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High School Teachers' Views on Formative Assessment in the Online Learning Environment

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Abstract

Formative assessment in the virtual learning environment is a beneficial complement to teacher pedagogy and student learning. But there is little research on high school teachers' perspectives on the use of formative assessment in the virtual learning environment. The purpose of this basic qualitative study was to address the research gap. The conceptual framework was Black and Wiliam's theory of formative assessment. Two research questions guided the study. The first addressed high school teachers' perspectives on formative assessments in the virtual learning environment. The second addressed how teachers used formative assessment in the virtual learning environment. Semistructured interviews were conducted with 11 participants who taught a content area course at the high school level for more than 1 year and used formative assessment in the virtual learning environment. The findings that emerged from the study were that formative assessment has mutual benefit to teachers and students. Specifically, formative assessment is an effective monitoring tool, helps teachers adjust consequent instructional strategies, and promoted students' agency through teacher support and feedback.

Keywords: *Formative Assessment; Virtual Learning; Online Learning; E-learning; Distance Learning*

Introduction

There are several benefits for high school teachers associated with the use of formative assessment during online instruction. The main advantage is that teachers could use the data from formative assessment to reveal the extent to which students understand or fail to understand academic content (Sanders & Lokey-Vega, 2020). When teachers are aware of students' skills and knowledge levels, they can better provide instruction that meets the student's needs. This means teachers are able to monitor students' performance actively and adjust their instruction in response to data (Krishnan et al., 2021). Further, incorporating formative assessments during instruction increases students' engagement in

the virtual classroom (Raes et al., 2020). When students in the virtual learning environment are engaged in the lesson, they can deepen their academic content knowledge (Holmes, 2018).

Even though there are potential benefits to using formative assessments, high school teachers rarely use formative assessments during instruction in the virtual learning environment (Lyon et al., 2019). People's perspectives drive their behavior; therefore, high school teachers' belief about instructional practice affects their use of formative assessment in the virtual learning environment (Andersson & Palm, 2017; Bonner et al., 2018; Krishnan et al., 2021). High school teachers who did not find formative assessments useful did not use formative assessment strategies (Lamberg et al., 2020). In addition, high school teachers with class size challenges and a lack of time allotted to formative assessment tasks chose not to use formative assessment strategies (Alt, 2018).

Formative assessment is a beneficial complement to teacher pedagogy and student learning. For instance, formative assessments help high school teachers monitor students' progress to determine students' understanding, and students can use the activities provided to correct misconceptions and deepen their understanding of academic content. Specifically, teachers can use formative assessment to identify what students know, monitor students' progress, and provide students with feedback (An & Mindrila, 2020; Krishnan et al., 2021; Raes et al., 2020). In addition, as students interact with content, high school teachers can use formative assessments to help students increase practice and engagement (An & Mindrila, 2020; Holmes, 2018; Mindrila, 2020; Krishnan et al., 2021; Raes et al., 2020). Finally, through formative assessment, students can also participate in a metacognitive, pedagogical process to gain personal insight into what they= understand (An & Mindrila, 2020; Darling-Aduana, 2021; Krishnan et al., 2021).

Although formative assessment activities have the potential to help students show their knowledge and deepen their understanding of content, regrettably, the formative assessments often used online often require only low-level thinking skills. For example, a typical online assessment typically includes meager measures such as true-or-false or multiple-choice questions (Darling-Aduana, 2021; Krishnan et al., 2021). These impoverished assessments merely require students to recall memorized content.

Teachers have a ready opportunity to use assessment in much more effective ways. However, there is a lack of studies investigating the teachers' perceptions and use of assessments in virtual learning. The insight these baseline studies would provide would be critical to setting a course toward reform (DeLuca et al., 2018; Raes et al., 2020). This study is necessary to uncover teachers' perspectives on formative assessment and how high school teachers use formative assessment strategies in the virtual learning environment. With these insights in hand, policymakers and school district leaders may be able to address the future needs of teachers and students.

Research Problem

An increasing number of high school teachers have recently transitioned to offering instruction in a virtual environment. Just as in the bricks-and-mortar classroom, online formative assessments can determine students' understanding of content (Raes et al., 2020). Moreover, formative assessment can be used to identify students' misconceptions, thereby increasing knowledge gains/ This application of formative assessment offers a more effective way of increasing learning than summative assessment (Chen et al., 2019; Enders et al., 2021). However, some online teachers only provide formative feedback after a summative assessment (Zlabkova et al., 2021). Additionally, although researchers have illustrated how formative assessment tools are often used in a virtual college environment (Amasha et al., 2018), there is a gap in the literature regarding high school teachers' perspectives on formative assessment and how they use assessment in virtual environment. Therefore, there was a need to conduct a study that on

this under-researched topic (see Darling-Aduana, 2021). Addressing this gap in the literature helped provide insight into how high school teachers in the virtual environment use assessments and their perspectives on formative assessment.

Purpose Statement

This qualitative study aimed to explore high school teachers' perspectives on formative assessment and their use of this assessment in the virtual learning environment. The study contributed to the field of education by providing insights into how high school teachers perceive formative assessments in the virtual learning environment and how they use them. In addition, this study provided insight into the strategies and tools that meet the academic needs of students during virtual instruction (see An & Mindrila, 2020), which can help school leaders and administrators better understand high school teachers' perspectives and predict the future needs of teachers and students. The following research questions guided the study.

1. What are high school teachers' perspectives on formative assessment in the virtual learning environment?
2. How do high school teachers use formative assessment in the virtual learning environment?

Literature Review

Overall, assessments can either be summative or formative (Beard, 2017; Chen et al., 2019; Cotton, 2017). A summative assessment refers to the activity at the end of the lesson to assess the learners' learning performance (Chen et al., 2019). It is also known as the assessment of learning (Houston & Thompson, 2017). However, formative assessments are continuous and allow the teacher to monitor the student's progress and level of understanding (Cotton, 2017). Therefore, it is also an assessment of learning (Black & Wiliam, 2018).

Formative assessment is an approach to pedagogy that influences the practice of teaching and learning (Zlabkova et al., 2021), where teachers monitor instruction and make adjustments based on data from students' responses to the task (Krishnan et al., 2021). Academic interests have recently been steered toward an understanding of formative assessment. The conceptual framework used for this study was Black and Wiliam's (2009) theory of formative assessment, which explains that for teaching to be effective, teachers must adapt instruction based on evidence.

Black et al. (2004) found that the effect size for improvement on the national school leaving examination increased by incorporating formative assessment strategies. The formative assessment strategy includes the five constructs of clarifying the learning intention, facilitating the learning tasks, providing feedback, building the capacity of students to support each other, and empowering students to take control of their learning (Black & Wiliam, 2009). The findings confirm the benefits of using formative assessment during instruction, such as increased student scores.

Over time, Black and Wiliam (2009) used the theory to explain instructional strategies during teaching and learning. For instance, when clarifying the learning intention, the authors demonstrated that teachers provide students with the lesson objective and the indicators for success. The authors further explained that the instructional strategy for facilitating the learning tasks involved teachers deliberately planning dialogue that included questioning. In explaining the construct of teachers providing feedback, Black and Wiliam stated that one of the strategies could be to use comments rather than a numerical grade when marking. The last two constructs of building the capacity of students to support each other and taking ownership of learning involve teachers using peer assessment and self-assessment, respectively.

Finally, the theory deepens pre-service teachers' instructional staff and school leaders' understanding of what happens during instructional interaction when teachers clarify the learning goal, create opportunities for students to show what they know, and develop the skill of being independent learners. The formative assessment theory is best suited for the study because it focuses on teachers' actions to help students cognitively process content.

Methodology

The study used a basic qualitative research design (see Caelli et al., 2003; Kalke, 2014; Merriam & Tisdell, 2015; Percy et al., 2015). Participants were 11 American high school teachers selected by purposive sampling from high school teachers who responded to announcements posted to social media and a university participant pool. The participating teachers taught a high school subject in a virtual learning environment for over a year and used formative assessment. Participation was voluntary, and we provided participants with a written informed consent briefing. Gift cards in the amount of $25 were used as an incentive.

Data collection consisted of semistructured interviews done remotely via the Zoom platform (see Archibald et al., 2019; Gray et al., 2020). Interviews lasted between 45 and 60 minutes, were audio-recorded, and later transcribed. Data analysis of the resulting transcripts used the inductive approach. This approach to data analysis reflects how people construct meaning from their experiences (Kahlke, 2014; Thorne, 2016). During inductive analysis, our goal was to fully engage in each participant's data and analyze the raw data into a summary (see Kostere & Kostere, 2021; Thomas, 2006). In the first cycle, we coded the transcribed data and identified a priori codes from literature and open codes from participants' words (see Ravitch & Carl, 2015). In the second cycle of the data analysis process, we used axial coding to combine and organize the codes to develop categories and themes (see Kostere & Kostere, 2021; Ravitch & Carl, 2015; Saldaña, 2015). We also used a reflective field journal to keep a memo of our thoughts during data collection and analysis. In addition to using a reflective journal to support trustworthiness, we used member checking (see Birt et al., 2016). Finally, we emailed each participant a one-page summary of the overall findings for review (see Rubin & Rubin, 2012). The participants confirmed the findings were correct and presented additional information not provided in the original semistructured interviews.

Data Analysis and Results

Table 1 shows how the codes were mapped into categories, how the categories led to themes, and how the themes aligned with the research questions.

Table 1. *Codes Organized Into Categories, Emergent Themes, and Research Questions*

Research Question	A Priori Codes	Open Codes	Categories	Themes
RQ 1	Formative assessment Understand content	Grow Important Master content	Learning objectives	Theme 1: High school teachers perceive formative assessment as beneficial for helping students understand and helping teachers disseminate the learning objectives.
RQ 1	Adjust instruction	Data-informed instruction Essential	Informs instruction	Theme 2: High school teachers perceive data from formative assessment informs instruction to help them determine consequent instructional strategies.

RQ 1	Monitor for understanding	ConversationNecessary Questioning Vital	Monitoring	Theme 3: High school teachers perceive formative assessment as an effective monitoring tool to identify evidence of students' understanding and engagement.
RQ 2	Empower students Peer support Student engagement Take ownership of learning	Track progress	Empowering to take ownership	Theme 4: Some high school teachers use formative assessment strategies to empower students to take ownership of learning.
RQ 2	Discussions Instruction Quizzes	Discussion-based assessment Live lessons Phone calls Tutoring Breakout rooms Google Classroom Kahoot Kaltura Loomio	Instructional strategies and tools	Theme 5: High school teachers use formative assessments such as discussion-based assessments and academic games to clarify content in live lessons, phone conferencing, and tutoring.
RQ 2	Feedback Guide learners	Corrective feedback Emails Evaluative Formulaic feedback Generalized feedback Specific feedback	Types of feedback	Theme 6: High school teachers use the component of specific, corrective, generalized, or formulaic feedback to guide students in understanding academic content in the virtual learning environment.

We identified six themes during data analysis. The first theme indicated that high school teachers perceive that formative assessment is beneficial for helping students meet learning objectives. The second theme illustrates that teachers viewed formative assessment as necessary for informing instruction. The third theme showed high school teachers in the virtual learning environment viewed formative assessment as an effective monitoring tool to identify evidence of students' understanding. The fourth theme indicated that high school teachers used formative assessment strategies to empower students to take ownership of learning. The fifth theme identified teachers using discussion-based assessments and academic games to clarify content in live lessons, phone conferencing, and tutoring. Finally, the sixth theme showed that high school teachers use the formative assessment construct of feedback, such as specific, corrective, generalized, or formulaic feedback, to guide students in the virtual learning environment. We found no discrepant cases in the study.

The first theme that emerged from the research is high school teachers in the virtual learning environment perceived formative assessment had a mutual benefit to both students and teachers. The teachers believed formative assessment helped them disseminate the learning objectives and help students understand the content. For instance, Participant 2 stated, "Formative assessments are supposed to help students understand a topic and help teachers identify students' strengths and weaknesses to know what areas to target for instruction."

In addition, Participant 3 shared the belief that formative assessment in the virtual learning environment had a mutual purpose of meeting students' and teachers' needs. In an interview, the participant stated:

Formative assessment helps students think critically and helps teachers clarify the learning objectives exactly for what you want them to understand. It's like getting the main points because, at times, it's hard for students to get content the way you want them to get it. You have to be very intentional.

However, there was a slight variation in the report from Participant 1, who highlighted the benefits of formative assessment as it related only to students. The participant stated, "Formative

assessment is critical; it's important that students have an opportunity to take the risk of trying out new information before they are expected to show mastery of it."

The second theme that emerged was high school teachers perceived data from formative assessment informed instruction to help them determine consequent instructional content and strategies. A pattern emerged regarding participants making instructional decisions based on evidence from formative assessment. For instance, Participant 4 stated:

My perspective is that formative assessments are quite important in terms of getting to know matters pertaining to student's progress; what they are doing well, or not. Then determining what can be done to improve on their performance.

In the virtual learning environment, high school teachers adjust instruction to support students' performance. Participant 6 explained it in the following way:

I have to reach out to them one-on-one, mainly by talking to their parents and finding out what I can do. In our one-on-one meeting, it's basically the two of us or even the specific students who are having challenges. I would call and organize some time. Sometimes I intervene during the lesson through the online platform just [me and the student] away from the rest of the students in a breakout room.

The teachers in our study decided on appropriate instructional strategies such as reteaching content, facilitating mixed ability groups and engaging peer support, or guiding students to support themselves in the virtual learning environment. For instance, Participant 5 used "breakout sessions quite a bit [and] mixed the students depending on what's needed. I can also differentiate small groups and do more interventions when I'm constantly using those formative assessment tools." Likewise, Participant 2 stated, "I identify what students don't understand in a specific issue and make an instructional decision on whether to have students practice in mixed ability groups or [re]teach the core skills during Live lessons and tutorials." Participant 9 explained using "check-in, and gauging instruction to know when I need to try another technique."

The third theme that emerged from the study was high school teachers in the virtual learning environment perceived formative assessment as an effective monitoring tool for evidence of students' understanding and engagement. Participant 5 monitored for understanding by asking "probing questions" and having "targeted conversations" with students. The participant stated, "I would track the students' responses to monitor which students may have mastered the task and which students are struggling."

Participant 3 also monitored for understanding but also included engagement. For instance, the participant said, "I ask follow-up questions and have them put an emoji, raise their hands, or put a note in the chat box to show if they understand the content." The participant summarized that formative assessment helped increase teachers' awareness of what students understand and how much they engage in the lesson:

Without formative assessment, there would be so many things that are not known. Without [formative assessment], there would be so many things that are not known. Because it helps in active engagement with learners. It helps us to see where our students are in terms of progress.

After member checking, Participant 7 added, "Formative assessment is also a key engagement piece, especially with asynchronous learning." Participant 11 confirmed formative assessment to be a strategy that can engage students:

I think what [formative assessment] does is to give a more focused and targeted approach. The assessment is also personalized to the student. So, once it's personalized, that allows the student to take the initiative in their own learning.

Participant 8 found that formative assessment allowed students to be more engaged in the lesson. For instance, the participant explained that students in the virtual learning environment might be less interactive because they were not being seen. Participant 8 stated:

You know, you're talking to them, and you're not seeing them, so it's just silence and mute if they're not showing themselves. I gave them that choice with the camera, but formative assessment keeps them engaged because they have to interact with me and their classmates to let me know what they understand.

Finally, Participants 4 and 9 expressed that formative assessment helped student engagement. For instance, Participant 4 stated, "Formative assessment stimulates students' interest in the subject," Participant 9 also said that formative assessment strategies are a way to "reach the students and to maintain their interest."

Theme 4 was that high school teachers used formative assessment strategies to empower students to take ownership of learning**.** Participants helped students take ownership of learning by encouraging them to attend a live lesson or tutorial when they misunderstood content and encouraging ownership through metacognition. For instance, participants helped students assess their understanding of content as it is presented, then rate their understanding by using an emoji, Gif, or number. After students reflected on their learning, many participants "invited [students] to book a call or stay after the lesson" so that teachers would help them understand the content.

Participant 10 used metacognition in the following way:

I would ask them how much they understand the skills, and they could type it in the chat box, and then they have to explain. So, if they are at level three, they must explain why they are a three. If they are at level five, why are they a five? They have to clarify by asking themselves, why am I there? What exactly did I learn? What exactly did I understand? If they're a one, Okay, why are you the one; what is it? So, the students do not just give a number, but they have also to explain. So, it's like taking ownership of where they are and where they need to go.

Theme 5 was that high school teachers used formative assessment strategies such as discussion-based assessment and academic games to clarify content in live lessons, phone conferencing, and tutoring, how high school teachers used formative assessment such as discussion-based assessment and academic games to clarify content in live lessons, phone conferencing, and tutoring in the virtual learning environment. When asked how they used formative assessment in the virtual learning environment, participants shared instructional strategies and tools to help students learn academic content.

Four participants discussed using data-based assessments in live lessons and phone conferences to reinforce and clarify content based on evidence from formative assessments. For instance, Participant 1 explained that:

Time with them is limited. You have their work that you grade every week. And then we do monthly discussion-based assessments…We use discussion-based assessment as a way for the students to show what they know. You do have a conversation with that individual student to kind of check the learning.

For instance, Participant 1 stated, "If they don't pass a discussion-based assessments with you, you say, 'We need to reschedule; I think you need to review; let's talk about this.' Then students can schedule tutoring with me."

Participant 11 also used discussion-based assessments on a video or audio call to assess students' understanding of content. The participant explained giving students "the option of a live lesson and do the discussion-based assessment during the live lesson. And each time it's me asking the students questions about the content they learned for that module, and their overall understanding." Similarly, Participant 9 explained there is more involved in the virtual learning environment than simply submitting work. The participant explained that:

Teachers can be proactive within live lessons to look at the content and determine what students can potentially have difficulty with, or where we need to support that in the live lessons. Live lessons can be offered if students do not understand a skill.

Participant 8 also confirmed live lessons are offered when discussion-based assessments show that students have not grasped the concept and added that "tutoring was also an option."

Some participants used academic games. For example, high school teachers used academic games such as Quizlets and Kahoot to clarify and evaluate students' understanding of content. Participant 11 stated:

I use two digital tools Kahoots and quizlets. Both of those assessments are interactive and fun. You can use online gaming and create your questions. You have the students log in with the particular code, you start the game and ask the questions, and students will respond with what they believe is the correct answer.

Similarly, Participant 5 uses academic games as a formative assessment to determine what students know and understand. For example, the participant stated, "I use Quizlet to make my formative assessments enjoyable so that the students will pay attention."

However, both Participants 1 and 9 did not gamify the quiz. Instead, Participant 1 stated, "At the end [of the lesson], I use the quiz in Nearpod to check their understanding and clarify that way." Similarly, Participant 9 asked a two- or three-question quiz during the lesson to determine what students know or do not know and to identify what support students would need:

One of my formative assessments is a quiz, like a short two, maybe a three-question quiz. I could see the students who didn't perform well. For those who don't perform well, I'd probably do a quick pull out and put them in a small group, like a breakout group.

Participant 5 also used technology to support the use of formative assessment in the virtual learning environment. For example, participant 5 used Loomio to see students' worksheets and wrote directly on students' worksheets remotely:

Technology for speaking towards the virtual learning process, I need to be able to have a tool that I could assess students' worksheets remotely. So, for example, I will use a platform called Loomio, which allows me to project a digital worksheet, I could project on a slide, and I could see what they're doing, I could see their screen live real time… [I] click on his screen and be able to even write on his assignment and give feedback.

Theme 6 illustrated that high school teachers use the component of specific, corrective, generalized, or formulaic feedback in a timely fashion to guide students in understanding academic content in the virtual learning environment. Teachers provide immediate and consistent feedback via

conversation, email, or technology such as Kaltura. Teachers placed a notification alert to determine if students could see the feedback and required that they acknowledge that they received it. Feedback was corrective and could be general or specific.

Participants indicated they used timely feedback to help students clarify misunderstandings. For instance, Participant 7 explained, "I provide feedback within 24 hours. I will give individualized feedback so they know what they did well." Likewise, Participant 8 stated, "I always give feedback based making sure that they hit the standards of that particular lesson." In addition, Participant 10 admitted to providing feedback regularly and consistently. The participant explained, "In the virtual environment, they encourage you to provide feedback more [rather]than less." Participant 10 explained guiding students using feedback. "helps students understand what they did wrong and what they didn't understand."

The feedback used to guide students were corrective in nature and could be formulaic, specific, or generalized. For instance, two participants explained that high school teachers are expected to give feedback of a particular structure. To explain, Participant 1 stated:

We are required to give a particular kind of feedback. It's kind of formulaic for us, but it works. We always acknowledge something positive. It's kind of a little formula; we kind of sandwich together. So, we always start with something positive; then we give the corrective feedback or the guiding information.

Contrary to Participants 1, 7, and 10, Participant 5 gave "immediate and consistent feedback" that is specific and not based on a formula. Participant 5 used Loomio to respond to students' worksheets in "real time."

Participant 11 believed that feedback could be specific and provided students with personal feedback:

For the most part, feedback should be detailed and specific, not generic. You have to be very specific, addressing personalizing, addressing by name, and then highlighting specific things within the assignment or project that they submitted; you're highlighting that and providing that specific feedback.

However, Participant 1 did not agree with specific feedback. Instead, the participant explained using general feedback to acknowledge that the student was "close" to the correct answer. The participant expressed the use of feedback in the following way: "Let's say you're doing something and getting the right or wrong answer. So that's one type. The other type is, you know, acknowledging that they're close. Some something more generalized." When asked how high school teachers help students respond to feedback, participants explained using emails and technology tools and requiring students to acknowledge receipt.

Both Participants 7 and 11 provided feedback using technology. For instance, Participant 7 used Google Classroom and stated, "I post reflections in Google Classroom, and as they're answering, I give them individualized feedback on what they did well within 24 hours." On the other hand, Participant 11 used Kaltura to provide feedback:

I use a tool called Kaltura; it's a media tool it allows you to record a video and, or audio. And what I do with that, it's like between one to two minutes. I will provide that with, again, areas where highlight areas where the student have excelled, telling them where they have achieved, you know, or made progress, and then areas where they could improve. And a great thing about this tool is that there is a kind of like a question you can insert in there, where I actually insert to have students acknowledge that they've received the feedback

Conclusions

The results of the study indicated that high school teachers perceive formative assessment as having a mutual benefit to teachers and students and that it promotes planned instruction, which aids in teachers correcting students' misconceptions and supporting student engagement in the virtual learning environment. Formative assessment helps support planned instruction, encourages engagement, and promotes students' agency through teachers' support and feedback. Overall, the findings demonstrated that formative assessment, coupled with technology, provides a way for teachers in the virtual learning environment to present flexible, efficient instruction to engage students who did not attend a traditional bricks-and-mortar class setting. Studies have supported high school teachers' perspectives affect their use of formative assessments in instructional practice (Correia & Harrison, 2020; Krishnan et al., 2021; Maier, 2021).

An important finding is that formative assessment is mutually beneficial to teachers and students. For instance, the participants indicated that formative assessment helped them assess students' understanding of content. In addition, some of the participants reported that formative assessment helped students in the virtual learning environment interact deeper with content to master academic content. With regard to teachers, the study revealed that teachers used technology to provide a flexible environment to disseminate information using formative assessment based on the learning objectives. These findings corroborated previous research that revealed high school teachers who worked in the virtual learning environment supported students' achievement by launching assessments to help students understand the content (Barana et al., 2019; Raes et al., 2020; Van der Kleij, 2019). With the use of technology, teachers facilitated a flexible environment for students to engage with content. For instance, teachers interacted with students in chat boxes and breakout rooms, during Live lessons or tutorials, and launched formative assessment to help students think more critically. All the teachers in my study indicated that formative assessment informed instruction and provided data they needed to help students improve.

The findings also showed that teachers provided support by reteaching the core skills in a format that aided comprehension. The formative assessment strategy includes providing instructional steps and discourse with students to share learning progress and adjusting instruction based on evidence (Lamberg et al., 2020; Yan et al., 2021). Our study revealed participants contemplated what teacher response would be needed to improve students' performance and offered live lessons and tutoring. Previous research showed pedagogical adjustment is a critical component of formative assessment and occurred when instruction is changed based on evidence (Bibbens, 2018; Krishnan et al., 2021; Wylie & Lyon, 2020; Yan et al., 2021). The effect of adjusting instruction is that students build knowledge of the content and strengthen self-efficacy (Carless & Boud, 2018; Maier, 2021; Nicol, 2020; Zlabkova et al., 2021).

In a few cases in our study, high school teachers found it challenging to support students in the virtual learning environment because of time factors. Prior research showed that despite positive attributes, formative assessment strategies were time-consuming (Cisterna & Gotwals, 2018; Jensen et al., 2021). Another researcher found that lack of time caused teachers to default from formative to teacher-centered assessments (Alt, 2018). In the present study, some high school teachers perceived the disadvantage of using formative assessment as it being time-consuming. In particular, the participants explained needing more time to identify resources to provide interventions. Three participants used data to personalize pedagogy and stated the collaboration needed to create follow-up lessons in the virtual learning environment was time-consuming and that it takes a long time to do evidence-based planning with their peers. In additional research, some teachers defaulted to teacher-centered assessments because of lack of time (Alt, 2018).

Students struggle with the intrinsic motivation to maintain the discipline of doing schoolwork without the vigilant, watchful eye of the teacher, which eventually leads to not completing work in the

virtual learning environment (Émon et al., 2021). Teachers in the present study reached out to students when they realized the student had not engaged in the module. On the contrary, teachers and guidance counselors who transitioned from the traditional bricks-and-mortar to the virtual learning environment did not reach out to students, which led to disengagement, and further found that schools would benefit from an improved approach to technology-enhanced learning for practical digital tools that target student-centered pedagogy (Williams & Corwith, 2021). The teachers in the present study engaged students by inviting them to Live lessons and encouraging them to respond in the chatbox with emojis and Gifs. Other research found that student engagement increased when they participated in activities in a synchronous class and completed work during live instruction (Aguilar et al., 2022).

Another finding was that students learn content when teachers have conversations using open-ended assessments. High school teachers interact with students in one-on-one conversations using discussion-based assessment to determine what they already know and their misconceptions. Participants in my study explained discussion-based assessments as open-ended conversations with students about content. The teachers would determine if students needed further support based on how well they responded to the discussion-based assessment.

When students needed academic support, teachers facilitated individual and group activities to build students' capacity to support themselves and each other. For instance, the teachers directed students to the module they should review, and other teachers invited students to one-on-one time with them in small group classes to receive peer support. Other researchers found the benefit of conversation in small groups to include peer support, increased agency, and affective interactions as they learn academic content (Blaine, 2019; Sanders & Lokey-Vega, 2020). In this study, teachers used a collaboration board called Jamboard and breakout rooms to have targeted conversations about content.

Conversation is a vital component of positive interaction in the virtual learning environment. Teachers used not only discussion-based assessment but also used open-ended questions based on students' learning. Teachers in the current study achieved this by conversing with students about their progress. For example, some teachers in my study consistently measured students' progress and taught them to read their data. Some teachers empowered students to pay attention to their scores and to identify when they did not understand a concept. Researchers found that teachers occasionally stopped to question and analyze performance with the student (Van der Kleij et al., 2017). Another consequence of conversation is that it builds relationships and supports students' agency in the virtual learning environment. The conversation could be one-on-one or with parents, depending on the nature of the concern. However, Blaine (2019) and Sanders and Lokey-Vega (2020) found that sometimes affective connections are absent in the virtual learning environment. The current study did not corroborate the literature. For example, in the study, teachers held conversations with students to determine their needs and then provided support to meet them. Instead, my study affirmed that collaboration and peer support allowed some students to become engaged members of the learning community (Zlabkova et al., 2021).

High school teachers' perspectives affect their use of formative assessments in instructional practice (Correia & Harrison, 2020; Krishnan et al., 2021; Maier, 2021). The information about teacher perspectives gained in this study provides insight into formative assessment as one of the strategies and tools teachers used to meet students' academic needs. The teachers in our study perceived that formative assessment was vital to supporting students' academic growth. Their perspective resulted in them being intentional about providing consequent instructional strategies based on evidence.

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