Uncharted Universe of Educational Technology: Potential Awaits

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Educational technological tools are now an integral part of the education industry. Various platforms used for educational purposes were analyzed to find the perception of the learner; however, the major analyzing trends revolve around Zoom, Google meet, Google Classroom, and Institutional LMS, overlooking the evaluation of the perception of Teachly: an Ed-tech application developed by Harvard Kennedy School. The objective of this study is to determine the perception of students at Stamford University (n = 36) who enrolled and completed a semester at Teachly using descriptive statistics. For precision, a slider scale was used to collect data using the Google form in a semi-structured questionnaire. The data were then analyzed using the mean and standard deviation to find the central tendency and the measure of variability. The analysis confirms that the student has a positive perception towards using Teachly covering Walgito's three components of perception, and it also points out some limitations identified by the student which hampers its future implementation.

Keywords: Covid-19, Teachly, Ed-tech application, perception, online learning, descriptive statistics

INTRODUCTION

Educational technology appeared as the savior of the education sector during Covid-19, allowing the educational institution to continue their teaching and learning activities through the online platform. Earlier scholarship on educational technology was contemplated for Schrödinger's cat, everyone knew it was there but was unsure of its existence (Jones, Buntting, & de Vries, 2013). Covid-19 conjures up as a one-eyed demon crushing everyone and every sector without discriminating against class, race, gender, nation, and color; thus, it was initially labeled as a great equalizer (Devakumar, Bhopal & Shannon, 2020).

The sole objective of Covid-19 was public health, but all surrounding aspects were destroyed by the juggernaut, including political, economic, social, and cultural (Reich et al., 2020). To protect public health,

governments around the world initiated preventive measures that ranged from lockdowns to social distancing to quarantine (A. Kumar, Priya & Srivastava, 2021). This caused a ripple effect in other sectors. The education sector was one of the sectors that were affected by the ripple effect and responded with an equal response (Lewis, 2021; Schleicher, 2020). Due to the lockdown phase, the educational institution was forced to stop its academic activities. Even higher education institutions around the world stopped their traditional form of teaching and learning and began learning-learning (Almaiah, Al-Khasawneh, & Althunibat, 2020). This transition from traditional to e-learning was unplanned, rushed, and sudden in nature (Kulikowski, Przytua & Sukowski, 2022). This transformation was so sudden that it occurred overnight. Thus, it is called emergency adaptation, where the success of adaptation depends on several key factors such as institution facility, student perception, etc. (Nikou & Economides, 2017).

This transition resulted in the exercise of various modes such as synchronous and asynchronous together with various tools such as video conferencing applications (Zoom, meet), document management tools (google classroom), and communication tools (WhatsApp) to use by different institutions with the sole purpose of continuing the flow of education (Zarei & Mohammadi, 2021). It was evident that the closure of the educational institution was a uniform decision to control the spread of Covid-19, but to continue education on the online platform was not, so the mode and use of educational technology tools varies from institution to institution (Maatuk, Elberkawi, Aljawarneh, Rashaideh & Alharbi, 2022). to continue education This ununiformed decision forced students around the world to go through various tools, Applications, platform along with their respective technological limitations and difficulties (Zalat, Hamed & Bolbol, 2021). These frequent changes in the learning platform were distressing to the students.

This study enters the domain of educational technology with a debate on whether the absence of a uniform and convenient e-learning platform could cause serious panic and distress in the future. First, the scientific community is yet to discover an effective vaccine for Covid-19(Hosen, Uddin, Hossain, Islam, & Ahmad, 2022, p.1), widening the possibility of a sudden closure of educational institutions anytime, second, induced by technological advancement, there are numerous educational technology applications (Ali, Gulliver, Uppal, & Basir, 2021) still waiting to be assessed, finally, E-learning proved to have potential to use alongside conventional teaching and learning in the future (Shevchenko, Malysh, & Tkachuk-Miroshnychenko, 2021). The main argument of this study is that not every university student has the exact symmetric technological ability to find all the E-learning platforms easy to use. Thus, the perception of the student towards all available e-learning platforms should be taken into consideration. It will help to assess and find the most convenient educational technology. The objective of this study is not to find the most effective and easy-to-use online platform for education, but rather to serve as a welcome drink and to pave the way for assessing student perception of available concomitantly overlooked E-learning platforms. The study asks what the perception of students towards Teahcly is: an educational technological application developed by the Harvard Kennedy School, using descriptive statistics, this study intends to find perception following Walgito's (2010) theory of perception.

DIVERSE WORLDS OF TEACHING AND LEARNING

Technology has revolutionized human society with success (Vicente, 2006). The technological revolution also led to reforms in education and learning (Kale & Goh, 2014). In the domain of education, it is very common to get lost in the wave of interchangeably used terminology. A study by (Moore et al. (2011) reveal that the definition and perception among researchers about different learning environment labels such as distance learning, e-Learning, and online learning are contested in nature.

Unlike e-learning, distance learning or distance education is an old practice among educators and a well-established field (Banas & Emory, 1998). It frequently refers to the effort made to provide people who live far from educational opportunities. The relevant literature from the past 20 years reveals that different authors and researchers have used varying definitions of long-distance learning and education. Experts like Moore (1989) used the term distance education by combining both electronic and print media, while other scholars argued that both distance and time should be considered as determining factors when deciding the

definition of distance education (Volery & Lord, 2000). While the distinctions are made, Keegan (2013) suggested that distance learning should be used as an umbrella term.

One of the most cited definitions of e-learning is given by Wheeler (2012, p.3) as a set of technology-mediated methods that can be applied to support student learning and can include elements of assessment, tutoring, and instruction. He also suggested that there is a thin line between distance learning and e-learning; on the contrary, many scholars argued that all types of learning, which include electronic medium/platforms known as e-learning or online learning, should fall under the domain of distance education (Sun, Gan, Liu, Lang, & Lu, 2019). A study by Benson (2002) compared the existing component of e-learning with distance learning and suggested that e-learning is just the developed version of distance learning with more advanced components. The same year another study by Conrad supported the idea of Benson and revealed that e-learning provides better facilities than distance learning, and e-learning is just the distance learning of the present time.

The terms e-learning, online learning, and distance learning is varied by a few factors ranging from media type, access type, and interaction type (J.L. Moore et al., 2011) but one thing is common among them which is the use of technology.

Current Study

Teachly falls under the broader domain of Ed-Tech application, which promotes teaching and learning with the help of technology. Online learning has received a lot of attention since the inception of Covid-19. While most of the scholarly works on assessing the perception of the student are toward popular e-learning mediums such as Google Classroom, Zoom, and Meet (Fuady, Sutarjo, & Ernawati, 2021), this study aims to examine the University students' perception of Teachly; An Ed-Tech application developed by Harvard Kennedy School. The absence of an effective vaccine in combination with numerous unassessed e-tech applications, as well as future potential, generates a greater need to assess all e-learning mediums to find out their real-world implications. Since all relevant scholarly studies are done after the inception of Covid-19, a review of the literature following the chronological structure will best serve the purpose of finding the patterns, turning points, and debates on this subject.

Earlier studies on evaluating student perception of online learning platforms include a study by Mohd Shaharanee et al. (2016). Their study aimed to explore the effectiveness of Google Classroom far before the inception of Covid-19. Their analysis of using the technology acceptance model confirms that students possess a positive attitude towards Google Classroom in terms of communication, interaction, and instruction delivery between teacher and students. It proves that Google Classroom has successfully replaced some spatial attributes such as ambient, air quality, and visibility of Conventional Classroom (Yang, Becerik-Gerber, & Mino, 2013) with ease of use, ease of use, ease of learning, and satisfaction (Oktaria & Rahmayadevi, 2021) based on which a student forms their perception. The second study before Covid-19 was carried out by Jakkaew and Hemrungrote (2017) to evaluate the determining factors behind the deployment of Google Classroom. Using the unified acceptance theory, the analysis suggests that the facility provided by the application proves to be the determining factor for it; however, the students argued that the full feature of the Google classroom is yet to be explored and utilized. Subsequently, three studies related to measuring the effectiveness of Google Classroom were published in 2018. The first study was conducted using descriptive statistics on data collected from 54 students; it reveals that students have a positive attitude towards the use of Google Classroom due to its user-friendly facility (Negara, 2018). While another study by Azhar and Iqbal (2018) tried to assess the Teacher's perception using the qualitative analysis software Nvivo and came up with the results that Google classroom is just a document management tool and does not have any significant impact on the methodology of teaching, later in the year of 2020 a study by Rahmawati et al. (2020) pointed out similar findings, it claimed that the facility of materials discussion and understanding of lecture materials is absent in Goggle classroom; hence it despite of positive perception students believe it will not be able to replace the conventional classroom. Finally, Khalil's study (2018) argued that collaborative learning and student-teacher-student interaction can be established through Google classroom, which fosters an effective learning environment. However, Erito (2021) in his study

exposed the limitations of Google classroom by concluding that Zoom can be used for presentation, interaction, and joining the classroom, which cannot be done by Google classroom.

The very first study to evaluate the perception of students of Google classrooms in Bangladesh was conducted by Islam (2019), his study argued that the Google classroom facilitates an environment where both students and the teacher can communicate beyond class time. His analysis confirms that the learner faces some technical issues that hampers the learning environment. The same year another study was carried out using the descriptive qualitative method drawing data from 30 English as Foreign Language Learners, the study aimed to explore the perception, benefits, and challenges of using Google classroom. The study reveals that there exists a positive perception among students about Google classroom; the study also claimed that the applicability of this tool can also be used for other subjects (Ridho, Sawitri, & Amatulloh, 2019). A year later many studies were conducted and came up with similar findings, some of the studies focused on other popular online platforms to facilitate online teaching and learning such as Zoom, WhatsApp, etc. Besides finding a positive perception, these studies claim the effectiveness and efficiency of those platforms in terms of crucial factors like time, place, and money, especially during Covid-19 (Nuraziza, Oktaviani, & Sari, 2021; Suadi, 2021; Widodo & Slamet, 2020).

In the year (2020) a study was published by Hussaini et al., using descriptive statistics the study explored the effectiveness of Google classroom, it claims that Google Classroom can be used to have meaningful interaction feedback to students and their parents, top of the authors advised integrating Google classroom with a conventional method of teaching to levitate the performance. Another study found similar results; it suggested that the positive perception of students towards the Google classroom is greatly influenced by flexibility, personalization, and fair evaluation (Krishnapatria, 2020). The effectiveness of online tools in the conventional course already showed positive results; however, to assess its effectiveness for practice-based courses such as the translation was carried out by a group of researchers (Nugroho, Basari, Suryaningtyas, & Cahyono, 2020). Applying the qualitative paradigm and field observation, the authors reaffirm that Google Meet was detested by the student due to technical difficulties while using Google Classroom in conjunction with the respective translation software was perceived as positive.

While Diana and Hamidah (2021; 2020) in their study drawing data from a large number of respondents point out that both opportunities and challenges exist in the online learning platform, however, utilization of the benefits and avoidance of limitations depend on the student's perception and ability to improvise, they also suggested that planned online teaching and learning can enhance the effectiveness of the online teaching platform, both of the findings of this study enforce the degree of significance of students' perception. With the continuous wave of the Covid-19 wave, higher educational institution was forced to remain close and pursue alternative means to carry learning process, resulting in more institutions adopting diverse e-learning platform (Ansong-Gyimah, 2020), Zoom is one of the popular platforms that provides web-based video conferencing, studies on Zoom find out that despite the numerous facility provided by zoom which makes the learning process easier (Abriati, 2021) students are yet to be found a proper substitute of the conventional classroom (Serhan, 2020).

Most studies to assess student perception towards the online platform for educational purposes ranged from Learning Management System (LMS) to moodle through Google Classroom, Zoom, Meet, and others during Covid-19 were conducted during the year 2021 (Fuady et al., 2021). Gillis and Krull (2020) tried to find the perception and barriers to using Google classroom by exploring the instructional technique. Critical factors such as race, class, and gender were taken into consideration when analyzing the data, the study finds that implementation matters most comparing the type of instructional technique and many students face technological barriers using Google classroom, among them female, nonwhite, and first-generation students constitute a major portion. Another study by Rahman et al. (2021) following descriptive statistics identified that students share a positive perception toward zoom and no students strongly disagreed with the usefulness of the e-learning platform, rather facilities like remote interaction with the tutor, submission of assignments, viewing grades online prove to be effective and fun for students (Annurwanda & Winata, 2021). Another influential study was conducted by Kanetaki (Kanetaki, Stergiou, Bekas, Troussas & Sgouropoulou, 2021) revealing that students' learning style is positively influenced by an effective online

learning framework, the findings of this study were further supported by Wang (Wang, 2022) where he specifically demonstrated that the learning outcome is greatly influenced by different learning components.

The most recent study evaluating the perception of the student toward Zoom was conducted by Salhab (2022); his research exposes sensitive matters like privacy intrusion during online classes while stating the positive impact of Zoom during Covid-19 on students. Even though e-learning offers continuity of education in volatile times like Covid-19, a decrease in the rate of attendance in virtual classes has been observed. A study revealed that perceived usefulness (PU) and perceived ease of use (PEU) significantly influence the attitude of students toward the e-learning platform (Mohamed Riyath, Muhammed Rijah, & Rameez, 2022). In another study by Perera and Abeysekera (2022) after the quantitate method found that around 55% of the students had no experience with e-learning before and considered ease of use as a determining factor for participation in the e-learning process. Despite the negligence of policymakers, ease of use among practitioners and educators seems to emerge from time to time as a crucial factor among students. As found in a nationwide study covering 11,000 students, two-thirds of students have a negative attitude toward e-learning, and ease of use as perception is a determining factor behind the formation of that perception (Rabayah & Amira, 2022).

The above scholarly review implied that there the use of technological tools in the tertiary level learning process is a well-established plethora (Mozombite-Jayo et al., 2022), although there exists a debate about the most useful e-learning platform not its usefulness, on top of that many studies were conducted on models of on-line learning strategies including Google Classroom Google Meet, Zoom, and WhatsApp, where methods applied in those studies ranged from qualitative to quantitative, the popular method was descriptive statistics because of its appropriateness. Most higher education institutions embedded their curriculum into e-learning platforms during Covid-19, and there is no denying that the successful implementation of a system largely depends on the perception of the end user (J. A. Kumar, Bervell, & Osman, 2020) since many studies were conducted to assess the perception of learners (Nuankaew et al., 2021). In this regard, the literature review finds that no study was conducted to assess the perception of students towards Teachly, creating a gap related to the perception and evaluation of the available e-learning platform. Hence, this study aims to evaluate university students' perception toward Teachly to serve it as a welcome drink to assess the remaining overlooked e-tech applications.

METHODOLOGY

The methodology of this study is influenced by many previous studies (Fuady et al., 2021; Gillis & Krull, 2020; Hussaini et al., 2020; Islam, 2019). This study tends to find out the perception of students towards Teachly using Walgito's (2010) theory of perception framework, which could only be answered using qualitative data. In this cross-sectional study, to collect the primary source of data, the survey method was applied using Google forms, where the purpose sampling technique was used to distribute the semi-structured questionnaire to undergraduate students at Stamford University of Bangladesh (n=36), who took the course "Human Rights and Judicial Administration in Bangladesh" on the Teachly platform over the period of Spring-2022 from January to June, the response rate was 100%. The questionnaire addresses three components that constitute the perceptions, which are affective, cognitive, and conative following Wagner's (2010) theory of perception. The slider scale was used to measure the response instead of the Likert scale in search of a more accurate response, the range of the slider scale was from 0-100 and in 9 different categories; strongly disagree, disagree, moderately disagree, mildly disagree, neutral, mildly agree, moderately agree, agree and strongly agree. Here, 0 stands for Strongly disagree and 100 stands for strongly agree. To answer the research question descriptive statistics were used, where the mean was calculated to find out the central tendency, and to further enforce the results, the measure of variability was calculated using the standard deviation equation.

Descriptive statistics-Measure of Central tendency: Sample mean equation

$$\bar{X} = \frac{\sum x}{n} \quad (1)$$

where; $\bar{X}$ is the sample mean
$\sum x$ is the sum of all data value
n is the number of data items in the sample

Descriptive Statistics-Measure of Variability: Sample Standard Deviation

$$S = \sqrt{\frac{\sum(X-\bar{X})^2}{(n-1)}} \quad (2)$$

where; S = sample standard deviation
$\sum$= Sum of
X = each value
$\bar{X}$ = Sample mean
n = number of values in the sample

Limitations of the Study

To measure the perception Walgito's (2010) theory was employed, other popular theories like Gibson's (1966) were not applied because they suggested that no learning is required, which contests the objective of e-learning. The 36 students in the course received both a "participation snapshot" and a "participation history" a week before the distribution of the questionnaire. Their response was collected and analyzed using descriptive statistics. Although the sample does not constitute a complete projection of the perception towards Teachly, it serves as a welcome drink for the scholar to study further.

ANALYSIS

Perception

To assess the perception of students about Teachly, the study uses Walgito's (2010) theory of perception and its three components. The three components are affective, cognitive, and conative. The first component cognitive refers to the knowledge, views, opinions, expectations, and beliefs that are related to an object, whereas the second term affective aspect refers to likes and dislikes about an object, and the final component conative implied the tendency action or motivation toward an object. These factors have a significant role in people's lives since they connect to people's knowledge, emotions, and actions toward an item.

TABLE 1
MEAN AND STANDARD DEVIATION OF STUDENTS' AFFECTIVE COMPONENTS TOWARD TEACHLY

Indicator	Question	Mean	SD	Category
Affective	Teachly makes students motivated/interested in online learning	81.4	14.19	Agree

Source: Research Data Analysis

Table 1 demonstrates the perception of students through affective components. Affective components are associated with the subjective emotional aspect of the respondents. Around 11% of students remained neutral, mildly agree, and moderately agree respectively in terms of expressing if Teachly motivates online learning, where only 17% of students agreed and 50% of students claimed strongly agree. In general, the

mean value of 81.4 suggests that on average around 82% of students have positive affection, which is supported by the value of the standard deviation of 14.19.

TABLE 2
MEAN AND STANDARD DEVIATION OF STUDENT COGNITIVE COMPONENTS TOWARD TEACHLY

Indicator	Question	Mean	SD	Category
Cognitive	Teachly provides a platform for interactive communication	75.3	17.79	Moderately agree...

Source: Research Data Analysis

Table 2 visualizes the student's perception in terms of cognitive components. Cognitive components imply the respondent's belief in something or someone. As the analysis suggests that 28% of students have the same degree of perception as neutral, agree, and strongly disagree, respectively, and only 17% of students claimed that they moderately agree that Teachly provides a platform for interactive communication. The mean value in this regard is 75.3%, which is supported by a standard deviation value of 17.80, which claims that on average 75% of students moderately agree with the above statement.

TABLE 3
MEAN AND STANDARD DEVIATION OF STUDENTS' CONATIVE COMPONENTS TOWARD TEACHLY

Indicator	Question	Mean	SD	Category
Conative	Teachly has greater applicability for implementation in future	76.1	13.37	Moderately agree...

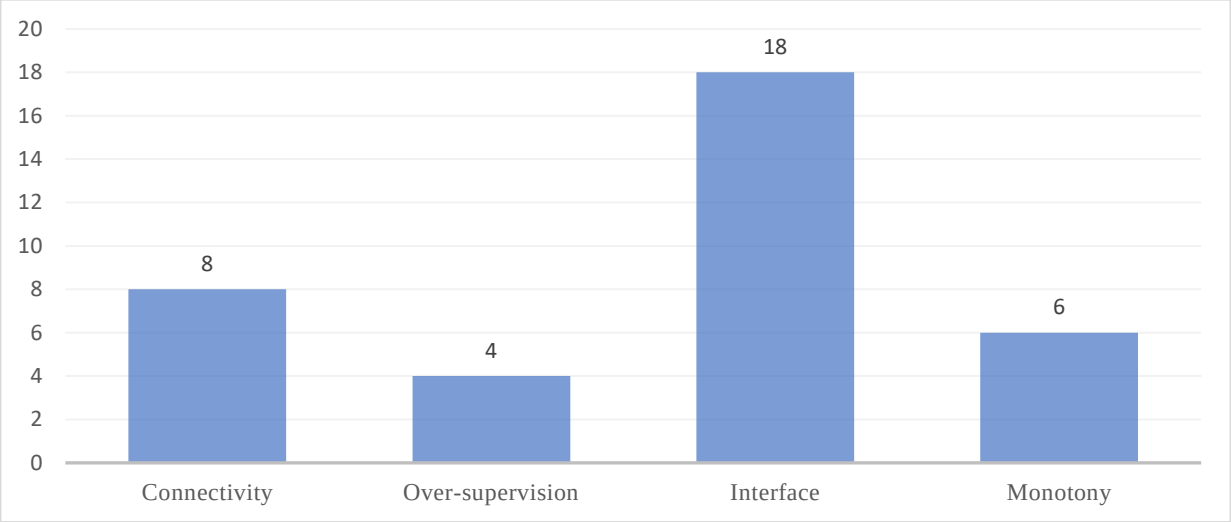
Source: Research Data Analysis

Table 3 illustrates the perception of the student using conative components. While analyzing the conative components using data from students, which indicates the user tendency or intention against, it, it was revealed that 11% of students remain neutral about Teachly's future implementation possibility, 17% of students mildly agree, while another 11% of students strongly agree with the statement, and 22% students have moderately agree to comply with the statement, the majority within constitute 39% have agreed that Teachly does have great future implementation applicability. And in general, 76% of the students moderately agree with the future implementation of Teachly.

In **Figure 1** it can be seen that they perceived several limitations during their online session. These ranged from network connectivity to corporate visual interface through over-supervision. 8 out of 36 students said that they experienced fluctuating internet during an online session, 4 students reported that Teachly over-supervise the activity, 18 students claimed that the interface looks corporate and lacks student-friendly functions, in addition to that, 6 students said that Teachly creates monotony among them.

Limitations

FIGURE 1
LIMITATIONS OF TEACHLY FROM THE STUDENT'S PERSPECTIVE



RESULTS

The descriptive analysis consisting of mean and standard deviation was used to find the central tendency and measure the variability of students on their perception towards Teachly using data collected from the slider scale. A positive perception was found in the student by analyzing three components of Walgito's (2010) theory. The first component effective with a score of Mean=81.4, SD=14.19, the second component cognitive with a score of Mean=75.3, SD 17.79, and the last component conative with a score of Mean =76.1, SD= 13.37. The limitations of Teachly perceived by students ranged from network connectivity to corporate visual interface through over-supervision and monotony. Taken together, these results suggest that Teachly successfully managed to cast a positive impression among the students, but it has scope for improvement.

DISCUSSION

In search of the research question of the perception of students towards Teachly, the result indicates that there is a positive perception among students; however, the respondents also identified some limitations. First, the results imply that students felt motivated while using Teachly for online learning, second, Teachly proved to be an interactive platform for students to communicate with both tutors and peers, and finally, the students are willing to continue their learning process in the future. Although the overall perception is positive, the future implementation of Teachly was only supported by 76% of students, where 81% of students expressed that they are motivated to use Teachly. It seems that some limitations including connectivity issues, over-supervision, and interface act as a demotivating factor behind this declination from students about future implementation of Teachly. This study appears to be on par with previous research (Abriati, 2021; Al-Maroof & Al-Emran, 2018; Suadi, 2021) in terms of the positive perception of the student towards online learning platforms, in addition to that the findings of this study filled a gap about evaluating the perception of the learner towards the popular online learning and teaching platform, to be precise only this study evaluated the perception of students towards an actual Learning Management system, as other popular platforms are not intended to use for students-teacher learning since Zoom is a video conferencing tool (Antonelli, n.d.), Google classroom is a document management system

("Guide to Google Classroom," n.d.), Google meet is an enterprise-grade video conferencing tool ("Online Video Conferencing with Google Meet and Duo - Google Workspace," n.d.). As none of these applications were designed to serve educational purposes, only Teachly remains the only tool that is an educational technology application built by the Harvard Kennedy School repudiated designed to help educators create a more effective and inclusive classroom ("Teachly," 2020).

CONCLUSION

Since the inception of Covid-19, a much higher educational institution was forced to transition from the conventional classroom to online classrooms (Gillis & Krull, 2020), and Stamford University Bangladesh is no exception. This study aimed to explore the perception of students towards Teachly: an Ed-Tech application. Using descriptive statistics, it can be concluded that Teachly received positive feedback from students in all 3 components of perception. Although this study indicates a positive perception towards Teachly, however, concerns were raised by students in terms of interface; connectivity issues, and over-supervision, which might have created an impact on the popularity and feasibility of this Ed-tech application. Based on this conclusion, educators should consider using Teachly to make their classrooms more sophisticated. To better understand the implication of these results, the researcher should study further in this domain to assess the crucial point of view of the entire e-learning platform. This study broadens our understanding and paves the way for the researcher to assess the other overlooked ed-tech application.

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