Proceeding Paper

Barriers Faced by Teachers in Acclimatizing to Online Teaching †

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Abstract: Centered on the transformation of the norm of education from face-to-face teaching to online platforms, this article explores the intrinsic and extrinsic factors that contribute to the challenges teachers faced in delivering online lessons during the pandemic. The study adapts thematic deductive qualitative analysis approaches by using an open-ended questionnaire where the data were collected via Internet survey. The results portrayed intrinsic factors to exhibit the biggest barriers in comparison to extrinsic factors. Hence, teachers' pedagogical needs should be considered, with priority given to teachers' technological access by the education authority to improve the quality of the online teaching. This study provides insights for education authorities in addressing the challenges of online teaching, especially in terms of technological access.

Keywords: challenges; COVID-19; educational technology; online education; online teaching/learning; remote teaching; secondary school; teachers; technology in education

1. Introduction

The outbreak of the COVID-19 pandemic has had global implications for education, whereby most lessons which were traditionally conducted through face-to-face teaching are now delivered through online platforms [1]. Not only do governments worldwide face the health threats of the contagious virus, but they also need to develop practical strategies to ensure that school classes do not cease [2]. For examples, Malaysia's neighboring countries such as Indonesia, Brunei, Singapore, Timor-Leste, and the Philippines have adopted online teaching and home-based learning as their strategies to maintain the continuation of education during the pandemic. However, due to the differences in local and economic backgrounds among citizens, the countries have made changes to their online education which include adapting the curriculum, learning materials and online delivery modes [3].

The announcement of the Movement Control Order (MCO) in Malaysia has put pressure on teachers, as they need to be prepared to adapt to the online teaching and learning mode immediately. Online teaching and learning readiness are the state of teachers' preparation for online teaching and learning practices [4]. During the shift from physical classroom interaction to this practice, teachers needed to plan and deliver online lessons. Past research pointed out that the sudden and massive global adoption of online teaching and learning practices has challenged teachers' readiness for online teaching like never before [5]. However, the severity of the COVID-19 crisis and its widespread outbreak may indicate that online teaching and learning practices will soon come into the picture of the global education scenario.

2. Significance of the Study

The observation of Malaysians' education experience with the use of technology shows that blended learning is being used at a limited scale. For instance, [6] it was found that only 0.57% to 4.69% of teachers in Malaysia have used the Learning Management

System (LMS) for blended learning. This suggests that a significant number of teachers never or rarely used blended learning technology in their teaching before COVID-19 mandated online teaching and learning practices. Although online teaching and learning practices have existed in the educational context for a long time, it is still perceived as something novel when teachers have never encountered this technology in their teaching [7]. Teaching through an online teaching and learning platform becomes more difficult when teachers face infrastructure problems, limited bandwidth, unstable internet access and time challenges [8].

Nevertheless, previous research shows that technologies such as online platform teaching and learning practices were only used as a tool for teaching, unlike the current scenario during the pandemic where the entire teaching and learning process takes place online [9]. Therefore, teachers who had never used online teaching and learning practices before the school closure need to learn the basic skills to implement it. Teachers who have had experience with online teaching and learning practices need to improve their skills for more successful implementation.

Thus, there are a variety of challenges arising from the new norm of online education during the outbreak of COVID-19. Therefore, this study is essential in exploring the challenges faced by secondary schools due to the sudden shift from face-to-face teaching to online teaching and learning. The findings of this study will inform teachers, researchers, and education policy makers around the world, particularly in Malaysia, of the actions that are needed to be taken in order to address the challenges and improve the infrastructures for online teaching and learning practices and teacher readiness, not only during the pandemic but also in terms of future education plans.

3. Review of Related Studies

The current research suggests that there are several intrinsic and extrinsic factors that challenge teachers' readiness to deliver content online [10]. Intrinsic factors refer to factors derived from the teachers that challenged their readiness to conduct online teaching [11]. To put it in another way, it has to do with the fundamental and personal characteristics that are ingrained in their belief about education and technologies [12]. Concomitantly, the Self-Determination Theory [13] highlights the fact that the fundamental elements that affect the way a teacher engaged in a certain behavior were founded based on the need for relatedness, autonomy, and the need for competence. Noh et al. [10] found that the intrinsic factors that challenge teachers' willingness to teach online are teachers' innovation, information technology-specific innovation, computer self-efficacy, and technological knowledge and skills. In the context of professional development, when teachers understood the importance of intrinsic motivation, it engaged both their teaching process and their students' learning [14]. Therefore, the beliefs and thoughts of teachers influence their pedagogy. The lack of confidence has been found by Al-Maroof et al. [11] to be the factor that disconnect teachers from implementing online teaching and learning practices. This will be detrimental, as students need more support from teachers in adjusting from physical face-to-face class sessions into cyberspace. In order to cultivate self-efficacy in teachers to adapt to online teaching and learning practices, there is a need for external support such as teachers' training in adequate skills needed to teach online by the administrative [15], and the availability and stability of internet connections [9].

In this study, the external factors influencing the teachers were acknowledged as extrinsic factors. Extrinsic factors were related to external sources that affect teachers in their online teaching and learning practices. In the context of online teaching and learning practices, Wang [12] suggests extrinsic factors as elements in technology preparation to be integrated in pedagogy. Meanwhile, Rogers [7] emphasized in the theory of Diffusion of Innovation that technology does not have to take the form of a tangible product. Technology is an innovation that materializes in the form of hardware such as a laptop, software such as Google Meet, concepts, and practices such as online teaching and learning itself, or any combination of these things. Some of the extrinsic factors that affect the readiness for

online teaching and learning practices are identified as administrative support [15], the role of change agents [7], and school and training institutions [12]. Botham [14] found that the policies that were developed by those in positions of higher authority (such as the Ministry of Education) ultimately led to the implementation of those policies into effective procedures (i.e., the implementation of online teaching as an alternative to ensure education continuation during school closure).

Therefore, the intrinsic and extrinsic factors affecting teachers' readiness should not be considered as a separate entity, but instead as side-by-side factors. In this research, intrinsic factors are those originating from teachers themselves that challenge their readiness to implement online teaching. Meanwhile, extrinsic factors are external factors that influence teachers' willingness.

The objective of the current study is to find out the intrinsic and extrinsic factors that affect teachers' willingness to conduct online teaching and learning practices and therefore raises the following question: What are the intrinsic and extrinsic factors that affect teachers' willingness to conduct online teaching and learning?

4. Population and Sample

The population of this study is public school teachers that have conducted online teaching and learning processes. The teachers who participated in this study were recruited on a voluntary basis, and anyone who received the link to it could answer the questionnaire. A non-probability volunteer type of sampling was suggested by Cohen, Manion, and Morrison [16] when access to a sample is difficult. The adaptation of volunteer sampling and internet survey in the current study is a feasible and appropriate alternative method due to limited freedom of movement and health aspects to be considered amidst a pandemic. Internet-based surveys have the potential to act as representative data because of its ability to collect responses from a greater number of people compared to traditional methods.

Statistical Techniques Used in the Present Study

The researchers developed an open-ended questionnaire as the research instrument to collect feedback from teachers on the challenges they faced when teaching online. The items of the instrument were validated for language and content by two experts in the field. Subsequently, the Google Form questionnaire was distributed via social media platforms such as Facebook, WhatsApp, and Telegram. A descriptive analysis of distribution was then used to present the findings derived from the samples. Consequently, frequency and percentage were then used as data presentations.

5. Data Analysis and Interpretation

At the first screening, the data were filtered by three types of sources, which were (i) sources from teachers, (ii) sources from students, and (iii) sources from parents. The data source from teachers was then further analyzed in this study. A total of 136 valid responses were collected from 116 secondary school teachers. The data were then sifted to remove unrelated information and were prepared for further analysis.

The data were analyzed using the deductive thematic analysis method in order to determine the frequency with which each particular theme emerged in the study that was being discussed. In carrying out deductive theme analysis, data were analyzed by employing a structure or framework that has been determined in advance. A deductive thematic analysis was adopted as it helps organize the data into categories and with the evaluation of the themes retrieved from literature that emerged in the scenario studied. After all the data were classified according to their respective themes, the next process was to categorize the data into intrinsic or extrinsic factors. The frequencies of occurrence and their respective percentages were then recorded.

116 teachers responded to the questionnaire, highlighting issues with facilitating online teaching, interaction and providing feedback. Of the eight issues, 33.1% are intrinsic factors and 66.9% are extrinsic factors. Among the factors, technological access is the

most prominent, with 62.5% of mentions, followed by communication self-efficacy (14%). In comparison, online lesson planning and technological skills each account for 5.9%, knowledge for 5.1%, and time, students' lesson comprehension and environment for 2.2% each. Figure 1 shows the number of occurrences and the respective percentage in the current research.
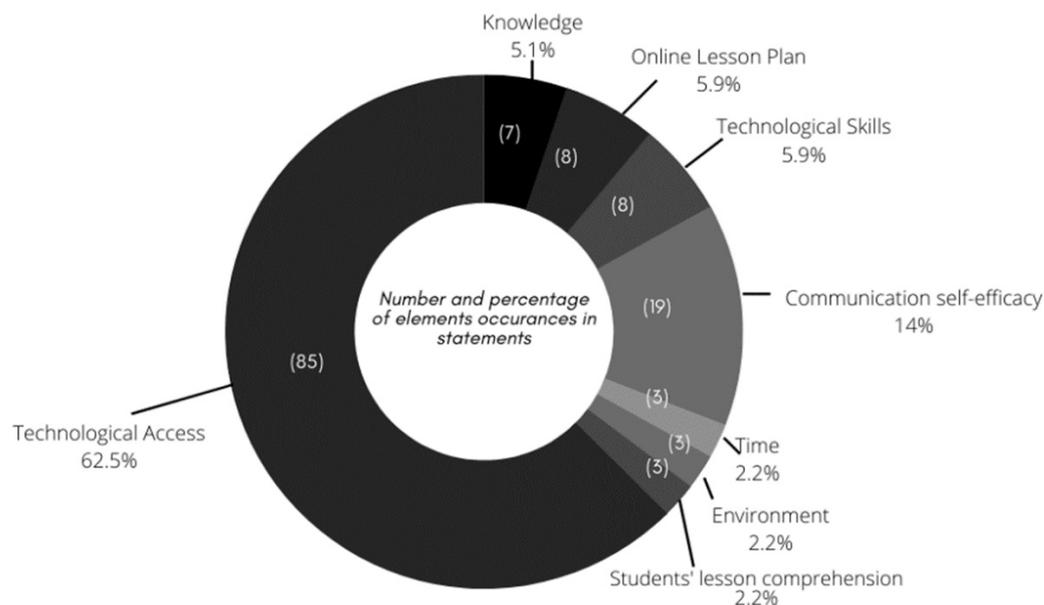

Figure 1. Number and percentage of element occurrences in statements.

6. Study Variables and Novelty

This study has a unique focus within the factors included in this study. One of the investigated intrinsic factors is that the lesson plan has not been widely investigated in previous research. The authors of this study believe that the lesson plan prepared prior to teaching is particular and important to promote the success of online teaching, as the conducted online class requires a different method and skills of preparation than that of face-to-face lesson planning. Moreover, this study investigated the extrinsic factor components, which are the teachers' working time, students online learning comprehension and the teacher's working environment. To the authors' knowledge, those components have not been widely investigated in the context of online learning. However, the extrinsic factor focus on the working environment of the teachers itself, as the class was mostly conducted in the teachers' homes hence, making it easier for the teachers to feel distracted as they are bound to their own personal responsibilities and the need to balance work-personal life may lead to the lack of time they needed to achieve work-related task and their own personal tasks.

The themes and the type of factor, sources of adaptations and the number of statements that arose in the current study are shown in Table 1.

Table 1. Pre-determined and emerging themes and their number of statements.

No	Theme	Type of Factor	Adaptation	Number of Statements
1	Communication Self-Efficacy	Intrinsic	Martin, Budhrani, Kumar, and Ritzhaupt, (2019) [17] and Watkins et al., (2004) [18]	19
2	Online Lesson Plan		Martin, et al., (2019) [17]	8
3	Technological Skills		Martin, et al., (2019) [17] and Watkins et al., (2004) [18]	8
4	Knowledge		Adapted from Pamuk, Ergun, Cakir, Yilmaz, and Ayas, (2015) [19], and Martin, et al., (2019) [18]	7
5	Technological Access	Extrinsic	Watkins, et al., (2004), [18]	85
6	Time		Martin, et al., (2019) [17]	3
7	Students' Lesson Comprehension			3
8	Environment			3

6.1. Intrinsic Factors

The intrinsic factors are Knowledge, Online Lesson Plan, Technological Skills, Communication Self-Efficacy and Time. Figure 2 shows some examples expressed by the respondents in the current study.
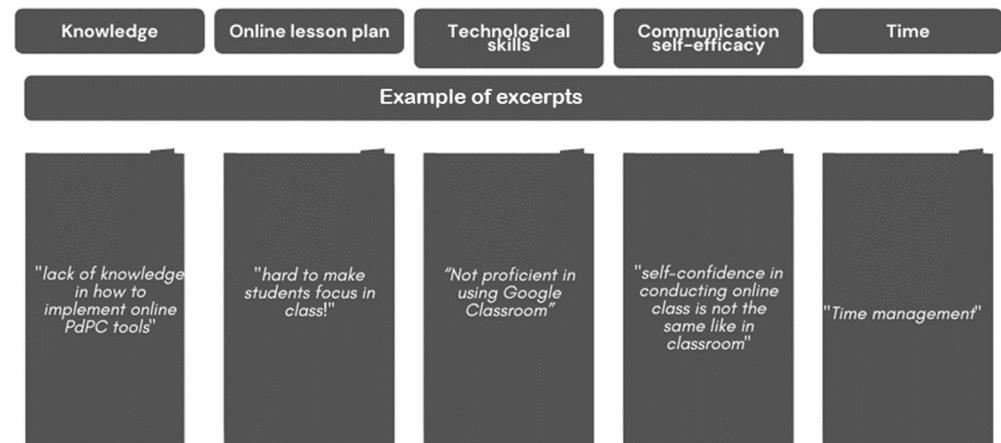
Figure 2. Intrinsic Factor.

6.1.1. Knowledge and Technological Skills

The theme of Knowledge is labelled when a teacher knows how to use online instruction, develop instructional materials, assess students' learning, and use available online resources to teach on school days. In other words, knowledge means knowing what is and how to conduct online instruction [17]. For example, Teacher 4 emphasized that it was confusing to keep track of students' attendance and assignments. This was so because in the past, teachers could ask class leaders to monitor the attendance of respective classes early in the morning and teachers would update the attendance software system upon being informed by class leaders. For online courses, it is then difficult to track students' attendance. Teacher 35 stated that she did not know how to use the online teaching tools because using the online software was new to her. According to Rogers [7], a technology, practice or idea that has existed but that no one has ever been exposed to is perceived as a new innovation.

Teaching using technology, such as online teaching, requires technological knowledge, pedagogical knowledge, content knowledge, technological pedagogical knowledge, technological content knowledge and pedagogical content knowledge [20]. Teacher 109, for example, admitted that she is not very skilled in using technology or online teaching tools. She expressed that she only knows how to use social media such as WhatsApp and Telegram for social interaction (chatting).

6.1.2. Online Lesson Plan

Online Lesson Plan demand the teachers to design the way a lesson should be conducted through an online medium [17]. Online teaching differs from physical face-face class session as the change in the medium to conduct teaching and learning call for different approach to ensure the students' focus in class. For example, Teacher 72 expressed her difficulties in "... making sure that students are ready for the lesson they are planning, excited about the lesson, and participate in the lesson until the end". Teachers need to use their knowledge and skills in online teaching to prepare a lesson that will practically make students participate in the lesson and stay until the end, taking into account the students' screen time and attention spans. Teacher 102 also mentioned that it is difficult for her to ensure students' concentration throughout the lesson. With online teaching, teachers lose some of their aptitude to manage the class, such as controlling students' behaviors. Hence, unlike physical classrooms where natural interactions can happen, teachers cannot plan or monitor students' acts when teaching online.

For this reason, the Ministry of Education (MoE) and United Nation Children's Fund (UNICEF) Malaysia, in collaboration with the Ministry of Education, has established the Komuniti Guru Digital Learning platform (Teacher Digital Learning Community), which consists of learning modules for teachers to learn and develop their skills in preparing and delivering online lessons [21]. In addition, the Ministry of Education has prepared a teaching and learning module called the PdPR module, which focuses on mitigating lessons during school closure [22]. Nevertheless, there is no recent study on the effectiveness of Komuniti Guru Digital Learning and the PdPR module for teachers' professional development.

6.1.3. Communication Self-Efficacy

The current research views Communication Self-Efficacy as teachers' self-confidence in online teaching, their expressiveness in words, voice and video, and their well-being [23]. Teachers 38 and 39 both indicated that they lacked confidence in conducting online classes because they could only use their smartphones for social communication and not for teaching purposes. Teacher 36 preferred to use pre-recorded videos for his lessons, as he had little time available for live video streaming.
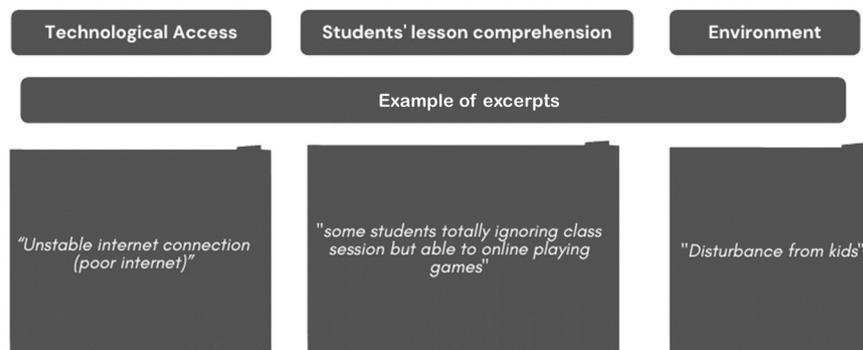
6.1.4. Time

In the current research, the term time is understood as the allocation of time to complete online classes and assignments. The problems were highlighted by Teacher 114, while Teacher 87 emphasized that she is happy about students being responsible for their education. She shared that "the students did not ask much during class, but afterwards they keep texting and asking about the lesson, no matter how late it is". This highlights the need for teachers to set up a class setting in the first week of online teaching that is sustainable and supportive for both teachers and students. It can be concluded that when teaching online, teachers need to plan their time thoroughly so that their online teaching will not be disrupted.

6.2. Extrinsic Factors

The extrinsic factors are Technological Access, Students' Lesson Comprehension, and Environment, as shown in Figure 3. Figure 3 also shows some excerpts received in the current study.

Extrinsic Factors

Technological Access	Students' lesson comprehension	Environment

Example of excerpts

"Unstable internet connection (poor internet)"	"some students totally ignoring class session but able to online playing games"	"Disturbance from kids"

Figure 3. Extrinsic Factors.

6.2.1. Technological Access

Technological access is at the heart of the successful implementation of online teaching. Other factors, such as knowledge, online lesson planning, etc., only emerge when the access to technology is available. Thus, technological access contributes to a larger part of the problems in implementing online teaching. Online teaching requires sufficient data coverage to conduct live streaming and share teaching materials. Furthermore, sufficient data coverage also contributes to the stability and the strength of internet connection, and most importantly, the availability of devices like laptops, smartphones, and tablets for online classes. For example, Teachers 2, 11, 12, 15, 17 and 29 mentioned that they had problems with internet connections that kept disconnecting during lessons.

The slow internet coverage is not only due to the internet capacity subscribed by the teachers prior to their lessons, but is also influenced by geographical location. Zhang, Wang, Yang, and Wang [24] mentioned that some of the problems in implementing online teaching in China are due to geographical location, whereby rural and sub-rural areas have little to no internet access compared to urban areas. In the current study, Teacher 67 said, "I live in a fairly rural area. The internet coverage here is slow with only one to two bars (the indicator of internet coverage) and I have to find a better place to get internet". In addition, teachers who depend on mobile phone data coverage shoulder a bigger financial burden than those who use home Wi-Fi. Teacher 114 mentioned having to upgrade his mobile data coverage subscription to be able to do live streaming.

If the teachers have excellent technological access but the students do not have the same, it also makes online teaching difficult to conduct. Teacher 90 reported that her students only have a limited number of devices which they have to share among their siblings. Some even sacrificed their learning opportunities because other siblings were sitting for important exams and had to attend online classes to prepare for exams. Teacher 26 also mentioned that one of his students did not have access to the lessons because the only devices available in the household belonged to the parents, and his parents had to use them for their work. Therefore, technological access is a problem that needs to be solved by both teachers and students. It also shows that online teaching is not something that can be mastered quickly, especially when technological access plays a key role in its implementation.

6.2.2. Students' Lesson Comprehension

The primary purpose of a teacher's delivery of learning is his or her students' understanding of the subject matter [20]. Teacher 14 indicated that they were concerned whether students understand the materials he taught in his online classes. In face-to-face physical classes, teachers can observe their students' facial expressions and body languages. However, according to Teacher 97 and Teacher 112, students tend to not turn on their

cameras during online classes. Some students do so because they are uncomfortable, and some do not have functional webcams on their devices (Teacher 113).

However, students' understanding of the subject matter may also be influenced by their behaviors. Teacher 69 expressed his disappointment; some of the students have openly said that they do not want to participate in class. This shows that the students do not take their education seriously. At the same time, teacher 81 mentioned that "students did not attend classes because they forgot, even though the timetable was announced beforehand on different platforms".

6.2.3. Environment

During Malaysian Movement Control Order (MCO), everyone was instructed to stay at their own respective home as a measure to control the spreading of COVID -19. Therefore, apart from teaching online, teachers are occupied with chores and the preparation of online teaching materials. Teacher 92, who has young children, expressed her concern with regard to concentrating during class while her children need her attention at the same time. Nonetheless, the distractions in online classes do not only come from the teacher's home environment, but also that of students. Teacher 24 mentioned that she and the other students could hear noises from one of the students during their live streaming session, which distracted the rest of the class. However, these problems can be overcome if the teacher uses the software skillfully, e.g., the mute function or good self-efficacy in communication, as mentioned earlier.

7. Recommendations

The current study only considered teachers' views on the challenges affecting their readiness and not the views of students or parents. In addition, individuals tend to emphasize the negative over the positive when presenting challenges. Therefore, it is recommended that suggestions for improvement of online education be developed from the perspective of teachers, students, parents, and other organizations such as telecommunication providers and devices (e.g., laptops, smartphones), manufacturers, etc. It is possible to overcome extrinsic issues by giving funding, sufficient training, technological help, and support within the teacher community [12].

The government could establish a task force group made up of representatives from teachers, students, and parents that reports transparently on strategies implemented to improve online teaching over time. Setting up a task force was also suggested by United Nation Educational, Scientific and Cultural Organization (UNESCO) [25], which would better facilitate online teaching during the crisis. This article also identified the critical factors that should be considered if the government intends to integrate online teaching into its strategies of using technology in education for future education plans.

It is recommended that education authority involved should provide more teachers' training regarding the use of the online teaching with the focus on technological knowledge, technological pedagogical knowledge, technological content knowledge and the communication self-efficacy as they are the necessary aspects to improve the quality of online teaching. The education authority and the telecommunication companies could work together to improve the condition of the technological access to online teaching and learning for both the teachers and students in terms of the devices and reliable, affordable internet.

Future Research Recommendations

This study was conducted qualitatively using an open-ended questionnaire. It is recommended that future researchers study the significance of the obtained factors regarding their study quantitatively, within the actual usage of online teaching and learning practice among teachers as the higher number of responses would be able to predict the situation in a more accurate way.

8. Conclusions

It can be concluded that there are intrinsic and extrinsic issues and challenges that challenge teachers' readiness to deliver online content. In the context of this study, technological access is the factor with the highest degree of occurrence as barriers faced by teachers in acclimatizing to online teaching. Despite this, the number of intrinsic factors, which include knowledge, an online lesson plan, technological skills, communication self-efficacy, and time, has been found to outnumber the number of extrinsic factors, which include only three factors (technological access, student lesson comprehension, and time). It can also be seen that even though technological access is categorized as the extrinsic factor having the highest occurrence, the intrinsic factors still form the utmost barriers. Therefore, technological access and teacher self-efficacy are essentials for the online teaching and learning implementation. Moreover, the government could establish a task force from teachers, students, and parents in addition to education experts that reports transparently on strategies implemented to improve online teaching over time.

Hence, in an educational system that is structured and centralized, concern should still be focused on teachers' pedagogical needs in order to gain a better understanding of the updated scenario of technology integration in education. The only constant in technology is advancement, hence there will be several areas that will keep on changing and challenges that will need to be overcome in education. This article also identified the critical factors that should be considered if the government intends to integrate online teaching into its strategies of using technology in education for future education plans.

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