemic era. In addition, research about creative way on teaching with various learning platforms can be conducted in bringing insights for educational stakeholders.

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