DOI https://doi.org/10.5281/zenodo.10049652#138

TWIST, 2024, Vol. 19, Issue 2, pp. 120-131

TWIST

Journal homepage: www.twistjournal.net

The Quipper Way of Learning Mathematics:
Through the Spectrum of Major Subjects

Rey Avila Mangarin
Faculty, UM Panabo College, Philippines
[*Corresponding author]

Junalyn R. Pacatang
Student, UM Panabo College, Philippines

Jean B. Peligor
Student, UM Panabo College, Philippines

Christine M. Limpangog
Student, UM Panabo College, Philippines

Abstract
The purpose of this phenomenological study was to explore the experiences, coping mechanisms, and insights of students at a certain college institution in using Quipper LMS in learning mathematics. Five participants were interviewed in depth, and the data was recorded. The instrument used in this study was a set of open-ended interview questions, and thematic analysis was employed in analyzing the data. The results of the study show that math major students experienced frustration due to the unstable internet connection, technicalities, and absence of mathematical features in the platform. It challenges their sense of resourcefulness to adopt other learning platforms available online to help them in their learning and meet their daily tasks. Teachers and Quipper personnel are their instruments to address their issues and concerns. However, despite the challenges they encounter, students find Quipper School to be user-friendly in that it offers easy navigation and bridges the gap amidst the pandemic to allow them to continue their learning in a distant environment to minimize the potential risk of transmission due to COVID 19. However, this study is limited only to experiences of students taking BSEd Mathematics in one of the colleges in Panabo City. Also, qualitative data were only the bases of generating the knowledge of this research. But this study is of great significance to the field of education especially in distance learning which will serve as basis for the curriculum developers especially the Learning Management Systems designers.

Keywords
Quipper LMS, Phenomenology, Thematic Analysis, Philippines

INTRODUCTION

The World Health Organization (WHO) confirmed the pandemic called COVID-19, which caused educational disruptions and global health concerns that have proven difficult for global health systems to manage. The entire world is overwhelmed by the rapid spread of the virus and the drastic change in lifestyles of billions of people, forced to stay at home, practice self-isolation, work, and learn from home (Onyema et al., 2020). As a result, the Philippine Commission on Higher Education (CHED) sector forced to suspend classes in response to the increasing coronavirus outbreak. Thus, online learning offers a solution to facilitate students' learning activities (Joaquin, Biana, & Dacela, 2020).

The advancement of Information and Communication Technology (ICT), multimedia technology, and the Internet has contributed to the revolutionary change in the traditional process. Using electronic media such as video and audio conferencing, interactive TV, and satellite serves as a communication channel between teachers and students mediated by technology. The advancement fuels the opportunity to continue every learner's education in the comfort of their home and safe from the virus (Al-alak & Alnawas, 2011).

Moreover, Computer Assisted Language Learning (CALL) is an example of a new educational platform that allows teachers and students to learn in a distant setting. The most commonly known CALL is the Learning Management System (LMS), and one available LMS for learning mathematics online is Quipper School. However, there are still difficulties in ensuring clear and effective communication channels between teachers and students, such as limitations in writing mathematical symbols and finding problems in delivering lessons regarding computation and the boundaries of knowledge in using LMS and multimedia software (Radu, Schnakovszky, Herghelegiu, Ciubotariu, & Cristea, 2020).

Researchers observed the importance of the problem that students must be heard to describe the actual phenomenon of using Quipper LMS in learning math courses. In local studies, researchers did not find any study about the experience of Mathematics primary students in utilizing Quipper School. Furthermore, as major math students, we noticed the difficulties in putting mathematical symbols and the sensitivity in answering tests. Thus, the researchers find an urgency to conduct the study since most of the research is about the experiences of other disciplines, which are not related to mathematics. Through this, it can generate ideas to enhance further and update the platform imposed by the institution. Instructors were guided and encouraged to investigate other media platforms to address learning.

The result of this study is expected to be helpful information and provide a global contribution to the education system. Through this study, the platform will gain popularity in this country and every corner of the world. Quipper School has an intelligent management tool that allows all students to participate in teaching and learning in more interactive ways. Another benefactor of this research study is the society in which, through this LMS, people can continue their education, work in the comfort of their homes, and be safe from the virus. In addition, Quipper school developers will be aware of the difficulty students encounter due to their inability to explore the platform's other aspects to address concerns. Another benefit of the study is that it allows the institution and teachers to understand the issues that students have to investigate different media platforms to help students overcome their e-learning difficulties during this difficult time. Furthermore, the study will disclose the challenges and worries of the students. Finally, the study's findings will provide future researchers with a foundation for understanding mathematics students' perceptions of Quipper LMS.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

In the study of Mandic (2010), education via the internet network offers tremendous and exciting opportunities for educators and students. ICT-based learning is one of the technological developments adopted in this modern period, particularly in the educational sphere. Moreover, e-learning has become a required component of all educational institutions such as schools, colleges, and universities worldwide. Due to this situation, the mode of learning changed. Thus, to ensure the teaching of students, e-learning has turned into a solution, which is an efficient method of teaching that brings out the best in students (Radha, Mahalakshmi, Kumar, & Saravanakumar, 2020).

Furthermore, in the study of Samsuri, Nadzri, and Rom (2014), e-learning, also known as electronic learning, delivers instructional programs to students who are physically distant from their teachers. It uses technologies such as the Internet, computers, networking, and multimedia. It is a learning system supported by electronic hardware and software that can access online (synchronous) or offline (asynchronous).

In addition, Nedeva, Dimova, and Dineva (2010), Mohammadi, Ghorbani, and Hamidi (2011), and Samsuri et al. (2014), in their study that e-learning reduces the amount of time spent on teaching and learning and reduces educational costs such as infrastructure, tools, and books. Students can access anytime and everywhere to learn more easily, quickly, and affordably utilizing the Internet. Further, students can also communicate and participate in online discussions through online meetings, and it becomes easier to keep track of student progress since the material is more easily updatable.

E-learning can benefit both students and lecturers in terms of evaluating student achievement because both parties can monitor the accomplishment at any time and from any location, allowing students to test their ability and understanding as much as they want (Tawil et al., 2013).

On the other hand, Manggiasih (2016) stated that there are some disadvantages found in e-learning. Namely, the information is inaccurate, which hinders students, especially those who lack a critical approach to data. The learning process becomes more personalized. As a result, the interaction between teachers and students is a problem, or between students themselves, and not all the facilities are accessible over the Internet.

Additionally, the study of Rusman and Riana (2011) cited by Manggiasih (2016) added and cited some disadvantages of e-learning. Students' learning processes are dependent on their interdependence on learning and motivation. Accessing to join using web media can be a problem for students; students will feel bored if they cannot access information on the very diverse web. Students may feel isolated if communication facilities are limited when web-based learning. Learning models are only limited in the way they ask questions. So, perhaps some materials cannot be delivered through e-learning and must be practiced.

In the same way, Zaharah, Windarti, and Kirilova Galia (2020) mention that even though e-learning integration may not always be smooth and effective. Schools and universities quickly implemented e-learning during the COVID-19 outbreak. As a result, schools with little or no experience with e-learning and that have not prepared e-learning resources face challenges, particularly when teachers do not understand how to use online applications.

In mathematics education, Mailizar, Abdulsalam, and Suci (2020) stated that most participants agreed that their students did not have access to devices or an internet connection for e-learning. Furthermore, according to the findings, students were not well prepared for e-learning use before the pandemic. Since learning mathematics is online, it is challenging due to the difficulty in explaining mathematical concepts online. As a result, it is difficult for teachers to

prepare their students for learning in an online environment in the event of an emergency. Moreover, learners' motivation to learn online. Their confidence in using e-learning technology and their teachers' attitudes toward online instruction all impact how and if they remember.

On the contrary, Umoh and Akpan (2014) mentioned that even though e-learning has the potential to improve institutional reputations, it enhances the quality of mathematics teaching and learning and gives students more flexibility in their learning. Hence, this method saves lecturers time and allows them to focus more on the course content. Thus, e-learning practices assist in overcoming the challenges of traditional mathematics teaching and learning.

In Kusumawardani and Faizah (2017) study, teachers nowadays employ various teaching media to facilitate teaching and learning. Quipper is a web-based online learning tool known as Quipper School. According to Mulyono (2016), it was created in 2010 by Quipper Ltd., a company based in London. Quipper opens its representative offices in four countries: Japan, the Philippines, Indonesia, and Mexico. In addition, Pitagan (2017) mentioned that Quipper School transforms the teaching and learning experience by combining reduced technology with high-quality content. In the Philippines, the implementation of K-12 classrooms for blended learning and teaching.

In addition, Wardyaningrum and Suyanto (2019) emphasized that Quipper School, as a Learning Management System (LMS), has several features that assist teachers in planning classes and helping students comprehend the lessons. Teachers can use various teaching materials, such as texts, e-books, videos, pictures, graphs, and links to other online learning resources in delivering subject content. Students can select teaching resources that will make it easier for them to master the topic. Moreover, Quipper School has various exercise questions per the subject offered. Students can practice anywhere and at any time, and they will immediately know whether their answers are correct or incorrect, as well as the score they will receive. They can obtain information about their learning progress via the progress track feature.

Further, the study presented by Sulisworo, Sulistiyo, and Akhsan (2017) that Quipper School makes online courses more flexible, allowing students to take both synchronous and asynchronous classes. With this e-learning platform, teachers and students have their accounts. Students can participate in courses by entering the class code, which teachers establish based on their subject. Learning interaction happens by visiting the link to have meetings on a specific subject matter. Teachers and students can communicate easily using the devices by sending a private message or making a public announcement.

Moreover, it was stressed in the study (Wenger, 2011) that learning online, such as through Quipper School, improves the development of various characters. Students are disciplined and responsible for what their teachers assign them. Teachers use the due date strategy to raise students' awareness of their responsibilities. Students try to fulfill their duties by submitting tasks on time. Furthermore, the teacher assigns both individual and group work. It is to familiarize the students with group work. Group work requires students to participate in group activities, share information, assist, discuss a given topic, and solve problems.

Besides, Septinawati, Febriani, Tarwana, and Syafryadin (2020) stated that Quipper School aspires to modernize how learners understand and exchange information. Electronic grading reduces all the required paperwork, and the instructor can quickly generate class activities and assignments in a split second. Quipper School significantly reduces the time and effort required by both the teacher and the students.

However, in the study of Umoh and Akpan (2014), it was revealed, especially in mathematics courses, that students struggle with inadequate computer/mathematics laboratories, malfunctioning content management software (i.e., internet insecurity), or other related ICT incompetence among students/educators. Also, math students face difficulties typing mathematical formulas/notations, which hinders mathematical communication. As a result, students are encouraged to describe mathematics using words rather than conventional mathematical notes.

The study is anchored on Mayer (2014) model, as cited by Magno (2017) model of cognitive-affective multimedia learning, in which online lessons mentally scaffold learners' thinking and processing. Also, it emphasizes the importance of self-regulation, motivation, and engagement as outcomes in computer-based instructions. LMS is a type of computer-based instruction, and one of the examples of LMS is Quipper School, which assists learners in thinking and processing information in a more structured manner. Some aspects of self-regulation motivation and engagement dramatically improved while utilizing Quipper school. It helps, especially in lessons that require complex cognitive processing.

In addition, Umoh and Akpan (2014), as cited in Downes (2010), describes that knowledge exists not only in an individual's mind but also in a distributed form of a network. Quipper school can be the bridge in disseminating the knowledge in teaching mathematics to the students, and it is beneficial for students to learn independently. Similarly, in cognitive learning theory, an individual learns through thinking by analyzing an individual's mental processes (Viray, 2016). In learning mathematics through quipper school, students inspire and motivated to engage in self-directed or independent learning. Students learn to be self-sufficient and in charge of their communication and education, realizing they are not relying on teachers or institutions to know.

Moreover, by using the Internet to teach and learn, Quipper School enables teachers and students to continue carrying out their responsibilities, such as monitoring students' progress for teachers and learning for students wherever and whenever they want. It demonstrates that online learning, such as Quipper School, is more adaptable, convenient, and interactive. According to Septinawati et al. (2020), teachers and students can interact directly through the message provided by Quipper School. Additionally, Mulyono (2016) stated that teachers and students could communicate personally in Quipper School. The message and announcement features help teachers interact with colleagues and students.

Thus, the research objective of this study includes three questions: (1) What are the experiences of BSED-Mathematics students in Quipper for their significant subjects? It is to know the everyday challenges they encounter in using Quipper LMS in learning mathematics courses; (2) How do Math primary students cope with the challenges faced in using Quipper during their significant subjects? It is to determine how math primary students can overcome the difficulties they experienced in using the Quipper School; (3) What are the insights of the primary math students in using Quipper? It is to investigate if they still want to use Quipper School LMS despite the difficulties they experienced.

RESEARCH METHODOLOGY

Participants

The participants of this study were BSEd Mathematics Major students who experienced using Quipper School as an online learning platform. Through purposive sampling, we selected 5 participants enrolled at UM Panabo College school year 2021-2022. Informants undergo an in-depth interview (IDI) with dissimilar sex, age, and year level. Participants should have at least one year of using Quipper School so that they can best described and explained their experiences. Thus, to identify the participants, the following are their demographic profiles: student 1 is female, 21 years old from the second-year level; student 2 is male, 22 years of age from the third-year level; student 3 is female, 24 years old from the third-year level; student 4 is female, 28 years old from the third-year level; student 5 is male, 26 years of age from the fourth-year group. All of them utilized Quipper School for almost two years. To ensures that the data needed to expedite the study accurately addresses the research questions. According to Sargeant (2012), subject selection in qualitative research is purposeful; participants select who can best inform the research questions and enhance their understanding of the phenomenon. Researchers only chose who meets the criteria and we excluded students who come from first-year level and are not primary math students at UM Panabo College as they do not have so much experience in using Quipper School in learning mathematics courses.

Design and Procedure

The researchers used a semi-structured interview guide questionnaire as an instrument for this research study to gather information from significant math students who used the Quipper School as their online platform. A semi-structured interview is a meeting in which the interviewer does not strictly follow a formalized list of questions (Doyle, 2022). Open-ended questions aim to understand better the participants' inner thoughts, emotions, and feelings concerning their perspective on using Quipper School. The instrument covers three open-ended research questions that cover the experiences, challenges, and insights of significant math students who use Quipper LMS. Thirty-five probing questions supported it. The Panel members scrutinized the instrument to make sure it was valid.

Design and Procedure

This study is a qualitative research with a phenomenological approach. Grove, Burns, and Gray (2012), as cited by Khan (2014), qualitative research is a systematic and subjective approach in highlighting and explaining daily life experiences and giving them a different meaning. The researchers aim to describe an event, action, or phenomena related to students' instructional experiences; hence phenomenology is used. In line with Starks and Trinidad (2007), through close examination of individual experiences, phenomenological analysts seek to capture the meaning and standard features or essences of experiences or events. The researchers used an in-depth interview to collect the data needed in the study. In-depth interviewing is a qualitative research technique involving intensive individual interviews with a small number of participants to explore their perspectives on an idea, program, or situation (Boyce & Neale, 2006).

For this research, we asked for approval from the Dean of College to conduct the study on the selected BSED major in Mathematics students. After the approval, we completed the activities for this study. There is informed consent and agreement to participants through email or personal message on Messenger. The letter entails the background of the study, which helps the participants have a clear view of the purpose and urgency of the study. Following participant confirmation, researchers set the interview date via Google Meet in the welfare of the participant's available time. Data was collected from the participants using in-depth interviews. Specifically, one-on-one virtual consultation for less than 90 minutes in every participant was all oriented to the interview records. The researchers guarantee the confidentiality of the informants. The collected data transcribe into English, and then thematic analysis was utilized. Thematic analysis is a method for describing data, but it also involves interpretation in selecting codes and constructing themes (Kiger & Varpio, 2020). Only the relevant statements from their response are in the list of data analyses and categorized based on the themes we developed. The compositions formulated were according to the participant's responses to describe the core ideas of their experiences using Quipper. The data gathering up to making a result and discussion takes two and half months.

To ensure the study's trustworthiness, researchers considered the criteria proposed by Guba and Lincoln (1981), such as credibility, confirmability, dependability, and transferability, which are implied in this research study. In constituent, trustworthiness is the real findings of the study, and it was performed in the accuracy of data interpretation gathered from the informants' experiences. To establish credibility, we ensured firmness in our data collection. Interviews are directly taken from the informants online because of our current situation, which is the pandemic. Researchers confirm that the participants have used the Quipper School platform for more than one year, so that best described, explained and their experiences were not craft-up stories. In addition, in analyzing the data from the informants, we asked

for help from our data analysts in this study. To develop dependability, researchers are persistent in data collection and analysis in the coding-recording system. In data reduction, only relevant information was included in the study. To attain confirmability, researchers followed the replicated process in the results to link to the study's conclusion. To achieve transferability, researchers explained the research context and suppositions in detail. We are confident that our study is rich with descriptions so that other researchers and readers who will transfer the results to another context will be held accountable.

Lastly, the ethical requirements taken into account in this study ensure that: the approval letter to conduct the study was obtained before conducting the research; and the assent letter and informed consent were obtained from each participant, providing background information on the study, discussing the risk, benefits, withdrawal, and participant rights, as well as the ethical standards upheld during this activity. The researchers guarantee that, without the participants' prior approval, the sensitive information in this document won't be utilized for any reason other than the evaluation or execution of the investigation. Another crucial assurance is that the researcher promises to adhere to the principles and protocols that have been approved by the university and other legal criteria.

RESULTS AND DISCUSSION

This section presents the findings in a table, followed by discussions based on the research findings. The items in the table have been analyzed, categorized, and arranged according to different themes. Every piece of information gathered from informants was classified according to the various challenges to which they belonged. The researchers, adviser, data analyst, research coordinator, and validators carefully review and oversee the findings.

Table 1 The Experiences of Math major students in using Quipper School as an online platform

Theme	Core Ideas
Friendly-User Platform	It is simpler to use than other platforms. The application is friendly for users. It's easy to use and offers convenience.
Frustrated Due to Unstable Internet Connection	The Internet connection is not friendly most of the time. Students experience repetition in answering tests due to poor internet connection. Connectivity was a problem, especially taking exams.
Thwarted Due to Technicalities of the Platform	There is no learning that happens when internet connections are interrupted. Students encounter sensitivity in some of the features of Quipper LMS. They experienced errors in taking tests, especially identification type of evaluation. During the test, they had to deal with unclear or no instructions. They get a low score due to the technicalities of the platform.
Lack of Mathematical Features	The absence of mathematical features that are used in the course's learning. Students utilized other learning platforms to meet daily tasks. They used Microsoft Office and Google to search for mathematical notations or symbols.

Theme 1. The first theme is the Friendly-user platform where students find Quipper School LMS has a simple design that can easily navigate all facilities available on the system. Moreover, they found that it is more convenient than other online learning platforms because of its menu and sub-menu features.

It is supported by Quipper User 1, who said that:
"The good thing is that Quipper is easier to navigate than other platforms. "_ QU#001

It is also asserted by Quipper User 2, who said that:
"Even if you have not attended the Quipper orientation, you can access the Quipper immediately because it is straightforward to use." _ QU#002

Another example, as stated by Quipper User 5, is as follows:
"The advantage is that it's easy to use and convenient." _ QU#005

It supports an article by Kapenieks (2013) that user-friendly and reliable devices aid the success of an online program. It can improve students' learning and classroom experiences and instructors' ability to teach course material. When an online platform is simple to use, it is a successful way to engage students and increase class participation—assisting learners in quickly accessing information and communication among instructors.

Cakrawati (2017), in his study Quipper School, is an accessible and user-friendly social learning platform that offers a variety of features that allow students to interact and collaborate with teachers and peers and access teacher-provided courses. The teacher can assign the assignment, set the due date, and keep track of the students' progress. Some teachers have used Quipper to integrate technology into the teaching and learning process in the classroom. Because online platforms facilitate interactions between teachers and students even when they are not in the same room, they promote inquiry-based and independent learning.

Theme 2. The second theme created from the experiences of the significant math students is frustration due to unstable internet connection, where they find that internet connectivity is the most challenging part of the new learning modality. Students found that the Internet interruption affected their utilization of Quipper LMS. They cannot access their quizzes, exams, or learning materials. When it happens, it certainly affects their learning and performance.

It is supported by Quipper User 1, who said that:
"Internet is not friendly all the time. There are times you will experience, especially on rainy days where you can't access the app." _ QU#001

It is backed up by Quipper User 2, who stated:
"I have the experience to repeat answering items even if you've done answering those items. Then you need to check first the items before submitting because there are items that will not reflect that you've done answering." _ QU#002

Another statement by Quipper User 5 said that:
"We couldn't download our modules online, and we cannot enter into a synchronous class." _ QU#005

Internet connectivity is a common complaint among teachers and students in the Philippines, one of Asia's slowest internet countries. Souvik (2021) stated that students with poor internet connectivity adversely impact their studies. If a student were to miss even two consecutive lectures, they would fall back alarmingly on their reading and numeracy skills. Consequently, due to poor internet connectivity, students had difficulty complying with learning activities and requirements. Furthermore, they are unable to communicate with their teachers and classmates. As a result, it contributes to students' low academic performance.

Sharna (2019) added that the Internet is the most valuable tool of our time, assisting us in our personal lives and professional endeavors. Internet use for education facilitates the sharing of information and communication. Interactivity in student-teacher interactions boosts by internet connectivity. Teachers and students can now engage in dynamic exchanges by including social media apps and online learning platforms that provide real-time help.

Theme 3. The third theme thwarts due to the technicalities of the platform. Students find the Quipper School platform sensitive in some of its features. They experienced errors in taking assessments, particularly identification or fill-in-the-blank types of tests. Students deal with unclear or lack of instructions during trials. As a result, they received a low score due to their technicalities.

It is supported by Quipper User 1, who said that:
"There is a tendency that you will mark incorrectly on a quiz or exam because you should input the exact letter or number that the teacher provides" _ QU#001

Another statement by Quipper User 2 said that:
"*I also experienced in the identification type of quiz or exam, so even if you encode the correct answer, you will mark as wrong because it will depend on how the teacher encodes the answers whether it capitalizes or small letter." _ QU#002*

It is also added by Quipper User 3, who stated:
"Sometimes the instructions on responding to these items are unclear, such as in fill-in-the-blank exams where we don't know what to put in the blank; it's either all upper case or all lower case. So, if you enter the answer improperly, there's a chance you'll get it wrong and lose points because Quipper is so sensitive that all of your answers, even if they're correct, will be rejected if you mistype it." _ QU#003

It is also asserted by Quipper User 5, who said that.
"There were other supposedly correct quizzes, but the system marked them wrong, and maybe the teacher just encoded them wrong in some instances that we can't avoid." _ QU#005

As mentioned in the study conducted by Sitzmann, Ely, Bell, and Bauer (2010), although online learning has many potential benefits, one of its drawbacks is technical difficulties. Technical difficulties are interruptions that people experience when interacting with technology. Technical issues can harm important training outcomes. Technical difficulties increase trainees' frustration and reduce their satisfaction with the instructional experience.

Students in the new learning mode rely on computer software and technology to attend classes and stay engaged in their learning. As affirmed in the study of Kostaki and Karayianni (2021), remote learning offers convenience and space constraints. Still, it also introduces some difficulties, due in part to connectivity issues, applications lagging, and computers running slowly, all of which can disrupt the learning process. The study reveals that students who experienced technical difficulties such as hardware, software, and connectivity reported that these issues hampered their learning and participation. As a result, test performance suffered when trainees encountered technical difficulties.

Theme 4. The fourth theme is the lack of mathematical features, where students find, with their experience in using Quipper LMS, its absence of math features, specifically mathematical symbols, which are essential in learning the subject. They are more likely to explore other online learning platforms to complete daily tasks.

It is supported by Quipper User 1, who said that:
"There was one time answering a quiz, and it is asking for the specific symbol. What I've done I just copy and paste the symbol in the module, but then again, it changes the value in Quipper. I tried several times, and it didn't work. To perform the task, I just searched the symbol on the Internet." _ QU#001

Another statement by Quipper User 2 said that:
"You must use Microsoft Office or Google to search for a math symbol, then copy and paste it into the Quipper Essay because there is no symbol you can click in the essay section." _ QU#002

It is also added by Quipper User 3, who stated:
"Quipper is a different story because it doesn't allow you to put in any equations except maybe parentheses or basic numbers, but in terms of complex equations." _QU#003

It was asserted by Quipper User 5 said that:
"It's complicated because, in the Quipper app, there are no mathematical notations or symbols, so you have to search for it on Google if you know how to use a shortcut on the keyboard for the notations and symbols." _ QU#005

Teaching math courses in the new learning modality is challenging due to the limited resources available to students and instructors. Students faced difficulties as they transitioned from face-to-face to online learning platforms. Based on the study by Azevedo, Pereira, Fernandes, and Pacheco (2022), the success of an e-learning tool links to student satisfaction and teachers' willingness to experiment with new pedagogical models. Therefore, increasing the student's participation and the teacher's engagement are significant attributes to improving the platform's reliability, expansion, and integrity.

Table 2 The Coping mechanism of Math major students in using Quipper School as an online platform

Theme	Core Ideas
Seek Professional Assistance	Students ask for help from the Quipper assistant if they encounter errors or challenges in using the platform. Due to the errors, students usually approach their teacher to clarify their answers.
Personal Initiatives and Resourcefulness	Students used Microsoft word, it has features related to inserting mathematical equations. They do manual searching on the internet for the mathematical symbols that are not in the platform.

Theme 1. The first theme, created out of the coping mechanisms of the primary math students, is seeking professional assistance, where students ask for help from their teachers or the Quipper assistant when they encounter issues with some features in the platform. In the study by Qayyum (2018), academic assistance is one of several learning tactics that students employ to increase their learning. It is a critical practice that can help face-to-face and online students' study more effectively.

It is supported by Quipper User 1, who said that:
"If there are any symbols or sensitivity to the answer. I will just take a screenshot and send it to our professor for him to know what I am implying, and then mostly they give consideration." _ QU#001

It is also added by Quipper User 2, who stated:
"I usually approach my teacher to clarify if they were wrong or if the system was wrong. If the teacher can no longer manage, I immediately contact the technician's assistance." _ QU#002

Another statement by Quipper User 3 said that:
"If we encounter errors or challenges in using Quipper, or they will give us a specific person to contact via messenger or other tools to report our concerns about our experiences using Quipper." _ QU#003

It is backed up by Quipper User 4, who stated:
"We just contact our professor; it's okay because the professors are friendly and will respond and grasp your concerns quickly." _ QU#004

It is also added by Quipper User 5, who stated:
"If there is a symbol or sensitivity to the encoded answers, I will clarify it to my teacher and send a private message with the problem or errors that I've encountered of why my answers were wrong when they were supposedly right." _ QU#005

In the study by Bembenutty (2006), help-seeking refers to the strategic self-regulation methods by which learners collect information from formal and informal sources to adapt and secure knowledge acquisition and task completion. The student must recognize that they have a problem, decide if and to whom to seek assistance, do so clearly, and process the aid that provides. Some students seek help before considering the problem; such an offering would be beneficial during the completion process.

Theme 2. The second theme is that students test their resourcefulness, where inserting mathematical symbols in Quipper school is quite challenging for students. Utilizing other online learning platforms, such as Microsoft Office and manual searching on the Internet for the math symbol are ways for the students to finish daily tasks.

It is supported by Quipper User 1, who said that:
"I simply search manually on the net for that specific symbol." _ QU#001

Another statement by Quipper User 2 said that:
"I usually go to the word docs or Microsoft Word and make my solution or task with mathematical symbols, then copy and paste it to the Quipper essay part. Otherwise, there are times that I find it time-consuming to use word docs. I write it on a piece of paper because I find it convenient and easier, then take a picture of it and upload it into the Quipper essay part." _ QU#002

This is also added by Quipper User 3, who stated:
"I usually make a draft in Microsoft Word because it has features related to inserting mathematical equations, so after editing in a paint application, I will save it as an image, then paste it to Quipper." _ QU#003

This is backed up by Quipper User 4, who stated:
"We tried writing our solution on bond paper, then taking a picture of it and sending it via Messenger or in a Quipper essay." _ QU#004

It was asserted by Quipper User 5 said that:
"I usually crop a picture of the symbol from Google and insert it on the quipper." _ QU#005

In the study by Briggs (2015), it was specified that resourcefulness is the ability to make do with what you have, to see possibilities where others do not, and to anticipate the obstacles that will face you. It finds creative methods to utilize the resources available to it and seeks resources that are not under your control. Students who are resourceful are more likely to practice self-control when dealing with stressors in their lives. They are more likely to be well-adjusted, achieve higher grades, and stay in university than their less resourceful peers.

Table 3 The Insights of Math Major students in using Quipper School as an online platform

Theme	Core Ideas
Quipper School Bridges Gap in Times of Pandemic	It enables students to access the lessons both online and offline. It provides learning materials such as modules and video tutorials. Weekly lessons will keep you up to date. Numerous tools are available to use in sending messages. It's possible to access it from anywhere using the internet or mobile data.
The Platform Requires Improvement in Math Courses	A designated area for mathematical symbols. A feature that enables mathematical symbols or equations to be inserted. A virtual meeting feature that does not require the use of another application.

Theme 1. The first theme is that Quipper School bridges gaps in times of pandemic, where students find Quipper School as a good distant learning platform because it provides different features and tools. In addition, students can also keep up with their weekly lessons, and Quipper School is accessible from anywhere with an internet connection or mobile data. Quipper School is a platform for presenting e-learning, sometimes known as the online learning model.
As testified in an article expressed by Sastranegara, Suryo, and Setiawan (2020), in order to make the learning process at home operate smoothly, an online learning platform is required, one of which is the Quipper School application. During the growth of Covid-19, Quipper School has become one of the solutions for online learning. The Quipper School application provides an innovative approach to learning in which the teacher may more efficiently manage assignments and homework while also recognizing the strengths and weaknesses of pupils in grasping a certain learning topic.

This is supported by Quipper User 1, who said that:
"During this time of the pandemic, students allow accessing lessons offline if it was being saved. Also, it allows professors to attach lessons." _QU#001

This is also added by Quipper User 2, who stated:
"It provides instructional materials just like modules or tutorials. If ever, the teacher will send videos for the lesson that you can access online or offline. So, it offers to practice the lessons again and again until you get 100% mastery of the lesson in a specific task. "_QU#002

Another statement by Quipper User 3 said that:
"We can monitor our lessons for the week because our teachers give us the study guide with their respective deadlines." _QU#003

Based on Quipper User 4 stating that:
"It was enjoyable because there are numerous tools available, such as the ability to send messages and stay up to date on your tasks, such as quizzes, because you may receive notifications." _QU#004

Another example testified by Quipper User 5, who said that:
"Quipper is really helpful in conducting our online learning because, during a pandemic, we can only rely on technology. Using the app, teachers can upload our modules, and we can access them via the internet or mobile data, and it gives us a lot of learning." _QU#005

Among the informant's responses, they said that Quipper School is a good online platform at this time of pandemic because of its features. As stated by Septinawati et al. (2020), Quipper School can help fill in the gaps. It aims to empower teachers to help their students by combining high-quality learning content with an advanced online platform. Quipper school keeps teacher-student interaction in the classroom and out of the classroom in the learning process; students can still access or get lessons or review material even if the teacher is not present in the classroom; it motivates students to learn because they enjoy and feel comfortable using the Quipper school; enhances teachers' creativity; and enhances students' learning experiences using new learning systems.

Theme 2. The second theme is that the platform requires improvement in math courses, where inserting mathematical symbols in Quipper School is a challenge for students. Quipper school should create several features for usage in math courses. The best implementation of an e-learning platform in teaching is Quipper School, but according to Irfan, Kusumaningrum, Yulia, and Widodo (2020), there is a belief that there are numerous obstacles to learning when using online learning, particularly in mathematics education study programs, such as the limitations of writing mathematical symbols and the basic capabilities of learning management systems and multimedia software to support online learning.

This is backed up by Quipper User 1, who stated:
"Hopefully, they will provide an area in Quipper where we can utilize mathematical symbols." _QU#001
This is also asserted by Quipper User 2, who said that:
"It cannot stand alone in terms of learning math. I hope that next time they have those virtual meet features, we will not use another app and provide mathematical symbols that we can easily use." _QU#002

Another statement by Quipper User 3 states that:
"Add a feature that allows every learner to insert mathematical symbols or equations." _QU#003

This is supported by Quipper User 4, who mentioned that:
"Quipper should have a section for mathematical symbols intended for math problems so that you don't have to search for them on Google, especially during timed quizzes and exams because it is time-consuming." _QU#004

This is followed up by Quipper User 5, who stated:
"Quipper should at least upgrade and put in some mathematical symbols because it's really time-consuming when we have to search via Google for the symbols and paste them". _QU#005

Most of the participants stated that Quipper school should at the very least give room for mathematical symbols in their answers. For major math students, searching for mathematical symbols on the Internet takes time, which has an impact on their performance. As a result, Quipper school should improve its features or services for math courses that allow every learner to have a better experience with Quipper.

DISCUSSION

This area discusses the main themes identified in the study's findings. Furthermore, each theme is discussed thoroughly in order to fully understand the experiences of major math students in using Quipper School for learning mathematics. In particular, the discussion of the results is organized around the research questions, findings, and answers.

Experiences of Math Major Students in Using Quipper School as an Online Platform

User Friendly Platform

Based on the experiences of the math major students using Quipper School as their tool in learning mathematics courses, they found the platform to be user-friendly. The LMS offers easy navigation through which students can clearly understand how to run the platform and apply learning in their field of study.

Frustrated Due to Unstable Internet Connection

During the utilization of Quipper School in learning mathematics, math major students felt frustrated due to an unstable internet connection. Specifically, the loss of internet connection during exams or timed quizzes is the most challenging part of using the platform. Moreover, they find internet connectivity the most important factor in navigating the platform because it is where they will take exams, and quizzes, attend synchronous classes and read and download learning materials.

Thwarted Due to Technicalities of the Platform

Learning math courses with the use of Quipper School, they are thwarted in participating in assessments due to the technicalities of the Quipper LMS. In particular, they experienced sensitivity when taking an identification type of test. There are instances where professors forget to indicate instructions, or they find the instructions are unclear in response to the test. When they respond to the problem, most of the time, they tend to be marked as wrong in Quipper.

Lack of Mathematical Features

Derived from the experiences of major math students, they found disadvantages in using Quipper because of the lack of mathematical features in the platform. Since Quipper School does not offer mathematical symbols or notation, learners tend to use other applications, namely Google, Microsoft Office, and other word documents, to search for or copy and paste math symbols. They find it challenging and time-consuming for their learning.

Coping Mechanism of Math Major Students in Using Quipper School as an Online Platform

Seek professional assistance

When math major students encounter problems with sensitivity or technicalities while using Quipper School, they seek assistance from their teachers to clarify issues, or if the teacher is unable to manage the problem, they report their concern to the Quipper technician to manage the errors and difficulties immediately.

Personal Initiatives and Resourcefulness

Math major students at UM Panabo College test their resourcefulness in response to the lack of features in learning mathematics using Quipper School. Since a math course requires students to show their solutions when answering problems, students use their intuition to supplement the absence of the mathematical symbol by using other learning platforms such as Microsoft Office, word documents, or searching the Internet. Students write their computations in Microsoft Word since it has features for mathematical symbols and equations. After editing, they copy and paste it into the paint application, save it as an image, and upload the image into the Quipper essay.

However, other students find it time-consuming to use word document applications. They find it convenient and easier to write their answers on a clean piece of paper, then take a picture of it and upload the image into the essay portion of Quipper School, which allows students to copy and paste images or even upload images.

Informants' Responses on the Insights of Math Major Students in Using Quipper School as an Online Platform

Quipper School Bridges Gap in Times of Pandemic

In our current situation, where we are experiencing this pandemic, the only way to continue learning is to rely on technology. Math major students have a positive experience with utilizing Quipper School, despite some issues they encountered. Quipper School delivers instructional materials while also keeping them up-to-date on their classes on a weekly basis. Apart from that, Quipper School is an excellent bridge in this pandemic because it allows students to learn from a distant environment. Furthermore, students appreciated their experience with Quipper School because of its features and ease of navigation.

The Platform Requires Improvement in Math Courses

In most cases, major math students require Quipper School to have an improvement in math courses. Conforming to the responses of the participants, Quipper School cannot stand alone in terms of learning math courses. They believe the platform should at the very least enhance their system, particularly for math learners. They should provide mathematical features and a virtual meet portion, which will no longer take time for students to use other applications to meet their learning tasks.

CONCLUSIONS AND RECOMMENDATIONS

This review presents a summary of the study. Then conclusions were proposed according to the researcher's insights based on the findings and limitations of the study. Further recommendations were given concerning the respondents and readers.

Conclusion

Based on the results of the study, math major students feel at ease using Quipper School for learning mathematics since the platform is user-friendly and easy to navigate. On the other hand, they also experience unstable internet connectivity, technicalities, and the absence of mathematical features in learning the subject. This situation tests their resourcefulness to find ways to supplement the lack of math features of the platform. They visit other online learning applications such as Google and Microsoft Office to meet their learning tasks. They also seek assistance from their mentors and Quipper technicians to respond to their issues and concerns.

Regardless of the absence and technicalities they underwent, students appreciate Quipper School because it bridges the gap in times of pandemic to continue the learning process of the learners. However, the students find that Quipper School cannot stand alone in terms of learning math courses. They believe that a learning platform should enhance their system, specifically for major math students. It should provide mathematical features and virtual meetings, which will no longer take time for learners to use other applications to experience better learning.

Implication for Future Study

The result of the study implies that math major students at UM Panabo College experience technicalities in using Quipper School for learning the course. However, it has become an avenue to test their resourcefulness in managing the difficulties and absence of mathematical features in learning the subject. Teachers and Quipper School personnel are the instruments of the learners in reporting their concerns. It demonstrates that, despite the drawbacks, students find the

platform useful during pandemics. Students yearn for improvements to the features of Quipper LMS, particularly for math learners. If the platform helps students improve their performance in a new learning modality, it is necessary to re-evaluate the features and sensitivity of Quipper LMS, specifically for math learners.

Implication for Future Practice

With the introduction of online learning as an alternative to face-to-face classes, students had to make several adjustments. One of the learning platforms that UM Panabo College utilizes is Quipper LMS to minimize the potential risk of transmission due to COVID 19. The platform can be strengthened to experience better learning by addressing the experiences of the major math students to Quipper School personnel. Through this, it will give them information based on the experiences that were given by the respondents and allow them to make improvements to the platform to experience better learning.

Recommendation

The findings of the study show that major math students experience some drawbacks in using Quipper LMS. This implies that by utilizing the platform, they come up against technicalities and the absence of features that can be used in learning mathematics courses. However, they find Quipper School good in other subjects but cannot stand alone in the field of mathematics. The researchers recommend the following:

First, the sensitivity features inside the Quipper School LMS will be addressed by the quipper personnel. Along with the experiences of math students, the platform developers will make improvements to their features, particularly for math students.

Second, the institution and teaching personnel may sustain effective utilization of Quipper LMS and reconsider the platform in mathematics courses.

Third, for major math students, despite the shortcomings of Quipper School, they may use their sense of resourcefulness to investigate other learning platforms that may help them master their field of study.

Finally, for future researchers, it will serve as their basis of reference in conducting similar studies.

Acknowledgement

We, the researchers from UM Panabo College, would like to extend our deep appreciation to the following people for playing a great part in enabling us to do this study successfully.

To Dr. Liezel V. Chan and Prof. Jovany Gleen L. Allawan as our panel for the suggestions and recommendations for this study.

To selected 2nd and 4th year math major students, for lending their time to answer wholeheartedly and truthfully the questions needed in this study.

To our parents for moral support and financial assistance from the beginning until the end, as well as for being understanding.

Most especially to our heavenly father for giving us the gifts of wisdom, protection, guidance, strength, determination and particularly good health in making this research throughout many challenges.

REFERENCES

1. Al-alak, B. A., & Alnawas, I. A. (2011). Measuring the acceptance and adoption of e-learning by academic staff. *Knowledge Management & E-Learning: An International Journal, 3*(2), 201-221.
2. Azevedo, B. F., Pereira, A. I., Fernandes, F. P., & Pacheco, M. F. (2022). Mathematics learning and assessment using MathE platform: A case study. *Education and Information Technologies, 27*(2), 1747-1769.
3. Bembenutty, H. (2006). Preservice Teachers' Help-Seeking Tendencies and Self-Regulation of Learning. *Online Submission*.
4. Boyce, C., & Neale, P. (2006). *Conducting in-depth interviews: A guide for designing and conducting in-depth interviews for evaluation input* (Vol. 2): Pathfinder international Watertown, MA.
5. Briggs, S. (2015). The Ultimate Lesson: Teaching Your Students to Be Resourceful. Retrieved from https://www.opencolleges.edu.au/informed/features/the-ultimate-lesson-teaching-your-students-to-be-resourceful/
6. Cakrawati, L. M. (2017). STUDENTS'PERCEPTIONS ON THE USE OF ONLINE LEARNING PLATFORMS IN EFL CLASSROOM. *Elt tech: journal of english Language Teaching and Technology, 1*(1), 22-30.
7. Downes, S. (2010). Learning networks and connective knowledge *Collective intelligence and E-Learning 2.0: Implications of web-based communities and networking* (pp. 1-26): IGI global.
8. Doyle, A. (2022). What Is a Semi-Structured Interview? Retrieved from https://www.thebalancemoney.com/what-is-a-semi-structured-interview-2061632
9. Grove, S. K., Burns, N., & Gray, J. (2012). *The practice of nursing research: Appraisal, synthesis, and generation of evidence*: Elsevier Health Sciences.
10. Guba, E. G., & Lincoln, Y. S. (1981). *Effective evaluation: Improving the usefulness of evaluation results through responsive and naturalistic approaches*: Jossey-Bass.
11. Irfan, M., Kusumaningrum, B., Yulia, Y., & Widodo, S. A. (2020). Challenges during the pandemic: use of e-learning in mathematics learning in higher education. *Infinity Journal, 9*(2), 147-158.
12. Joaquin, J. J. B., Biana, H. T., & Dacela, M. A. (2020). *The Philippine higher education sector in the time of COVID-19.* Paper presented at the Frontiers in Education.
13. Kapenieks, J. (2013). User-friendly e-learning environment for educational action research. *Procedia computer science, 26*, 121-142.

14. Khan, S. N. (2014). Qualitative research method-phenomenology. *Asian Social Science*, *10*(21), 298.
15. Kiger, M. E., & Varpio, L. (2020). Thematic analysis of qualitative data: AMEE Guide No. 131. *Medical teacher*, *42*(8), 846-854.
16. Kostaki, D., & Karayianni, I. (2021). Houston, we have a pandemic: Technical difficulties, distractions and online student engagement.
17. Kusumawardani, A. D., & Faizah, A. (2017). *Teachers" and Students" Voices Toward The Use Of Quipper School on English Subject in SMP N 40 Semarang.* Paper presented at the UNNES-TEFLIN National Seminar.
18. Magno, C. (2017). Facilitating student learning in schools through a learning management system: an action research. *The International Journal of Research and Review*, *12*.
19. Mailizar, A., Abdulsalam, M., & Suci, B. (2020). Secondary school mathematics teachers' views on e-learning implementation barriers during the COVID-19 pandemic: The case of Indonesia. *Eurasia Journal of Mathematics, Science & Technology Education*, 1-9.
20. Mandic, D. (2010). *Plenary lecture 3: knowledge based multimedia system for teacher's education.* Paper presented at the Proceedings of the 9th WSEAS international conference on Artificial intelligence, knowledge engineering and data bases.
21. Manggiasih, F. N. (2016). *The use of quipper school as an e-learning platform in teaching english to the tenth grade students of MAN 2 Ponorogo in academic year 2015/2016.* Stain Ponorogo.
22. Mayer, R. E. (2014). Incorporating motivation into multimedia learning. *Learning and instruction*, *29*, 171-173.
23. Mohammadi, N., Ghorbani, V., & Hamidi, F. (2011). Effects of e-learning on language learning. *Procedia computer science*, *3*, 464-468.
24. Mulyono, H. (2016). Using Quipper as an online platform for teaching and learning English as a foreign language. *Teaching English with Technology*, *16*(1), 59-70.
25. Nedeva, V., Dimova, E., & Dineva, S. (2010). Overcome disadvantages of E-learning for training English as foreign language. *University of Bucharest and University of Medicine and Pharmacy Târgu-Mures*, 275-281.
26. Onyema, E. M., Eucheria, N. C., Obafemi, F. A., Sen, S., Atonye, F. G., Sharma, A., & Alsayed, A. O. (2020). Impact of Coronavirus pandemic on education. *Journal of Education and Practice*, *11*(13), 108-121.
27. Pitagan, F. B. (2017). *Quipper School contributes to higher test score, attendance rate and assignment submission in teaching Mathematics.* Paper presented at the Article presented during the DLSU Research Congress, June.
28. Qayyum, A. (2018). Student help-seeking attitudes and behaviors in a digital era. *International journal of educational technology in higher education*, *15*(1), 1-16.
29. Radha, R., Mahalakshmi, K., Kumar, V. S., & Saravanakumar, A. (2020). E-Learning during lockdown of Covid-19 pandemic: A global perspective. *International journal of control and automation*, *13*(4), 1088-1099.
30. Radu, M.-C., Schnakovszky, C., Herghelegiu, E., Ciubotariu, V.-A., & Cristea, I. (2020). The impact of the COVID-19 pandemic on the quality of educational process: A student survey. *International journal of environmental research and public health*, *17*(21), 7770.
31. Rusman, D. K., & Riana, C. (2011). Pembelajaran Berbasis Teknologi Informasi dan Komunikasi: Mengembangkan Profesi Guru. *Depok: Rajagrafindo Persada*.
32. Samsuri, N. N., Nadzri, F. A., & Rom, K. B. M. (2014). A study on the student's perspective on the effectiveness of using e-learning. *Procedia-Social and Behavioral Sciences*, *123*, 139-144.
33. Sargeant, J. (2012). Qualitative research part II: Participants, analysis, and quality assurance (Vol. 4, pp. 1-3): The Accreditation Council for Graduate Medical Education Suite 2000, 515 ….
34. Sastranegara, T., Suryo, D., & Setiawan, J. (2020). A study of the use of Quipper School in history learning during COVID-19 pandemic era. *International Journal of Learning and Development*, *10*(3), 20-31.
35. Septinawati, S., Febriani, R. B., Tarwana, W., & Syafryadin, S. (2020). Students' Perceptions Toward the Implementation of Quipper School as an E-Learning Platform in Teaching English. *Jadila: Journal of Development and Innovation in Language and Literature Education*, *1*(2), 223-238.
36. Sharna, K. (2019). Role of Internet in Education. Retrieved from https://www.theasianschool.net/blog/role-of-internet-in-education/
37. Sitzmann, T., Ely, K., Bell, B. S., & Bauer, K. N. (2010). The effects of technical difficulties on learning and attrition during online training. *Journal of Experimental Psychology: Applied*, *16*(3), 281.
38. Souvik. (2021). Internet Connectivity and its Impact on Students in Australia. Retrieved from https://www.rswebsols.com/tutorials/internet/internet-connectivity-impact-students-australia
39. Starks, H., & Trinidad, S. B. (2007). Choose your method: A comparison of phenomenology, discourse analysis, and grounded theory. *Qualitative health research*, *17*(10), 1372-1380.
40. Sulisworo, D., Sulistiyo, E. N., & Akhsan, R. N. (2017). The motivation impact of open educational resources utilization on physics learning using quipper school app. *Turkish Online Journal of Distance Education*, *18*(4), 120-128.
41. Tawil, N. M., Ismail, N. A., Asshaari, I., Othman, H., Zaharim, A., & Bahaludin, H. (2013). Preference Learning Style in Engineering Mathematics: Students' Perception of E-Learning. *International Education Studies*, *6*(6), 61-65.
42. Umoh, J. B., & Akpan, E. T. (2014). Challenges of Blended E-Learning Tools in Mathematics: Students' Perspectives University of Uyo. *Journal of Education and learning*, *3*(4), 60-70.
43. Viray, J. (2016). quipper school and Its Effectiveness in the Academic Performance of Grade 8 Students in English. *Research Gate*.
44. Wardyaningrum, A. R., & Suyanto, S. (2019). *Improving Students' Conceptual Understanding of Biology through Quipper School.* Paper presented at the Journal of Physics: Conference Series.
45. Wenger, E. (2011). Communities of practice: A brief introduction.
46. Zaharah, Z., Windarti, A., & Kirilova Galia, I. (2020). Impact of coronavirus outbreak towards teaching and learning activities in Indonesia. *SALAM: Jurnal Sosial dan Budaya Syar-i*, 269-282.