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Middle School Teachers' Perceptions of Using Google Classroom With Integrated Apps

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This is to certify that the doctoral study by

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and that any and all revisions required by
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Walden University
2024

Abstract

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EdS, Kennesaw State University, 2017

MA, Walden University, 2015

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Project Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

The problem addressed through this qualitative study was that middle school teachers in a suburban public school district in the southern United States were inconsistently using Google Classroom in their classrooms. At the project site, middle school teachers were creating a blended learning environment; however, administrators expected them to integrate other educational apps such as Quizizz and Nearpod when using Google Classroom. The purpose of this basic qualitative study was to explore middle school teachers' perceptions about the support that would help them use Google Classroom consistently while integrating other productivity apps such as Quizizz and Nearpod at a suburban public school district in the southern United States. The conceptual basis was the technological pedagogical content knowledge (TPACK) framework. Two research questions guided the study, asking what middle school teachers' perceptions are about the support that would help them (a) use Google Classroom in the blended environment and (b) integrate specific productivity apps, such as Quizizz and Nearpod, in the blended environment. The basic qualitative design involved interviews with 10 middle school teachers. Data were analyzed through an inductive process of coding to develop themes. Teachers expressed a need for professional development and on-on-one modeling and troubleshooting assistance when using Google Classroom and productivity apps. Three days of professional development curriculum was created to support teachers' use of Google Classroom and productivity apps, with the hope that teachers' increased use may lead to improved student outcomes and experience.

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Dedication

I dedicate this qualitative project study to my son, parents, siblings, and friends. Also, I dedicate this qualitative project study to my two recent guardian angels, my Aunt Patricia and best friend, Ty'Ree, who both passed away in the summer of 2022.

Acknowledgments

I acknowledge the support I received from my mentor, Dr. Heng-Yu Ku. Dr. Ku has been such an effective guide who has provided motivation and constructive feedback through this process. I am also incredibly grateful for Dr. David Perry, as he has been on this journey with me since the beginning. Dr. Perry has been there through thick and thin and was incredibly reassuring. Lastly, I am grateful for the support from my parents and sister, who have been incredibly supportive of my academic pursuits, allowing me the time and space to write when I most needed it.

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Section 1: The Problem

The Local Problem

The problem addressed through this qualitative study was that middle school teachers in a suburban public school district in the southern United States were inconsistently using Google Classroom in their classrooms. At the project site, middle school teachers were creating a blended learning environment; however, administrators expected them to integrate other educational apps such as Quizizz and Nearpod when using Google Classroom. The purpose of this qualitative study was to explore middle school teachers' perceptions about the support that would help them use Google Classroom consistently while integrating other productivity apps such as Quizizz and Nearpod at a suburban public school district in the southern United States.

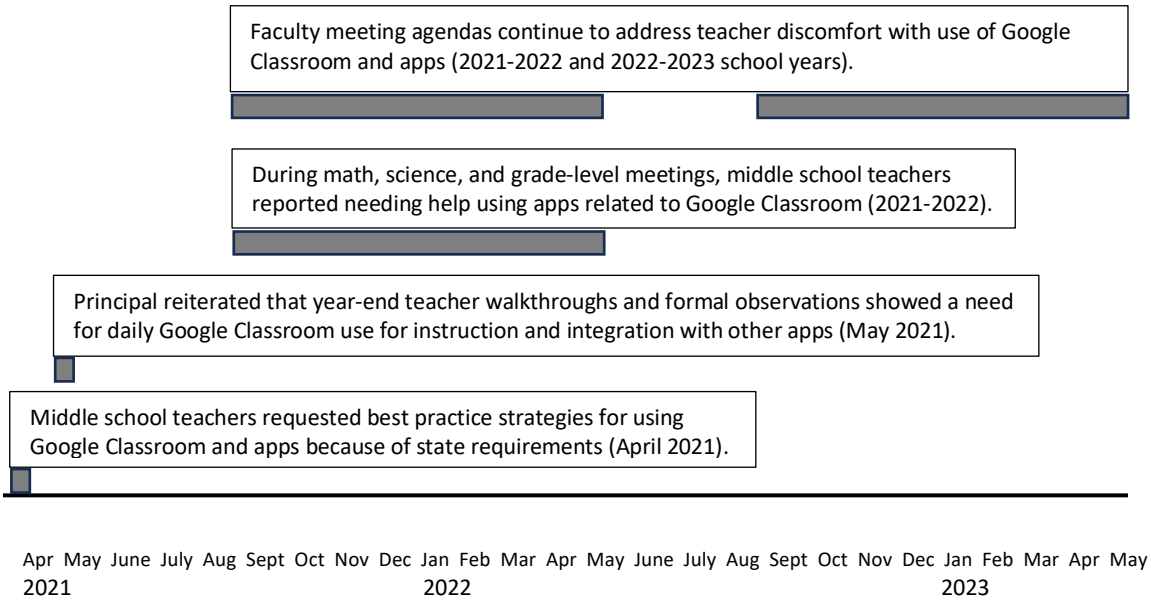
Rationale

The following is evidence showing inconsistent use of Google Classroom and integrated apps in a suburban public school district in the southern United States. In an April 2021 faculty meeting, middle school teachers requested best practice strategies for using Google Classroom and integrating additional apps because of state mandatory requirements. During a faculty meeting in May 2021, the school principal reiterated that year-end teacher walkthroughs and formal observations showed a need for daily Google Classroom use for instruction and integration with other apps. Middle school teachers continued to voice their discomfort with advanced uses of Google Classroom and additional apps, as demonstrated by the recurring topics in faculty agendas in the 2021 and 2022 school years at the qualitative study middle school. In the 2021–2022 academic

year, during mathematics, science, and grade-level meetings, middle school teachers reported that they needed help using some of the apps related to Google Classroom. Figure 1 shows a timeline. This evidence shows that despite administrator expectations, middle school teachers inconsistently used Google Classroom and associated productivity apps, showing a gap in practice at the local site.

Figure 1

Timeline of Evidence of Problem at the Local Site



Scholars have recommended further research on teachers' perceptions of Google Classroom (Kormos, 2021; Laho, 2019; Martin, 2021). Kormos (2021) specifically recommended that more research be conducted across grade levels and content areas to determine how kindergarten through Grade 12 (K–12) teachers use new educational technology. Although schools are increasingly implementing systems such as Google

Classroom, Laho (2019) noted a need for more research. Laho examined teacher and parent use of learning management systems such as Google Classroom in a rural Michigan district. In the quantitative research survey, Laho analyzed data from 266 families and 84 teachers. Teachers continued to use traditional modes such as telephone and email to contact parents needing help using the learning management system.

Martin (2021) also recommended additional research. Martin conducted mixed-method research to explore teachers' perceptions of professional development as a success factor for using Google Classroom. Martin focused on the pedagogical side of technology integration and collected data via online surveys and interviews with 11 K–12 teachers. Martin found that Google Classroom created an engaging learning environment to help students develop 21st-century learning skills, such as creativity, communication, and critical thinking. However, Martin found that teachers needed more training or professional development in implementing and using Google Classroom, leading to its underutilization by teachers to optimal potential. Similar to Martin's study, teachers at the local site of this qualitative study also had not used Google Classroom to the extent that administrators required and sought more support on how to better use associated apps.

The use of Google Classroom in U.S. middle schools is also a gap in the published literature. In a search of Google Scholar for review articles using the terms *middle school teachers* and *Google Classroom*, of the first 70 published articles, all were based in Indonesia, India, and other countries, with none from the United States. Of the first 140 listed articles, only two were from the United States, one of which was a doctoral dissertation. Much of the available research on using Google Classroom has

been conducted on English language learning with university students and in other nations. This qualitative study was designed to fill a gap in practice related to how middle school teachers use Google Classroom in the blended learning environment in U.S. middle schools.

Definition of Terms

Blended learning is a hybrid approach of face-to-face and online instruction (Acree et al., 2017; Suhroh & Cahyono, 2021). Students use digital tools for autonomy and flexibility with pacing and instructional delivery (Suhroh & Cahyono, 2021).

Google Classroom is a free online productivity app designed for teachers, students, and parents to collaborate and communicate (Gleason & Heath, 2021). The cloud-based app is part of the Google Apps for Education suite. Teachers can assign and collect homework and send feedback (Gleason & Heath, 2021; Google, 2022).

Integrated apps are third-party applications that can be integrated with Google Workspace and Google Classroom (Google, n.d.). For example, *Nearpod* is a cloud-based interactive tool that allows image and video sharing, poll creation for feedback, and other interactive tools (Burton, 2019; Buttrey, 2021). *Quizizz* is an integrated app for creating assessments of student learning and engagement (Huei et al., 2021).

Middle school teachers are teachers who instruct students in Grades 6–8.

The technological pedagogical content knowledge (TPACK) framework represents the intersection of technological, pedagogical, and content knowledge (Koehler et al., 2014; Mishra & Koehler, 2006). According to Koehler et al. (2014), the framework is based on the three basic types of knowledge (technological, pedagogical,

and content knowledge) as well as the overlapping areas of those types of knowledge (technological pedagogical, technological content, pedagogical content, and technological pedagogical content knowledge).

Significance of the Study

The findings of this project may contribute to the existing research on Google Classroom and middle school teachers' perceptions about the support that would help them use Google Classroom and integrated productivity apps in the blended learning environment. The study fills a gap in practice at the local site. The findings may provide a new understanding of strategies to help middle school teachers use Google Classroom consistently. Moreover, the findings may help middle school principals to support teachers with the use of Google Classroom. Middle school teachers were asked what supports could help them use Google Classroom and integrated apps in the blended learning environment.

I will use the findings of this qualitative project study to create a professional development program to support middle school teachers using Google Classroom. Furthermore, the findings may help middle school principals better support these teachers. Implications for positive social change within the local school district under study include training to support middle school teachers using Google Classroom, thereby increasing student achievement.

Research Questions

This qualitative study was guided by two research questions. The research questions were as follows:

1. What are middle school teachers' perceptions about the support that would help them use Google Classroom in the blended environment at a suburban public school district in the southern United States?
2. What are middle school teachers' perceptions about the support that would help them integrate specific productivity apps, such as Quizizz and Nearpod, in the blended environment at a suburban public school district in the southern United States?

Review of the Literature

I searched for current peer-reviewed articles using online databases via Walden University's Library. I used ProQuest, ERIC, Google Scholar, Emerald, and SAGE. I located a plethora of literature from peer-reviewed journals, books, government websites, and professional education websites, such as the Education Research Institute. However, most of the research was international. I used these search keywords: *middle school teachers, perceptions, experiences, Google Classroom, integrated apps, teaching strategies, use of integrated apps, middle school teachers' perceptions of using Google Classroom with integrated apps*, and *middle school teachers' experiences on using Google Classroom with integrated apps.* Moreover, I searched for literature related to the conceptual framework of this qualitative project study. The literature review presented in this qualitative project study includes peer-reviewed articles published between 2018 and 2023. Literature published before 2018 is incorporated to support the research methodology for this qualitative project study. In this qualitative project study, I

examined middle school teachers' perceptions of support that would help them use Google Classroom and integrated apps on a consistent daily basis.

In this section, I present a literature review regarding Google Classroom in middle schools, including the features, benefits, and challenges of using Google Classroom in middle schools. The literature review begins with the conceptual framework. Then, previous studies using the conceptual framework are reviewed. The broader problem is reviewed, divided into sections on Google Classroom, U.S. studies on Google Classroom use, international studies on Google Classroom use, integrated apps, benefits of Google Classroom in middle school, challenges with Google Classroom in middle school, and a summary.

Conceptual Framework

TPACK

I used the Mishra and Koehler's (2006) TPACK framework as the conceptual framework for this qualitative project study. TPACK is used to understand how teachers engage students with the integration of technology (Koehler et al., 2014). According to Koehler et al. (2014), the TPACK framework identifies three types of knowledge that teachers should combine to successfully integrate education technology: (a) technological, (b) pedagogical, and (c) content knowledge. I used this conceptual framework to understand middle school teachers' perceptions of support that may help them use Google Classroom with integrated apps. Specifically, I used the TPACK framework to develop the interview protocol, which contains the interview questions.

Teachers need to combine TPACK to integrate technology successfully in the classroom (Koehler et al., 2014). The use of TPACK skills is the foundation and rationale for technology integration (Koehler & Mishra, 2009). For the integration of technology in the classroom to be effective, teachers should match technology use in the classroom with students' academic needs (Koehler & Mishra, 2009).

Koehler and Mishra (2009) identified seven main knowledge areas critical to instruction and learning practice. The seven knowledge constructs represent the overlapping areas of (a) technological knowledge, (b) pedagogical knowledge, (c) content knowledge, (d) technological pedagogical knowledge, (e) technological content knowledge, (f) pedagogical content knowledge, and (g) TPACK. Specific to this study, technological knowledge refers to teachers' knowledge of Google Classroom and the ability to select and use word processors, browsers, and Google apps as software or computer peripherals, iPads, and laptops as hardware. Pedagogical knowledge describes teachers' knowledge of pedagogy or the practices, processes, and methods regarding K–12 teaching and learning. Pedagogical knowledge includes more specific topics such as student learning styles, classroom management skills, lesson planning, and assessments (Koehler & Mishra, 2009). Content knowledge describes teachers' knowledge of the subject matter, including best practices in the field and foundational theories (Koehler & Mishra, 2009).

One of the overlapping areas, technological pedagogical knowledge, describes teachers' understanding of how particular technologies can change teaching and learning experiences (Koehler & Mishra, 2009). Technological content knowledge describes

teachers' understanding of how the subject matter can be communicated via different educational technologies for specific subject matters or classrooms (Koehler & Mishra, 2009). Pedagogical content knowledge describes teachers' knowledge about teaching specific content areas, such as curricula development, student assessment, and connecting content to pedagogy and student engagement. Finally, TPACK focuses on the areas of content, pedagogy, and technology to create an effective basis for teaching using educational technology (Koehler & Mishra, 2009).

Application of TPACK as a Framework in Current Studies

This section focuses on current studies using the TPACK framework. Rets et al. (2020) conducted a mixed-methods study with a sample of 25 preservice teachers to determine whether the use of online communication or virtual exchange impacted their TPACK development. Preservice teachers participated in online pre- and postquestionnaires and made online diary entries. Rets et al. showed that pedagogy reasoning and action development started with teachers' understanding of the blended learning environment, which provided concrete representation and instructional pedagogy. Moreover, knowledge evaluation was used to analyze and reflect on the elements of TPACK (Rets et al., 2020). Teachers needed hands-on training on digital tools such as Google Docs, Moodle, and online collaborative tools. Preservice teachers perceived the pedagogical uses of technology when participating in hands-on training with new digital tools (Rets et al., 2020).

In another study of preservice teachers, Jin and Harp (2020) used TPACK as a framework to investigate the effectiveness of two pedagogical approaches, flipped

classroom and flipped team-based learning. Participants were 32 preservice teachers studying middle-grades education in the United States. Using quantitative survey data, Jin and Harp reported that those in the flipped team-based learning group reported higher TPACK scores.

Bonnafon and Lee (2021) also used TPACK as a framework. Their qualitative study included preservice mathematics teachers using iPads to create screencast video lessons. Participants described in the study were four preservice teachers studying secondary mathematics education at two U.S. universities. Bonafini and Lee analyzed the lesson plans, screencast videos, and participants' reflections and concluded that the four preservice teachers demonstrated TPACK in their lesson plans. Participants expressed some difficulties using the screencast app with the mathematical tool app they chose, which in some instances changed how they presented the lesson, confirming previous literature indicating that the structure of the technology influences pedagogical strategies (Bonafini & Lee, 2021).

Teachers need to know what strategies to use to integrate technology. Hill and Uribe-Florez (2020) used a mixed-methods survey study to examine the strategies that middle and high school teachers use to integrate technology and their TPACK. Participants were 29 math and special education teachers in mathematics classrooms in a rural Mid-Atlantic U.S. district. Hill and Uribe-Florez conducted a mixed-method design, collecting data using a survey with closed-ended questions to measure teachers' TPACK using a Likert scale of 1–5 and open-ended questions on technology integration. Teachers' self-rated pedagogical knowledge was the highest and technological

knowledge the lowest, leading Hill and Uribe-Florez to recommend more professional development related to using technology to enhance teachers' existing understanding of pedagogy. The qualitative responses indicated that barriers to technology integration included a lack of time and resources.

In contrast to Hill and Uribe-Florez's (2020) participants, those in Walan's (2020) study reported confidence in technological knowledge. Walan used TPACK as a framework in a qualitative case study of teachers' strategies in an entirely online format. The participants were two science teachers and their seventh-grade classes. Data were gathered through observations and teacher interviews. The findings revealed that teachers effectively used Google Classroom and a completely digital format with their students, possibly because they had previous confidence in using technology.

Whereas other researchers (e.g., Bonafini & Lee, 2021; Hill & Uribe-Florez, 2020; Walan, 2020) studied teachers and TPACK, Atun and Usta (2019) used TPACK as a framework for studying students and their learning. In a quasi-experimental design, Atun and Usta used a quantitative pre- and posttest to measure the effects of programming education using TPACK on the skills of 41 Turkish sixth graders. Framing the lesson using TPACK resulted in a significant improvement in the treatment group compared to the control group. Atun and Usta noted the importance of matching technology and content.

Review of the Broader Problem

The literature is reviewed based on the following topics. First, Google Classroom is briefly described, and research is reviewed specific to the program. Studies from the

United States are presented first, followed by international literature. Integrated apps are described. The focus of the review then narrows; the next section presents studies showing the benefits of the use of Google Classroom in middle school, followed by a section on challenges in using Google Classroom in middle school. The literature review concludes with a summary.

Google Classroom

Google Classroom is a free, cloud-based resource that is part of the Google Apps for Education suite (Google, 2022). Teachers can use Google Classroom as a learning management system to assign and collect homework and send feedback (Google, 2022). Gleason and Heath (2021) indicated that Google Classroom is a cloud-based system offering online productivity tools for classroom collaboration.

However, in their critical audit, Gleason and Heath (2021) reported that the use of Google Classroom

> limited meaningful interaction, envisioned students as technology users with little agency or control, and predisposed students to unnecessary practices of surveillance and monitoring, all while subjecting them to regimes of data collection and sharing for corporate profit. (p. 26)

Gleason and Health observed that Google Classroom is designed for efficiency rather than pedagogy. Although the program provides self-paced lessons, they posited that it did not provide enough social interaction for young students. Other researchers have agreed that Google Classroom is not based on pedagogy but rather on data gathering (Herold, 2020; Perrotta et al., 2020). Regardless, the use of virtual programs such as Google

Classroom increased with the Coronavirus-2019 (COVID-19) pandemic (An et al., 2021; Hodges et al., 2020; Squire, 2022).

U.S. Studies on Google Classroom Use

Although the majority of studies found in the literature search were international, some studies were reviewed on the use of Google Classroom in the United States. An et al. (2021) conducted a mixed-method study to gather K–12 U.S. teachers' perspectives on online instruction during the COVID-19 pandemic. They conducted an online survey with 107 teachers from 25 states; of those, 13 teachers participated in follow-up interviews. Of the survey respondents, 67% used Google Classroom for course management, 70% used Google Docs, and 63% used Google Slides.

Like An et al. (2021), Francom et al. (2021) reported Google Classroom to be the most popular classroom learning management system. Francom et al. conducted a mixed-method survey study to identify technology resources that U.S. K–12 teachers used when suddenly transitioning from face-to-face instruction to remote teaching due to the pandemic. Francom et al. received responses from 388 teachers in Mississippi and South Dakota, of whom 18% taught middle school. Google Classroom was the most popular learning management system, used by 36% of respondents before the pandemic and 44% after the pandemic began. Respondents used Google Classroom and learning management systems, in order of frequency, for assignments, sharing materials, videos, announcements, two-way communication, assessments, parent communication, student support, and grading. Almost half of the respondents planned to keep using the application after returning to face-to-face instruction (Francom et al., 2021). However,

Francom et al. found that the use of Google Classroom did not eliminate structural inequalities in U.S. school systems, including access to resources and the internet.

According to Squire (2022), during COVID-19, schools around the world rapidly began using online applications. Squire examined technological instruction following the onset of the pandemic to determine the state of education, virtual schooling, and the appropriate role of technology. The study design was an autoethnography that Squire conducted as a parent and teacher, combined with informal interviews, documents, and articles. Squire concurred with Gleason and Heath (2021) and Francom et al. (2021) that the use of online programs like Google Classroom revealed existing inequities among students. Affluent schools were already using online technologies and had little difficulty with the transition. These schools used Google Classroom to deliver teacher-developed content to schools, to provide online learning activities, to integrate with third-party apps, and to collect and provide feedback on student homework. However, families needed to provide dedicated space for students, online and technical resources, and routines to support students, all of which were more difficult for poorer families (Squire, 2022).

Further, Squire (2022) noted that the way students used technology for their interests outside of school was different from the prescribed format used by schools. Students preferred to use technology in creative ways, and Squire found that schools often did not employ creative integrated apps and virtual reality field trips. As learning management systems, Google Classroom and Canvas did not provide adequate social presence (Squire, 2022).

Bishop (2021) reported similar findings as Squire (2022) and Gleason and Health (2021) regarding educational inequities in online instruction. Bishop gathered narrative responses to a survey of 332 middle school teachers in the United States to determine aspects of their practice that might have improved while teaching remotely. Bishop found that teachers described using Google Meet for weekly check-ins with students and using Google Classroom to differentiate instruction. Teachers used a variety of integrated apps to provide feedback, including video feedback, rather than lengthy written critiques.

Research revealed that technology had a major role in the field of education, yet teachers were having challenges using Google Classroom. Dexter and Richardson (2020) examined technology integration literature to identify leadership practices that supported K–12 teachers' technology integration efforts. Using the findings from 34 peer-reviewed journals, Dexter and Richardson reported that teachers needed opportunities to learn about technology integration. Technological knowledge of teachers was a predictor of the integration of technology in classrooms (Dexter & Richardson, 2020). Teachers were required to coordinate school curricula and promote technology integration in classrooms (Dexter & Richardson, 2020).

To investigate the effectiveness of Google Classroom in higher education, Murphy et al. (2020) examined undergraduate college students' perceptions, general preferences, emotional responses, and comment themes with the transition to a virtual learning classroom during the COVID-19 pandemic. Participants were 148 students from a college in the northeastern United States who completed an 18-item survey about their transition to virtual classes. The students indicated that their professors used the learning

management system effectively with virtual coursework, and their professors adapted and communicated changes in course content during the transition. Professors used the learning management system to regularly communicate course expectations, syllabus changes, and grades to students. However, students expressed negative emotions such as uncertainty, anxiety, and nervousness when transitioning to virtual classes during the pandemic (Murphy et al., 2020). Students appreciated professors who exhibited flexibility and continual contact (Murphy et al., 2020).

International Studies on Google Classroom Use

Internationally, Google Classroom has become popular due to the pandemic and because the program is free. Google Classroom has become one of the most widely known online learning platforms being used in the global education sector. According to Tarteer et al. (2022), the limited cost of using the program is the main reason for its widespread use. Tarteer et al. studied the experiences of female Palestinian students in Grade 11 English classes using Google Classroom by interviewing the students in a qualitative study. Tarteer et al. reported that Google Classroom had several built-in features for pedagogical and technological aspects. Results indicated that most students were interested in using Google Classroom. Some students reported internet speed difficulties and thus preferred face-to-face instruction to the use of the online program. As with the U.S. studies by Gleason and Heath (2021) and Squire (2022), the lack of access to appropriate internet resources prevented adequate use of Google Classroom.

Whereas Tarteer et al. (2022) conducted a qualitative study, Suhroh and Cahyono (2021) used a quantitative survey method with 25 teachers in Indonesia to find factors

that influenced the use of Google Classroom. Suhroh and Cahyono confirmed that the free nature of Google Classroom was a factor in its use. Additionally, respondents specified Google Classroom was beneficial because it allowed easy communication and data analysis. Suhroh and Cahyono reported that Google Classroom allowed lesson collaboration between students and teachers because teachers could create a lesson for certain content and allow students to collaborate on lesson plans. Google Classroom presented an opportunity for an active learning environment where students could define and set their own pace of learning based on their unique needs (Suhroh & Cahyono, 2021). Also, Suhroh and Cahyono indicated that Google Classroom allows real-time questions and answers from teachers. Google Classroom improved educators' classroom management experience through different tools, such as scheduling tools, communication, and notification (Suhroh & Cahyono, 2021). Challenges in the use of Google Classroom were poor internet connection for students, reported by 93% of teacher respondents, and poor internet connection for instructors, reported by 80% of respondents.

In another quantitative study, Sulisworo et al. (2020) examined Google Classroom use in Indonesia. According to Sulisworo et al., the application of technology in the education sector presents unique experiences for teachers and students. Sulisworo et al. examined the effect of blended learning using Google Classroom using a posttest-only design with a treatment and control group. The treatment group used Google Classroom, whereas the control group used the application Schoology. The independent variable was the learning strategy, and the dependent variable was critical thinking skills (Sulisworo et

al., 2020). The sample was two classes of high school students in a school in Indonesia who were selected using cluster random sampling (Sulisworo et al., 2020). An analysis of variance demonstrated that students using Google Classroom scored lower on critical thinking skills than those using Schoology. Sulisworo et al. indicated main differences were that Schoology used social media, enabled the sharing of learning resources, and was simpler than Google Classroom.

Also, in Indonesia, Sukmawati and Nensia (2019) investigated the role of Google Classroom in English language teaching. In a descriptive qualitative study, the researchers interviewed 16 university students who used Google Classroom. Sukmawati and Nensia reported that Google Classroom supported better communication between students and teachers. By improving communication between teachers and students, Google Classroom allowed students to remain on a given task.

In a qualitative study on the use of Google Classroom in Indonesia, Harjanto and Sumarni (2021) interviewed 35 high school teachers to examine their experiences using Google Classroom. Results indicated that the teachers had mixed perceptions regarding the benefits of using Google Classroom. “Teachers use Google Classroom as a facilitation tool for managing students’ tasks, organizing the classroom and accommodating students’ interaction” (Harjanto & Sumarni, 2021, p. 8). However, Google Classroom limited physical interaction and socialization among users, and some users had connection difficulties (Harjanto & Sumarni, 2021).

Similar to Harjanto and Sumarni’s (2021) findings, Octaberlina and Muslimin (2020) found internet connectivity to be a barrier to Google Classroom use. Octaberlina

and Muslimin examined Indonesian students' perspectives on online learning barriers and alternatives using Moodle/Google Classroom during the COVID-19 pandemic. With a descriptive, mixed-method survey design, Octaberlina and Muslimin used questionnaires and interviews to collect data from a sample of 25 university students studying English as a foreign language. Instructors used Google Classroom to distribute and grade assignments and to share files with students. Students described difficulties as unfamiliarity with online learning, slow internet connection, and physical conditions such as eye strain (Octaberlina & Muslimin, 2020). Furthermore, teachers need training on the use of learning management to maintain good communication with students (Octaberlina & Muslimin, 2020).

Google Classroom also benefits students in various ways. In Indonesia, Sartika et al. (2021) conducted a quantitative survey study to understand seventh-grade students' perceptions of learning writing using Google Classroom. The sample of 54 students indicated positive perceptions of Google Classroom to learn writing English. Sartika et al. described Google Classroom as providing quick access, secure cloud storage, communication, and collaborative learning.

In a quantitative study, Laili and Muflihah (2020) sought to determine the effectiveness of Google Classroom with Indonesian high school students learning writing. The sample was 30 students in Grade 10 in Indonesia who completed pre- and posttests and a questionnaire. Students showed significant improvement in writing and a neutral view of the application (Laili & Muflihah, 2020). Laili and Muflihah stated that the accessible features of Google Classroom encouraged teachers and students to use it

for Google Docs, translation applications, transcription features, Google Calendar, and Gmail for communication.

Azhar and Iqbal (2018) reported similar useful features of Google Classroom as Laili and Muflihah (2020). Azhar and Iqbal conducted a qualitative study in Pakistan to explore teachers' perceptions of the effectiveness of Google Classroom. Azhar and Iqbal interviewed 12 high school teachers and found that Google Classroom offered an effective classroom tool for reading; writing; presenting with visuals; submitting work; keeping track of assignments; and facilitating communication between teachers, students, and parents. Azhar and Iqbal indicated that the primary key features of Google Classroom included Google Drive, which teachers can use to create and distribute information such as Google Docs, sheets, and slides for writing; Gmail for communication; and Google Calendar for scheduling tasks. Given these features, Google Classroom has become useful for learning in the 21st century.

Integrated Apps

Additional apps can be used with Google Classroom, such as Nearpod and Quizizz. Huei et al. (2021) stated that Quizizz is more user-friendly than Google Classroom. Quizizz is an assessment application described as being interactive and easy to use (Huei et al., 2021). In a mixed-method study among English language students in rural Malaysian schools, 10 of the 13 students showed improvement after using Quizizz (Huei et al., 2021). Students reported the app was useful and motivating. Additionally, Quizizz allowed collaboration.

In a quantitative study, Vitarani et al. (2021) reported students using Quizizz and Zoom Cloud Meeting reported enthusiasm and interest in the course. Zoom Cloud Meeting allows for asynchronous collaboration and discussion. Likert-type data showed statistically significant increases in student interest in the course after using the apps (Vitarani et al., 2021).

Another app frequently used in conjunction with Google Classroom is Nearpod. Nearpod is a cloud-based interactive tool designed to engage students (Burton, 2019). As a teacher, Burton (2019) reported being able to share slides with students via smartphones or iPads and create polls for feedback. Shyer students could ask questions anonymously through the app. Additionally, the app could be used to interact asynchronously or synchronously (in real time). Virtual field trips were possible. Additionally, Nearpod could direct students to appropriate information in the learning management system, such as Google Classroom (Burton, 2019).

In a similar personal review, Buttrey (2021) described a case study of Nearpod use with the author's preservice teachers. Nearpod can convert PowerPoint slides into more interactive presentations or polls (Buttrey, 2021). Students could provide feedback or ask questions through the app, take quizzes, and participate in the class as an engaged group. Buttrey stated engagement increased from 50% to 100% among students in the author's class after using Nearpod.

Most of the studies were conducted with university students; Buttrey (2021) indicated studies at the elementary or middle school level are limited. However, Qi et al. (2021) described a Nearpod lesson to teach Grade 11 Chinese students about climate

change. The qualitative study used observational data to determine how well Nearpod worked as an interactive classroom tool. Students used the tool in their science class to explore the effects of global warming on the Earth and people's lives. Nearpod allowed students to investigate various perspectives (Qi et al., 2021).

In another study of Nearpod with young students, Delacruz (2014) used Nearpod with nine suburban fourth graders in the southeastern United States, of whom four were English language learners. When asked whether they preferred a book or Nearpod, all students stated they preferred the interactive nature of Nearpod on the iPad. Students with limited English skills could draw a definition of a word. Delacruz concluded that Nearpod increased inclusion as well as engagement. Delacruz also recommended the use of Nearpod with guided reading instruction, as the app is easy to use, engages students, and allows for progress monitoring.

Benefits of Google Classroom in Middle School

Google Classroom and related integrated apps such as Nearpod and Quizizz can be effective methods for helping both teachers and students in online learning. The many features can make online learning manageable in the classroom for middle school students. Benefits of Google Classroom, based on the literature, include improved course management, instruction flexibility and differentiation, improved communication with students and parents, and learning 21st-century skills.

Improved Course Management. Hill and Uribe-Florez (2020), in a qualitative study with 19 teachers, explored the effectiveness of Google Classroom and found that teachers who used Google Classroom reported improved classroom management.

Reported class management features included a built-in calendar for scheduling lessons, announcements, posts, and Gmail for communication. Hill and Uribe-Florez concluded that teachers' use of Google Classroom helped them improve overall classroom management by using different features to organize, plan, share, grade, and give feedback to students.

Like Hill and Uribe-Florez (2020), teachers in An et al.'s (2021) study used Google Classroom to organize, instruct, and provide feedback to students. An et al. conducted a mixed-method study to gather K–12 U.S. teachers' perspectives on online instruction during the COVID-19 pandemic. They conducted an online survey with 107 teachers from 25 states. Of the survey respondents, 67% used Google Classroom for course management, 70% used Google Docs, and 63% used Google Slides. These statistics show a high percentage of participants used Google Classroom regularly.

In another mixed-method survey study, Francom et al. (2021) sought to identify technology resources U.S. K–12 teachers used when suddenly transitioning from face-to-face instruction to remote teaching due to the pandemic. Francom et al. received responses from 388 teachers in Mississippi and South Dakota, of whom 18% taught middle school. Google Classroom was the most popular learning management system, used by 36% of respondents before the pandemic and 44% after the pandemic. Respondents used Google Classroom and other learning management systems for assignments, sharing materials, videos, announcements, two-way communication, assessments, parent communication, student support, and grading. Almost half of the respondents planned to keep using the application after returning to face-to-face

instruction (Francom et al., 2021). Middle school teachers in these studies (An et al., 2021; Francom et al., 2021; Hill & Uribe-Florez, 2020) persisted in their use of Google Classroom after returning to more traditional instruction.

Some teachers complained about the lack of consistency that Google Classroom provided when transitioning to online instruction. Tawfik et al. (2021) conducted a qualitative case study, interviewing six teachers in an urban U.S. school serving kindergarten through Grade 8. The purpose of their study was to determine how teachers overcame barriers when switching suddenly to a fully online format due to the COVID-19 pandemic. The school did not use Google Classroom prior to moving to remote instruction, and until the system was implemented, teachers were frustrated by the lack of consistency and having to send students to multiple websites and resources. After implementing Google Classroom, teachers were able to create daily agendas, for example, with links to everything in Google Classroom that students would be using (Tawfik et al., 2021).

Teachers in studies by both Tawfik et al. (2021) and Walan reported that Google Classroom enabled them to provide agendas, lessons, and resources in an online environment, demonstrating the benefits of using Google Classroom regularly. Walan (2020) observed and interviewed seventh-grade science teachers in a digital setting due to the pandemic. The teachers planned further ahead than they had before using Google Classroom. Using Google Classroom enabled teachers to share the lesson agenda and required materials well in advance as compared to their traditional setting before the

pandemic. Teachers planned earlier and used more structure in their planning (Walan, 2020).

Instruction Flexibility and Differentiation. Google Classroom allows students to work at their own pace, encouraging flexibility in teaching and learning (An et al., 2021; Bishop, 2021; Walan, 2020). For example, An et al. (2021) conducted a mixed-methods study to explore U.S. K–12 teachers' perceptions of online teaching during the COVID-19 pandemic. Teachers described a benefit of online learning as students being able to learn at their own pace as well as teachers being able to provide differentiated instruction. Bishop (2021) also reported differentiated instruction as a benefit. Bishop surveyed 332 U.S. middle school teachers and found qualitative descriptions of being able to differentiate instruction better than before they used Google Classroom, in part because remote instruction and feedback were private. The asynchronous, one-on-one engagement led teachers to know students better without the distraction of classroom behavior management. Bishop also noted the personalized pace of learning through Google Classroom and related apps was supported by teachers using checklists and communicating expectations well in advance. In another study indicating flexibility as a benefit, seventh-grade science teachers in Walan's (2020) study reported Google Classroom and digital instruction allowed students to work at their own pace and level. Teachers found individualizing instruction easier (Walan, 2020).

Acree et al. (2017) described Google Classroom as flexible and offering mobility for teachers and students. Acree et al. conducted a mixed-methods case study evaluation of Leadership in Blended Learning, a professional development program for school

leaders. Unlike in conventional classrooms, teachers can virtually communicate with students through Google Video (Acree et al., 2017). This allows students to have one-on-one meetings with teachers who can help them in various areas (Acree et al., 2017). Using videos and Google calls makes Google Classroom flexible in terms of communication. In addition, Google Classroom is flexible because students and teachers can access different materials.

Like other studies (e.g., Acree et al., 2018; Walan, 2020), Hill and Uribe-Florez (2020) reported that Google Classroom allowed students to organize materials and access them at their own convenient time. Students were free to access the materials and set the pace they wanted to learn. Thus, Hill and Uribe-Florez emphasized that Google Classroom gave students autonomy to decide their pace of learning, which created an active learning environment.

Improved Communication With Students and Parents. In addition to differentiated instruction, a benefit of Google Classroom use in middle school is improved communication with students and parents. The flexibility of asynchronous communication may yield better results for parents (Bishop, 2021). Bishop (2021) found middle school teachers reported increasing communication with students as well as parents when using Google Classroom. As a result, many teachers reported becoming more familiar with students and their families through the communication strategies they used when teaching remotely. They used Google Classroom and Google Meet for weekly check-ins, emails, and videos to communicate with students and parents (Bishop, 2021). Teachers in Francom et al.'s (2021 study noted use of Google Classroom increased their

communication with parents. Similarly, teachers in Tawfik et al.'s (2021) case study found using videoconferencing tools such as Google Meet helped them connect more deeply with parents and students.

Students also can receive immediate feedback on their work (Bishop, 2021; Hill & Uribe-Florez, 2020; Jin & Harp, 2020; Walan, 2020). Jin and Harp (2020) maintained a benefit of Google Classroom is real-time learning. Students can ask questions and receive instant feedback for improvement from their teachers (Jin & Harp, 2020). Seventh-grade science teachers in Walan's (2020) study also appreciated the faster assessment and feedback Google Classroom provided.

Learning 21st-Century Skills. Using Google Classroom in middle schools can improve 21st-century learning skills and familiarity with technologies for both students and teachers. Bishop (2021) found that being forced to teach remotely due to the pandemic led U.S. middle school teachers to increase their efficacy and comfort level with technology. To instruct students on technology use, teachers need self-efficacy and confidence in using ever-changing technologies in the classroom. Teachers began using technology more frequently for instruction as well as assessment, including Google Classroom (Bishop, 2021). Francom et al. (2021) reported a similar finding; teachers reported planning to continue using Google Classroom and other applications even when not required to by remote teaching.

In addition to improving teacher facility with technology, student skills improve with Google Classroom use, including technology and time-management skills. Tawfik et al. (2021) stated that to succeed in online learning, students must become technologically

savvy and have self-regulation and time-management skills. Teachers in Tawfik et al.'s case study stated that after using Google Classroom and related technologies, they intended to continue using the applications daily in their classrooms to strengthen students' technological skills.

Williams et al. (2020) used Google Classroom and related applications (such as Google Slides, Google Forms, Google Sheets, and Google's Teachable Machine) to modify their project-based learning curricula to an online format. The curricula taught artificial intelligence to U.S. middle school students. Williams et al. collaborated with middle school teachers to develop the curricula, and 78 students in 10 schools participated in a workshop as part of the study. As middle school students "explored technical concepts in tandem with ethical ones, they developed a critical lens to better grasp how AI [artificial intelligence] systems work and how they impact society" (Williams et al., 2020, p. 1). Teachable Machine is a Google tool that allows users to create data categories, train the computer model, and then evaluate the machine learning model. Teachable Machine allowed students to conduct quick trial-and-error experiments. Williams et al. stated using online tools such as Google's Teachable Machine offered an inexpensive, accessible way to train students on machine learning and artificial intelligence.

Other 21st-century skills related to Google Classroom use include abstract science concepts. Seventh-grade science teachers in Walan's (2020) study used Google Classroom and related technologies to help students visualize abstract science concepts and provide real-world contexts. Additionally, the digital format kept information up to

date and engaged students (Walan, 2020). Although Google Classroom has many benefits in middle school, its use has several challenges, including inequitable home internet access; lack of resources, time, and support; and lack of teacher training.

Challenges With Google Classroom in Middle School

The literature reviewed included studies that indicated challenges teachers face implementing and using Google Classroom in middle schools. A common challenge has been structural inequities, such as students' unequal access to broadband internet and computers (An et al., 2021; Bishop, 2021; Francom et al., 2021; Smith, 2020; Vogels, 2021). The second major challenge is the lack of resources, time, and support (Acree et al., 2017; Francom et al., 2021; Tawfik et al., 2021; Walan, 2020). The third challenge is the lack of training on Google Classroom and apps (An et al., 2021; Francom et al., 2021; Kormos, 2021; Tawfik et al., 2021).

Structural Inequities. Not all students have equal access to broadband internet access. Smith (2020) reported residents in Westside Atlanta often lacked broadband internet. For instance, in a Pew Research Center report, Vogels (2021) stated that lower-income Americans may not own a smartphone, have broadband internet service, or have a computer. Based on an analysis of Pew Research Center survey data, among families reporting incomes of $30,000 or less, 59% stated it was likely that their child would encounter three obstacles to online learning: having to do schoolwork on a cellphone, having to use public internet due to no reliable internet at home, and being unable to complete schoolwork due to lack of computer access (Vogels, 2020). In comparison, only

13% of upper-income families reported that students would likely encounter all three obstacles (Vogels, 2020).

Teachers in Francom et al.'s (2021) study reported that a substantial proportion of students still lacked internet or computer access needed for online learning, presenting a major challenge in using Google Classroom and other applications. Similarly, teachers in An et al.'s (2021) study reported that students' lack of access to technology was a barrier to the use of Google Classroom in the blended learning environment. Bishop (2021) explained that inequities impacted middle school teachers' use of technologies such as Google Classroom, as not all students had a reliable internet connection.

Even otherwise well-supplied classrooms can suffer from internet connectivity problems. Walan (2020) used TPACK as a framework in a qualitative case study of teachers' strategies in an entirely online format. The participants were two science teachers and their seventh-grade classes. Data were gathered through observations and teacher interviews. Teachers effectively used Google Classroom and a completely digital format with their students, possibly because they had previous confidence in using technology. In some situations, even well-supplied classrooms had connectivity issues. For example, in Walan's case study, teachers had adequate technological resources, and students had access to Chromebooks. However, their server sometimes became overloaded when all the students' Chromebooks were connected.

Lack of Resources, Time, and Support. Teachers, students, and schools require additional resources other than the internet to use Google Classroom. Time to learn and practice using the application is a scarce commodity (Acree et al., 2017). Teachers

reported needing more time for preparation using technologies like Google Classroom (Francom et al., 2021; Tawfik et al., 2021). The seventh-grade science teachers in Walan's (2020) study were confident with technology yet still reported a lack of time to become sufficiently familiar with Google Classroom and the technology.

Teachers in Tawfik et al.'s (2021) study also reported having to troubleshoot technology as a barrier. Administrator and technical support can be a challenge when using Google Classroom and other apps, according to Tawfik et al. In one instance, administrators decided to block Google as a policy, which led to a complete inability to use Google Classroom (Tawfik et al., 2021).

Lack of Teacher Training on Google Classroom and Apps. The third major barrier to consistent use of Google Classroom and related apps, in addition to structural inequities and lack of resources, time, and support, is the lack of teacher training. Teachers in several studies cited a lack of training and learning by doing through "trial and error" using that exact phrase (Francom et al., 2021; Kormos, 2021; Tawfik et al., 2021). For example, in a quantitative study, Kormos (2021) surveyed 379 urban K–12 teachers in a Mid-Atlantic state. Teachers used trial and error to learn to use new technologies, citing a lack of funds for training. They rarely used Google Classroom as a learning management system (Kormos, 2021). Kormos stated teachers need guidance on effectively integrating technology into classroom practice.

Other studies demonstrated a need for more training. Teachers in An et al.'s (2021) study described the difficulty of both students and teachers having to learn the new technology. Similarly, 90% of the 388 teachers in Francom et al.'s (2021) study

reported being unprepared for teaching online and facing great challenges. Science teachers in Walan's (2020) study were comfortable with technology use yet still stated they needed training on Google Classroom. Without formal training, teachers relied on colleagues and social media to learn the application (Walan, 2020). Additionally, some students struggled with technology, and teachers needed training to assist those students (Walan, 2020).

Summary of the Literature Review

Research on the experiences of teachers and students using technology, especially Google Classroom, to teach and provide instructional learning to students has shown the technology to be effective. Google Classroom is free and convenient. The application enables course management, allows students to work at their own pace and level, supports individualized instruction, improves communication with students and parents, and supports 21st-century skills. However, structural inequities; lack of resources, time, and support; and lack of training to learn the technology have negatively impacted the use of Google Classroom. Limited knowledge of how to use Google Classroom made it impossible for instructors to use all the features provided in the platform to improve their instruction delivery and improve learners' experiences.

Implications

Google Classroom is extremely popular in U.S. K–12 schools (An et al., 2021; Francom et al., 2021). However, research is limited to U.S. middle school teachers' use of Google Classroom. Additionally, studies have recommended further research on teachers' perceptions of Google Classroom. For instance, Martin (2021) conducted

mixed-method research to explore teachers' perceptions of professional development as a success factor for the use of Google Classroom. Martin found that Google Classroom effectively created an engaging learning environment to boost students' 21st-century learning skills, such as creativity, communication, and critical thinking. However, teachers lacked adequate training or professional development in implementing and using Google Classroom, leading to its underutilization by teachers to optimal potential. Martin concluded that professional development was critical to K–12 teachers' use of Google Classroom. Martin also recommended further research focused on exploring teachers' perceptions regarding the factors that influence the use of Google Classroom, including barriers and facilitators. Teachers in several studies cited a lack of training and learning to use Google Classroom through trial and error (Francom et al., 2021; Kormos, 2021; Tawfik et al., 2021). Scholars have recommended further research on teachers' perceptions of Google Classroom (Kormos, 2021; Laho, 2019; Martin, 2021).

Based on the identified gap in the literature and gap in practice at the site, in this study, I explored middle school teachers' perceptions about the support that would help them use Google Classroom consistently while integrating other productivity apps such as Quizizz and Nearpod at a suburban public school district in the southern United States. Findings might be used to develop professional development to support middle school teachers with the use of Google Classroom and integrated apps in the blended learning environment.

Summary

Middle school teachers in a suburban southern school district were using Google Classroom but not consistently or to their full potential. In this qualitative project study, I explored middle school teachers' perceptions about the support that would help them use Google Classroom consistently while integrating other productivity apps such as Quizizz and Nearpod. Literature is lacking on the use of Google Classroom by U.S. middle school teachers. The qualitative study addresses a gap in practice by exploring middle school teachers' perceptions to find solutions to why they are not meeting stakeholders' expectations. Section 2 includes the research methods used to conduct the qualitative study.

Section 2: The Methodology

Qualitative Research Design and Approach

The problem addressed through this qualitative study was that middle school teachers in a suburban public school district in the southern United States were inconsistently using Google Classroom in their classrooms. At the project site, middle school teachers were creating a blended learning environment; however, they needed to integrate other educational apps such as Quizizz and Nearpod when using Google Classroom, according to district policy. The purpose of this qualitative study was to explore middle school teachers' perceptions about the support that would help them use Google Classroom consistently while integrating other productivity apps such as Quizizz and Nearpod at a suburban public school district in the southern United States.

Qualitative Research

In qualitative research methodology, researchers intend to explore a phenomenon in its real-life status using participants' views and thoughts, as well as the meaning they attach to their experiences (Merriam & Tisdell, 2016). Similarly, I used a qualitative research design to investigate the perceptions of participants (see Patton, 2014). Specifically, I used a qualitative research methodology to gather detailed information from participants regarding their perceptions about factors that would help them use Google Classroom and apps including Quizizz and Nearpod. I did not choose quantitative research because I was not exploring the interaction of variables through statistical analysis (Creswell & Creswell, 2018). To explore the perceptions of individuals, a

qualitative approach is often more appropriate and allows for the use of participants' words and ideas (Creswell & Creswell, 2018).

Choice of the Basic Qualitative Design

I chose a basic qualitative design using semistructured interviews. In a basic qualitative study, data are analyzed to provide an in-depth understanding of how participants perceive and assign meaning to a phenomenon (Merriam & Tisdell, 2016). Typically, responses to a single instrument, such as open-ended questionnaires or interviews, are analyzed in a basic qualitative design (Saracho, 2017). The design is most appropriate to answer the research questions, which ask about teachers' perceptions:

1. What are middle school teachers' perceptions about the support that would help them use Google Classroom in the blended environment at a suburban public school district in the southern United States?
2. What are middle school teachers' perceptions about the support that would help them integrate specific productivity apps, such as Quizizz and Nearpod, in the blended environment at a suburban public school district in the southern United States?

I considered a qualitative case study, but case studies require multiple forms of data collection (Yin, 2018). I also considered a qualitative ethnography, which focuses on a specific cultural group. However, the participants were not a cultural group. A grounded theory approach would not have been appropriate, as I was not trying to develop or test a theory (Johnson et al., 2020). Phenomenology includes participants' motivations and ascribed meanings (Johnson et al., 2020), which were not aligned with

the research questions. In conclusion, I deemed the basic qualitative design the most appropriate. The design is a flexible approach to understanding individuals' perceptions. Basic qualitative designs are also appropriate in an exploratory study without defined variables (Creswell & Creswell, 2018; Percy et al., 2015).

Participants

Criteria

Purposeful sampling is used in a basic qualitative design to gather data from participants to answer the research questions (Creswell & Guetterman, 2019). Rather than a random sample, a nonrandom, purposeful sample enables the selection of a small group of participants with experience and knowledge of the topic being investigated (Creswell & Guetterman, 2019). Use of purposeful sampling is efficient and cost effective; the drawback is the lack of input from a broader population (Palinkas et al., 2015). A criterion-based purposeful sampling approach was used in this qualitative study (see Palinkas et al., 2015). Criteria for participation in this qualitative study indicated that participants needed to be middle school teachers in the study district in a southern state who had access to and could describe experiences with Google Classroom and related productivity apps, including challenges and supports they might need. These criteria were listed on the invitation to participate as well as the consent form. Participants taught students in Grades 6–8. Exclusion criteria were not teaching at a middle school in the study district, being an administrator rather than a teacher, not being able to describe experiences with Google Classroom and related productivity apps, and being employed in

the math department at the middle school where I teach. The district has approximately 200 middle school teachers, who were the participant pool.

Sample Size

Qualitative studies typically have low numbers of participants but gather rich information from each participant (Creswell & Guetterman, 2019; Merriam & Tisdell, 2016). Patton (2014) specified that five to 15 participants are typically sufficient for a case study. For phenomenology, Creswell and Creswell (2018) suggested a sample of three to 10. In terms of sample size for a qualitative study, there are no specific guidelines for reaching data saturation (Fusch & Ness, 2015). The true test of sufficiency is data saturation, when continued interviews do not reveal new information (Braun & Clarke, 2021; Fusch & Ness, 2015). Braun and Clarke (2021) stated that data saturation is likely with thematic analysis with six to 16 interviewees but is still arbitrary in qualitative research. The predicted sample for this qualitative study was 10–12 interviewees; the final sample was 10.

Gaining Access to Participants

Before selecting the participants for this qualitative study, I received Institutional Review Board (IRB) approval from Walden University as well as approval from the school district to conduct the research. I sent the district administration the Partner Organization Agreement for Low-Risk, Work-Related Interviews, as prescribed by Walden University (see Appendix B). I assured the district that students were not involved in the qualitative study and that all interviews would occur before or after school and not interfere with instruction.

The district has 11 middle schools employing approximately 200 teachers. As an employee of the district, I can access teacher emails through Outlook. I emailed all middle school teachers in the district an invitation, using text specified by Walden University (see Appendix C). An exception was math teachers at the middle school where I work, as I have supervisory responsibilities in the math department. The email explained the purpose of the qualitative study, the criteria to participate, the voluntary and confidential nature of the qualitative study, and the length of the interview. Interested recipients could contact me for more information. If I did not receive responses from at least 10 volunteers after 2 weeks, I would send a second invitation email to those who did not respond. If I received responses from more than 12 volunteers, I would choose participants from different schools and content areas, to ensure a diverse representation. I would give preference to core content areas and general education teachers rather than special education to increase the transferability of findings to a broader audience. I would email the remaining respondents thanking them for their interest and placing them on a waitlist in case any of the 12 chosen teachers left the qualitative study. Ultimately, 11 teachers responded, and 10 agreed to schedule an interview. I emailed interested teachers a copy of the consent form and began to schedule individual interviews. Interviews took place via Zoom and were audio recorded.

Researcher–Participant Working Relationship

To establish a relationship with the participants, I made sure that the participants were comfortable during the interview process to share their responses. I stated that their faces would not be recorded, only the audio portion. I also ensured confidentiality by

explaining that my chair, my second committee member, and I were the only three individuals with access to the recording and transcripts. During the interview, I paid close attention to their responses to establish a rapport and assure them that their information was valuable to my qualitative study. I also established a relationship by answering any questions they had about the qualitative study. Each interview was expected to take up to an hour. At the end of the interview, I thanked each interviewee for participating and gave them a thank you card and a $20 gift card.

Ethical Considerations and Participants' Rights

All ethical principles were followed as outlined by the IRB. Approval to conduct the qualitative study was obtained from IRB and the study school district before any data collection or contact with participants occurred. All information discussed, recorded, and transcribed would only be seen by my committee members and myself. Participants reviewed the consent form, and if they understood the qualitative study and wished to proceed, they indicated their consent.

Participant identities were protected. School administrators would not know who participated in the qualitative study. No details are included in the final report that could reveal a participant's identity. Participants were given a numerical ID (e.g., "Teacher 1"). All data have been password protected or saved in a locked filing cabinet.

Data Collection

For my planned research design, I used semistructured interviews for my data sources. I set aside days to interview 10 middle school teachers virtually through Zoom.

Interviews took place after school hours. Interviews gathered qualitative data aligned with the research questions.

Semistructured Interview Protocol

The research questions were specific to the qualitative study problem and site, so I developed a protocol for semistructured interviews rather than using a preexisting measure. Semistructured interviews have a predetermined set of open-ended questions that allow for topics to be explored while maintaining some consistency between interviews (Rubin & Rubin, 2012). Prompts and probing questions may be used to clarify participant responses if necessary. Unlike a strictly structured interview, a semistructured interview yields more of a conversation than a formal question-and-answer situation, allowing participants to express themselves more freely (Rubin & Rubin, 2012). Using a protocol, even a flexible one, increases reliability as it ensures consistency across interviews (Merriam & Tisdell, 2016). Reliability means that another researcher could use the same protocol to gather similar data (Merriam & Tisdell, 2016). Using a prepared introductory script also ensured that I safeguarded participants' rights, such as reviewing informed consent.

Interview questions were developed based on my experience observing teachers' use of technology, the research questions, the conceptual framework, and the literature review. I developed the protocol with the help of a professional researcher with 25 years of experience in education dissertation research and the development of protocols. Details on question development follow.

Interview Questions 2 and 7 asked about the use of Google Classroom and apps to differentiate instruction, engage students, manage the class, and assess students. The TPACK framework is related to using technology for pedagogical purposes, such as differentiated instruction, classroom management, and assessment (Koehler & Mishra, 2009). Although Martin (2021) described Google Classroom as creating an engaging learning environment, some researchers have questioned whether Google Classroom provides enough social interaction and engagement for young students (Gleason & Heath, 2021; Harjanto & Sumarni, 2021); responses might provide new information. Google Classroom has been used to differentiate instruction (An et al., 2021; Bishop, 2021; Walan, 2020). Apps such as Quizizz can motivate and engage students (Buttrey, 2021; Huei et al., 2021; Vitarani et al., 2021). Hill and Uribe-Florez (2020) described Google Classroom as a useful classroom management tool. Finally, Google Classroom and related apps allow for assessment and immediate feedback (Bishop, 2021; Hill & Uribe-Florez, 2020; Jin & Harp, 2020; Suhroh & Cahyono, 2021; Walan, 2020).

Interview Questions 3 and 9, regarding challenges with Google Classroom and apps, respectively, were based on the literature. A common challenge has been structural inequities, such as students' unequal access to broadband internet and computers (An et al., 2021; Bishop, 2021; Francom et al., 2021; Smith, 2020; Vogels, 2021). The second major challenge is the lack of resources, time, and support (Acree et al., 2017; Francom et al., 2021; Tawfik et al., 2021; Walan, 2020). The third challenge is the lack of training on Google Classroom and apps (An et al., 2021; Francom et al., 2021; Kormos, 2021; Tawfik et al., 2021).

Related to that third challenge, Interview Questions 4, 8, 9, and 10 related to ease of use and need for professional development. In faculty meetings at the qualitative study site, middle school teachers requested training and best practice strategies for using Google Classroom and integrating additional apps. Researchers have reported that teachers need professional development to integrate technology into the classroom, including Google Classroom and other online tools (Dexter & Richardson, 2020; Hill & Uribe-Florez, 2020; Martin, 2021; Rets et al., 2020). Bonafini and Lee (2021) stated that participants had problems using a screencast app, whereas Huei et al. (2021) found that Quizizz was reportedly easy to use.

Interview Questions 5 and 11 asked about the support needed to help teachers use Google Classroom and productivity apps. As noted earlier, a major challenge reported in the literature has been a lack of resources, time, and support (Acree et al., 2017; Francom et al., 2021; Tawfik et al., 2021; Walan, 2020). These questions determined specific, site-based support that teachers need, helping to develop the project for this qualitative study.

Dissertation committee members reviewed interview questions. Additionally, I pilot-tested the protocol with a teacher who did not participate in the final qualitative study. Validity means that a study measure gathers what it is intended to measure (Merriam & Tisdell, 2016). The pilot test demonstrated that the questions were clear and elicited the necessary information to answer the research questions. The pilot test also suggested the length of the interview.

Sufficiency of Instrument to Answer Research Questions

The interview protocol is in Appendix D. One set of questions is specific to Google Classroom to answer Research Question 1, and the next set of questions is specific to productivity apps to answer Research Question 2. Within each set of questions, the goal was to begin with questions that were easier to answer and then move to more complex questions. Table 1 shows the alignment of the interview questions with the qualitative study research questions. Additionally, the questions were related to TPACK, the conceptual framework of the qualitative study. For example, Interview Questions 2 and 7 related to technological pedagogical knowledge. Participants likely would mention technical, pedagogical, and content-related aspects of the use of Google Classroom and apps.

Table 1

Alignment of Interview Questions With Research Questions

Research question	Interview questions
1. What are middle school teachers' perceptions about the support that would help them use Google Classroom in the blended environment at a suburban public school district in the southern United States?	1. Tell me about your use of Google Classroom in the blended learning environment. 2. Tell me specifically how you use it to differentiate instruction, engage students, manage your class, and assess students. 3. What challenges do you have with Google Classroom? 4. What kind of professional development, if any, do you need to help you use Google Classroom more often and more effectively? 5. What other kind of supports would help in your use of Google Classroom?
2. What are middle school teachers' perceptions about the support that would help them integrate specific productivity apps, such as Quizizz and Nearpod, in the blended environment at a suburban public school district in the southern United States?	6. Tell me about your use of productivity apps with Google Classroom, such as Quizizz and Nearpod, for example. What apps do you use, and how? 7. Tell me specifically how you use apps to differentiate instruction, engage students, manage your class, and assess students. 8. What apps are most effective or easy to integrate, and why? 9. What problems do you have with various apps? 10. What kind of professional development, if any, do you need to help you use productivity apps more often and more effectively? 11. What other kind of supports would help in your use of productivity apps?

Data Gathering

Data were gathered and recorded during the interview process via Zoom meetings after school hours. The Consent Form sent before the interview included a list of the interview questions so participants could think about the topics in advance. Each interview began with a welcome and review of the Consent Form. I explained that participation was voluntary and that every effort would be made to protect interviewees' identities. I reminded the interviewee that the interview would be audio recorded. I asked the interviewee if they had any questions.

I then followed the semistructured interview protocol. I kept my responses neutral to avoid leading the interviewee or biasing the responses. At the end of each interview, I reminded the teacher that they would receive a draft of the findings for review. I thanked the teacher and sent them a $20 gift card. Each interview was transcribed via the Zoom audio recording and transcription feature. I compared the transcription to the audio recording to ensure accuracy within a day of each interview.

Data Tracking and Storage

I kept an audit trail of the research qualitative study, including a log detailing the dates of each step in the process. All data were protected via password or locked file cabinet. Participants were recorded by numerical ID on transcripts and in the final document. Documents with participant identities, such as Consent Forms, were stored separately from the data. I used hand coding and Word documents to analyze the data. After five years, per Walden University rules, I will destroy the data through shredding or data deletion.

Access to Participants

As described in the Participants section, I emailed all middle school teachers in the district an invitation using text specified by Walden University (see Appendix C). An exception was math teachers at the middle school where I work, as I have supervisory responsibilities in the math department. The email explained the purpose of the qualitative study, the criteria for participation, the voluntary and confidential nature of the qualitative study, and the length of the interview. Interested recipients could contact me for more information. I emailed interested teachers a copy of the consent form and began to schedule individual interviews. Interviews took place via Zoom and were audio recorded.

Role of the Researcher

The role of the researcher in this qualitative project study was to design and implement the qualitative study, collect data, and report the current local problem. In qualitative research, the researcher is also considered a data collection instrument, so reflection on personal experience and bias is important before conducting research (Ravitch & Carl, 2016). I am a middle school math teacher in the qualitative study district. I am the head of the math department at one middle school and thus did not recruit any math teachers at my school. I supervised none of the participants. I would know some of the potential participants but not all. My familiarity with the district might increase rapport with interviewees. I recognized my biases based on experience in the district; teachers are not fully trained in integrating productivity apps with Google

Classroom. I approached the qualitative study with a neutral perspective during data collection and analysis.

Data Analysis Methods

Coding

Coding focuses on finding trending words, phrases, and sentences used by the interviewees. Coding is an inductive process of classifying qualitative data by breaking apart participants' responses to look for regular patterns or repeating ideas related to the research questions and assigning meaningful labels (Creswell & Creswell, 2018). The first step in the analysis was reading and rereading the transcripts to become familiar with them (Creswell & Creswell, 2018). Then, I began to code each transcript, assigning short codes to sections of transcripts based on the interviewee' topic, concept, or actual language (Saldaña, 2021). The first coding cycle was initial coding (Saldaña, 2021); subsequently, codes were changed or combined as I analyzed more transcripts.

Codes and related quotes from the transcripts were grouped to form categories of similar codes (Ravitch & Carl, 2016; Saldaña, 2021). The research questions guided this process. Finally, moving further from the specific to the broad, I developed themes based on the categories and to answer the research questions. As described in the following section, I used member checking to gather a final approval of the draft findings from participants to ensure accuracy.

Evidence of Quality

Quality in qualitative research is also called trustworthiness and is based on four elements: credibility, transferability, dependability, and confirmability (Shenton, 2004).

Credibility means the data-gathering tools are appropriate for study's goal and the findings are credible. Dependability means the study could be replicated with similar results. Using semistructured interview protocol consistently across participants contributed to the study's trustworthiness, credibility, and dependability (Lincoln & Guba, 1985). Additionally, the pilot test and review by the committee of the interview protocol contributed to the interview instrument's dependability and credibility (Neuman, 2011). Additionally, the protection of confidentiality should encourage interviewees to offer honest and thorough responses (Shenton, 2004). Providing the interview questions in advance on the Consent Form allowed interviewees to reflect on the topic in depth.

In this qualitative study, member checks and expert reviews were incorporated into the data analysis to confirm the accuracy and credibility of the findings. As Shenton (2004) recommended, a member check was offered after the data analysis process to verify the interpretations made from the process and ensure that the participants' phrasing was accurately captured. I emailed each interviewee a draft of the data findings and asked them to call or email any additions or changes to the content. If I did not hear from an interviewee within ten days, I assumed the content did not need to be adapted. Additionally, my chair might review the data and the analysis to ensure my personal bias did not affect my interpretation of the data.

I used an audit trail outlining all steps in the qualitative study to increase the dependability and trustworthiness of the qualitative study (Creswell & Creswell, 2018; Shenton, 2004). I kept a log of all steps of the research qualitative study for transparency. For transferability, which is typically limited in qualitative studies, I included detailed

descriptions of the data and context of the study so readers can determine whether findings are apply to other settings, as Ravitch and Carl (2016) recommended.

Discrepant Cases

Ravitch and Carl (2016) testified that discrepant cases and outliers provide valuable checks on the research process by forcing the researcher to evaluate evidence that may provide insights that challenge anticipated findings. I ensured that I did not allow my personal bias to prevent me from detecting discrepant cases or opinions in the data. I include such cases in the description of the data.

Summary

I used a basic qualitative research design to investigate the perceptions of participants through a semistructured interview. Participants were 10 middle school teachers in the qualitative study district who could describe their experiences with Google Classroom and related productivity apps, including challenges and supports they may need. This section described the qualitative study's methodology, including sampling, protection of participants' rights, the development of the interview protocol, and procedures for data collection and analysis. I also described methods for establishing the quality and trustworthiness of the qualitative study.

Data Analysis Results

In this section, I briefly review my data collection procedures and present a detailed analysis of the data and the development of themes and findings. After obtaining approval from Walden University's IRB (No. 09-06-23-0461260), I conducted participant recruitment from September 7 to September 17, 2023. I recruited 10

participants. I collected data using virtual interviews via Zoom with middle school teachers in all the core academic areas between September 20, 2023, and October 10, 2023. Ten general education teachers were interviewed: two sixth-grade teachers, two seventh-grade teachers, three eighth-grade teachers, one ninth-grade teacher, one interrelated resource teacher, and one multitiered systems of support teacher. Out of the 10 teachers, nine were women. Participants' experience in the education field within the district ranged from 3–23 years. Demographics are shown in Table 2.

The problem addressed through this qualitative study was middle school teachers in a suburban public school district in the southern United States were inconsistently using Google Classroom in their classrooms. At the project site, middle school teachers were creating a blended learning environment; however, administrators expected them to integrate other educational apps such as Quizizz and Nearpod when using Google Classroom. The purpose of this basic qualitative study was to explore middle school teachers' perceptions about the support that would help them use Google Classroom consistently while integrating other productivity apps, such as Quizizz and Nearpod at a suburban public school district in the southern United States. The conceptual framework was the TPACK framework (Koehler & Mishra, 2009).

Table 2

Participant Demographics

Pseudonym	Teaching area	Gender	Years of experience	Highest level of certification
Teacher 1	Grade 6 English	Female	10	Educational Specialist
Teacher 2	Grade 9 math	Male	10	Master of Education
Teacher 3	Grade 7 math	Female	7	Doctor of Education
Teacher 4	Grade 8 science	Female	20	Educational Specialist
Teacher 5	Grade 8 English	Female	23	Educational Specialist
Teacher 6	Grade 7 math	Female	15	Doctor of Education
Teacher 7	Grade 6 English	Female	6	Master of Education
Teacher 8	Interrelated resource	Female	8	Bachelor of Education
Teacher 9	Grade 8 math	Female	3	Bachelor of Education
Teacher 10	Multitiered systems of support	Female	10	Master of Education

Two research questions guided the qualitative study, asking what middle school teachers' perceptions are about the support that would help them (a) use Google Classroom in the blended environment and (b) integrate specific productivity apps, such as Quizizz and Nearpod, in the blended environment at a suburban public school district in the southern United States. As described in the Data Collection section, Interview Questions 1–5 were aligned with Research Question 1, and Interview Questions 6–11 were aligned with Research Question 2. Data were coded by each research question. I

transcribed all 10 interviews and hand coded the transcripts. To contribute to the audit trail and transparency of the qualitative study, coding details are presented in Appendix E.

Research Question 1: The Support Needed for Using Google Classroom

Research Question 1 asked, "What are middle school teachers' perceptions about the support that would help them use Google Classroom in the blended environment at a suburban public school district in the southern United States?" Several rounds of coding resulted in seven categories related to teachers' use of Google Classroom, the challenges they faced, and the supports they identified that could help them. The categories were combined to develop three themes to answer Research Question 1: (a) teachers need professional development on Google Classroom, (b) teachers need professional development on how to use Google Classroom as a pedagogical tool, and (c) teachers need a Google Classroom guru to provide technology support. Themes and categories for Research Question 1 are shown in Table 3.

Theme 1: Teachers Need Professional Development on Google Classroom

The first theme for Research Question 1 was that teachers need professional development on Google Classroom in general, including its features and uses. Table 4 shows codes and details related to Theme 1. Additional detail is shown in Appendix E. Nine of the 10 participants (all but Teacher 10) emphasized a need for training. Teachers repeatedly stressed having no training. Teacher 4 said, "I've never received any professional development on Google Classroom. . . . I felt like you're either going to sink or swim. So, I had to do my own research."

Table 3

Themes and Categories for Research Question 1

Theme	Categories
Theme 1. Teachers need professional development on Google Classroom.	• Need training
Theme 2. Teachers need professional development on how to use Google Classroom as a pedagogical tool.	• Teachers use Google Classroom for messaging and posting assignments or resources (management) • Assessment • Differentiation • Engagement
Theme 3. Teachers need a Google Classroom guru to provide technology support.	• Google Classroom guru/dedicated technology support person • Need help with technical problems

Table 4

Categories and Codes Related to Theme 1 of Research Question 1

Theme	Category	Codes and teacher *n*
Theme 1. Teachers need professional development on Google Classroom.	Need training	• Need training (n = 9) • Have no training; "thrown in" (n = 5) • Need targeted professional development on specific aspects of Google Classroom (n = 7)
	Outlier: do not need more training	• Teacher 10 said teachers "don't need more training" • Teacher 10: Google certified teachers provide training to other educators

Need Training. Participants are having to learn on the job without training on Google Classroom use. Five participants (Teachers 3, 4, 5, 7, and 8) reported receiving no training (see Appendix E). Four of these participants (Teachers 3, 5, 7, and 8) used the phrase "thrown in." For example, Teacher 3 described being "just thrown in. I never had adequate training on Google Classroom." Similarly, Teacher 5 said, "I know that there are more, better ways that you can use Google Classroom, but it is a resource that was just kind of thrown at us. . . . We are just expected to figure it all out on our own." In another example, Teacher 8 used the word "thrown" as well, saying, "Many of us did not know about Google Classroom, so we were just thrown into something and trying to figure out how to utilize it day by day and showing the students." Teachers felt thrown into the use of Google Classroom without training.

Nine teachers (all but Teacher 10) described needing professional development on Google Classroom in general, including its features and uses. For example, Teacher 4 said, "I could benefit from more strategic or targeted training when it comes down to the use of Google Classroom and its benefits." As another example, Teacher 3 noted being unaware of all the capabilities of the software. The nine teachers perceived the software had more uses and wanted to learn them. Teacher 8 requested

> some type of professional development around that actually showed us the ins and outs of Google Classroom and how to better make it more effective so that we can teach our kids so that they can do more. That would help us a lot, but a lot of us need actual assistance within Google Classroom so that we can teach our kids how to manage it as well.

Seven teachers (Teachers 1, 2, 4, 5, 7, 8, and 10) described needing targeted professional development on specific aspects of Google Classroom. Teacher 1 and Teacher 7 mentioned wanting training on streamlining the use of Google Classroom. Teacher 1 wanted to learn how to sync the software to grades. An additional skill desired was how to "schedule assignments" in advance, expressed by Teacher 2. Additionally, Teacher 5 and Teacher 10 recommended training on new features of the software. Finally, Teacher 4 and Teacher 8 wanted training on using Google Classroom to differentiate instruction and keep students engaged.

Outlier. As noted, nine of the 10 participants emphasized a need for training. However, Teacher 10 was an outlier and provided discrepant data. Teacher 10, a multitiered systems of support resource teacher, stated,

> Because our district is so big on Google Classroom and we're always in some sort of training, whether it's at the district level, or in the school with our instructional specialists where she provides additional training. I don't think I need any more additional training. I think what they're providing is enough because we are always getting some sort of up-to-date training.

Teacher 10 recommended training for parents. Additionally, as noted, Teacher 10 admitted teachers had to discover new features of Google Classroom on their own.

Summary for Research Question 1, Theme 1. Teachers need professional development on Google Classroom in general, including its features and uses. Teachers described receiving no training and being "thrown in" to using Google Classroom.

Learning on the job did not allow them to learn all the features and benefits of the software.

Theme 2: Teachers Need Professional Development on Using Google Classroom as a Pedagogical Tool

Theme 2 for Research Question 1 is that teachers need professional development on how to use Google Classroom as a pedagogical tool. Table 5 shows codes and details related to Theme 2. Additional details are shown in Appendix E.

Google Classroom can be used to engage students, rather than teachers only focusing on its use for classroom management. For example, two teachers (Teacher 4 and Teacher 8) specifically requested training on using Google Classroom to differentiate instruction and keep students engaged. Teacher 4 said, “It would be definitely beneficial to have professional development opportunities that were more targeted towards other ways to actively engage scholars and to keep them actively engaged and other ways to differentiate.” Similarly, Teacher 8 said, “I could do some professional development on maybe more ways to differentiate instruction using Google Classroom and more ways to provide feedback.”

Table 5

Categories and Codes Related to Theme 2 of Research Question 1

Theme	Category	Codes and teacher *n*
Theme 2. Teachers need professional development on how to use Google Classroom as a pedagogical tool.	Teacher use of Google Classroom for messaging and posting assignments or resources (management)	• Post assignments (*n* = 9) • Messaging (*n* = 6) • Resources/information (*n* = 3) • Management: monitor groups needing more attention or help staying on task (*n* = 2) • Management: instruction for absent students (*n* = 1) • Management only; does not use it to differentiate, engage, or assess (*n* = 2)
	Assessment	• Assessment (*n* = 5) • Student writing (*n* = 2)
	Differentiation	• Differentiation: Tasks or reading based on appropriate level (*n* = 5) • Differentiation: Student groups by learning level (*n* = 3) • Differentiation: different learning styles (*n* = 1) • Request training on the use of Google Classroom for differentiation (*n* = 2)
	Engagement	• Does not use for engagement (*n* = 5) • Collaboration (*n* = 2) • Engagement: "enrich" students (*n* = 1) • Engagement: videos (*n* = 1) • Request training on the use of Google Classroom to keep students engaged (*n* = 2)

Teacher Use of Google Classroom for Messaging and Posting Assignments or Resources (Management). Related to use of Google Classroom for classroom management, all 10 teachers described using Google Classroom for posting assignments. Six teachers (Teachers 1, 2, 3, 4, 8, and 10) used the software for announcements and messaging. Two participants, Teacher 5 and Teacher 6, described using the software only

for classroom management purposes. Teacher 5 described using it as an "information center" and "management tool" to post assignments and materials. Two teachers (Teacher 7 and 9) described using the software to assign standard based task.

Another participant, Teacher 3, said, "To be honest, I do the most basic when it comes to Google Classroom. I just simply post assignments and announcements. I would like to incorporate Google Classroom more, but I have not been trained in all its capabilities." However, Teacher 3 later described using Google Classroom to address student learning styles, indicating an effort at differentiation. Like Teacher 3, Teacher 2 also used Google Classroom to group students by learning level. However, Teacher 2 summarized the use of Google Classroom as a management and communication tool:

> My use of Google Classroom in the blended learning environment consists of me sending out guided notes and links to specific work sessions or review links. Pretty much giving my kids access to the information that they would have in the classroom.

Interview Question 2 specifically asked teachers about the use of Google Classroom as a pedagogical tool: "Tell me specifically how you use it to differentiate instruction, engage students, manage your class, and assess students." This question was designed to assess teachers' knowledge of Google Classroom use and potential gaps indicating needed support. When asked specifically about its use for differentiation, assessment, and engagement, eight teachers described using Google Classroom for differentiation, but fewer (n = 5) reported assessment practices and its use to engage students (n = 4).

Differentiation. Regarding differentiation, four teachers (Teachers 1, 7, 9, and 10) used Google Classroom to provide reading or math assignments based on students' current levels and four described grouping students with similar abilities. For example, Teacher 1 stated, "I can take one reading text and find it at three different Lexile levels, and I'm able to assign each student their own individual paper to be read." Uniquely, Teacher 3 mentioned using the software to post materials based on student learning styles. Teacher 3 explained,

> I will sometimes post a video, so after I teach a lesson, I'll post a video to help reinforce the math lesson for the week. I use those videos to help my visual and auditory learners. So that helps to differentiate the instruction and engage the students.

Assessment. Five teachers (Teachers 1, 4, 7, 9, and 10) described using Google Classroom for assessment or feedback on student work. For example, Teacher 1 gives quizzes on Google Classroom at least weekly. Additionally, Teacher 1 explained that Google Classroom is "heavily used for writing as I use Google Docs through my Google Classroom, where I go in and can constantly comment and fix students' work." In another example, Teacher 10 uses Google Classroom to provide initial baseline reading assessments at the beginning of the school year.

Engagement. Teachers 4 and 8 described using Google Classroom for specific ways to engage students through collaboration. Teacher 4 described the use of Google Classroom for both differentiated instruction and student engagement. Teacher 4 uses "breakout rooms" to group students based on their ability, with "peer leaders" within

each group. Teacher 4 monitors the groups, helping students collaborate and stay engaged and on task. Related to engagement through collaboration, Teacher 8 described using Google Classroom to engage students through collaboration in math instruction.

Summary for Research Question 1, Theme 2. Overall, most of the teachers did not consistently use Google Classroom as a pedagogical tool, focusing instead on its use for classroom management or communication. For example, Teacher 2 described the use of Google Classroom for the management of absent students:

> Managing the classroom, I do have a lot of students who tend to be absent or just not available at the moment due to maybe suspensions and all that stuff. So, utilizing Google Classroom is a great way for me to still deliver the instruction.

When asked about the use of Google Classroom to differentiate instruction, engage students, manage the class, and assess students, Teacher 6 simply said, “I don’t.”

Related to the conceptual framework of the qualitative study, TPACK, teachers lacked technological knowledge of the software, as shown by their comments on not knowing the varied features of the program and needing training. Teachers also lacked technological pedagogical knowledge, meaning ways to use the technology to implement effective pedagogy, such as student engagement and immediate feedback (Koehler & Mishra, 2009). Instead, as shown in this section, teachers predominately used Google Classroom for classroom management, supplemented by efforts to differentiate instruction.

Theme 3: Teachers Need a Google Classroom Guru

One-on-One Google Classroom Technical Support. Theme 3 for Research Question 1 is that teachers need a Google Classroom guru to provide technical support. Five of the 10 interviewees (Teachers 3, 4, 5, 6, and 10) recommended such support (see Table 6 and Appendix E). For example, Teacher 4 recommended a school- or area-based tech support person for periodic check-ins, as teachers may not know their knowledge gaps in the use of the program. Requesting a dedicated technical support guru for Google Classroom, Teacher 3 requested, “I would like somebody to come in to model how to use it and also give a demonstration to my students. I definitely need that one-on-one support.”

Table 6

Categories and Codes Related to Theme 3 of Research Question 1

Theme	Category	Codes and teacher *n*
3. Teachers need a Google Classroom guru to provide technical support.	One-on-one Google Classroom technical support	• Google Classroom guru/dedicated technical support (*n* = 5)
	Help with technical problems	• Help with student log-in problems (*n* = 3) • Help with technology glitches (*n* = 2) • Help syncing Google Classroom with grades (*n* = 2) • Provide more materials for students well below grade level (*n* = 1) • Provide more differentiation tools for students well below grade level (*n* = 1)
	Additional support	• Training for students (*n* = 2) • Training for parents (*n* = 1)

Help With Technical Problems. Teachers described needing help with technical glitches and syncing Google Classroom to the grading system. The lack of syncing was mentioned by two teachers, Teacher 2 and Teacher 3. Teacher 2 explained,

> The grades being automatically synced to our Infinite Campus—I would love to see that happen. We still have to transfer grades, so that that if that was some way incorporated [into Google Classroom], that would definitely be a huge time saver.

Specific technology glitches included student log-in problems, reported by three teachers (Teachers 1, 2, and 10); Teacher 2 and Teacher 7 expressed frustration with technical

issues. As Teacher 2 put it, “My biggest challenge with Google Classroom is sometimes the technology’s a bit wonky.”

Additional Support. Additionally, Teacher 8 requested more materials and differentiation tools for special education students well below grade level. Another area of support requested was training for students and parents. Teacher 3 and Teacher 6 recommended that students receive Google Classroom training, and Teacher 10 recommended that parents receive training.

Summary of Research Question 1, Theme 3. Teachers need a Google Classroom guru to provide technical support. Various teachers requested a dedicated Google Classroom technical support person to provide one-on-one modeling and assistance. Teachers requested help with various technical issues and glitches, including student log-in problems and syncing Google Classroom with grading systems. Finally, two teachers suggested training on Google Classroom for students, and one suggested training for teachers.

Research Question 2: The Support Needed for Integrating Specific Productivity Apps

Research Question 2 asked, “What are middle school teachers’ perceptions about the support that would help them integrate specific productivity apps, such as Quizizz and Nearpod, in the blended environment at a suburban public school district in the southern United States?” Several rounds of coding resulted in categories related to teachers’ use of specific productivity apps, the challenges they faced, and the supports they identified that could help them. The categories were combined to develop three themes to answer

Research Question 2: (a) teachers use apps for assessment, differentiation, and student engagement; (b) teachers need professional development on apps; and (c) teachers need a technical support person for apps. Themes and categories are shown in Table 7; additional detail is shown in Appendices F and G.

Table 7

Themes and Categories for Research Question 2

Theme	Categories
Theme 1: Teachers use apps for assessment, differentiation, and student engagement.	• Nearpod • Quizizz • Kahoot • IXL • Blooket • Flocabulary • Quizlet • iReady • Other apps • Do not use apps; do not know how • Do not use apps by choice
Theme 2: Teachers need professional development on apps.	• Want training on all apps • Want training on specific needs
Theme 3: Teachers need a technical support person for apps.	• Technical support person • Support choosing from the "overwhelming" number of apps • Cheat sheet for teachers • Videos for teacher training

Related to the conceptual framework of the qualitative study, most of the teachers reported using apps for student engagement, assessment, and differentiation, indicating

an understanding of how to use the technology to implement pedagogy (Koehler & Mishra, 2009). Understanding teachers' current level of knowledge is important to help determine the supports needed. However, two teachers reported not using integrated apps with Google Classroom. All teachers reported wanting more training on apps.

Theme 1: Teachers Use Apps for Assessment, Differentiation, and Engagement

To understand gaps in teacher knowledge and areas where they need support, assessing their current use of apps was important. Interview Question 7 asked, "Tell me specifically how you use apps to differentiate instruction, engage students, manage your class, and assess students." Theme 1 for Research Question 2 was that teachers use apps for assessment, differentiation, and student engagement. Teachers 1, 2, 3, 4, 5, 7, and 8 described using apps for assessment. Additionally, Teachers 1, 2, 3, 5, 7, 8, and 10 described using apps for differentiation. Finally, Teachers 1, 2, 3, 4, 5, 7, 8, 9, and 10 described using apps engagement, through interaction and games. Table 8 shows details related to Theme 1 for Research Question 2. Codes were the uses of each app, and categories were popular apps. Information includes the types of apps teachers reported using and why. More details are presented in Appendix F.

Table 8

Categories and Codes Related to Theme 1 of Research Question 2

Theme	Category	Teacher *n*	Codes and teacher *n*
Theme 1: Teachers use apps for assessment, differentiation, and student engagement.	Nearpod	5	• Engagement/interactive games (*n* =3) • Differentiation (*n* = 2) • Easy (*n* = 1)
	Quizizz	4	• Assessment (*n* = 3) • Easy (*n* = 2) • Engagement (*n* = 1)
	Kahoot	4	• Easy; bank of questions (*n* = 3) • Engagement (*n* = 2) • Assessment (*n* = 1)
	IXL	3	• Easy (*n* = 2) • Differentiation (*n* = 2)
	Blooket	3	• Assessment (*n* = 2) • Engagement (*n* = 2)
	Flocabulary	3	• Differentiation (*n* = 1)
	Quizlet	2	• Easy for students and teacher (*n* = 2)
	iReady	2	• Easy and district program (*n* = 1) • Differentiation (*n* = 1) • Engagement (*n* = 1)
	Other apps	1	• eSpark: easy, differentiation, assessment, engagement
		1	• Jamboard: differentiation, engagement
		1	• Ace: Differentiation, district program
		1	• myON AR: Differentiation
		1	• Illuminate: Assessment
		1	• Amplify: Assessment
		1	• Google Slides: Easy for special education students
		1	• MAP platform
		1	• Deltamath
	Does not use apps	2	• Does not know how • By choice: “district not big on” outside apps

Nearpod, Quizizz, Kahoot, IXL, Blooket, Flocabulary, and More. The most popular apps were Nearpod, Quizizz, and Kahoot, followed by IXL, Blooket, and Flocabulary. Unlike their description of Google Classroom use, teachers described using apps more consistently for the engagement of students as well as assessment and differentiated instruction. Specifically for student engagement, Teacher 2, Teacher 3, and Teacher 5 described using Nearpod; Teacher 5 and Teacher 9 used Blooket and Kahoot; Teacher 8 used Jamboard; Teacher 1 used Quizizz; Teacher 7 used eSpark; and Teacher 10 used the district-provided iReady app. Specifically for differentiated instruction, Teacher 3 and Teacher 5 referenced Nearpod, Teacher 3 also referred to Flocabulary, Teacher 2 and Teacher 5 used IXL, Teacher 8 used Jamboard, Teacher 1 used myON AR, Teacher 7 used eSpark, and Teacher 10 used the district-provided iReady and Ace apps. Specifically for assessment, Teacher 1, Teacher 2, Teacher 3, and Teacher 4 used Quizizz. Blooket was used by Teacher 2 and Teacher 5 for assessment. Teacher 4 used Illuminate, and Teacher 8 used Amplify.

To elaborate, Teacher 1 chose Quizizz and Blooket for their ease of integration and ability to keep students "active and engaged." Teacher 2 described using these two apps for assessment but also using Nearpod "to deliver a more engaging lesson that's not quite lecture style." Teacher 3 enjoyed Nearpod's "interactive videos and games to help differentiate instruction" for students. Also referencing games, Teacher 5 said Kahoot and Blooket offer competitive games, "and usually all the kids are super engaged." Elaborating on the use of an app for student engagement through games, Teacher 9 said,

> How I engage with students, I make it a fun competitive game for them, so it makes them excited to want to participate, and sometimes I even give them an award for winning, or even just an award for trying and attempting and getting over 70%, and it makes them feel good about learning.

Three teachers (Teachers 2, 5, and 9) used IXL, an app that connects with student assessments to create a differentiated plan. For example, Teacher 9 said IXL is easy to integrate and is aligned with district and state standards. Teacher 2 and Teacher 5 described using it for differentiation.

Two teachers (Teachers 4 and 10) stressed the importance of any app being easy for students to use. Teacher 4 said students should be focused on the content, not on learning how to use the technology. In addition, Teacher 10 stated,

> The biggest problem at this point, because they [apps] are driving that instruction, is the time. Where in the day do we have time to use an app? Our district really is pushing small group instruction. So, at this point, it's just the time. Like when do we have the time to use those apps effectively and efficiently?

Do Not Use Apps. Teacher 10 was among the two teachers who stated they did not use apps. Teacher 7 does not use apps based on a lack of knowledge and training. However, Teacher 10 chose not to use apps for other reasons:

> To be just transparent, I don't use apps. Our district is not really big on us using outside apps because they have put a lot of work into different things that we could use. Now we do use Kahoot a lot where we do little quick games and then

> informal assessments with the kids just to see what else we need to go on. But I have not used Quizizz or Nearpod.

Summary for Research Question 2, Theme 1. These results indicated that most of the teachers had attempted to use apps in various ways to engage students, differentiate instruction, and assess student progress. Teachers were combining their technological knowledge with their content and pedagogical knowledge. However, they requested more training, as described in the next section.

Theme 2: Teachers Need Professional Development on Apps

Theme 2 for Research Question 2 was that teachers need professional development on apps. Related categories and codes are shown in Table 9. More details are presented in Appendix G.

Want Training on All Apps. All 10 participants stated they wanted training on apps for use in the classroom. Teacher 3 said,

> I just would like more training on all of these apps. . . . I don't know the full potentials of all these apps. . . . I'm pretty sure that these apps have a lot to offer, but I've not been trained. In my district, we're just given an app, and we just have to explore. So I would prefer to have somebody train me on these apps so I can efficiently use them. . . . So I definitely want somebody to come in or some type of professional development to teach me how to integrate them better.

Teacher 4 confirmed the lack of training on apps:

> The apps are provided for you to utilize, but there is a lack of training on how to get the maximum benefit out of the apps. The apps are really good. You can see

the benefits of the app, but there are always more ways to utilize them and to actively engage scholars. And once we start using them, we're always only doing the bare minimum because we don't have effective training.

Table 9

Categories and Codes Related to Theme 2 of Research Question 2

Theme	Category	Codes and teacher *n*
Theme 2: Teachers need professional development on apps.	Want training on all apps	• Want training on more apps: all 10 participants • Need more training on Quizizz & Nearpod (*n* = 5)
	Want training on specific needs	• Training on using apps to engage students (*n* = 2) • Training on using apps that are not internet based (*n* = 1) • Training on using apps to improve student achievement (*n* = 1) • Training on using apps for specific content areas (math, social studies) (*n* = 1) • Use of games for education (Minecraft) (*n* = 1) • Training for certification/specialization (*n* = 1)

Want Training on Specific Needs. A lack of training led to diminished use of apps. Teacher 7 did not use apps due to lack of training: "I don't use any apps in Google Classroom. The only thing that I know how to do in Google Classroom is just drop links in there. . . . I would love to have training." Additionally, Teacher 6 did not know how to use Nearpod or Quizizz but wanted to learn; similarly, Teacher 9 said, "I could definitely

use professional development on how to use specific apps," including Nearpod and Quizizz. Six teachers (Teachers 4, 6, 7, 8, and 9) requested training on Nearpod and Quizizz. Additional specific needs were training on how to use apps to engage students (Teachers 4 and 9), using apps that are not internet based in case of network failure (Teacher 4), and using games in apps (Teacher 1). Additionally, Teacher 6 wanted to learn how to use apps to improve student achievement, including in specific content areas. Finally, Teacher 2 wanted training for certification or specialization in the educational use of apps.

Summary for Research Question 2, Theme 2. All participants stated they wanted training on apps for use in the classroom. In addition to training in general, participants wanted training specifically on Quizizz and Nearpod. More specific training needs included using apps to engage students, among others.

Theme 3: Teachers Need Technical Support for Apps

Theme 3 for Research Question 2 was that teachers need technical support for apps. Such support could include a dedicated technical support person and supplemental aids such as cheat sheets and videos. Table 10 shows related categories and codes. Detailed information is also presented in Appendix G.

Technology Support Person. Three teachers (Teachers 1, 4, and 6) specifically requested a technology support person, and four (Teachers 6, 7, 9, and 10) wanted one-on-one modeling of app use. For example, Teacher 6 would like "one-on-one support" to "model for me as the teacher . . . and help me maneuver through these apps as I learn with the students." Similarly, Teacher 9 wanted help with learning how to use Quizizz

better, including “one-on-one help” with navigating the app and using its features. Additionally, Teacher 4 expressed a need for “some sort of technical support person who can help you when problems arise with those apps.”

Table 10

Categories and Codes Related to Theme 3 of Research Question 2

Theme	Category	Codes and teacher *n*
Theme 3: Teachers need technology support for apps.	Technology support person	• Technology support person (*n* = 3) • One-on-one modeling (*n* = 4) • Internet goes out in building (*n* = 1) • Problems with student log-ins (*n* = 1)
	Support choosing from the “overwhelming” number of apps	• Too many apps available (*n* = 3) • Free version of apps missing capabilities; apps become fee based (*n* = 3) • Lost time teaching/learning how to use apps (*n* = 2) • Google Classroom sends all apps to all students, preventing differentiated choice of apps for specific students (*n* = 1) • Apps not aligned with state standard (*n* = 1) • Want to sync with grades (*n* = 1) • Special education: need speech-to-text (*n* = 1)
	Cheat sheet for teachers	• Cheat sheet (*n* = 2)
	Videos for teacher training	• Videos for training (*n* = 2)

Support Choosing From the "Overwhelming" Number of Apps. In another area related to needing technical support, Teacher 6 wanted a technical support person to go through the available apps and describe their relevance to student achievement in different content areas. The quantity and variety of apps was an area of needed support. Teacher 2 described the number and variety of apps available as "overwhelming." Similarly, Teacher 8 also wanted help sifting through the quantity of apps. Teacher 8 stated,

> A better understanding exactly of how each of the apps works would help me integrate it more. . . . if you want us to use 50 apps, I would like something where maybe you would use three or four different apps, and we're consistent with, across the entire district, using those three or four.

Teacher 10 concurred with the need for training on choosing between apps. Teacher 10 wanted instruction from an individual who has experience with the apps but is not a salesperson.

> I think the professional development would be . . . that we could have just the list of the different apps, and what those apps entail, and how we can integrate those apps into our daily classroom routine, and how we could get our kids acclimated to those apps. I think that would be great for the teachers, and they could bring some teachers in that use all these different apps and kind of just show us on different levels: elementary level, this is how I use these apps; middle school level and high school level, this is how I use these apps. This is how I'm able to use

these apps effectively and also provide direct instruction to the students at the same time.

Additional needs related to support choosing between apps is knowing which apps begin trying to charge a fee after a trial period, noted by Teachers 1, 4, and 9. For example, Teacher 9 noted that apps such as Kahoot and Booklet require a subscription for the "good questions" and capabilities. Another issue, reported by Teacher 3, was a desire to automatically "link the [app] grade to Google Classroom." Another specific concern was the loss of internet in the school building, requiring teachers to learn how to use apps not based on the internet, as noted by Teacher 8. Teacher 8 also wanted speech-to-text capabilities for special education students. Finally, Teacher 6 described technical problems with student log-ins.

Cheat Sheet for Teachers. As additional technology support, two teachers (Teacher 2 and Teacher 5) recommended a "cheat sheet" for teachers. Teacher 2 explained the cheat sheet could allow teachers "to quickly access certain things in the app." Different kinds of cheat sheets could address different topics. Additionally, Teacher 5 recommended "an app cheat sheet" to help teachers sift through the number of apps to find the most relevant to content or goals. Teacher 5 elaborated, "There are so many apps and I feel. Like it takes so much time to figure out what they all do."

Videos for Teacher Training. As supplemental training, two teachers (Teacher 3 and Teacher 9) recommended videos for teacher training. Teacher 3 recommended "some supportive videos explaining the capabilities of the apps, so that when a new teacher comes to the district, they're not just thrown in, like, hey, we're using this app, do this."

In addition, Teacher 9 recommended "somebody posting a video in my district about how I can post presentations with Quizizz and how I can use Quizizz to help differentiate instruction." Teachers clearly would welcome input on which apps to use and how to use them.

Summary for Research Question 2, Theme 3. A technical support person was requested to provide one-on-one modeling and help with problems such as student log-ins. Additionally, teachers wanted support choosing from the wide variety and number of apps available. Additional resources could be teacher cheat sheets on apps and online videos.

Evidence of Quality

The presentation of results involved transparency in terms of coding and categories to increase the quality of the qualitative study. Additionally, participants were asked to check the results, reviewing the draft findings to provide any input. IRB procedures were followed carefully throughout the qualitative study. Participants were interviewed using the same interview protocol. Moreover, I endeavored to prevent any personal bias from interfering in the data collection and analysis. A discrepant case in the data, a teacher who felt the training was not needed for Google Classroom, was reported.

Outcomes in Relation to Literature and Conceptual Framework

The purpose of this qualitative study was to explore middle school teachers' perceptions about the support that would help them use Google Classroom consistently while integrating other productivity apps such as Quizizz and Nearpod at a suburban public school district in the southern United States. In the following section, outcomes

are discussed related to the research literature. Findings are also linked to the conceptual framework of the TPACK framework (Koehler & Mishra, 2009).

Research Question 1: The Support Needed for Using Google Classroom

Research Question 1 asked, "What are middle school teachers' perceptions about the support that would help them use Google Classroom in the blended environment at a suburban public school district in the southern United States?" Three themes were developed: (a) teachers need professional development on Google Classroom, (b) teachers need professional development on how to use Google Classroom as a pedagogical tool, and (c) teachers need a Google Classroom guru to provide technology support.

Research Question 1, Theme 1: Teachers Need Professional Development on Google Classroom. Findings indicated teachers need professional development on Google Classroom in general, including its features and uses. In previous studies, teachers have reported needing training on Google Classroom; teachers in three studies described learning through trial and error (Francom et al., 2021; Kormos, 2021; Tawfik et al., 2021). Similarly, in this qualitative study, teachers described having Google Classroom "thrown" at them and having to "figure it out" on their own. Supported by the literature, teachers are expected to learn Google Classroom on the job without formal training. Martin (2021) found that teachers needed more training or professional development in implementing and using Google Classroom, leading to its underutilization by teachers to optimal potential. More training might produce more effective use of Google Classroom.

Research Question 1, Theme 2: Teachers Need Professional Development on How to Use Google Classroom as a Pedagogical Tool. Teachers also need professional development on how to use Google Classroom as a pedagogical tool to engage students, rather than limiting its use for classroom management. Martin (2021) focused on the pedagogical side of technology integration and found teachers did not use Google Classroom to its potential because they lacked training. Martin claimed Google Classroom could be used to develop engagement, creativity, and critical thinking. Similarly, Tarteer et al. (2022) reported that Google Classroom combines pedagogical and technological aspects, and Suhroh and Cahyono (2021) described its use for collaboration. Google Classroom may provide a differentiated learning environment where students set their own pace of learning (An et al., 2021; Bishop, 2021; Suhroh & Cahyono, 2021; Walan, 2020). In Bishop's (2021) study, U.S. middle school teachers reported being able to differentiate instruction better with Google Classroom, in part because remote instruction and feedback were private. Students also can receive immediate feedback on their work (Bishop, 2021; Hill & Uribe-Florez, 2020; Jin & Harp, 2020; Walan, 2020). Such uses for engagement, critical thinking, differentiation, assessment, and feedback would involve all aspects of the TPACK framework. Some teachers in this qualitative study showed a lack of technological pedagogical knowledge related to Google Classroom use (Kohler & Mishra, 2009), suggesting a need for training.

However, other researchers have stressed Google Classroom is designed for efficiency rather than pedagogy (Gleason & Health, 2021; Herold, 2020; Perrotta et al., 2020). Respondents in Francom et al.'s (2021) study reported using Google Classroom

predominantly for posting assignments and communicating, like teachers in the current qualitative study. The full potential use of Google Classroom may require more study, particularly in the United States, a gap in the literature noted in Chapter 1. Scholars have recommended further research on teachers' perceptions of Google Classroom (Kormos, 2021; Laho, 2019; Martin, 2021).

Research Question 1, Theme 3: Teachers Need a Google Classroom Guru to Provide Technology Support. In addition to professional development, teachers need a Google Classroom guru to provide technology support. Rets et al. (2020) found teachers needed hands-on training on digital and online collaborative tools to learn how to use the technology for pedagogy. Hands-on training allowed teachers to understand the value of the technological tools for use with their students. Time to learn and practice using Google Classroom is a scarce commodity (Acree et al., 2017); having one-on-one instruction would allow teachers to receive training where they need it most.

Research Question 2: The Support Needed for Integrating Specific Productivity Apps

Research Question 2 asked, "What are middle school teachers' perceptions about the support that would help them integrate specific productivity apps, such as Quizizz and Nearpod, in the blended environment at a suburban public school district in the southern United States?" Three themes were developed: (a) teachers use apps for assessment, differentiation, and student engagement; (b) teachers need professional development on apps; and (c) teachers need a technical support person for apps.

Research Question 2, Theme 1: Teachers Use Apps for Assessment, Differentiation, and Student Engagement. Related to the conceptual framework, some

teachers reported using apps for assessment, differentiation, and student engagement, showing an understanding of technological pedagogical knowledge (Kohler & Mishra, 2009) related to the use of various apps, including Nearpod and Quizizz. Quizizz is an assessment application described as being interactive, collaborative, and easy to use (Huei et al., 2021). Nearpod is a cloud-based interactive tool designed to engage students (Burton, 2019; Buttrey, 2021). According to Buttrey (2021), students can provide feedback or ask questions through the app, take quizzes, and participate in the class as an engaged group. In a study of elementary students in Indonesia, Nearpod use increased student attention, engagement, and attendance (Abdullah et al., 2022). However, the use of apps varied among the participating teachers in the current qualitative study, and two teachers stated they avoided integrating apps altogether. Professional development might provide more consistent use of all teachers of integrated apps to promote student achievement. Additionally, teachers with greater knowledge of app use could contribute to professional development design and serve as peer resources.

Research Question 2, Theme 2: Teachers Need Professional Development on Apps. Moreover, every teacher in the qualitative study indicated wanting professional development on apps. Training on implementing and using such apps could increase their use in terms of differentiated instruction, collaboration, and student engagement. Degirmenci (2021) reported training on apps such as Quizizz could lead to increased use by teachers. For example, Hidayat et al. (2020) created a 3-day training for teachers on using Google Classroom and Quizizz and reported teachers showed increased skills using the technology. Teacher training is important when integrating technology, as teacher

support significantly affects student attitudes toward using apps such as Nearpod (Musa & Momani, 2022). Additionally, Abdullah et al. (2022) recommended training teachers to use Nearpod. Professional development could include seminar-type training as well as the suggestions given by teachers in this qualitative study: a cheat sheet for use with various apps, lists of various apps and their uses, and videos for teachers.

In a detailed study outlining training on Nearpod, Paramita and Effendy (2023) recommended teachers receive training including seminars and additional support on Nearpod use. The researchers described the beneficial aspects of Nearpod as interactivity, real-time progress monitoring, multimedia support, collaboration, analytics, and cross-platform compatibility. Therefore, Paramita and Effendy developed a workshop divided into the following areas. First, participants learned to create a Nearpod account. Second, educators learned to navigate the platform, including the dashboard, library, lessons, student progress, profile, and help center. Third, participants learned to create and manage classes. Then, participants learned detailed use of the following aspects of Nearpod: real-time progress monitoring, detailed analytics and automated grading, student engagement, individualized feedback, parent communication, interactivity, and collaboration (Paramita & Effendy, 2023).

Research Question 2, Theme 3: Teachers Need a Technical Support Person for Apps. Additionally, teachers need a technology support person for apps. Teachers described wanting one-on-one instruction and modeling. Cilliers et al. (2021) found in-person training remained invaluable in teacher training, concluding, “The benefits of in-person interaction might be difficult to replicate. . . . Technology itself was not a barrier

to implementation, but rather . . . in-person contact enabled more accountability and support" (p. 1). Researchers (Avci et al., 2019; Wei et al., 2020) have recommended the use of both online and in-person professional development. Teachers also require peer collaboration and hands-on learning. One-on-one training can involve modeling and hands-on practice (Avci et al., 2019).

Additionally, one-on-one training be focused on specific teacher needs (Avci et al., 2019). For example, one teacher requested instruction on apps to use in case of internet failure at the school. To meet challenges such as internet or other technology failure, Musa and Momani (2022) stated training in classroom apps should include alternate plans. A technology support person could address specific concerns from teachers.

Project Deliverable

The developed professional development project could include a workshop, supplemental cheat sheets of two types (listing app by content areas and uses and individual cheat sheet on navigating specific popular apps), and videos for teachers to access online. Regarding one-on-one support from a Google Classroom guru, the district might have a funding shortage. A possible solution was access to a guru during the workshop or possibly training teacher leaders to assist other educators on site.

Section 3: The Project

Introduction

For this basic qualitative study, I chose a professional development program, which includes a 3-day professional development. I collected data that addressed middle school teachers in a suburban public school district in the southern United States inconsistently using Google Classroom in their classrooms. The data revealed that the participants need a technical support person, professional development on apps, and a Google Classroom guru to provide technical support and professional development on how to use Google Classroom as a pedagogical tool. The intended audience for this professional development is middle school teachers.

Rationale

The problem addressed through this qualitative study was that middle school teachers in a suburban public school district in the southern United States were inconsistently using Google Classroom in their classrooms. At the project site, middle school teachers were creating a blended learning environment; however, administrators expected them to integrate other educational apps, such as Quizizz and Nearpod, when using Google Classroom. Data from this qualitative study revealed that teachers needed professional development in the use of Google Classroom and productivity apps such as Quizizz and Nearpod. In addition, some teachers requested a cheat sheet with reminders on accessing some of the apps' basics. Therefore, a professional development opportunity may address the inconsistency of using Google Classroom and productivity apps. The

professional development may provide support and guidance for middle school teachers and increase the consistent use of Google Classroom and productivity apps.

Review of the Literature

A further literature review was conducted to examine middle school teachers' perception regarding support during the implementation and use of Google Classroom and other productivity apps. This section focuses on the views and experiences of teachers covering the following three themes: teachers' perception of technology integration, professional development and technology training, and the role of leadership. I searched the Academic Search Complete, Education Source, Thoreau, ERIC, and Taylor & Francis 100 Online databases as well as Google Scholar for empirical research papers in peer-reviewed journals. The following keywords were used: *middle school teachers, perceptions, experiences, productivity apps, integrated apps, teaching strategies, use of integrated apps, middle school teachers' perceptions of using Google Classroom with integrated apps*, and *middle school teachers' experiences of using Google Classroom with integrated apps.*

Teachers' Perception of Technology Integration

The rapid and continuous evolution of technology has permeated every corner of the globe, as highlighted by the research conducted by Islahi and Nasrin (2019). This technological proliferation has extended its influence across diverse sectors, including business and education, thereby transforming the way society functions (Cheng & Xie, 2018; Regan et al., 2019; Xie et al., 2019). Within the realm of education, the integration of innovative tools such as computers, tablets, and mobile devices has become

increasingly prevalent in both K–12 settings and higher education. Khlaif's (2018) study delved into the intricate dynamics of educators' attitudes toward technology adoption. The research identified several key factors that play a pivotal role in shaping teachers' perspectives. One significant determinant is the availability of technical support, which encompasses elements such as training programs and schools having adequate access to the requisite technology (Francom, 2020; McFarland et al., 2018; Yang et al., 2018). The perceived ease of use and the perceived benefits of incorporating technology into the educational process also emerge as crucial influencers in shaping teachers' attitudes. Moreover, Khlaif emphasized the impact of teachers' prior experience with technology. This factor significantly contributes to the overall disposition of educators toward embracing and integrating technology into their teaching methodologies (Kormos, 2018). Moreover, Vidal-Hall et al. (2020) noted that the familiarity and comfort that teachers have with technology, stemming from their previous encounters, contribute to a more positive and receptive attitude.

According to the findings of Adegbenro et al. (2018), educators grappling with low self-efficacy often struggle with tasks that extend beyond their perceived capabilities, as they perceive themselves as lacking the necessary competence. This underscores the pivotal role of self-efficacy in determining the success of teachers in navigating tasks, with implications for their overall effectiveness in the educational landscape. Furthermore, Adegbenro et al. expounded on the intersection between teachers' attitudes, self-efficacy, and the adoption and integration of technology as part of best practices in education. The researchers posited that the attitudes and self-efficacy of educators play a

decisive role in shaping their willingness to embrace technology in their instructional methods, which aligns with the findings of Nousiainen et al. (2018). Moreover, Vongkulluksn et al. (2018) shed light on the interconnectedness between teachers' beliefs, competency, and the extent of technology integration in the classroom. When teachers self-perceive as competent in utilizing technology and recognize its value in education, their inclination to incorporate technology into their instructional approaches substantially increases (Uslu & Usluel, 2019). Likewise, a study conducted by Zamir and Thomas (2019) emphasized the critical influence of teachers' perceptions, attitudes, and motivation regarding information and communication technology on the actual use of technology within the classroom setting. Although their research primarily focused on university-level educators, the overarching goal remains consistent—to seamlessly integrate technology into instructional practices to enhance lesson delivery and equip students with competencies essential for navigating life's challenges effectively.

Vongkullusksn et al. (2018) asserted that the viewpoints of educators play a pivotal role in shaping the utilization of technology within the classroom. According to Regan et al. (2019), in their study 10% of educators reported never incorporating computers into their instructional practices, while an additional 19% rarely employed technology in their teaching methods. Indalecio (2021) emphasized that the efficacy of technology hinges on educators' willingness and ability to leverage these resources effectively. F. Liu et al. (2018) expounded on how educators' perspectives regarding the value of new technologies directly impact their inclination and capability to make meaningful use of these resources for teaching and learning purposes. Similarly, Trainin

et al. (2018) highlighted the importance of teachers perceiving the connection between technology and their instructional practices, noting that such recognition fosters both interest and confidence in integrating technology. In addition, their discourse on the relevance of technology aligned with earlier research emphasizing the direct correlation between teacher beliefs and the successful integration of technology. A recurring theme emerged, with educators frequently expressing feelings of unpreparedness or a lack of necessary experience to deliver successful technology-integrated lessons, as elucidated by Zipke (2018). This underlines the importance of addressing educators' perspectives, readiness, and capabilities to foster meaningful and successful integration of technology in educational settings.

Professional Development and Technology Training

Educators must undergo training to utilize emerging technologies, ensuring their seamless integration into the curriculum to address the diverse and evolving needs of students (Bicak, 2019). Recognizing the demand for novel approaches, there is a pressing need for professional development initiatives that model effective strategies, aiding teachers in developing comfort and proficiency with technology (Mishra et al., 2019). Given the transformative shifts occurring in school districts, educational leaders need to proactively equip teachers with continuous support through professional development and training programs. This proactive approach enables educators to remain well-versed in the latest technological advancements. Saydam (2019) highlighted the heightened interest in professional development observed in the new millennium, underscoring teachers' eagerness to enhance the professionalization of their teaching practices. The

significance of such training extends beyond individual professional growth, as emphasized by Indalecio (2021), who noted that these development opportunities play a crucial role in empowering teachers to effectively plan their lessons and enhance their pedagogical skills. Powell and Bodur (2019) further reiterated the pivotal role of professional development in elevating student learning outcomes, emphasizing its broader impact on the overall educational landscape. In essence, these concerted efforts contribute not only to the continual evolution of teaching methodologies, but also to the enhancement of educational outcomes for students.

Woodward and Hutchison's (2018) exploration of professional development underscored a general acknowledgment of its effectiveness in education. However, they highlighted a notable gap in the literature specifically addressing professional development tailored to technology integration. Despite the recognized potential of technology in enhancing learning experiences, a gap remains of comprehensive studies in this area. According to Woodward and Hutchison, discrepancies and inconsistencies in implementing technology in educational settings contribute to educators' struggles with the incorporation of technological tools into their lessons. Also, Georgiou and Ioannou (2019) further noted the slow pace at which technology is being integrated into classrooms, despite its transformative impact on learning. Their observation aligns with the broader context of technology integration facing hurdles and delays. Their research highlighted a crucial need for additional support and targeted professional development to bridge the existing gaps and empower teachers in navigating the complexities of technology integration effectively.

School districts employ professional development and teacher training as strategic interventions to enhance and elevate student performance. Research conducted by Ihmeideh and Al-Maadadi (2018) underscored the transformative impact of training programs on teachers' perceptions and practices, specifically in the realm of integrating technology into their lessons. Their study emphasized the pivotal role of such programs in shaping educators' approaches to technology integration. Similarly, Y. Liu and Liao (2019) emphasized the significance of professional development in fostering teacher confidence and self-efficacy. Their study highlighted how targeted training initiatives contribute significantly to enhancing educators' belief in their abilities to effectively employ technology in their teaching practices.

Moreover, Georgiou and Ioannou's (2019) examination into teachers' concerns about adopting technology revealed a positive correlation between professional development programs and the reduction of in-service teachers' concerns regarding technology integration. This finding underscored the role of ongoing training initiatives in addressing educators' problems and fostering a more positive outlook toward the integration of technology into their instructional methodologies.

The Role of Leadership

Leadership support stands as a crucial factor in fostering extensive and profound technology integration within a teacher preparation program. Clausen (2020) underscored this notion in his examination of leadership for technology integration in a teacher preparation program, stating, "To take root, a technology infusion effort necessitates sustained support from [program administration] leadership that establishes instructional

contexts empowering faculty to lead and actively engage in the change process" (p. 185). This brand of transformational leadership grasps the dynamics of the change process by articulating a clear vision for the future that challenges the current system. Throughout the entire change process, transformational leadership empowers others to partake in the transformative journey, cultivating a sense of encouragement across the organization.

Recognizing the necessity for a tool to aid education leadership in the implementation of the TPACK framework, the American Association of Colleges for Teacher Education took the initiative. Addressing this need, the American Association of Colleges for Teacher Education Innovation and Technology Committee devised the TPACK Leadership Diagnostic Tool, empowering leaders to "provide direction" and "exercise influence with a goal of organizational improvement within the realm of TPACK" (Graziano et al., 2018, p. 372). The underlying structure of the TPACK Leadership Diagnostic Tool draws from the theory of action (Argyris & Schön, 1974) and the transformational leadership framework (Edwards, 2022). The theory of action operates as a cause–effect relationship or logic model, prompting leaders in the TPACK context to assess how the change will unfold, what aspects are within their control, and what they aspire to have control over (Graziano et al., 2018). Complementing this, the transformational leadership framework introduces innovation as leaders articulate a vision, subsequently necessitating the development of a plan to cultivate faculty and reshape the organization to realize that vision.

Insights into the efficacy of the TPACK Leadership Diagnostic Tool are evident from a case study involving three teacher education institutions in the United States, as

presented by Clausen et al. (2019). The study, conducted through two rounds of semistructured interviews at institutions with TPACK-based initiatives, focused on assessing the progress of TPACK initiatives and the utilization of the TPACK Leadership Diagnostic Tool, with the second round occurring 1 year after the initial interview. The initial query posed by the researchers aimed to understand how the tool was employed during TPACK implementation. Participants consistently emphasized a prevalent theme: The tool served more as a tool for reflection than a mere reference. A participant articulated, "[The tool] helped you to look as you [are] defining, refining, developing programs or initiatives. . . . I can't attend to everything at every moment, but it helps me to think about where the appropriate pressure is pointing right this minute" (Clausen et al., 2019, p. 60). The category most frequently addressed when inquiring about how the TPACK Leadership Diagnostic Tool facilitated an examination of current practice was key leadership functions (n = 39). Although a variety of topics were discussed in the realm of wishful thinking (n = 36), participants from all three institutions consistently mentioned a favorable policy environment related to accreditation.

Despite attempts to formulate the TPACK Leadership Diagnostic Tool with a general format, participants recommended the addition of more specific TPACK elements, possibly as "guiding questions" (Clausen et al., 2019, p. 64). Furthermore, they suggested providing examples of various tool elements and tool levels. Clausen et al. (2019) concluded that additional "support, scaffolding, or even training" is essential for effective tool utilization (p. 65). Emphasizing the importance of utilizing the Measures/Artifacts Used column within the tool, Clausen et al. proposed that leaders can

use this feature to evaluate their progress. For those aspiring towards transformational and sustainable change in teacher preparation programs, viewing the tool as a resource rather than an occasional reference can yield gratifying outcomes.

Project Description

Based on the results of this qualitative study, middle school teachers have expressed a desire for professional development in areas such as Google Classroom, productivity apps such as Quizizz and Nearpod, and one-on-one troubleshooting and modeling assistance. To address these needs, a 3-day professional development has been developed to equip teachers with the necessary tools and knowledge to be effective in the classroom.

The professional development plan is designed to cover 3 full days of training. Each day will last for 6 hours. Middle school teachers, special education teachers, instructional coaches, instructional technologists, and administration should be present. The 3-day professional development will take place during summer learning sessions. Conducting it during the summer will allow teachers to implement their learning during the next school year. Also, during the school year, instructional coaches and administrators can conduct monthly check-ins to check teachers' progress.

The professional development's primary focus will be on collaboration and idea-sharing among participants, with a particular emphasis on using Google Classroom and productivity apps. Participants will have the opportunity to learn from a Google Classroom guru and receive one-on-one guidance and support to assist them in implementing these tools effectively. By participating in this professional development,

teachers should gain valuable skills and knowledge to enhance their classroom productivity and enable them to engage their students in innovative ways. The 3-day professional development aims to create a community of educators empowered to utilize technology in their teaching practices by providing opportunities for collaboration and support.

On Day 1, teachers will focus on the use and features of Google Classroom from a Google Classroom guru. At the end of this session, teachers will complete an exit ticket to evaluate the training and suggest other material they may need training on. On Day 2, teachers will focus on productivity apps and complete an exit ticket, such as teachers did on Day 1. On the final day, Day 3 will address specific concerns teachers expressed on their exit tickets from Day 1 and Day 2 and all focus on technical support glitches.

Needed Resources, Supports, and Potential Barriers and Solutions

No extra resources are needed for the professional development. The setting for the 3-day professional development will be one of the middle school's media centers. The spacious area enables teachers to move around freely and collaborate. In addition, it allows for a comfortable and productive environment. The media center is equipped with a sound system, outlets for computer chargers, internet, and a projector for necessary resources for presentations and research. All resources required will be available digitally via Google Classroom. This platform ensures that all teachers can access the same material and collaborate without interruption. Additionally, each teacher will receive a folder containing printouts of Google Classroom and productivity app cheat sheets and additional paper for notetaking.

Administrative support would include the administration and the instructional coach. The support from the administration and the instructional coach is needed to provide monthly check-ins throughout the school year. In addition, the administration should be present in case emergencies occur during the professional development to make immediate decisions.

Two potential barriers may impede the success of this professional development. One potential barrier to this professional development is low teacher participation during the summer break due to the lack of obligation for teachers to attend the professional development. The solution for this barrier is to survey potential teachers' availability and willingness to join this professional development during the summer. Alternatively, during preplanning, the week teachers report back for the new school year, professional development will take place. The second potential barrier is the lack of funding. During the summer, teachers receive stipends for any professional development they attend. If additional funding is unavailable, the professional development will take place during preplanning, the week teachers report back for the new school year.

Proposal for Implementation, Including a Timetable

The next step would be to speak to the school's administration team to discuss the successful execution of the 3-day professional development, allowing them to discuss the goals and objectives of the professional development. After looking at the school's schedule and calendar, I would schedule the proposed 3-day professional development in June based on the survey results. If not enough teachers sign up in June, the professional

development will occur during preplanning in July. Table 11 shows the timetable for professional development.

Table 11

Implementation Timetable

Timeline	Action steps/tasks
February 2024	Meet with administration on goals and objectives of the professional development
March 2024	Coordinate with the instructional technology department and technology support to request a member to facilitate Day 2 and 3 of the professional development.
April 2024	Conduct a survey for potential teachers' availability and willingness to join the professional development during the summer
May 2024	Meeting with the instructional technologist and technology support to give the final layout of Day 2 and Day 3
June 2024	Conduct 3-day professional development details in Appendix A
July 2024	Alternative for 3-day professional development
August 2024	Administrators and instructional coaches begin monthly check-ins
May 2025	Administrators and instructional coaches conclude monthly check-ins

Roles and Responsibilities of Stakeholders

As the researcher, I developed a 3-day professional development. Additionally, I will provide all teachers with cheat sheets for the implication of Google Classroom and productivity apps with evaluations following each day of training. During the 3-day professional development, I will serve as the lead facilitator for Google Classroom, and

the instructional technologist will serve as the lead facilitator for Day 2 for productivity apps such as Quizizz and Nearpod and one-on-one support, in addition to the technology support for one-on-one support on Day 3. The role of the administration and instructional coach will be to complete monthly check-ins with teachers who participated in the 3-day professional development. Additionally, administrators and the instructional coach will attend to learn what is expected of the teachers. The role of the teachers is to collaborate to create meaningful lessons that allow students to be critical thinkers using Google Classroom and productivity apps.

Project Evaluation Plan

The project will be evaluated in two ways to determine its effectiveness. Formative and summative data will be collected. Formative data will be collected on Day 1 and Day 2 of the professional development. These data will include teacher collaboration and discussion during each session. During Day 1, teachers will have a chance to produce artifacts from what was taught during the professional development to ensure their artifacts are engaging and meaningful. Teachers will have a chance to share their artifacts with other teachers during the sharing portion of the professional development. Additionally, teachers will post the artifacts into the Google Classroom so that other teachers can comment on them and make suggestions. Day 1 and Day 2 formative evaluation is presented in Appendix I.

In addition, teachers will be given a link to complete an evaluation on Day 3 of the professional development as the summative evaluation. Using the summative evaluation form, teachers will assess the overall success of the professional development.

Teachers will evaluate three components: content, learning opportunities, and coaching. Each component includes questions with a scale ranging from *poor* to *excellent* and from *strongly disagree* to *strongly agree*. The Day 3 summative evaluation is presented in Appendix J. Each day will give the facilitator input on how effective the professional development was and what needs to improve.

Project Implications

The implementation of Google Classroom and productivity apps could have a positive impact on the educational system. The implementation could be achieved through a 3-day professional development program, which could allow teachers to learn about the use of Google Classroom and productivity apps like Quizizz and Nearpod and receive one-on-one troubleshooting and modeling assistance. This initiative is critical as it could help bridge the gaps in professional development and equip teachers with the necessary skills and resources to improve student outcomes and achievement. The findings of this qualitative study also could provide implications for the lack of professional development with the use of Google Classroom and productivity apps like Quizizz and Nearpod. The data gathered could help identify the gaps in professional development, which can be addressed by implementing the proposed professional development. This professional development is necessary to ensure that teachers continuously improve their instructional practices, which could ultimately lead to increased student learning and achievement. It is important to note that local stakeholders are responsible for students' success. Therefore, teachers must be adequately prepared with the knowledge and resources necessary to improve student outcomes and

achievement. If implemented, the proposed professional development could positively impact teachers' use of Google Classroom and productivity apps, ultimately leading to improved student outcomes and achievement.

Section 4: Reflections and Conclusions

This basic qualitative study aimed to explore middle school teachers' perceptions about the support that would help them use Google Classroom consistently while integrating other productivity apps such as Quizizz and Nearpod. During data collection and analysis, I discovered a need for professional development on the features of Google Classroom and productivity apps. For this reason, I created a 3-day professional development to cater to the needs of middle school teachers. The 3-day professional development was titled Using Google Classroom and Productivity Apps. In this final section of the qualitative study, I reflect on the project and discuss its strengths and limitations, recommendations for alternative approaches, what was learned about the processes, and personal growth and learnings as a scholar and project developer. Lastly, I reflect on the importance of the work, implications, applications, and directions for future research.

Project Strengths and Limitations

In this section of the qualitative study, I explain the project's strengths and limitations. The project strengths focus on how the 3-day professional development may enrich teachers' technological and instructional strategies through technology. The project enables teachers to reflect on their current practices and identify areas requiring support and improvement. Additionally, professional development can help them consistently use Google Classroom and productivity apps and stay abreast of the latest technological trends and advancements in the education sector. Finally, the limitations of the project are concentrated on possible reasons for inconsistent usage due to lack of

professional development on Google Classroom and productivity apps such as Quizizz and Nearpod. Although there are some limitations to the project, the strength of the professional development outweighs its limitations. With proper support and resources in place, the project can significantly improve teachers' technological and instructional strategies, ultimately benefiting students' learning outcomes.

Strengths

One strength of this professional development plan is that it affords teachers the opportunity to participate in hands-on activities to build artifacts to use within their classroom. Not only does the project provide middle school teachers with hands-on activities, but teachers also are allowed to create supportive communities throughout the school. Moreover, the professional development emphasis on collaboration across grade levels is a notable strength. This allows teachers to gain innovative and new strategies to engage students and promote active learning. By working with teachers from other grades, teachers can learn from one another and gain a broader perspective on teaching and learning. Creating Google Classroom materials and assignments through productivity apps allows teachers to create significant material for their students. These tools can help teachers to develop more engaging assignments and activities that promote deeper learning and understanding.

Limitations

There are two limitations to this project. The first limitation is the timeframe of the professional development. The expected timeframe for this 3-day professional development is during the summer. Due to teachers' 10-month contracts, they are not

obligated to attend summer professional development. Due to teachers not being obligated, teacher participation may be low.

The second limitation of this project is the lack of funding. Compensation is necessary for teachers who participate in the summer. In the southern United States, suburban public schools compensate teachers for attending professional development beyond their contractual obligations. Due to the projected start date in the summer, it is imperative to compensate teachers for attending the 3-day professional development.

Recommendations for Alternative Approaches

The problem addressed within the suburban public school district focused on the lack of professional development with the inconsistent use of Google Classroom and integration of productivity apps. Because middle school teachers felt they needed additional help with Google Classroom and productivity apps, I proposed a 3-day professional development to assist middle school teachers in this district. Alternatively, the problem could have been identified as including middle school teachers across the state, not just middle school teachers. The instructional coaches can create monthly workshops in which content-specific teachers can collaboratively create the opportunity to gain innovative and new strategies to engage students and promote active learning in the classroom.

One way to do this would be to utilize teacher preplanning days for effective planning. These days allow teachers to collaborate and share ideas with content-specific instructional coaches to ensure better instruction alignment across different classes. This collaboration also allows teachers to discuss successful and unsuccessful strategies,

exchange additional ideas, and incorporate data to tailor their planning effectively. Teachers can better prepare for the academic year ahead by utilizing this time to its fullest potential.

Scholarship, Project Development and Evaluation, and Leadership and Change

Embarking on a scholarly qualitative project study and preparing for a 3-day professional development was a complex but valuable learning experience as a novice researcher. The courses I took at Walden University served as the foundation for this qualitative project study. As I dug deeper into the study's development, I gained a deeper understanding of the variations in conducting a basic qualitative study. This approach enabled me to examine the problem from the participants' perspective, allowing me to remain objective and set aside preconceived notions.

Throughout the development of this project, I had an opportunity to learn a great deal about myself, including my mental fortitude and passion for my work. I also identified and strengthened several characteristics, such as patience and understanding. The data analysis component was particularly critical, allowing me to make informed decisions rather than relying solely on subjective opinions. By reviewing the data, I could determine the most effective project type to address the problem under this qualitative study, and it also helped me identify themes that emerged from the data, making the project planning process more manageable. Additionally, it was essential to address researcher bias to ensure the credibility of this qualitative research study. As a result, I provided middle school teachers who had no knowledge of using Google Classroom and productivity apps with valuable insights.

This project has played a significant role in my growth as a leader and advocate of social change. Through my research, I discovered that while many researchers can identify local problems in their studies, only some take the initiative to address them with a project. This sets me apart as an educational leader and reinforces my dedication to being an agent of positive social change. I have developed a newfound passion for conducting research; identifying problems; utilizing literature, including current research studies, to determine what is known; and identifying solutions that could facilitate positive change locally and globally. Furthermore, the project's development process has given me practical insights into planning and executing professional development initiatives.

Reflection on Importance of the Work

The challenge lies in the district providing Google Classroom and productivity apps to facilitate technology integration but not yet accompanying them with adequate professional developments to enable their effective use. After conducting interviews, I identified key issues with this approach. Participants highlighted that while they were introduced to Google Classroom and productivity apps, there is a need for ongoing professional development to explore the full range of features offered by Google Classroom and productivity apps.

Technology integration in education has garnered significant attention from educational scholars, and its importance cannot be overstated. As an educator, a key part of my job is sharing my knowledge of using Google Classroom. This is one of the reasons I chose to do a 3-day professional development. I aim to extend this support

across the state. Such initiatives' outcome could help enhance lessons, promote active learning, and foster student engagement.

Implications, Applications, and Directions for Future Research

In this basic qualitative study, I investigated how middle school teachers perceived the support that would help them use Google Classroom consistently while integrating other productivity apps such as Quizizz and Nearpod. The research uncovered a theme highlighting the need for support in integrating specific productivity apps. To address this need, a 3-day professional development was designed to assist teachers in planning and delivering more meaningful and engaging lessons via Google Classroom and productivity apps. The professional development aims to promote social change within the middle school and improve teaching and learning within the classroom.

The primary objective of professional development is to equip teachers with the necessary tools and knowledge to be effective in their teaching practices. The professional development will focus on collaboration and idea-sharing among the participants, particularly emphasizing utilizing Google Classroom and productivity apps. A recommendation for future practices is to create professional development that can be used across Georgia to promote the use of productivity apps and Google Classroom. The same professional development framework dedicated to middle school teachers can be modified to meet the needs of other school districts.

Conclusion

During my basic qualitative project study, I identified a gap in professional development regarding the use of Google Classroom and productivity app integration.

Upon discovering teachers' negative perceptions of their training and preparation on Google Classroom and productivity app integration, I developed a professional development to address their concerns. The project, outlined in Appendix A, aims to enhance classroom teaching and learning by enabling teachers to collaborate and utilize more productivity apps. Despite encountering significant challenges such as the professional development being held during the summer and funding potentially being limited, the project taught me valuable skills, with conducting a basic qualitative study being the most noteworthy. I learned to listen to participants and set aside personal feelings about using Google Classroom and productivity apps. The qualitative project study also opened my eyes to new ideas, such as connecting the dots to categorize codes into themes. Finally, while positive implications are crucial, such as teacher participation, negative implications such as lack of funding to hold the professional development during the summer are equally important to consider.

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Appendix A: The Project

Day 1: Agenda

8:30-9:00	Sign-in and breakfast
9:00-10:00	Introduction, Purpose, and Getting Started with Google Classroom including Do's and Don't
10:00-11:00	Deeper Dig: Assignments and organization
11:00-12:00	Google Integration
12:00-12:40	Lunch
12:40-2:10	Creation Time: Create what you have learned and collaboration
2:10-2:30	Share "ah ha moments", wrap-ups, and exit ticket

Who am I.....

Purpose of this Professional Development

The purpose of this professional development is to focus on the use and features of Google Classroom, productivity apps features with Nearpod and Quizizz, and get one-on-one assistance on specific concerns with Google Classroom and productivity apps

Day 1: Today, we will...

- Use notes section to write down "ah ha" moments
- Do's and Don'ts of Google Classroom
- Getting Started
- Dig into assignments and organization
- Google Integration
- Create and share what you have learned

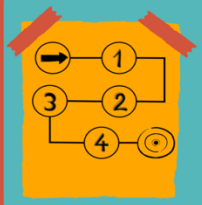
Do's and Don'ts of Google Classroom

DO'S

- DO use Google products (docs, slides, sheets, etc)
- DO post clear and specific directions **every time**
- DO use topics to keep your classroom organized
- DO keep assignments consistent

DON'TS

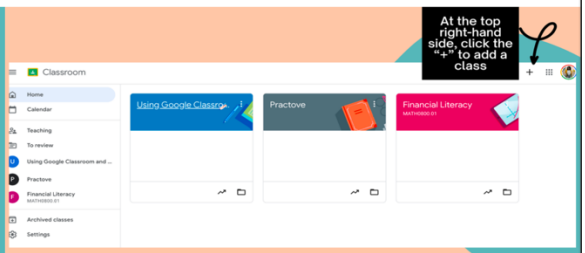
- Don't post Microsoft products (powerpoint, word, excel, etc)
- Don't take screenshots of worksheets / workbooks for students to complete in Google slides
- Don't post assignments as announcements in the stream
- Don't post assignments or quizzes without any instructions

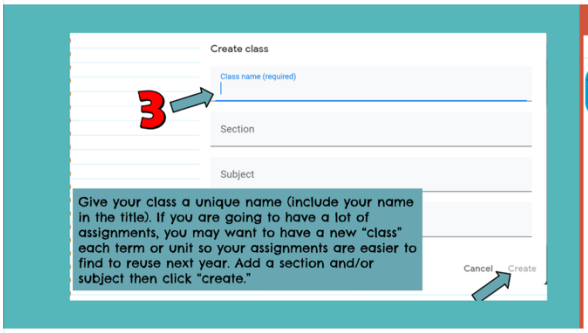


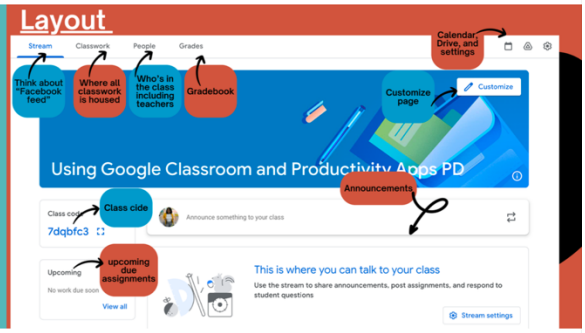
Getting Started

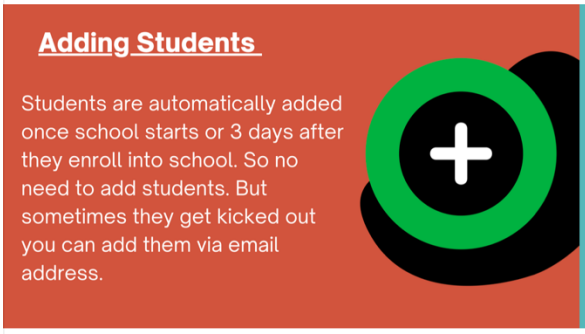
- Must log-in to Google Suites with your district email
- Create a classroom

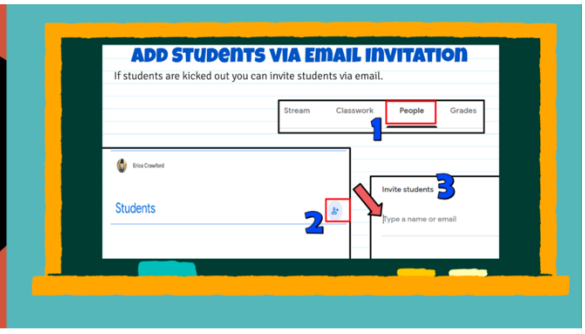
Use the QR code to access the training Google Classroom

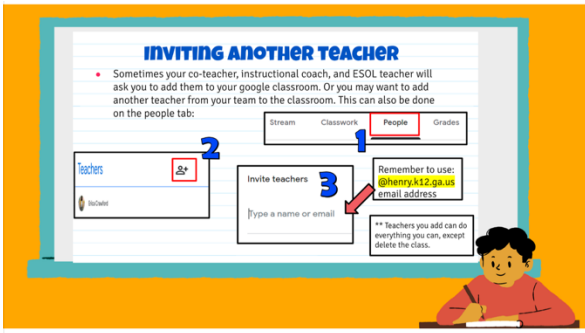


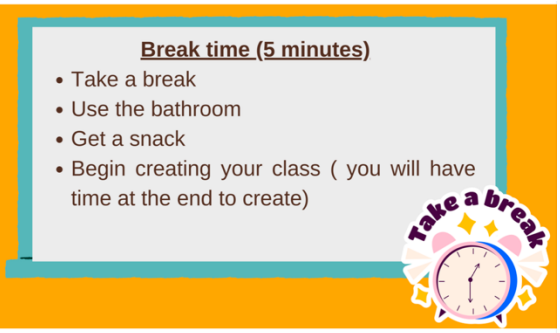

Create class
Class name (required)
Section
Subject
Give your class a unique name (include your name in the title). If you are going to have a lot of assignments, you may want to have a new "class" each term or unit so your assignments are easier to find to reuse next year. Add a section and/or subject then click "create."
Cancel
Create


Layout
Stream
Classwork
People
Grades
Calendar, Drive, and settings
Think about "Facebook feed"
Where all classwork is housed
Who's in the class including teachers
Gradebook
Customize page
Customize
Using Google Classroom and Productivity Apps PD
Announcements
Class code
Class cide
7dqbfc3
Announce something to your class
Upcoming
upcoming due assignments
No work due soon
View all
This is where you can talk to your class
Use the stream to share announcements, post assignments, and respond to student questions
Stream settings

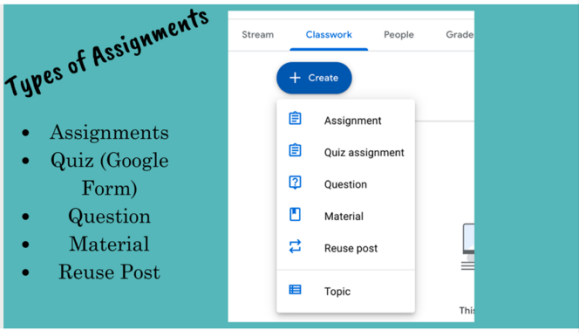

Adding Students
Students are automatically added once school starts or 3 days after they enroll into school. So no need to add students. But sometimes they get kicked out you can add them via email address.

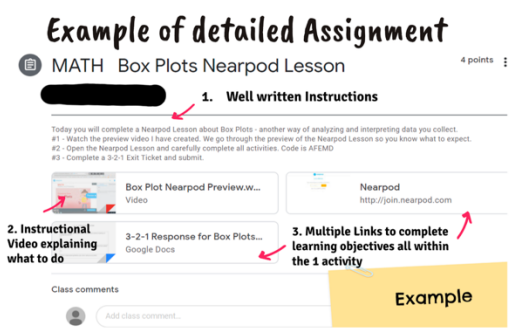

ADD STUDENTS VIA EMAIL INVITATION
If students are kicked out you can invite students via email.
Stream
Classwork
People
Grades
1
Erica Crawford
Students
2
Invite students
3
Type a name or email

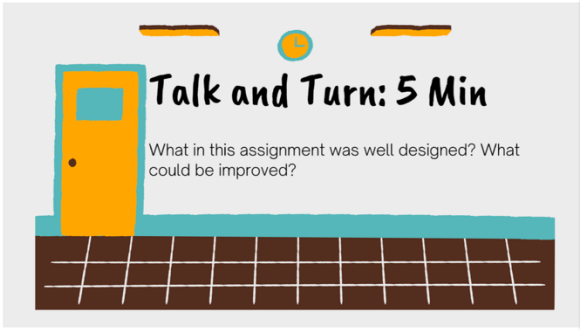

INVITING ANOTHER TEACHER
Sometimes your co-teacher, instructional coach, and ESOL teacher will ask you to add them to your google classroom. Or you may want to add another teacher from your team to the classroom. This can also be done on the people tab:
Stream
Classwork
People
Grades
1
2
Teachers
Invite teachers
3
Type a name or email
Remember to use: @henry.k12.ga.us email address
** Teachers you add can do everything you can, except delete the class.

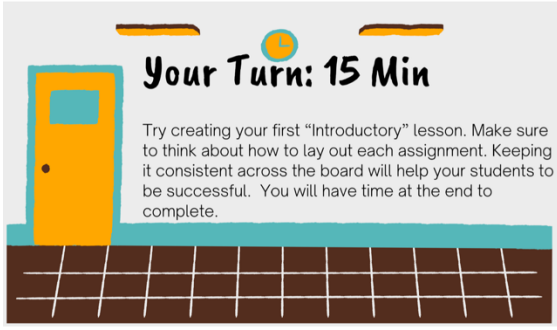

Break time (5 minutes)
Take a break
Use the bathroom
Get a snack
Begin creating your class (you will have time at the end to create)
Take a break


1: Instructions
First and most important piece. Leave more details than normal.
2: Add Videos
Add screencasts, whiteboard lessons, Khan Academy, Youtube, etc to be your direct instruction. Think how you would teach this if we were in person.
3 : Hyperdoc
Build everything needed into one document for easy access for students
4: Multiple Resources
Add multiple activities for the same learning objective to one assignment.
Details when posting an assignment

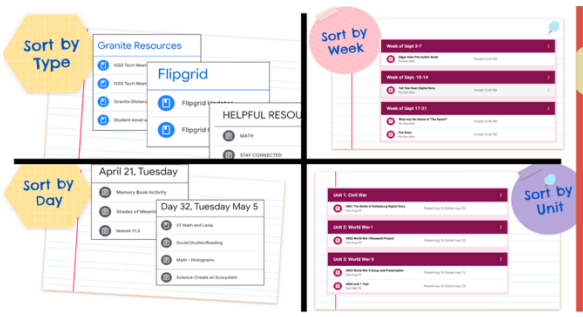

Types of Assignments
Assignments
Quiz (Google Form)
Question
Material
Reuse Post
Stream
Classwork
People
Grade
Create
Assignment
Quiz assignment
Question
Material
Reuse post
Topic

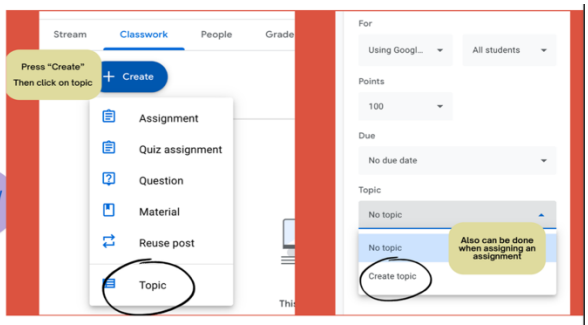

Example of detailed Assignment
MATH Box Plots Nearpod Lesson
4 points
1. Well written Instructions
Today you will complete a Nearpod Lesson about Box Plots - another way of analyzing and interpreting data you collect.
#1 - Watch the preview video I have created. We go through the preview of the Nearpod Lesson so you know what to expect.
#2 - Open the Nearpod Lesson and carefully complete all activities. Code is AFEMD
#3 - Complete a 3-2-1 Exit Ticket and submit.
Box Plot Nearpod Preview.w...
Video
Nearpod
http://join.nearpod.com
2. Instructional Video explaining what to do
3-2-1 Response for Box Plots...
Google Docs
3. Multiple Links to complete learning objectives all within the 1 activity
Class comments
Add class comment...
Example

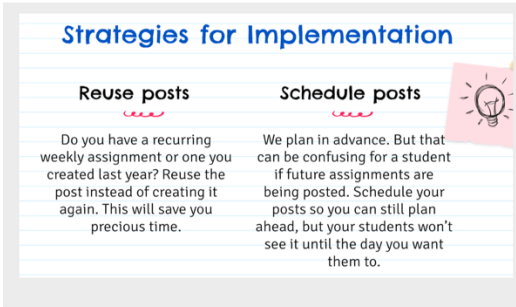

Talk and Turn: 5 Min
What in this assignment was well designed? What could be improved?

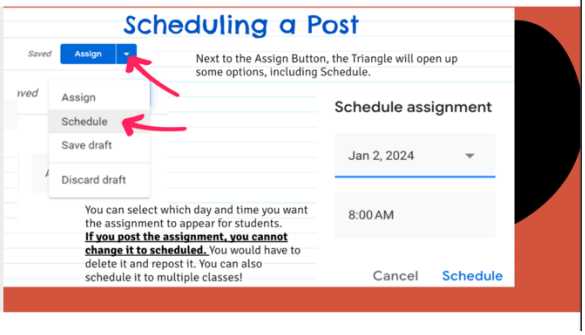

Your Turn: 15 Min
Try creating your first "Introductory" lesson. Make sure to think about how to lay out each assignment. Keeping it consistent across the board will help your students to be successful. You will have time at the end to complete.

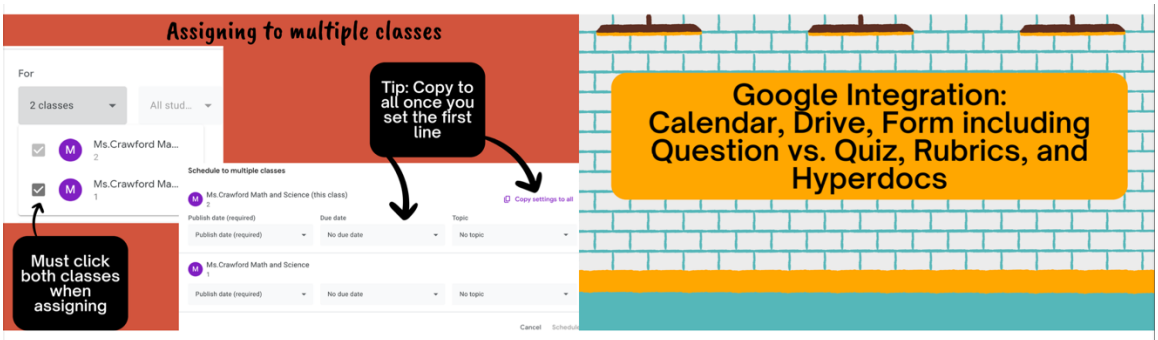

Type 1: By Unit
Organize your assignments by units. This helps students stay organized and know what to study in THAT unit
2: By Day
Helps students who miss a day to know what was done on that particular day
3 : By Week
Helps students that miss weeks of school due to illness or suspensions
4: By Type
Organize assignments by types such as; Google Docs, Google Slides, Google Form, Quizizz, Nearpod, Flipgrid, etc.
Lets organize your work


Sort by Type
Granite Resources
Flipgrid
HELPFUL RESOU
Sort by Week
Sort by Day
April 21, Tuesday
Day 32, Tuesday May 5
Sort by Unit


Stream
Classwork
People
Grade
Press "Create" Then click on topic
Create
Assignment
Quiz assignment
Question
Material
Reuse post
Topic
For
Using Googl...
All students
Points
100
Due
No due date
Topic
No topic
No topic
Also can be done when assigning an assignment
Create topic


Strategies for Implementation
Reuse posts
Do you have a recurring weekly assignment or one you created last year? Reuse the post instead of creating it again. This will save you precious time.
Schedule posts
We plan in advance. But that can be confusing for a student if future assignments are being posted. Schedule your posts so you can still plan ahead, but your students won't see it until the day you want them to.

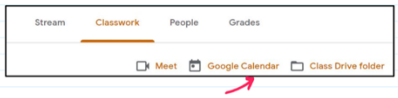

Scheduling a Post
Saved
Assign
Next to the Assign Button, the Triangle will open up some options, including Schedule.
Assign
Schedule
Save draft
Discard draft
Schedule assignment
Jan 2, 2024
8:00 AM
You can select which day and time you want the assignment to appear for students.
If you post the assignment, you cannot change it to scheduled. You would have to delete it and repost it. You can also schedule it to multiple classes!
Cancel
Schedule



Google Calendar

Google Classroom automatically saves all your assignments in Google Calendar to help you and your students stay organized.

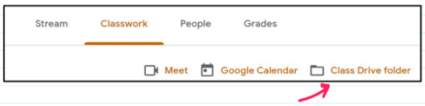
One of the places you can find your calendar is here.



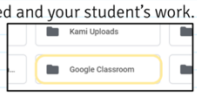
To create an assignment in the calendar is easy! All you need to do is make sure you add a due date.

Google Drive

Google Classroom also automatically saves all your student's work into a Google Classroom folder in your Google Drive.



You can see all the assignments you have assigned and your student's work. Nothing is ever lost!

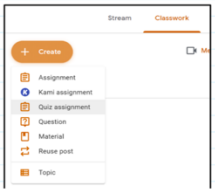


Practice using one of the organization tools, assigning assignment to multiple classes, and the two integrations; Google Calendar and Drive

Your Turn
10 mins

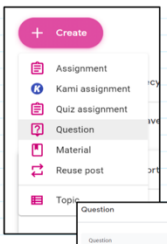
Google Form (Quiz)

You can imbed a Google Form (Quiz) into your Google Classroom. Just create a Quiz assignment and Google will create a blank quiz for you.



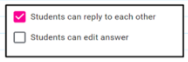
From here you can create a quiz from scratch. There are awesome features such as lock mode, which enables students from opening new tabs or applications while taking the quiz.

Remember that if you use lock mode then students have to use a District Chromebook to take the quiz.



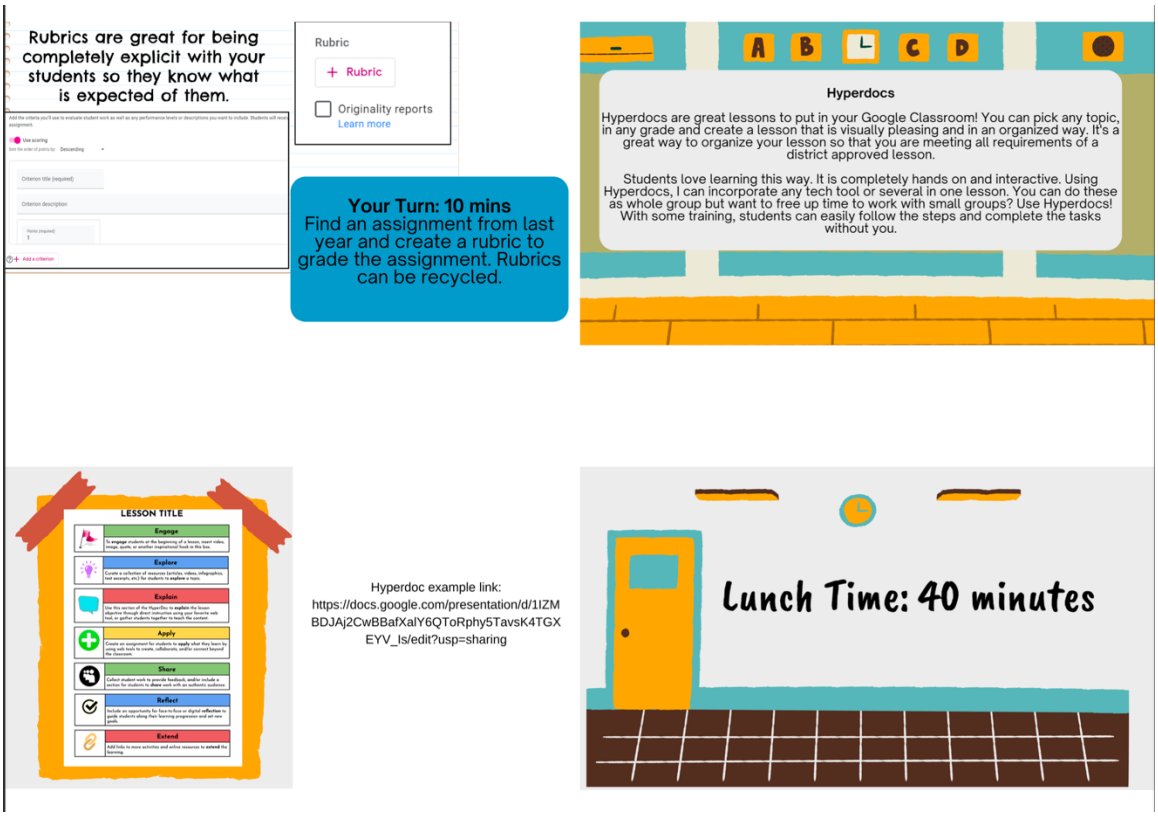
Question vs. Quiz

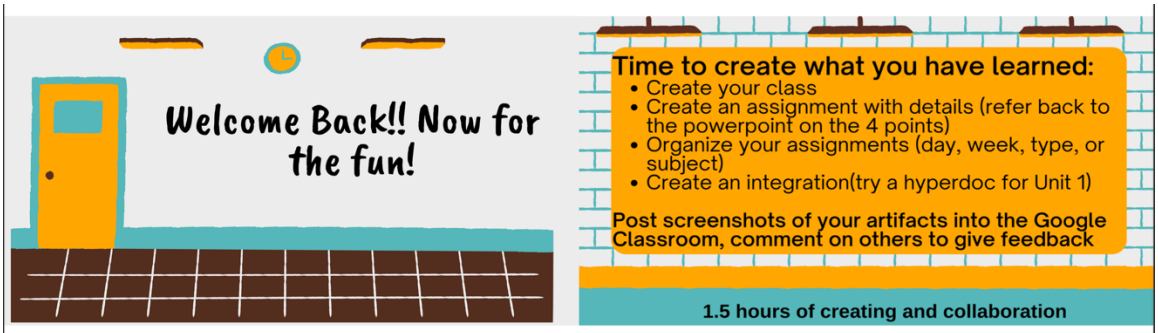
You can also just use the question option to post a quick question or exit ticket. You can choose from short answer and multiple choice. You can also give the students the option to reply to each other.

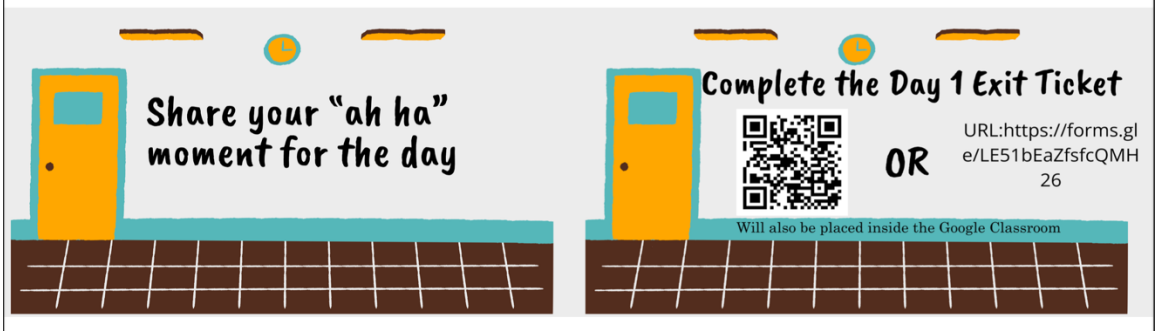


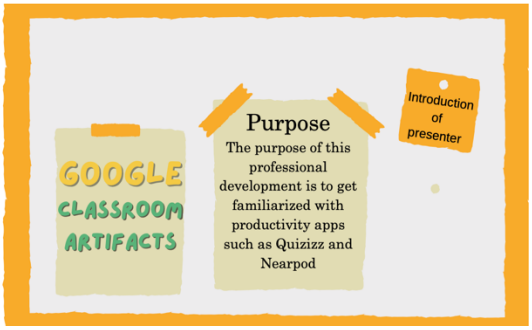
Talk to your table, when might you use a quiz verses the question option and visa versa.

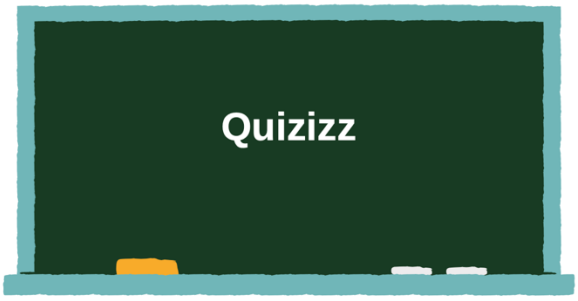
Your Turn
5 mins

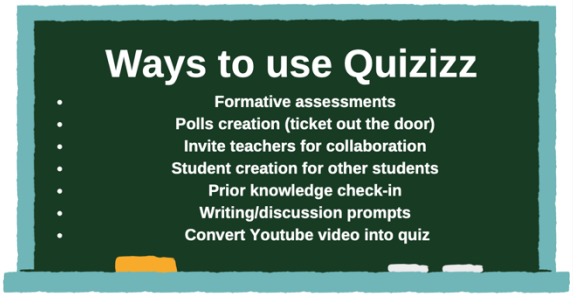

Rubrics are great for being completely explicit with your students so they know what is expected of them.
Rubric
+ Rubric
Originality reports
Learn more
Your Turn: 10 mins
Find an assignment from last year and create a rubric to grade the assignment. Rubrics can be recycled.
A B C D
Hyperdocs
Hyperdocs are great lessons to put in your Google Classroom! You can pick any topic, in any grade and create a lesson that is visually pleasing and in an organized way. It's a great way to organize your lesson so that you are meeting all requirements of a district approved lesson.
Students love learning this way. It is completely hands on and interactive. Using Hyperdocs, I can incorporate any tech tool or several in one lesson. You can do these as whole group but want to free up time to work with small groups? Use Hyperdocs! With some training, students can easily follow the steps and complete the tasks without you.
LESSON TITLE
Engage
Explore
Explain
Apply
Share
Reflect
Extend
Hyperdoc example link:
https://docs.google.com/presentation/d/1IZMBDJAj2CwBBafXalY6QToRphy5TavsK4TGXEYV_Is/edit?usp=sharing
Lunch Time: 40 minutes

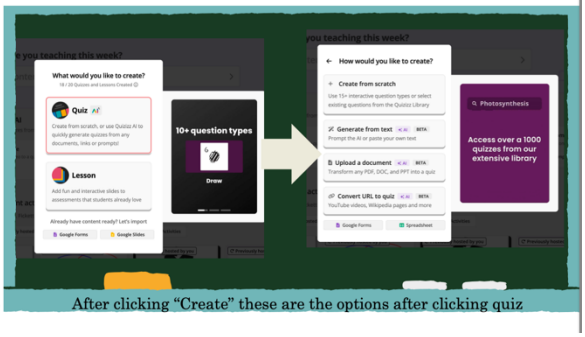

Welcome Back!! Now for the fun!
Time to create what you have learned:
• Create your class
• Create an assignment with details (refer back to the powerpoint on the 4 points)
• Organize your assignments (day, week, type, or subject)
• Create an integration(try a hyperdoc for Unit 1)
Post screenshots of your artifacts into the Google Classroom, comment on others to give feedback
1.5 hours of creating and collaboration


Share your "ah ha" moment for the day
Complete the Day 1 Exit Ticket
OR
URL:https://forms.gle/LE51bEaZfsfcQMH26
Will also be placed inside the Google Classroom

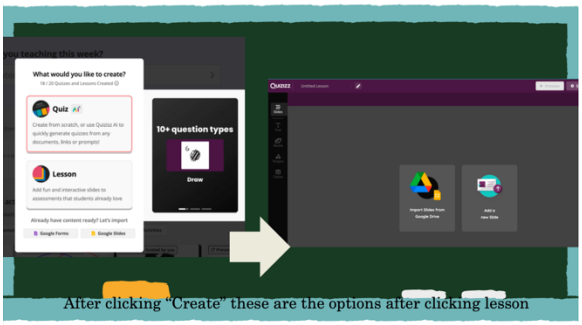




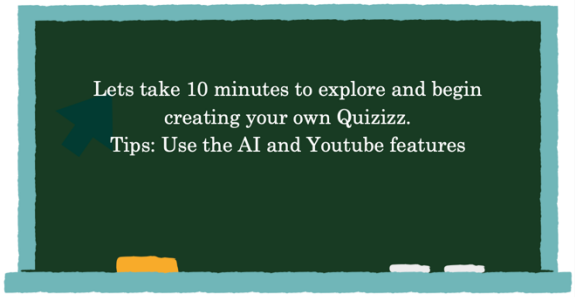


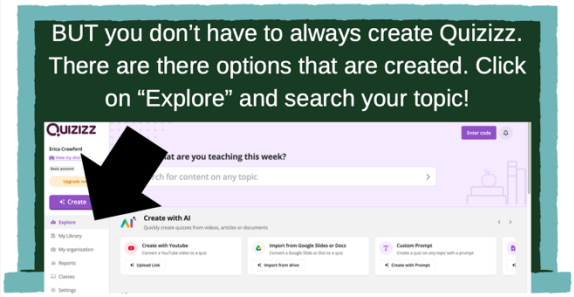


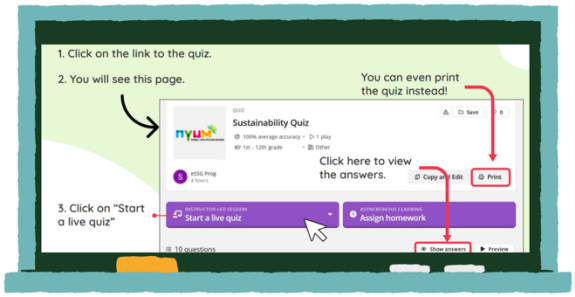
After clicking "Create" these are the options after clicking quiz

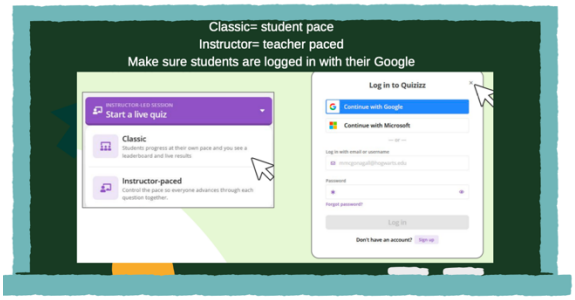


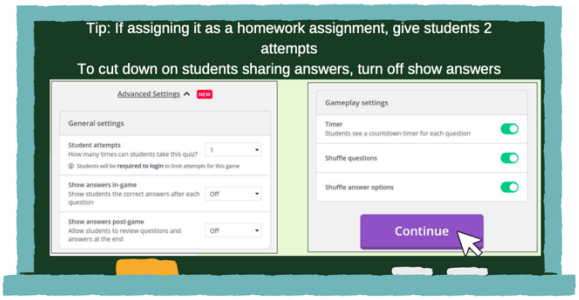
After clicking "Create" these are the options after clicking lesson

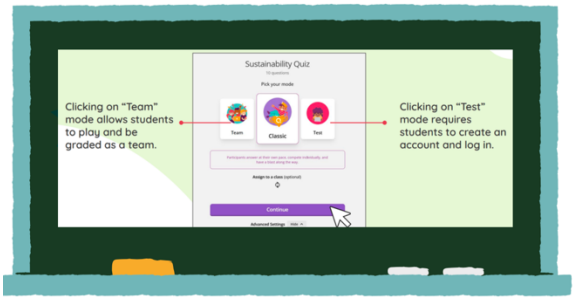


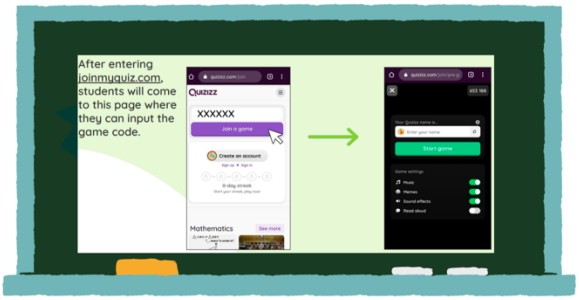


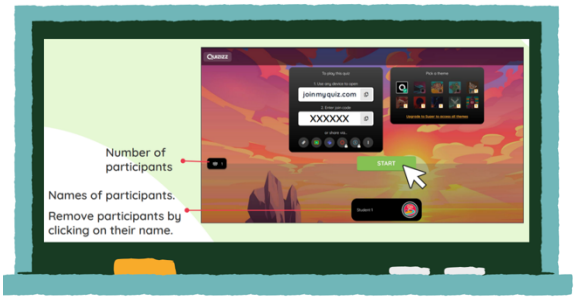


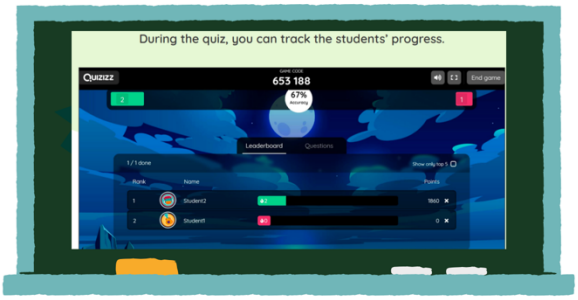


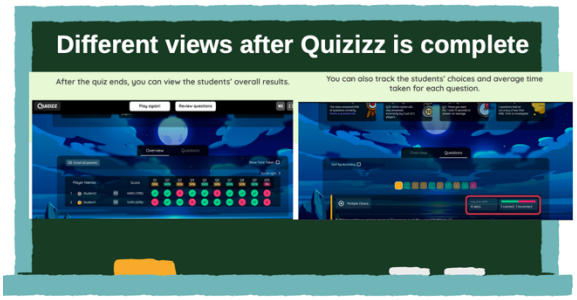


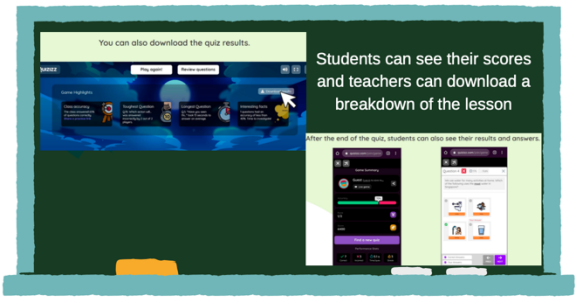


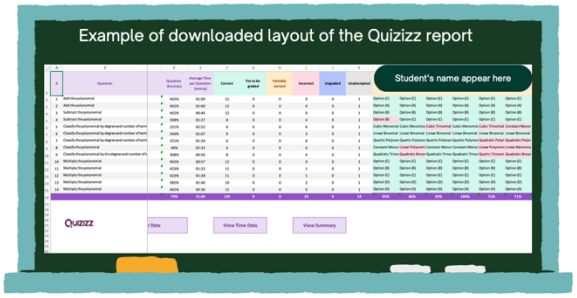


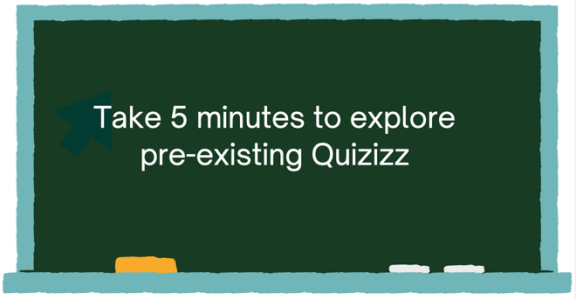

joinmyquiz.com
XXXXXX
START
Number of participants
Names of participants.
Remove participants by clicking on their name.


During the quiz, you can track the students' progress.
653 188
Leaderboard
Questions


Different views after Quizizz is complete
After the quiz ends, you can view the students' overall results.
You can also track the students' choices and average time taken for each question.


You can also download the quiz results.
Students can see their scores and teachers can download a breakdown of the lesson
After the end of the quiz, students can also see their results and answers.

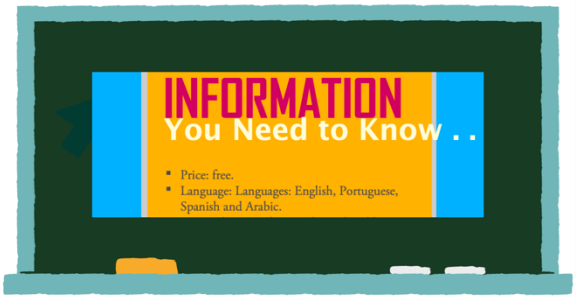

Example of downloaded layout of the Quizizz report
Student's name appear here
Quizizz

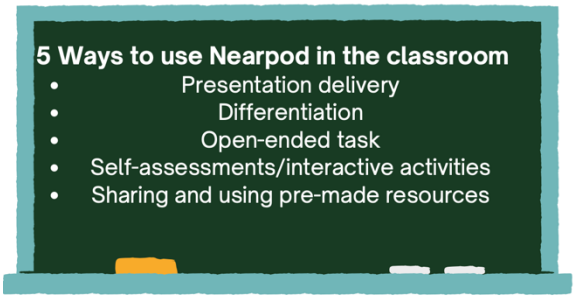

Take 5 minutes to explore pre-existing Quizizz

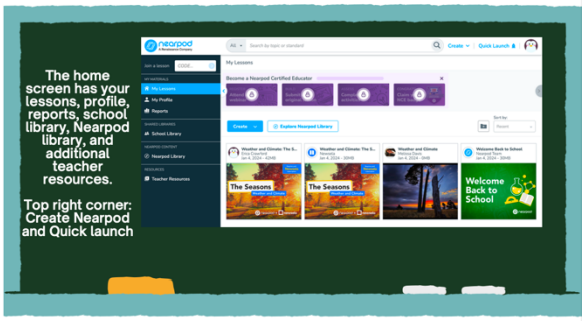

Nearpod

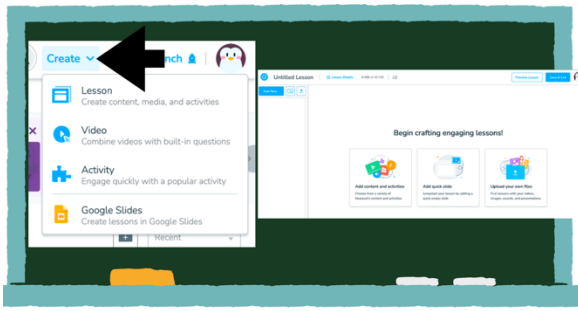

So... What is Nearpod
Nearpod is a collaborative presentation tool that allows teachers to engage and assess their students using mobile devices.
nearpod


In Classroom
Nearpod
Instructors can create multiple choice questions, problem solving activities, quizzes and drawing exercises to include in the lecture slides, and videos can be added as well.
Student results from quizzes and activities are calculated and sent to the instructor. The teacher can monitor the class' activity and evaluate students on an individual basis.

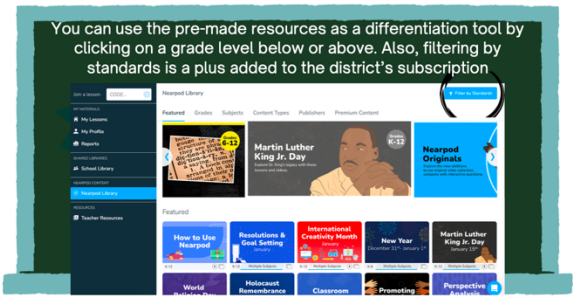

INFORMATION
You Need to Know . .
Price: free.
Language: Languages: English, Portuguese, Spanish and Arabic.

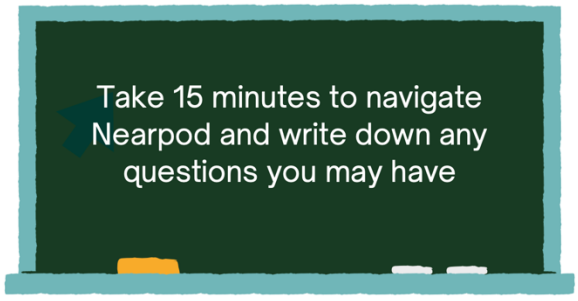

5 Ways to use Nearpod in the classroom
Presentation delivery
Differentiation
Open-ended task
Self-assessments/interactive activities
Sharing and using pre-made resources


The home screen has your lessons, profile, reports, school library, Nearpod library, and additional teacher resources.
Top right corner: Create Nearpod and Quick launch


Create
Lesson
Create content, media, and activities
Video
Combine videos with built-in questions
Activity
Engage quickly with a popular activity
Google Slides
Create lessons in Google Slides
Begin crafting engaging lessons!


Creating a video with questions during the video


You can use the pre-made resources as a differentiation tool by clicking on a grade level below or above. Also, filtering by standards is a plus added to the district's subscription
Martin Luther King Jr. Day
Nearpod Originals
How to Use Nearpod
Resolutions & Goal Setting
International Creativity Month
New Year
Martin Luther King Jr. Day


Take 15 minutes to navigate Nearpod and write down any questions you may have

Kahoot!

Another interactive productivity app used for formative assessments

9 Ideas, Tips, and Tricks

1. Always set expectations
2. Explore the Kahoot public library
3. Edit and customize existing Kahoots
4. Use Vimeo to add videos to Kahoot
5. Add animated gifs (kids love these)
6. Let Kahoot read the questions aloud
7. Use reports for formative assessments
8. Ask kids to show their thinking
9. Assign for homework

New to Kahoot

1. Interactive slides with emoji reactions
2. Open-ended questions
3. Updated question bank
4. AI
5. Marketplace courses
6. Join the community and become a verified creator

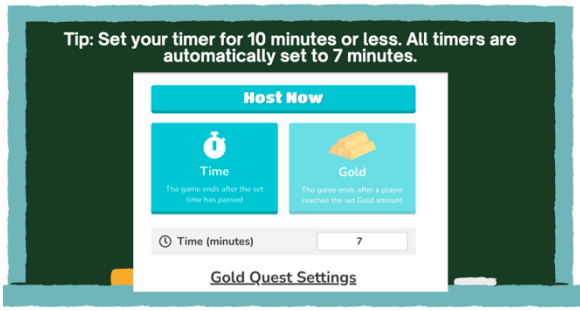
Take 5 minutes to explore Kahoot

Blooket

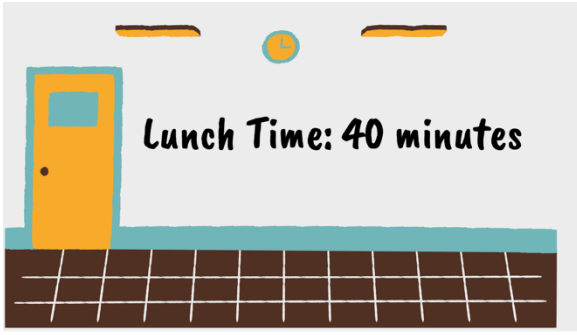
Blooket allows anyone to create a custom quiz. Multiple games can be played.

Gold Quest is the all time favorite. Students can steal gold from each other and swap with anyone no matter how many questions they answer correct.

Video of students playing Gold Quest

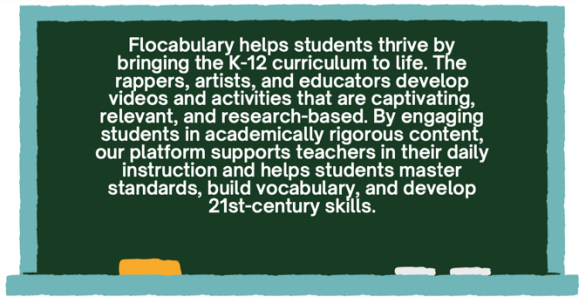

Tip: Set your timer for 10 minutes or less. All timers are automatically set to 7 minutes.
Host Now
Time
The game ends after the set time has passed
Gold
The game ends after a player reaches the set Gold amount
Time (minutes)
7
Gold Quest Settings

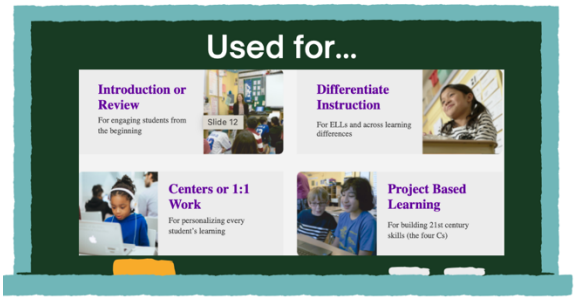

It's your turn to play a Blooket. It is time to see what our students see. Good luck
Go to play.blooket.com and enter Game ID:
7296218

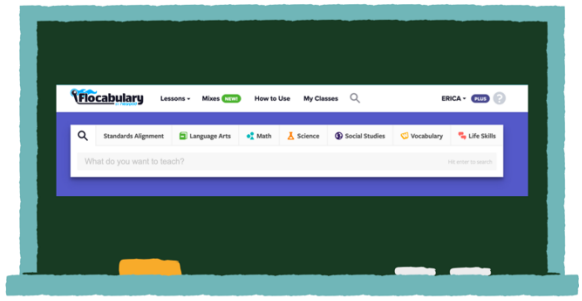

Lunch Time: 40 minutes


Welcome Back!! Now for some more fun!

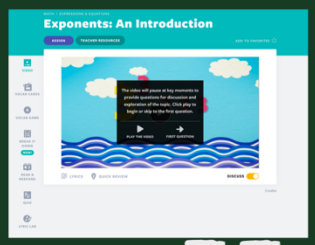

Flocabulary
BY nearpod


Flocabulary helps students thrive by bringing the K-12 curriculum to life. The rappers, artists, and educators develop videos and activities that are captivating, relevant, and research-based. By engaging students in academically rigorous content, our platform supports teachers in their daily instruction and helps students master standards, build vocabulary, and develop 21st-century skills.


Used for...
Introduction or Review
For engaging students from the beginning
Slide 12
Differentiate Instruction
For ELLs and across learning differences
Centers or 1:1 Work
For personalizing every student's learning
Project Based Learning
For building 21st century skills (the four Cs)


Flocabulary
Lessons
Mixes
How to Use
My Classes
ERICA
Standards Alignment
Language Arts
Math
Science
Social Studies
Vocabulary
Life Skills
What do you want to teach?

View of what it looks like before you assign a lesson. Each lesson has 7 components to it. During the video you are able to turn on the "discussions" and it will pause and ask questions



10 minutes: Explore and find a lesson that goes with Unit 1. Post the lesson to the Google Classroom.

IXL

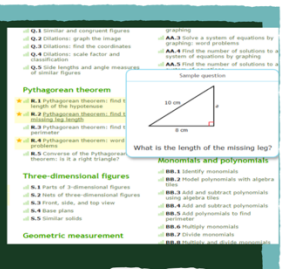
What is it?

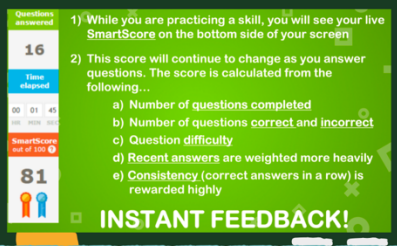
An immersive learning platform that provides comprehensive curriculum-aligned content

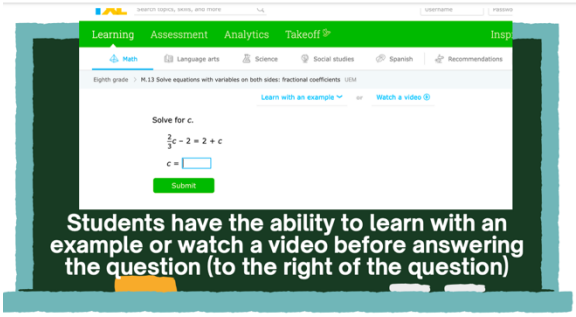
Features of IXL

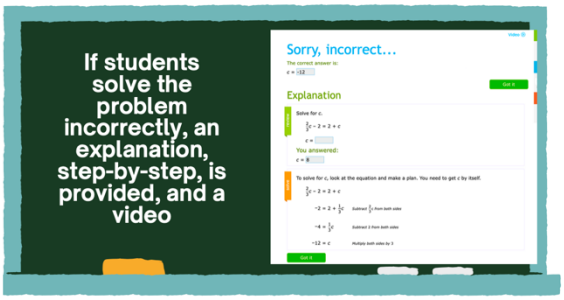
Teachers have the ability to choose lessons from below, on, or above grade level for specific students

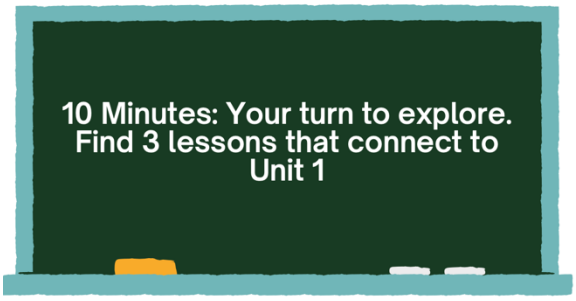
Hover over lessons to see sample questions. Star the lessons to assign to students

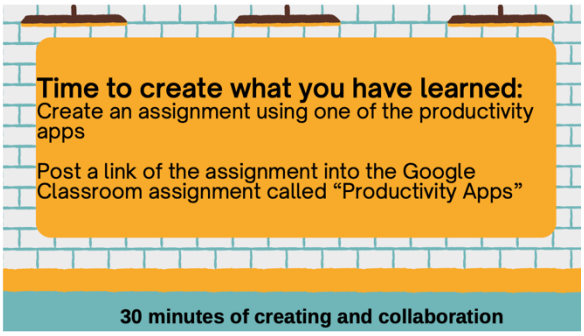




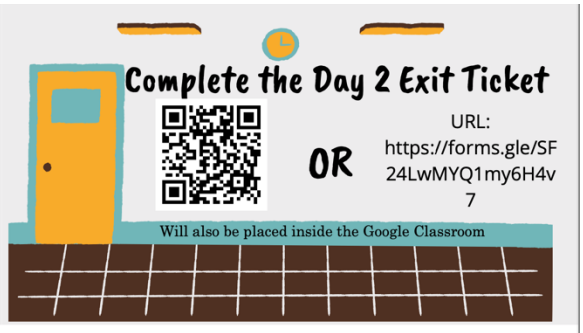

Learning
Assessment
Analytics
Takeoff
Solve for c.
Submit
Students have the ability to learn with an example or watch a video before answering the question (to the right of the question)

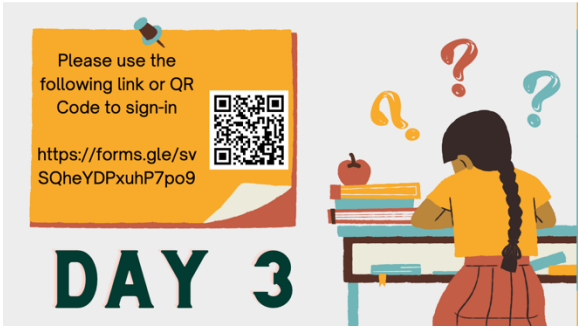

If students solve the problem incorrectly, an explanation, step-by-step, is provided, and a video
Sorry, incorrect...
Explanation

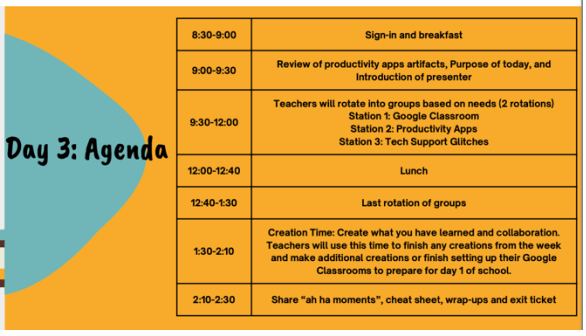

10 Minutes: Your turn to explore. Find 3 lessons that connect to Unit 1

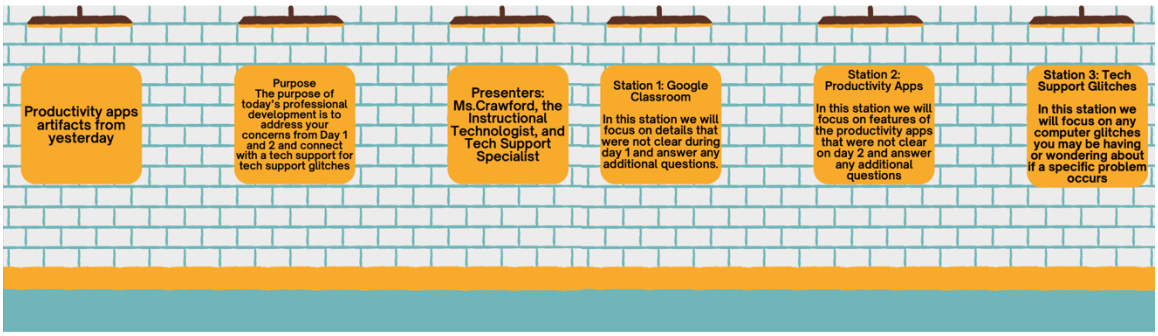

Time to create what you have learned:
Create an assignment using one of the productivity apps
Post a link of the assignment into the Google Classroom assignment called “Productivity Apps”
30 minutes of creating and collaboration

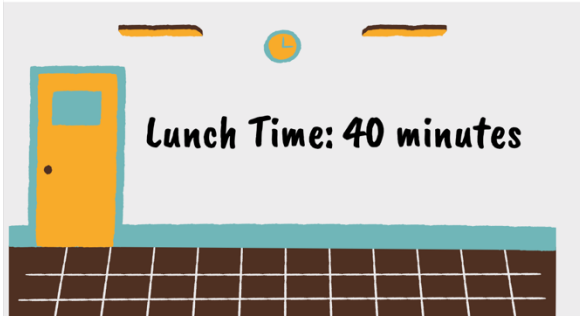

Share your “ah ha” moment for the day

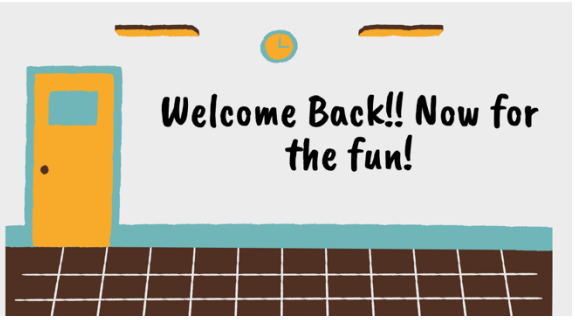

Complete the Day 2 Exit Ticket
OR
URL: https://forms.gle/SF24LwMYQ1my6H4v7
Will also be placed inside the Google Classroom

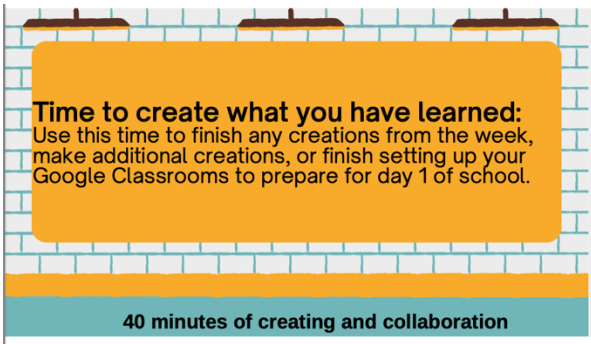

Please use the following link or QR Code to sign-in
https://forms.gle/svSQheYDPxuhP7po9
DAY 3


Day 3: Agenda
8:30-9:00 Sign-in and breakfast
9:00-9:30 Review of productivity apps artifacts, Purpose of today, and Introduction of presenter
9:30-12:00 Teachers will rotate into groups based on needs (2 rotations) Station 1: Google Classroom Station 2: Productivity Apps Station 3: Tech Support Glitches
12:00-12:40 Lunch
12:40-1:30 Last rotation of groups
1:30-2:10 Creation Time: Create what you have learned and collaboration. Teachers will use this time to finish any creations from the week and make additional creations or finish setting up their Google Classrooms to prepare for day 1 of school.
2:10-2:30 Share “ah ha moments”, cheat sheet, wrap-ups and exit ticket


Productivity apps artifacts from yesterday
Purpose
The purpose of today's professional development is to address your concerns from Day 1 and 2 and connect with a tech support for tech support glitches
Presenters: Ms.Crawford, the Instructional Technologist, and Tech Support Specialist
Station 1: Google Classroom
In this station we will focus on details that were not clear during day 1 and answer any additional questions.
Station 2: Productivity Apps
In this station we will focus on features of the productivity apps that were not clear on day 2 and answer any additional questions
Station 3: Tech Support Glitches
In this station we will focus on any computer glitches you may be having or wondering about if a specific problem occurs


Lunch Time: 40 minutes


Welcome Back!! Now for the fun!


Time to create what you have learned:
Use this time to finish any creations from the week, make additional creations, or finish setting up your Google Classrooms to prepare for day 1 of school.
40 minutes of creating and collaboration


Share your "ah ha" moment for the day


Complete the Day 3 Exit Ticket
OR
URL:https://forms.gle/LE51bEaZfsfcQMH26
Will also be placed inside the Google Classroom

Appendix B: Partner Organization Agreement for Low-Risk, Work-Related Interviews

Henry County School District

The doctoral student, Erica Crawford, is approved to collect interview data from teachers at our organization.

STUDENT RESPONSIBILITIES
I understand that, as per the student doctoral program requirements, the student will publish a scholarly report of this qualitative study in ProQuest as a doctoral capstone (withholding the names of the organization and interviewees), as per the following ethical standards:

a. In all reports (including drafts shared with peers and faculty members), the student is required to maintain confidentiality by removing names and key pieces of evidence/data that might disclose an organization's/individual's identity or inappropriately divulge proprietary details. If the organization itself wishes to publicize the findings of this project, that is the organization's judgment call.
b. The student will be responsible for complying with the organization's policies and requirements regarding data collection (including the need for the partner organization's internal ethics/regulatory approval, if applicable).
c. Via an Interview Consent Form, the student will describe to interviewees how the data will be used in the doctoral project and how all interviewees' privacy will be protected.
d. The doctoral student will not use these data for any purpose other than the doctoral qualitative study outlined in this agreement.

I confirm that I am authorized to approve research activities in this setting.

Signature _____

Partner Organization Leader's Name and Title

_____

Appendix C: Invitation to Participate

Subject line:
Teacher perceptions about Google Classroom and apps

Email message:
I am exploring middle school teachers' perceptions about the support that would help them use Google Classroom consistently while integrating other productivity apps such as Quizizz and Nearpod. You are invited to participate in a single, confidential interview to describe your perceptions.

About the study:

- One Zoom interview of up to an hour that will be audio recorded (no video recording)
- To protect your privacy, the published qualitative study will not share any names or details that identify you

Volunteers must meet these requirements:

- Middle school teacher in Henry County School District
- Able to describe experiences with Google Classroom and related productivity apps, including challenges and supports you may need

This interview is part of the doctoral qualitative study for Erica Crawford, a doctoral student at Walden University. Interviews are expected to take place during October 2023.

Please email Erica.crawford2@waldenu.edu to let the researcher know of your interest. You are welcome to forward it to others who might be interested.

Appendix D: Interview Questions

Date:

Interviewee Code #:

Introduction

Welcome and thank you for participating. First, we will review the Consent Form. Participation is voluntary, and every effort will be made to protect your identity. The interview will be audio recorded but not video recorded. Only my chair, my dissertation committee member, and I will have access to the recording. This interview could take up to an hour. Do you have any questions?

Part 1: Google Classroom

1. Tell me about your use of Google Classroom in the blended learning environment.
2. Tell me specifically how you use it to differentiate instruction, engage students, manage your class, and assess students.
3. What challenges do you have with Google Classroom? [prompts: student lack of internet access, technical glitches, lack of training?]
4. What kind of professional development, if any, do you need to help you use Google Classroom more often and more effectively?
5. What other kind of supports would help in your use of Google Classroom?

Part 2: Productivity Apps

6. Tell me about your use of productivity apps with Google Classroom, such as Quizizz and Nearpod, for example. What apps do you use, and how?

7. Tell me specifically how you use apps to differentiate instruction, engage students, manage your class, and assess students.
8. What apps are most effective or easy to integrate, and why?
9. What problems do you have with various apps?
10. What kind of professional development, if any, do you need to help you use productivity apps more often and more effectively?
11. What other kind of supports would help in your use of productivity apps?

Appendix E: Matrix of Codes by Teacher Participant for Research Question 1

Category	Code	Teacher									
		1	2	3	4	5	6	7	8	9	10
Use of Google Classroom:											
Management	Post assignments	x	x	x	x	x	x	x	x	x	x
	Messaging/announcements	x	x	x		x			x		x
	Resources, info		x			x	x				
	Student writing	x					x				
	Monitor student groups				x				x		
	Instruction for absent students		x								
	Management use only					x	x				
Differentiation	Assign based on the appropriate level	x						x		x	x
	Groups by learning level		x		x				x		x
	Learning styles			x							
Assessment	Assessment	x			x			x		x	x
Engagement	Don't use it for engagement	x				x	x	x	x	x	x
	"enrich" students		x								
	Engage with videos			x							
	Engage: collaboration				x				x		
Need training	Need training in general	x	x	x	x	x	x	x	x	x	
	No training			x	x	x		x	x		
	"Thrown in"			x		x		x	x		
	"Sink or swim"				x						
	Figure it out on the job							x	x		
	Need training on specific aspects	x	x		x	x		x	x		x
	Need training on streamlining use	x						x			
	Need training on syncing GC to grades	x									
	Need training on how to schedule future assignments		x								
	Need training on how to differentiate				x				x		
	Need training on how to keep students engaged				x				x		
	Need training on new features					x					x
Outlier: no training needed	Do not need training										x
	GC-certified teachers provide training										x
Technology/ Google Classroom guru	One-on-one tech support			x	x	x	x				x
Tech support to help with technical problems	Help with technology glitches		x					x			
	Help with student log-in problems	x	x								x
	Help syncing GC with grade		x	x							
	Provide more materials for students well below grade level								x		
	Provide more differentiation tools for students well below grade level								x		
	Training for students			x			x				

Category	Code	Teacher									
		1	2	3	4	5	6	7	8	9	10
Additional support	Training for parents										x

Appendix F: Codes by Teacher Participant Use of Apps for Research Question 2

App	Teacher ID	Uses
Nearpod	1	
	2	Engagement/collaboration
	3	Easy, self-paced/differentiation, engagement with interactive games
	4	
	5	Differentiation, engagement with interaction/games
Quizizz	1	Easy, engagement, assessment
	2	Assessment
	3	Assessment
	4	Easy for students, assessment
Kahoot	5	Easy, assessment, engagement, bank of questions
	8	Easy, extra practice questions
	9	Engagement
	10	Easy; also used in teacher training
IXL	2	Easy, differentiation
	5	Differentiation
	9	Easy to integrate
Blooket	2	Assessment
	5	Assessment, engagement
	9	Engagement
Flocabulary	3	Differentiation, videos
	6	
	7	
Quizlet	4	Easy for students
	5	Easy; bank of questions
iReady	6	
	10	Easy, differentiation, engagement with games, district-provided program
myON AR	1	Differentiation
MAP platform	3	
Illuminate	4	Assessment
YouTube	5	
Deltamath	6	
Ace	10	Differentiation, district-provided program
eSpark	7	Easy, differentiation, assessment, engagement
Amplify	8	Assessment
Google Slides	8	Easy for special education students
Jamboard	8	Differentiation, engagement/collaboration

App	Teacher ID	Uses
Does not use apps in Google Classroom, does not know how	7	
Does not use apps, “district not big on it”	10	

Appendix G: Matrix of Codes by Teacher Participant for Research Question 2

Category	Code	Teacher									
		1	2	3	4	5	6	7	8	9	10
Want training on all apps	Want training on all apps	x	x	x	x	x	x	x	x	x	X
Want training on specific needs	Need more training on Quizizz & Nearpod				x		x	x	x	x	
	Training on using apps to engage students				x					x	
	Training on apps that are not internet based								x		
	Training on using apps to improve student achievement						x				
	Want training on using apps for specific content areas (math, social studies)						x				
	Want training on the use of games for education, such as Minecraft	x									
	Training for certification/specialization		x								
Technical support person	Tech support person	x			x		x				
	one-on-one modeling						x	x		x	X
	Internet goes out in building								x		
	Problems with student log-ins						x				
Support choosing from the "overwhelming" number of apps	Too many apps available		x			x			x		
	Free basic version of apps missing capabilities; constant requests to upgrade for a fee	x			x					x	
	Lost time teaching/learning how to use apps				x						X
	Differentiation: trying to choose diff. apps for diff. students; Google Classroom sends all apps to all students							x			
	Apps not aligned with the state standard	x									
	Want to sync with grades			x							
	Special ed: need speech-to-text, etc.								x		
Cheat sheet for teachers	Cheat sheet		x			x					
Videos for teacher training	Videos for training			x						x	

Appendix H: Professional Development Sign-In Form

Using Google Classroom and Productivity Apps PD sign-in

lashellcrawford@gmail.com Switch account

Not shared

* Indicates required question

Name (first and last) *

Your answer

Grade Level *

- 6th
- 7th
- 8th
- Connections
- Special Education
- Administration
- Instructional Coach

Subject (s) *

Your answer

Submit

Clear form

Appendix I: Professional Development Formative for Day 1 and Day 2

Professional Development (PD) Exit Ticket

Please submit feedback regarding the professional development you have just completed, including feedback on content, learning opportunities, and coaching.

PD= professional development

* Indicates required question

1. Professional development *

Mark only one oval.

- Google Classroom
- Productivity Apps

2. Level of effort *

Mark only one oval per row.

	Poor	Fair	Satisfactory	Very good	Excellent
Level of effort you put into the PD					

3. Learning opportunity *

Mark only one oval per row.

	Poor	Fair	Satisfactory	Very good	Excellent
Level of skill/knowledge at start of PD					
Level of skill/knowledge at end of PD					
Level of skill/knowledge required to complete the PD					
Contribution of PD to your skill/knowledge					

4. Skill and responsiveness of the coach/presenter

Mark only one oval per row.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Coach/presenter was an effective lecturer/demonstrator					
Coach/presenter were clear and organized					
Coach/presenter stimulated teacher interest					
Coach/presenter effectively used time during PD					
Coach/presenter was available and helpful					

5. Professional development content *

Mark only one oval per row.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Learning objectives were clear					
PD was organized and well planned					
PD workload was appropriate					
PD organized to allow all teachers to participate fully					

6. What aspects of this professional development were most useful or valuable?

7. How would you improve this professional development?

8. What additional help do you need one-on-one guidance with? (These will used to guide day 3 professional development) *

Appendix J: Professional Development Summative for Day 3

Professional Development (PD) Exit Ticket Day 3

Please submit feedback regarding the professional development you have just completed, including feedback on content, learning opportunities, and coaching.

PD= professional development

* Indicates required question

1. Grade Level *

Mark only one oval.

- 6th
- 7th
- 8th
- Connections
- Special Education
- Instructional Coach
- Administration

2. Level of effort *

Mark only one oval per row.

	Poor	Fair	Satisfactory	Very good	Excellent
Level of effort you put into the PD					

3. Learning opportunity *

Mark only one oval per row.

	Poor	Fair	Satisfactory	Very good	Excellent
Level of skill/knowledge at start of PD					
Level of skill/knowledge at end of PD					
Level of skill/knowledge required to complete the PD					
Contribution of PD to your skill/knowledge					

4. Skill and responsiveness of the coach/presenter

Mark only one oval per row.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Coach/presenter was an effective lecturer/demonstrator					
Coach/presenter were clear and organized					
Coach/presenter stimulated teacher interest					
Coach/presenter effectively used time during PD					
Coach/presenter was available and helpful					

5. Professional development content *

Mark only one oval per row.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Learning objectives were clear					
PD was organized and well planned					
PD workload was appropriate					
PD organized to allow all teachers to participate fully					

6. What aspects of this professional development were most useful or valuable? *

7. How would you improve this professional development? *

8. What additional professional developments would you like to attend throughout the school year? *

9. Are you willing to pass all your knowledge on to your teammates and new teachers that did not attend this 3 day professional development?

Mark only one oval.

- Yes
- No