

Technology Use in Classroom-Based Assessment for Young Learners: Teachers' Practices and Perceptions

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Abstract

The tools that teachers use to teach and assess their students have a significant impact on how they teach and how well their students learn. However, we need to know more about how primary school teachers utilize technology to assess in the classroom. To fill this gap, we conducted a study to investigate how teachers in seven countries—Brazil, China, Colombia, Ecuador, Japan, Taiwan, and Vietnam—utilize technology to assess students' proficiency in speaking and writing. A total of 142 teachers participated in an online survey to provide information about how they utilize technology to assess students' speaking and writing skills in the classroom, as well as the challenges they encounter. We selected 16 teachers to participate in one-on-one online interviews, allowing us to gain a deeper understanding of how technology is utilized in classroom assessments. The findings highlight the technology tools educators use to assess the speaking and writing skills of young language learners, how they use them, the features they like, and perceptions concerning the benefits and challenges of integrating technology into classroom assessments. We also provide suggestions on how to use technology assessment tools more effectively, tailored to young language learners, to enhance their classroom assessment practices.

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¹Introduction

New technologies—like online platforms and AI—have made traditional assessment tasks easier for teachers by speeding up test delivery, scoring, and feedback (Pellegrino & Quellmalz, 2010). Technology has also reshaped language assessment, bringing both new challenges and fresh opportunities (Chapelle & Voss, 2017). It can increase efficiency and encourage innovation in assessment design (Chapelle & Voss, 2016), make assessments more authentic by involving students in real-world contexts (Bahrani, 2011; Nguyen & Hegelheimer, 2021), enable remote evaluation over the internet (Suvorov & Hegelheimer, 2013), incorporate automatic speech recognition and spoken-dialogue systems into speaking tests (Litman et al., 2018), and support learning-oriented assessment by capturing new evidence of learning—such as student interactions with digital materials and performance on online tasks (Voss, 2021).

There are still a lot of problems with using new technology in language testing, even though it has come a long way in the last few years (Chapelle & Voss, 2017). Some of these problems are not being able to get new technologies easily, keeping up with new tech, problems with hardware and software, not knowing how technology affects performance, concerns about validity, redefining language constructs, and not getting enough training to use new technologies (Chapelle & Voss, 2017). Despite these challenges, technology in language assessment has the potential for innovation and is anticipated to continue evolving with emerging technologies (Nguyen & Hegelheimer, 2021). As technology evolves, there is an increasingly urgent need for ongoing research to determine best practices for technology integration in language assessment (Xi, 2023).

This article acknowledges Carol Chapelle's significant contributions to the integration of technology in language assessment over the past twenty years. Chapelle's research has focused on the impact of technology on second language acquisition, instruction, and evaluation (Chapelle, 2003). Her work aims to connect applied linguistics and educational practices, particularly in computer-assisted language learning and assessment, emphasizing two key research areas: technological efficiency and innovation in language evaluation (Chapelle & Voss, 2016).

Our study seeks to build on Carol Chapelle's work by examining how technology is utilized with young language learners (YLLs), specifically children aged 6-12 learning English as a foreign or additional language in elementary schools. We investigated how English as a foreign language (EFL) teachers employ technology in the classroom to assess their students. Our focus on technology in language assessment stems from the rapid growth of technology-enhanced assessment in language learning during the COVID-19 pandemic (Alavi et al., 2022). Research has shown that various tools and technologies were used for classroom assessment during the pandemic (Sun & Zou, 2022). However, there is limited understanding of how classroom teachers use technology to assess YLLs' language skills and the specific technology or tools they utilize. This highlights the

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significance of our work in bridging the gap between applied linguistics and educational practices.

Integration of Technology in EFL Classrooms

Language learners all over the world need to use technology because it gives them access to study materials, interactions, learning opportunities, and assessments (Chapelle, 2010; Chapelle & Sauro, 2017). Studies have shown that integrating technology into EFL classrooms can boost student motivation and engagement (Boonmoh et al., 2022; Bui, 2022; Li, 2014; Solano et al., 2017; Vungthong et al., 2017), help teachers teach better (Bui, 2022; Li, 2014; Li & Ni, 2011; Li et al., 2019), and help students learn a language (Li, 2014; Sun & Zou, 2022; Vungthong et al., 2017). Research indicates that educators employ a variety of technological tools, such as electronic whiteboards, websites, online resources, instant messaging, video conferencing, and learning management systems (Khamprem & Boonmoh, 2019; Kusuma, 2021; Shadiev & Yang, 2020). Some studies, though, have shown that technology is often not used enough in EFL settings (Li & Ni, 2011; Solano et al., 2017). Instead, it is mostly used as a classroom resource for teacher-centered purposes (Li & Ni, 2011).

Although using technology in EFL classroom brings many benefits, there are also some problems that come with it. Some of these problems are that teachers do not have access to technology resources (Bui, 2022; Li, 2014; Mai & Hong, 2014) and that equipment breaks down or the internet connectivity is not adequate (Moorhouse & Kohnke, 2021; Vungthong et al., 2017). Also, many teachers report that they lack proper training on how to effectively integrate technology into teaching, learning, and assessment (Bui, 2022; Mai & Hong, 2014) and students not being prepared to use technology (Boonmoh et al., 2022). Even with these problems, technology is still a key tool for getting YLLs to participate.

Numerous studies indicate that educators' perceptions of technology-enhanced teaching and learning can influence their readiness to integrate it into their classrooms. While many studies show that teachers generally have a positive view of technology (e.g., Li & Ni, 2011), some teachers are still unsure of how well it works (Boonmoh et al., 2022; Ding et al., 2019; Mai & Hong, 2014) or are not sure they can use it well in their classrooms (Sun & Zou, 2022). Nonetheless, possessing a positive disposition and assurance in utilizing technology is essential for effective integration (Li & Ni, 2011). Li and Ni (2011) found a positive link between having a positive attitude and using technology more often in their study.

Recent studies indicate that AI is effective for language assessment (Xi, 2023). Voss et al. (2023) contend that AI technologies, including machine learning, natural language processing (NLP), and large language models, have been employed in language testing to enhance the evaluation of learners' linguistic competencies. Chapelle and Chung (2010) state that these technologies make it possible for AI to understand and analyze human language, which makes it easier to test complex language skills like speaking and writing. A few studies have shown that AI can be used for automatic scoring and feedback, which

cuts down on mistakes made by people and speeds up the assessment process (Cotos, 2023; Hannah et al., 2023; Xi, 2010; Zechner & Hsieh, 2024). Our study was conducted before the introduction of generative AI tools like ChatGPT in November 2022, so we did not investigate how teachers employ these AI tools in their classrooms.

Assessing Young Language Learners

Teaching English to YLLs continues to grow worldwide (Butler, 2018). However, YLLs have special traits that make it hard for them to learn a language (Butler, 2022; Wolf & Butler, 2017). For example, most YLLs have short attention spans, enjoy activities that involve physical movement, and are striving to enhance their self-esteem and social awareness (Patekar, 2021). Furthermore, they are still developing their literacy skills in their native language which can both impede and facilitate foreign language literacy (Butler, 2016). YLLs are also very sensitive to what adults say about them, whether it's good or bad, so this can affect their motivation and how well they learn (Butler, 2018). Given this distinctive age-related characteristics and developmental phases of YLLs, it is critical to develop suitable language assessments for them (Butler, 2021; McKay, 2006).

It is very important for YLLs to be assessed in the classroom to help them improve their language skills. It encourages self-control, boosts interest, and sets learning goals (Yan et al., 2022). Classroom-based assessment also helps teachers set clear goals, use a variety of methods, and give good feedback, which helps YLLs understand what they need to learn and develop positive attitudes and self-control (Butler, 2021).

It is important to use classroom assessments for formative purposes in order to keep track of progress and measure language proficiency (Quesada Pacheco, 2022). Teachers play a crucial role in ensuring that classroom-based assessments are used properly for formative assessment purposes (Wolf & López, 2022). Some studies even show that young language learners learn languages better when tests in the classroom change how lessons are taught (Yan et al., 2022). Nonetheless, many educators do not possess the necessary knowledge and training to effectively employ assessment for formative purposes (Patekar, 2021; Tsagari & Koutozi, 2016).

Some teachers find it hard to use classroom-based assessments for a number of reasons. Some of the reasons include a lack of assessment literacy among teachers (Vogt & Tsagari, 2014), poor training (Patekar, 2021; Tsagari & Koutozi, 2016), teachers' views on classroom-based assessment (Yan et al., 2022), institutional assessment policies (Cojocnean, 2012; Kaur, 2021; Tsagari & Koutozi, 2016; Yan et al., 2021), and too much reliance on teacher-centered assessments (Yan et al., 2022). Recent trends emphasize aligning assessments with 21st-century skills and external standards (Papp, 2018) and incorporating technology-mediated and game-based assessments (Nikolov & Timpe-Laughlin, 2020). Scholars stress the importance of educators being assessment literate and call for further research on child second language acquisition to enhance assessment methods (Butler, 2021).

Goals of the Study and Research Questions

This research explores how elementary school EFL teachers utilize technology to assess their students' speaking and writing skills. The emphasis is on the evaluation of speaking and writing, as contemporary research highlights the growing importance of technology in assessing language competencies, especially in speaking and writing (e.g., Cushing, 2012; Nguyen & Pham, 2022). More and more, language tests are using automated speech recognition and spoken dialogue systems. These systems make it possible to test a wider range of speaking skills (Litman et al., 2018). There are also automated essay scoring (AES) systems that can grade the written work of elementary school students (Hannah et al., 2023). Also, using technology to enhance formative assessment in the classroom can improve students' writing and change how teachers teach and students learn (Tang et al., 2012). The study also examines the specific technology tools teachers use, what they like and dislike about them, the benefits of using technology in classroom assessments, and the problems that arise when doing so. This study seeks to examine the following three research questions:

RQ₁: Do the participating teachers employ technology to assess the speaking and writing skills of young language learners? If so, how?

RQ₂: What types of technology or tools do the participating teachers use for classroom assessment? What features do they find valuable?

RQ₃: What are the participating teachers' perceptions of the benefits and challenges of using technology for classroom assessment?

Methods

We used a sequential explanatory design to address the three research questions. This approach allowed us to gather and analyze first quantitative and then qualitative data to further explain the initial findings (Tashakkori & Teddlie, 2003). This approach helped us gain a comprehensive understanding of how teachers implemented technology-enhanced classroom assessment. The following sections will provide detailed information about the participants, data collection procedures, and data analysis methods.

Participants

We used convenience sampling to recruit elementary school teachers for this study. We targeted countries with a high number of TOEFL Primary test takers and partnered with organizations in those countries to assist in recruiting teachers. The research participants included 231 EFL teachers teaching students between six and twelve years old at the time of data collection. The teachers were teaching at public (23.8%) or private (54.1%) primary schools or at after-school language programs (22.1%). They came from seven countries, including Brazil ($n = 10$), China ($n = 29$), Colombia ($n = 11$), Ecuador ($n = 8$), Japan ($n = 13$), Taiwan ($n = 104$), and Vietnam ($n = 56$). Their ages ranged between 24 and 60 years ($M = 37.4$, $SD = 8.1$), and most were female teachers (77.1%). Their first languages included Chinese (54.5%), English (4.8%), Japanese (5.6%), Portuguese (4.3%), Spanish (6.9%), and Vietnamese (23.8%). On average, the teachers had

approximately ten years of experience teaching English to elementary school students (SD = 6.4).

Instruments

The research instruments comprised an online teacher survey and an interview protocol, including a set of questions.

Online teacher survey. The teacher survey consisted of six parts. Part 1 included questions about the participants' background information, such as age, gender, and teaching experience. Part 2 contained questions about how the teachers assessed speaking and writing skills in the classroom and the types of assessment strategies they used. Part 3 was about how the teachers gave students feedback on how well they spoke and wrote. In Part 4, teachers were asked to say how they understood or used the information from tests on speaking and writing in the classroom. Part 5 was about how the teachers used digital tools in the classroom to test how well students could speak and write. Part 6 focused on the problems teachers faced when grading students' writing and speaking skills. At the end of the survey, the teachers could choose to describe an assessment task they used a lot and how it worked. They were also asked if they would like to take part in a follow-up interview. We used an online survey platform, Alchemer, to conduct the survey.

Interview protocol

We used a semi-structured interview protocol to help us with the interview process (Kvale, 2007). The interview questions asked the teachers who took part to: (a) talk about their experiences using digital tools for testing, (b) give an example of a successful testing task, (c) explain how they use speaking and writing test results to plan lessons, and (d) talk about the problems they have when testing students' speaking and writing skills. We also asked more probing questions when they were needed and made sense.

Data Collection

The research team collaborated with ETS's local partners in seven countries to collect data. A local site coordinator from each country helped recruit the survey participants and distribute the survey link to the recruited teachers. The data collection took place between April and June 2022.

The recruitment of the interview participants was conducted by the researchers. We randomly selected and invited teachers who expressed an interest in participating in the interviews. Four teachers from Brazil, five from Ecuador, one from Japan, two from Vietnam, and four from Taiwan, agreed and took part in the one-on-one interview with the researchers via video conferencing. The interviews were conducted in English. Each interview session took one hour and was audio-recorded.

Data Analysis

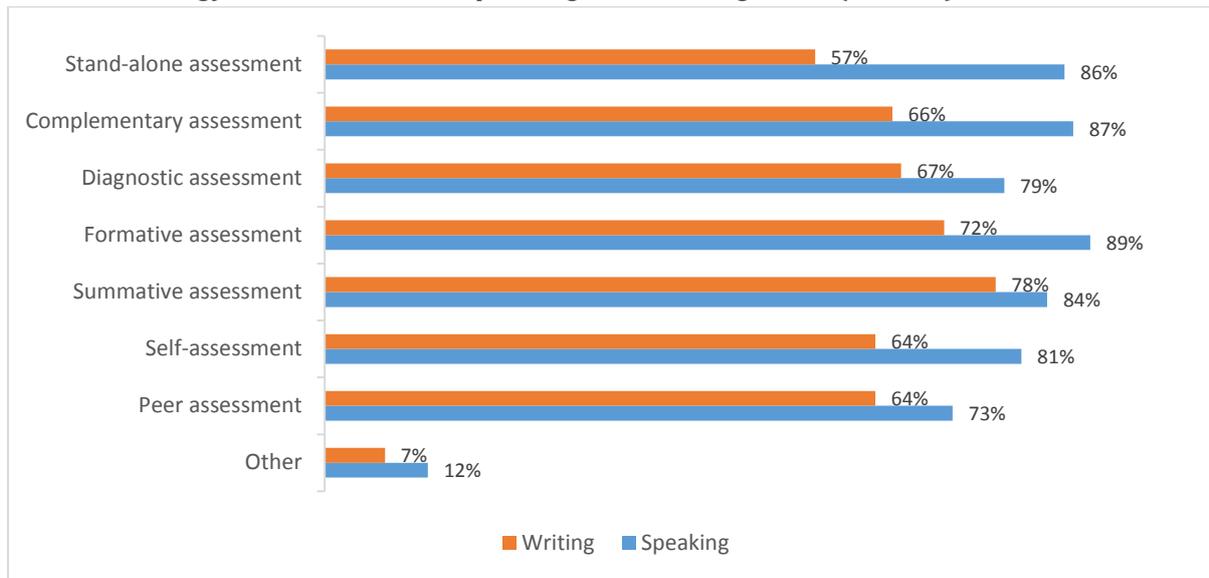
We collected survey responses from the Alchemer platform and organized them in an Excel sheet. For this paper, we extracted and focused on responses to Part 5 of the survey. Among the 231 survey respondents, 142 teachers indicated that they used technology to assess their students speaking and/or writing skills. The results reported below only included these teachers' responses. We used IBM SPSS Statistics (Version 29) to calculate descriptive statistics and frequency counts. For the interview data, we obtained the complete transcripts from the video conferencing platform. To ensure accuracy, we edited and corrected any transcription errors before conducting qualitative content analysis. After cleaning the data, we developed a preliminary coding scheme based on the research questions and major themes from the interviews. We iteratively discussed and revised the coding categories until reaching the final version. To ensure consistency, we randomly selected three teachers' interview transcripts and individually coded the data using the final coding scheme. Any discrepancies were resolved through discussion until we reached 100% agreement. We then double-coded the remaining thirteen teachers' interview data.

Findings

In this section, we discuss how elementary school EFL teachers utilize technology in classroom assessment. We explore the specific technology tools they use, the features they appreciate in these tools for YLLs, and the advantages and challenges of integrating technology into classroom assessment.

Use of Technology in Classroom Assessment

According to the survey, approximately two fifth of the teachers reported incorporating technology for student assessments in the classroom. A total of 44.4% of the 231 teachers who completed the survey (N = 142) reported using technology to assess speaking skills, while 40.8% utilized it for writing assessments. Teachers who reported using technology in classroom assessment shared various ways technology is employed to evaluate students' speaking and writing skills (see Figure 1). We found that some teachers rely solely on technology-enhanced assessments, while others use them alongside traditional methods. These assessments serve different purposes, including diagnosing student needs, guiding teaching and learning, and conducting summative assessments. Additionally, teachers employ technology-enhanced assessments to actively involve students in the evaluation process. Other uses of technology in assessments include enabling remote assessments, allowing online submission of responses, motivating and engaging students, and providing opportunities for students to revise their work.

Figure 1*How Technology is Used to Assess Speaking and Writing Skills (N =142)*

In the interviews, we discovered that all 16 teachers incorporated technology in their teaching in varying ways, particularly for assessment. It was found that technology was used more often for informal rather than formal assessments. Out of the 16 teachers, only four integrated technology in formal assessment, such as end-of-unit assessments, final exams, midterms, or quizzes. The remaining 12 teachers primarily used technology for informal assessment, which includes formative assessments, classroom activities, homework, self-assessment, and peer assessment. Six of these teachers mentioned using technology to facilitate classroom assessments, such as showing pictures or videos using computers, laptops, or projectors to aid students in formulating their responses, recording spoken responses, and providing personalized feedback through online conferences. All of the teachers said that they used technology to make or prepare tests for the classroom. For example, they used the internet to find pictures, videos, websites, and apps to create interactive worksheets for tests.

All the teachers reported in the interviews that they used technology to assess their students' writing and speaking skills during the pandemic. The most common way to assess YLLs' speaking skills was to have them record themselves, either in audio or video, and then send their recordings to teachers via email, messaging app, or by uploading them to an online platform. To assess YLLs' writing skills during the pandemic, teachers used online text editors, such as Word or Google Docs. Teachers received the students' texts via email or messaging apps, or they would access these texts directly from an online tool or platform. Teachers also used video conferencing tools (e.g., Zoom) to assess students individually. They also used video conferencing tools or created videos to provide individualized feedback.

Technology Tools Used for Assessment Purposes

During the interviews, teachers reported using a variety of technology tools for assessment purposes. We identified seven categories of tools that teachers utilized.

Below, we describe each category, provide examples of the technology tools teachers used, and explain how both teachers and students employed these tools to assess speaking and writing skills.

Classroom tools

The technological resources available in the classroom include items such as interactive whiteboards, laptops, tablets, and projectors. All the teachers indicated that they primarily use these tools to facilitate assessments by sharing prompts, images, or videos. However, students rarely use these tools to complete assessments in the classroom.

Video conferencing tools

Platforms like Zoom, Webex, and Google Meet enable online lessons or virtual meetings with students and parents. Ten teachers reported using these tools to assess students' speaking skills outside the classroom and to provide feedback to students and parents. Students record their spoken responses by creating videos or audio recordings.

Messaging apps

These applications, such as WhatsApp and Messenger, enable users to instantly send and receive text, audio, and video messages. Six teachers commented that they utilize these apps to evaluate their students' speaking and writing skills outside the classroom by asking them to record and share their responses through the messaging apps.

Learning management systems (LMSs)

LMSs are software applications designed for planning, creating, managing, and delivering online instruction and assessments, such as Seesaw and Google Classroom. Nine teachers reported using LMSs to assign assessments, monitor student progress, score responses, and provide feedback. In turn, students utilize these tools to complete online assessments and access the feedback they receive.

Web-based tools

These applications allow teachers to create interactive assessments for students. Examples include Google Forms, Google Docs, Wizer.me, Cool English, and Quizlet. Seven teachers reported using these tools to develop online assessments and to find or create images and videos to enhance those assessments. In turn, students use these platforms to write or record their responses.

Language apps

These applications assist users in practicing, tracking progress, and receiving personalized feedback (e.g., Kahoot, ELSA Speak, Grammarly). Six teachers explained that they encourage students to utilize these apps for self-assessing their speaking and writing skills.

Online resources

These resources are supplementary materials that often accompany textbooks, such as e-books, quizzes, and tests. Eight teachers reported using these online resources to assess students both in the classroom and at home, and students also have access to them.

Characteristics of Appropriate Assessment Technology Tools for Young Learners

In the interviews, teachers reported on the features they like or would like to have in the technology tools they use for assessment purposes. Below we describe the characteristics of appropriate technology-enhanced tools for YLLs.

Tools with kid-friendly content and design

All the teachers agreed that technology-enhanced tools for YLLs must be easy to use and appropriate for kids. Teachers explained that kid-friendly tools are easy to log in, user-friendly, and simple to navigate. Moreover, the tasks should be short, include breaks, and include various activities for different language proficiency levels. According to the teachers, it is critical to have a variety of assessment tasks to cater to the diverse interests and backgrounds of YLLs. Additionally, the tools should be interactive, engaging, colorful, and include visuals and animation. To make the assessment tasks more engaging for children, some teachers suggested incorporating game-like features such as pedagogical agents, tokens, points, and levels.

Flexible use of tools

In the interviews, 15 teachers indicated that they prefer technology tools that offer users a wide range of options. For instance, they want to use the tools for various purposes, such as instruction, formal assessment, informal assessment, self-assessment, peer-assessment, homework, additional practice opportunities, and placement. Teachers also prefer tools that can be used in both teacher-centered and student-centered ways and in different contexts, such as in class or at home. Teachers also like tools that allow them to modify the assessment activities. For example, they can edit the assessments to make them more responsive to their students' characteristics, needs, or interests, skip parts of the assessment, or add additional assessment tasks (e.g., upload their own activities).

Tools with automated scoring and feedback capabilities

Twelve teachers mentioned that they appreciate tools with automated scoring and feedback features. However, they also want the tools to enable them to provide additional feedback or comments to their students as necessary. They are looking for automated feedback that covers various aspects of language, such as grammar, vocabulary, organization, fluency, pronunciation, intonation, stress, and spelling. Additionally, they are interested in having automatically generated embedded reports available through the tool. These reports could be for individual students or the entire class, helping them identify trends or common issues. The teachers emphasized the importance of AI and NLP capabilities as they reduce their workload and allow them to focus on other crucial language aspects, such as generating ideas and content.

Tools with rich instructional resources and supports

Twelve teachers mentioned that they prefer tools with a wide range of resources for both teachers and students. These include scoring criteria, rubrics, checklists, sample responses, and feedback templates, which help in scoring student responses and providing feedback. Additional resources such as videos, audio recordings, visual supports, hints, word banks, dictionaries, pop-up glossaries, and text-to-speech capabilities are also important, especially for YLLs who require significant support in producing language, both orally and in written form.

Tools with embedded learning management system (LMS)

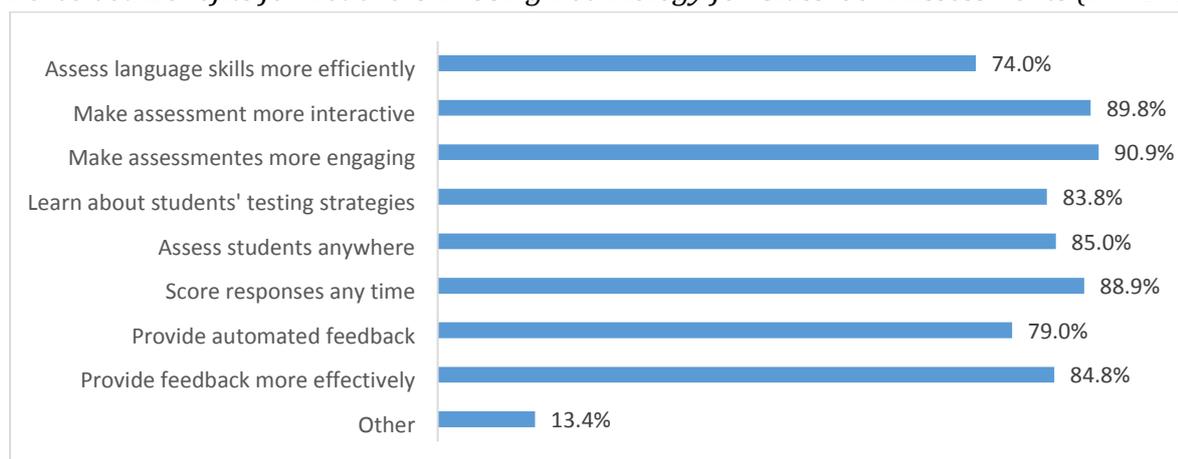
Ten teachers emphasized the importance of having an LMS, as it simplifies tracking students' performance and progress. With an LMS, teachers can monitor students as they complete assessment tasks, track their access to feedback, and observe how they utilize it. Additionally, an LMS facilitates communication with students and parents by enabling the sharing of students' performance and responses and providing feedback.

Perceived Benefits of Using Technology in Classroom Assessment

Survey participants were asked to identify the perceived benefits of using technology in classroom assessments (see Figure 2). Overall, teachers have a favorable view of technology-enhanced assessments. They believe these tools improve their ability to evaluate students' speaking and writing skills, enhancing the overall assessment experience for students. Additionally, teachers appreciate the flexibility that technology offers, allowing assessments to be conducted in class or at home and giving them the option to score responses at any time.

Figure 2

Perceived Benefits for Teachers in Using Technology for Classroom Assessments (N = 142)



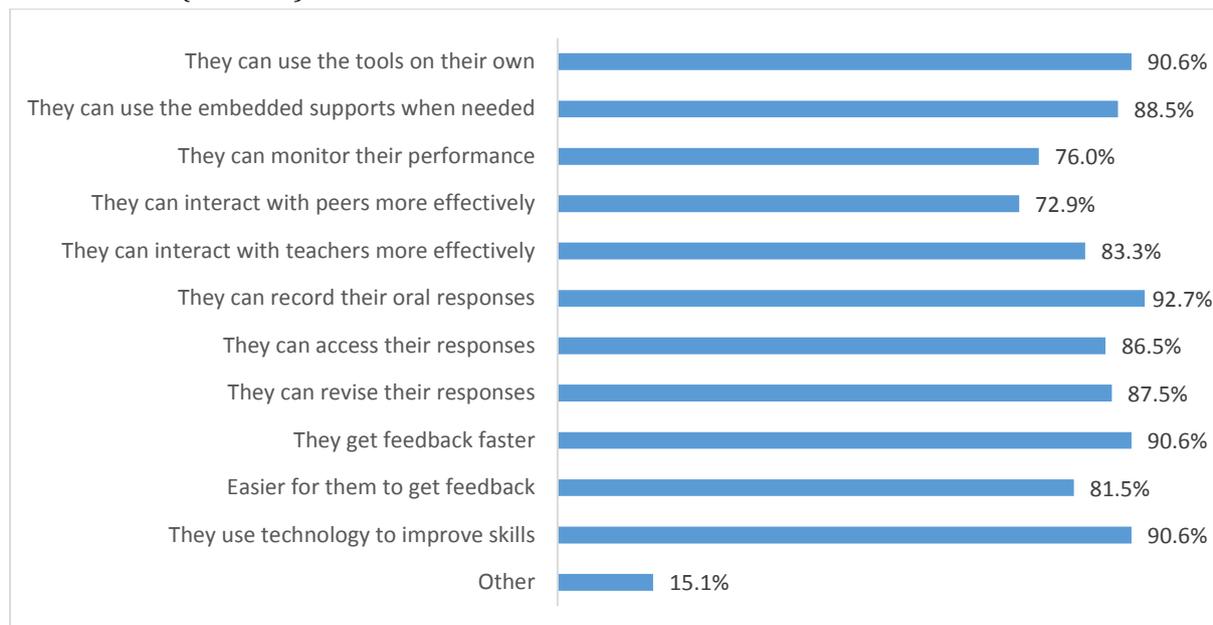
Furthermore, technology-enhanced assessments streamline the feedback process. Other benefits highlighted in the survey include improved efficiency, which helps teachers save time; the ability to monitor and track student progress during assessments; enhanced communication with parents; and the capacity to share information about students' responses, performance, and overall progress with other stakeholders.

The survey also asked teachers to identify the benefits of technology-enhanced assessments for students (see Figure 3). Teachers noted that YLLs are skilled at independently accessing technology tools and their key features; however, teachers must show them how to use them appropriately. Additionally, technology allows YLLs to track their progress on assessments easily and facilitates communication with peers and teachers. Teachers appreciate that technology enables YLLs to record, access, and revise their responses. It also provides YLLs with more opportunities for practice at home when completing assessments. Other reported benefits include increased engagement in assessments and the ability to access additional online resources, such as online dictionaries and websites.

All of the teachers who were interviewed agreed that one of the best things about technology-enhanced assessments is that they are easy to use because they make the assessment process easier. For example, teachers said they can give tests to students in class or online, which means that students can take them anywhere and at any time. Also, technology makes it easier for teachers to keep an eye on YLLs while they take tests and keep track of how they are doing. Moreover, technology makes it easier to collect and store student responses, allowing teachers to grade these tests from anywhere, at any time. These responses can also serve as evidence of students' performance. Finally, technology streamlines the feedback process, making it simpler for teachers to provide feedback to students and to share students' performance and responses with other key stakeholders such as parents, other teachers, and school administrators.

Figure 3

Teachers' Perceptions of How Students Benefit from Using Technology for Classroom Assessments (N = 142)



Twelve teachers highlighted that technology-enhanced assessments offer numerous benefits for evaluating speaking skills. Ten teachers noted that assessing YLLs' speaking abilities in large classrooms can be particularly challenging, especially when students

lack confidence or feel too shy to speak in front of others. They mentioned that their students generally prefer using technology for speaking assessments rather than facing their teachers or peers directly. Additionally, these teachers primarily use small group activities to practice speaking, which means they do not always get the chance to listen to each student individually. However, using recordings enables teachers to hear every student's speaking performance. Seven teachers also pointed out that allowing students to record themselves at home, review the recordings, and re-record, if necessary, significantly boosts YLLs' confidence in their speaking skills.

Similarly, eight teachers indicated that technology-enhanced assessments provide significant advantages for evaluating writing skills. Although many YLLs are still developing their keyboarding abilities, which can slow down their writing process, teachers believe that technology offers a more effective way to assess their writing. For example, educators can gather additional data, such as the time taken to complete texts, the total word count, and any spelling errors. They also noted that technology facilitates easier access to feedback, allowing students to revise their work more efficiently.

Perceived Challenges of Using Technology-enhanced Classroom Assessment

Although teachers acknowledged the benefits of using technology for assessing their students in the classroom, they also identified several challenges in integrating it into their assessments. In the interviews, five teachers mentioned that they lack access to technology tools in the classroom; however, they noted that all their students have access to technology at home. Seven teachers indicated they have access to technology in the classroom but choose not to use it for assessment due to having too many students or facing persistent connectivity issues. Three teachers reported that their class periods are too short to assess each student's speaking skills individually, leading them to prefer online assessments for speaking skills. Additionally, two teachers commented that writing assignments take their students a lot of time, so they prefer to evaluate their students' writing outside the classroom. These teachers use LMSs to assess writing at home or ask their students to submit their texts via messaging apps.

Two teachers noted that while their students have iPads in the classroom, they are reluctant to assess their speaking skills all at once due to the excessive noise, which distracts the students. This background noise also makes it challenging for teachers to hear the recordings. As a result, they prefer to assess one student at a time or do so informally outside the classroom. Although the teachers expressed a preference for using technology to record their students' spoken responses, six of them found it time-consuming to listen to each recording, especially when they have many students.

A challenge noted by nine teachers is that, although they have access to many online resources, some are not specifically designed for YLLs, such as Grammarly. Additionally, technology literacy poses an obstacle for both teachers and students, preventing them from fully utilizing technology tools. As a result, these teachers feel that more professional development is necessary to help them use these tools effectively and assist their students in better accessing technology. Also, seven teachers said that school rules

only let students in the upper grades, starting in fourth grade, use technology-enhanced assessments. Thus, they cannot use technology in formal assessments in grades 1-3.

Discussion

This study investigated how teachers used technology in the classroom to assess YLLs. Previous research has shown that technology-enhanced language assessments have the potential to enhance the assessment experience for YLLs and enhance assessments to guide instruction (Butler, 2018; Nikolov & Timpe-Laughlin, 2020; Sun & Zou, 2022; Yan et al., 2022). Our findings indicate that although technology is increasingly incorporated into teaching methodologies, its use in formal student assessments remains constrained. Many teachers use technology only for informal assessment, such as formative assessment, self-assessment, and homework. The study found that teachers use technology-enhanced assessments for different purposes, such as making remote assessment easier, providing personalized feedback, and engaging students more in the assessment process. Nonetheless, many teachers continue to face challenges in incorporating technology into formal assessments.

It is important to use a variety of tools and strategies to adequately integrate technology into language assessments (Chapelle & Voss, 2016; Sun & Zou, 2022). We found that teachers use various technology tools for assessing speaking and writing skills. These tools fall into seven categories: classroom tools to project the speaking and writing prompts and stimulus materials, video conferencing tools for remote speaking assessments, messaging apps for submitting oral and written responses, LMS for assigning and grading assessments, web-based tools for creating interactive online assessments, language apps for self-assessment, and online resources to assess student performance. Teachers primarily use these tools to present assessment materials, while students use them to complete assessments and receive feedback.

This study also explored the characteristics of suitable assessments for YLLs. It has been previously noted that YLLs require language assessments that align with their specific age-related traits and stages of development (Butler, 2021; McKay, 2006; Patekar, 2021; Wolf & Butler, 2017). The teachers provided valuable insights into the features they prefer in technology tools for assessing YLLs. They favor tools that are child-friendly, with straightforward login processes, intuitive interfaces, and engaging, colorful content. Several studies have also emphasized that technology-mediated assessments should be user-friendly (Butler, 2018).

Additionally, the teachers mentioned that technology-enhanced assessments should include short tasks with breaks and a variety of activities tailored to different proficiency levels, incorporating game-like elements to maintain children's engagement. Game-based assessments leverage the intrinsic motivation associated with gaming to enhance the assessment experience for YLLs (Nikolov & Timpe-Laughlin, 2020). Also, assessments for YLLs should utilize familiar and engaging contexts, introduce skills gradually, and foster

a positive learning environment that supports effective language acquisition (Nikolov & Timpe-Laughlin, 2020; Yan et al., 2022).

Furthermore, we found that teachers value flexibility in the tools they use, preferring options that can serve multiple purposes, such as instruction, assessments (both formal and informal), self-assessment, and peer assessment, whether in the classroom or at home. They also appreciate tools equipped with AI and NLP capabilities for automated scoring and feedback, along with the option to provide personalized comments. NLP plays a crucial role in language assessment by enhancing the efficiency and effectiveness of evaluating language proficiency (Chapelle & Voss, 2016). It enables the automated scoring of both written and spoken language samples and allows for the creation of tailored feedback, helping learners identify their strengths and areas for improvement (Chapelle & Chung, 2010; Chapelle & Voss, 2016).

Teachers look for tools that give them a lot of different ways to score and give feedback, like rubrics, sample answers, and multimedia support. A well-integrated LMS helps teachers monitor student progress, ensure timely feedback, and communicate more easily with students and parents. Prior studies show that LMSs can significantly improve the linguistic proficiency of YLLs (Wulandari & Budiyo, 2017). Still, developing these systems for YLLs requires careful evaluation of their specific characteristics, needs, and competencies (Kraleva et al., 2020).

We examined teachers' perceptions of the pros and cons of using technology for classroom assessments. The results show that technology offers many benefits, such as making assessments easier to administer remotely, providing personalized feedback, and engaging students more in the assessment process. However, many teachers find it very hard to use technology in formal assessments. These results align with earlier studies that highlight both the benefits (Butler, 2018; Nikolov & Timpe-Laughlin, 2020) and the drawbacks (Patekar, 2021; Yan et al., 2022) of using technology in classroom assessments.

Most teachers like technology-enhanced assessments because they help them better judge how well students can speak and write. They like that these tools let them take tests both in class and at home. These technologies make it easier to give feedback, save time, and keep better track of how students are doing. Technology also facilitates communication with parents and other important stakeholders, and it gets students more involved by giving them more opportunities to practice.

Teachers in the interviews said that technology-based assessments are very useful. They pointed out that assessments can be taken anywhere and at any time, which makes it much easier to track progress and give timely feedback. Many teachers also noticed that these tools are especially helpful for improving speaking abilities: students often feel more comfortable recording responses at home, which boosts their confidence. Technology gives students more access to information and makes feedback quicker and clearer, so assessments become more meaningful. Overall, teachers felt that digital tools

improve testing for both instructors and learners. Other research supports this, showing that technology can make assessments more engaging and motivating for YLLs (Butler, 2018; Yan et al., 2022).

Conversely, teachers recognize that they face several challenges when using technology for classroom assessments. Firstly, some teachers lack access to adequate technology tools in the classroom, even though many students have these resources at home. Large class sizes and connectivity issues often discourage the use of technology-based assessments. Several teachers highlighted that the brief duration of class periods presents a significant challenge when it comes to assessing their students' speaking skills, even with the use of technology.

Some teachers use online speaking tests instead of in-person tests because they do not have enough time to teach. Also, loud noises in classrooms with iPads can make it hard to implement good speaking assessments. Teachers who have a lot of students to teach also have trouble listening to recorded responses because they do not have enough time. When it comes to writing tests, many teachers choose to have students do them at home using LMSs or messaging apps so they can make the most of their time in class.

The teachers made it clear that some of the technology tools used to test YLLs do not do a good job of meeting their unique needs, characteristics, and learning styles. Without adaptations for YLLs, technology-enhanced assessments risk giving misleading results; more research is required to confirm their effectiveness (Butler, 2018). Such studies could help find problems with the current technology tools and help create better options that make learning and testing better for these students.

Also, differences in how well students know how to use technology and strict school rules make it even harder to use technology-based tests. Teachers are very interested in getting better professional development that helps them use technology more effectively in their classrooms. These findings highlight the need for more ongoing professional development and teacher education to help teachers in effectively integrating technology into assessments and leveraging technology to enhance both efficiency and innovation in their assessment methods (Chapelle & Voss, 2016; Patekar, 2021; Tsagari & Kontozi, 2016).

Implications for Designing Technology-enhanced Assessment Tools for YLLs

Chapelle and Voss (2016) emphasize the importance of creating technology-mediated assessments that are efficient, innovative, and supportive of learning. Taking this into account, we found the insights from the teachers to be extremely valuable. Based on their feedback, we recommend the following strategies for designing effective technology-enhanced assessments for YLLs:

1. Use a kid-friendly design.
2. Include age-appropriate content.
3. Offer flexibility to adapt the content.

4. Incorporate tasks that promote meaningful interactions.
5. Utilize automated scoring and feedback.
6. Integrate rich instructional resources.
7. Provide supports specifically designed to assist YLLs.

Limitations and Future Research

The present study has some limitations that should be considered for future research. First, our online survey sample was not well-balanced in terms of geographical location. Although we aimed to target EFL teachers from various regions (e.g., Asia, Europe, Latin America), most of the teachers we recruited were from East and Southeast Asia, comprising 87.5% of the sample. As a result, the teachers' perceptions may not be generalizable to all contexts of teaching YLLs. To address this limitation and enhance the validity of our findings, we invited some of the survey respondents to participate in follow-up interviews to clarify and expand upon the survey results. We also coded the interview data to identify common themes among the teachers. We recommend that future research includes a more balanced sample.

Another limitation of our study is that we did not examine how teachers' integration of technology varies across different grade levels or types of schools. Future research could explore whether there are differences in how teachers incorporate technology into classroom assessments. Our findings revealed that some schools have policies prohibiting the use of technology for assessing YLLs in the early grades. Therefore, it is essential to investigate how technology can be utilized for assessments in these grade levels. Despite these limitations, our study provided valuable insights into how EFL elementary school teachers integrate technology into classroom assessments, as well as their perceptions of the benefits and challenges of using technology to assess YLLs.

Conclusion

This study demonstrates that although technology is progressively incorporated into pedagogical practices, its application in formal classroom assessments for YLLs remains constrained. Teachers mostly use technology for informal assessments, like self-assessments, formative assessments, and homework. There are many ways to assess someone's speaking and writing skills, but adding technology to formal assessments can be challenging. The study also shows how teachers think about the best technology tools for YLLs. The teachers said that good technology tools should be easy for kids to use, fun, and have short tasks and game-like elements. Teacher like tools that use AI and NLP to give automatic scores and feedback. Some things, like not having enough access to technology, having too many students in a class, and not having enough time, make this integration harder. Teachers like tools that can be used for more than one thing, and they stress the need for professional development to learn how to use technology in tests. In conclusion, although technology can improve student engagement and offer tailored feedback, its full incorporation into formal assessments necessitates additional development and support. We think that our study will help EFL teachers learn more about how to use technology to test YLLs.

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We used Grammarly to review and edit the manuscript. For more information on the extent and nature of AI usage, please contact the author.

Ethics Declarations

World Medical Association (WMA) Declaration of Helsinki–Ethical Principles for Medical Research Involving Human Participants

All participants provided informed consent before the study. This research adhered to the Declaration of Helsinki principles, and the protocol was approved by the ETS Committee for Prior Review of Research (IRB-FY2022-35).

Competing Interests

The authors declare that they have no competing interests.

Data Availability

The data supporting the findings of this study are available on request from the corresponding author due to ethical/privacy restrictions.

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