Mixed-Methods Study in Malaysian Suburban Primary Schools on ESL Learners' and Teachers' Perceptions of Google Read-Along in Enhancing Reading Fluency

Aik Yong Qi*., Melor Md Yunus., Hanita Hanim Ismail

Faculty of Education, Universiti Kebangsaan Malaysia, 43600 Bangi, Malaysia

DOI: https://dx.doi.org/10.47772/IJRISS.2025.91100229

Received: 10 November 2025; Accepted: 20 November 2025; Published: 05 December 2025

ABSTRACT

This mixed-methods study investigated learners' and teachers' perceptions of using Google Read-Along to enhance English reading fluency among ESL learners in suburban Malaysian primary schools. The study was motivated by the ongoing challenge that many Malaysian pupils still struggle with reading fluency despite years of formal English instruction, especially in suburban settings with limited exposure to English outside the classroom. While previous studies report fluency gains from AI-based reading tools, less is known about how learners and teachers perceive these tools in Malaysian classrooms, particularly regarding motivation, confidence, feasibility, and curriculum alignment. A convergent mixed-methods design was employed. Quantitative data were collected from 60 Year 5 pupils using an 18-item survey ($\alpha = .835$), while qualitative data were gathered through semi-structured interviews with four English teachers and analysed using reflexive thematic analysis. Quantitative findings showed that pupils held highly positive perceptions of Google Read-Along, reporting high usefulness ($M = 3.95$), ease of use ($M = 4.07$), engagement ($M = 4.02$), motivation ($M = 4.06$), and increased reading confidence with reduced anxiety. Qualitative findings revealed that teachers viewed Google Read-Along as a valuable supplementary tool that complemented traditional reading instruction, aligned flexibly with CEFR-based lessons, supported facilitation, improved classroom management, and worked well alongside multilingual scaffolding. However, implementation barriers included limited devices, unstable internet connectivity, accent-related feedback issues, time constraints, and inconsistent parental support. Overall, the study concludes that Google Read-Along can effectively enhance reading fluency and motivation when integrated into scaffolded, teacher-guided instruction, supported by contextual adaptation and adequate school-level resources.

Keywords: AI-assisted reading, Google Read-Along, ESL learners, reading fluency, reading anxiety

INTRODUCTION

Background of the Study

Reading fluency is acknowledged as a fundamental aspect of literacy development, acting as the link between word recognition and comprehension (Rasinski et al., 2016). Fluent reading involves a combination of speed, accuracy, automaticity, and prosody—elements that enable readers to decode words effortlessly while extracting meaning from the text. In contexts of English as a Second Language (ESL) and English as a Foreign Language (EFL), reading fluency plays a vital role in improving vocabulary acquisition, grammatical awareness, and overall comprehension (Wilang et al., 2025). As learners cultivate fluency, they enhance their ability to interact with intricate texts, engage assertively in classroom discussions, and foster routines of self-directed reading. On the other hand, a lack of fluency—evident in slow, hesitant, or monotonous reading—can negatively impact comprehension and long-term academic success (Rodríguez-Fuentes et al., 2024).

In Malaysia, English is taught as a compulsory subject from the early years of primary school and is designated as the second language in the national curriculum. Despite this emphasis, many Malaysian primary ESL learners continue to face challenges in developing adequate reading fluency. The Malaysia Education Blueprint (2013–2025) identified literacy as a key national concern, noting that many pupils progress to secondary school without

mastering essential reading skills. Recent studies indicate that students, particularly in suburban and rural areas, consistently fail to meet the Common European Framework of Reference (CEFR) standards in reading fluency (Tessensohn et al., 2025). The challenges arise from restricted exposure to English beyond the classroom, diminished reading motivation, and inadequate literacy support at home (Chua & Sulaiman, 2021).

Traditional literacy instruction in Malaysian ESL classrooms typically emphasizes choral reading, comprehension questioning, and teacher-led drills. While these strategies can support foundational literacy, they frequently lack the personalised and repetitive oral practice essential for cultivating automaticity and prosody (Yunus et al., 2019). Large class sizes and mixed learner abilities further constrain teachers' ability to provide adequate one-on-one feedback. In suburban schools, where learners' proficiency levels and home literacy environments vary widely, these challenges become even more complex (Ramasamy et al., 2025). These realities underscore the necessity for creative and scalable approaches that complement traditional reading instruction while addressing learners' individual fluency needs.

The emergence of artificial intelligence (AI)-driven reading tools offers new opportunities to bridge this gap. Applications powered by AI and speech-recognition technologies provide instant feedback on pronunciation and pacing, giving learners personalized and gamified reading experiences (Elmaadaway et al., 2025). Among these tools, Google Read-Along has gained global attention for its accessibility, offline usability, and child-friendly design (Google, 2020, 2022). The app uses AI-based voice recognition to listen as learners read aloud, providing visual and auditory feedback to encourage improvement. Studies have reported that learners who used Google Read-Along showed measurable gains in accuracy, rate, and confidence (Ramasamy et al., 2025; Wilang et al., 2025). Besides, Rodríguez-Fuentes et al. (2024) found that digital read-aloud tools significantly improved fluency and prosody among EFL learners. However, most existing research predominantly emphasises outcome-based metrics—such as words per minute or pronunciation accuracy—while overlooking the lived experiences of both learners and teachers (Rodríguez-Fuentes et al., 2024).

Furthermore, previous Malaysian studies have primarily examined Google Read-Along in rural contexts (Ramasamy et al., 2025), leaving suburban schools largely underexplored. Suburban schools occupy a unique position between rural under-resourcing and urban privilege, often characterized by mixed levels of device access, diverse learner proficiency, and varying degrees of parental support. Yet, little is known about how these contextual realities shape the effectiveness and sustainability of AI-based reading tools. Moreover, while quantitative studies measure fluency improvement, few have investigated affective outcomes such as learners' reading confidence, motivation, or anxiety—factors that strongly influence reading performance and persistence.

Similarly, teachers' perspectives on pedagogical fit, feasibility, and implementation barriers remain underrepresented. Many teachers face constraints such as limited class time, unreliable internet connectivity, and insufficient digital literacy training, all of which may affect adoption. Without examining these factors, it is difficult to understand how tools like Google Read-Along can be effectively adapted and sustained in real-world Malaysian classrooms. Therefore, this study addresses a critical gap by investigating both learners' and teachers' perceptions of Google Read-Along within the suburban Malaysian ESL context. By integrating quantitative and qualitative evidence, the study aims to uncover not only how users perceive the tool but also what contextual enablers and challenges influence its successful use in practice.

Purpose and Objectives of the Study

The purpose of this study is to investigate how ESL learners and teachers in Malaysian suburban primary schools perceive the use of Google Read-Along as a digital tool for enhancing reading fluency. Specifically, the study seeks to examine learners' perceptions of the application in terms of its usefulness, ease of use, and engagement, while also exploring their perceived changes in reading fluency, confidence, and reading anxiety after using the application. In addition, the study aims to gain insights into teachers' perspectives on the pedagogical fit, usefulness, and feasibility of integrating Google Read-Along into classroom practice. Finally, it seeks to identify the key facilitators and barriers that influence the effective implementation of Google Read-Along in suburban ESL contexts.

Research Questions

This study is guided by the following research questions:

1. How do Malaysian primary ESL learners perceive Google Read-Along in terms of usefulness, ease of use, and engagement?

2. What perceived changes in reading fluency, confidence, and reading anxiety do learners report after using Google Read-Along?

3. How do ESL teachers perceive the pedagogical fit, usefulness, and feasibility of Google Read-Along in supporting reading fluency development?

4. What facilitators and barriers do teachers identify in the implementation of Google Read-Along in suburban primary ESL classrooms?

LITERATURE REVIEW

Technology Acceptance Model (TAM)

The Technology Acceptance Model has long been used to explain user adoption of educational technologies, with its central constructs of perceived usefulness and perceived ease of use (Davis, 1989). In this study, TAM is extended to encompass engagement, which reflects the motivational appeal of Google Read-Along's interactive features such as rewards and feedback (Teo, 2019). For learners, usefulness refers to their belief that the app helps them read more fluently, ease of use concerns whether its interface is intuitive for children, and engagement captures their enjoyment of reading with the app. For teachers, TAM highlights pedagogical fit, feasibility, and perceptions of how the app complements classroom instruction. Positive perceptions of usefulness, ease of use, and engagement are expected to predict sustained adoption.

Sociocultural Theory

While TAM focuses on attitudes toward technology, Sociocultural Theory provides insight into the mediated nature of reading development. According to Vygotsky (1978), learning occurs in the Zone of Proximal Development (ZPD) through scaffolding by more knowledgeable others and mediational tools. Google Read-Along serves as such a tool, with its AI character Diya providing corrective feedback and encouragement, functioning as a form of scaffolding that allows learners to progress beyond their independent capabilities. Teachers also act as mediators by aligning app use with curricular goals, monitoring progress, and supporting pupils who struggle. From this perspective, learner outcomes depend not only on individual interaction with the app but also on the social and cultural context in which it is embedded (Lantolf & Thorne, 2006).

Constructivist Learning Theory

Constructivist principles further illuminate how Google Read-Along supports reading fluency. Bruner (1986) emphasized that learners actively construct knowledge through interaction, reflection, and practice. Reading fluency is not acquired passively but develops through repeated oral reading, self-correction, and engagement with meaningful texts (Rasinski et al., 2016). Google Read-Along embodies these principles by requiring learners to read aloud, offering immediate feedback, and allowing multiple attempts. Its gamified elements sustain persistence and autonomy, transforming fluency practice into an active process. From a constructivist standpoint, the app promotes learner-centered practice, where children take ownership of their fluency development while receiving scaffolded support.

The Role of Technology in Developing Reading Fluency

The rapid growth of educational technology has opened new possibilities for supporting reading fluency, especially for ESL and EFL learners who may not receive sufficient oral reading practice during regular classroom hours. In Malaysia, the Digital Education Policy (2023) highlights the need to integrate digital tools

into everyday teaching (Azahar, 2023). Many of these tools extend practices already known to improve fluency—such as repeated reading and reading-while-listening—by offering forms of scaffolding that are difficult to maintain consistently in face-to-face lessons. E-books, text-to-speech functions, and similar features allow learners to rehearse passages at their own pace, hear fluent models, and obtain pronunciation support whenever needed (Crompton & Burke, 2023). These affordances contribute directly to the three central components of fluency: accuracy, automaticity, and prosody.

A growing body of empirical work reinforces these benefits. For example, a scoping review of 86 studies conducted from 2013 to 2023 reported steady gains in fluency for learners with reading difficulties who engaged in computer-assisted repeated reading, particularly in their words-per-minute growth and oral accuracy (Zhu & Wang, 2025). Rodríguez-Fuentes et al. (2024) similarly found that digital forms of repeated reading improved the fluency of Latin American EFL learners, suggesting that the advantages apply to both mainstream and support groups. More recent developments in artificial intelligence have expanded these possibilities even further. Elmaadaway et al. (2025) showed that primary ESL learners who used an AI-based voice tutor outperformed peers relying solely on teacher-led instruction, particularly in reading speed, accuracy, and expressive reading. Their findings point to the growing role of technology not as a replacement for instruction but as an effective enhancement to fluency programmes.

AI-Supported Fluency Interventions and Google Read-Along

Google Read-Along (previously known as Bolo) has gained attention in many countries because it is free, easy to use, and built on an automated speech recognition system. Its animated tutor, Diya, listens as children read aloud, identifies mispronunciations, and gives immediate corrective responses. The app also awards stars and badges, which makes reading practice feel more like a game and less like a stressful classroom activity. For many learners, this private practice space reduces the pressure of reading in front of others.

Studies from Malaysia and abroad highlight the usefulness of this platform. Ramasamy, Yunus, and Ismail (2025) found that rural upper-primary learners improved both their accuracy and reading rate after several weeks of using Read-Along. Teachers also observed that students became more enthusiastic and more willing to participate in oral reading. Similar findings have been reported in other contexts. Ngo and Chen (2025) showed that Taiwanese EFL learners improved their pronunciation and word-recognition skills, while Abimanto and Sumarsono (2024) recorded an increase of over 65% in pronunciation scores when the app was used together with the read-aloud technique. Dja'far and Hamidah (2024) noted steady fluency gains among Indonesian learners after an eight-week programme. Together, these studies show that AI-supported tools like Read-Along can make a meaningful difference in fluency development across a range of learning environments.

Affective Dimensions of Reading Fluency

Reading fluency development is deeply shaped by affective variables such as motivation, anxiety, and confidence. Research consistently shows that high levels of reading anxiety are negatively associated with reading achievement (Zhou, Ma, & Guo, 2022). In contrast, fluency gains tend to enhance confidence, foster enjoyment, and encourage learners to practice more frequently, reinforcing a positive cycle of growth.

Technology can play an important role in reducing anxiety by creating safe, non-judgmental spaces for oral reading. Wiyaka et al. (2024) observed that Indonesian ESL learners using an AI chatbot for reading practice reported a shift "from nervous to fluent," reflecting both affective and performance improvements. Similar outcomes were reported by Ramasamy et al. (2025), who noted that Malaysian learners became more willing to participate in oral reading after using Read-Along. Motivational gains are also enhanced by the app's gamification. Features such as badges and progress rewards provide immediate signals of achievement, sustaining engagement (Alazemi, 2024). Adaptive difficulty further supports motivation: He (2024) found that AI reading platforms that adjust text levels dynamically kept learners in an optimal "zone of challenge," preventing frustration and disengagement. These affective benefits are not incidental but central to fluency development, since consistent and confident practice is a prerequisite for lasting gains.

Teacher Perceptions and Pedagogical Integration

Teachers' perceptions are equally critical, as they determine how tools are implemented and sustained in classroom practice. In Malaysia, earlier digital initiatives such as the Smart School project revealed that insufficient teacher training and lack of curriculum alignment often hinder uptake (Azahar, 2023). Contemporary evidence shows a similar pattern: teachers tend to value AI reading tools for providing individualized practice and diagnostic data, yet remain cautious about over-reliance and technical constraints.

For instance, Southeast Asian teachers reported that AI tools offered valuable insights into learner fluency challenges, but device availability and lesson integration posed barriers (Taylor et al., 2023). In Malaysia, Ramasamy et al. (2025) documented that teachers appreciated Read-Along's ability to engage reluctant readers but worried about curriculum fit and infrastructural limitations. International studies echo these tensions. Alazemi (2024) observed that some learners became overly reliant on AI corrections, while Wilang, Seepho, and Kitjaroonchai (2025) noted passive engagement when software feedback replaced independent strategy use. These concerns underscore the importance of teacher mediation. Wiyaka et al. (2024) showed that teacher scaffolding—interpreting AI feedback and aligning it with literacy goals—produced stronger outcomes than unsupervised use. Likewise, Hidayat (2024) found that adaptive platforms like ReadTheory were most effective when teachers contextualized and reinforced the automated practice. Overall, research converges on the need for professional development and pedagogical guidance to help teachers integrate AI tools effectively.

METHODOLOGY

Research Design and Data Collection

This study employed a convergent mixed-methods design, integrating both quantitative and qualitative approaches to obtain a comprehensive understanding of ESL learners' and teachers' perceptions of Google Read-Along in suburban Malaysian primary schools. In a convergent design, both quantitative and qualitative data are collected concurrently, analyzed separately, and then compared or combined during interpretation to yield deeper insights into the research problem (Creswell & Plano Clark, 2018).

This design was selected because the quantitative survey provided breadth by identifying overall learner perceptions and attitudinal trends, while the qualitative interviews offered depth by explaining teachers' classroom experiences and contextual factors influencing implementation. Consistent with Fetters and Freshwater (2015), the integration of these two strands enabled selective methodological triangulation, in which areas of convergence—such as motivation, engagement, confidence, and anxiety—were compared across datasets. At the same time, findings unique to the qualitative strand were treated as complementary rather than triangulated.

Data collection was conducted over a four-week period across four suburban primary schools in Perak and Johor, Malaysia. The quantitative phase involved an online Google Form survey administered to 60 Year 5 ESL pupils who had prior experience using Google Read-Along, while the qualitative phase consisted of semi-structured interviews with four English teachers from the same schools. Both datasets were analyzed independently — the quantitative data using descriptive statistics in SPSS, and the qualitative data through reflexive thematic analysis supported by ATLAS.ti.

Sampling

The population of this study comprised Year 5 ESL pupils and English language teachers from four suburban primary schools in Perak and Johor, Malaysia. A purposive sampling strategy was employed to ensure that all participants had direct experience using Google Read-Along, either during classroom activities or at home.

For the quantitative phase, a total of 60 Year 5 ESL pupils participated in the study. The inclusion criteria required pupils to have provided verbal assent and to have used Google Read-Along for at least four sessions, or approximately 60 minutes of reading practice, in the month prior to data collection. For the qualitative phase, four English language teachers, one from each participating school, were selected to participate in semi-

structured interviews. The selection of teachers was based on their direct classroom experience with Google Read-Along and their willingness to share pedagogical insights and challenges. A maximum variation sampling approach was applied to capture a diverse range of perspectives in terms of teaching experience, class size, and access to technological resources.

The sample size of 60 pupils was deemed appropriate for classroom-based studies investigating affective variables in second-language learning (Alamer, 2021) and aligns with typical sample ranges employed in similar mixed-methods educational research (Creswell & Plano Clark, 2018). For the qualitative strand, the inclusion of four teacher participants provided sufficient information power and thematic richness, consistent with Creswell and Poth's (2018) recommendation of engaging between three and six participants for in-depth qualitative inquiry.

Instruments

The study employed two main instruments: a learner survey and a teacher interview protocol. Learner survey was adapted from several established theoretical frameworks to ensure both construct validity and contextual relevance. Specifically, it drew on the Technology Acceptance Model (Davis, 1989), the Foreign Language Reading Anxiety Scale (Saito et al., 1999), and the Motivation and Engagement Scales (Wigfield & Guthrie, 1997). The items were reworded into child-friendly language suitable for Year 5 pupils and translated into trilingual format (English, Malay, and Chinese) to ensure comprehension and inclusivity across linguistic backgrounds. The final questionnaire consisted of 18 items representing six constructs—usefulness (3 items), ease of use (3 items), engagement (3 items), reading confidence (3 items), reading anxiety (3 items), and motivation (3 items). Each construct comprised three items measured on a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The questionnaire was created and administered using Google Forms to facilitate ease of access and efficient data collection. The use of an online format ensured that responses were automatically recorded and organized for analysis. This structured yet flexible approach enabled reliable collection of data on pupils' perceptions of Google Read-Along across all six constructs.

The teacher interview protocol was developed to explore English teachers' perceptions and experiences regarding the pedagogical use of Google Read-Along in ESL classrooms. The semi-structured format allowed flexibility for teachers to elaborate on their views while ensuring coverage of key domains, including pedagogical fit and usefulness, observed learner outcomes, classroom feasibility and implementation, and factors facilitating or hindering adoption. Each interview lasted approximately 45 to 60 minutes, depending on participant availability and depth of discussion, and was conducted either face-to-face or via Google Meet, depending on the teachers' convenience. All sessions were audio-recorded with consent, transcribed verbatim, and translated into English where necessary for data analysis.

Together, the survey and interview instruments provided a comprehensive understanding of both learners' and teachers' perspectives. The integration of these instruments enhanced the validity of the findings by enabling convergence and corroboration between quantitative results and qualitative insights. Conducting a pilot phase is critical for ensuring that the instruments are valid, reliable, and age-appropriate before main data collection (Dörnyei, 2007). Prior to the main study, the learner survey was piloted to ensure clarity, reliability, and age appropriateness for Year 5 ESL pupils. The pilot study involved 20 Year 5 ESL pupils from a non-participating suburban school, and feedback confirmed that the items were understandable and relevant to their reading experiences. Statistical analysis produced a Cronbach's alpha of .889 indicating excellent internal consistency.

Data Analysis

Data analysis followed the convergent mixed-methods framework, where both quantitative and qualitative data were analyzed separately and then integrated to enable methodological triangulation and complementarity.

For the quantitative analysis, survey responses from 60 pupils were entered into SPSS for statistical processing. Data screening was conducted to identify missing values or inconsistencies. The internal reliability of each construct was verified using Cronbach's alpha, with a threshold of 0.70 or above considered acceptable (George & Mallery, 2019). Subsequently, descriptive statistics, including means and standard deviations, were calculated

for each of the six constructs—usefulness, ease of use, engagement, reading confidence, reading anxiety, and motivation. These descriptive results provided an overall picture of pupils' perceptions toward Google Read-Along and their perceived changes in reading-related affective factors.

As for the qualitative analysis, the teacher interview transcripts were analyzed using reflexive thematic analysis (Braun & Clarke, 2006, 2019), supported by ATLAS.ti for data management and coding. This process involved iterative reading of transcripts, coding meaningful segments, grouping similar codes into categories, and refining them into overarching themes. Sensitizing concepts such as usefulness, engagement, feasibility, and barriers guided theme development while still allowing new patterns to emerge inductively from the data. To ensure trustworthiness, member checking was carried out with participants to confirm the accuracy of transcriptions and interpretations.

FINDINGS

Learners' Perceptions and Reported Reading Changes (RQ1 &2)

The quantitative phase examined 60 Year 5 pupils' perceptions of Google Read-Along across six constructs: usefulness, ease of use, engagement, reading confidence, reading anxiety, and motivation. Data were analyzed using IBM SPSS Statistics, focusing on internal consistency reliability and descriptive trends to determine overall learner attitudes toward the app. The overall reliability analysis of the 18-item instrument produced a Cronbach's alpha of $\alpha = .835$, indicating good internal consistency among items. According to George and Mallery (2019), values above .80 reflect high reliability, confirming that the instrument was both stable and consistent in measuring pupils' perceptions. This finding also aligns with the pilot study reliability ($\alpha = .889$), validating the soundness of the instrument after refinement for clarity and readability.

Descriptive statistics were computed for each construct to summarize pupils' perceptions of Google Read-Along. The mean scores ranged from 3.80 to 4.07, with standard deviations between 0.58 and 0.69 (as shown in Table 1), indicating generally positive and consistent responses across the participants.

Table 1 Descriptive Statistics for Pupils' Perceptions of Google Read-Along (N = 60)

Construct	Items	Mean(M)	SD	Interpretation
Usefulness	1. Google Read-Along helps me improve my English reading.	4.05	0.62	High
	2. I understand stories better when I use Google Read-Along.	3.90	0.60	
	3. Google Read-Along makes reading easier for me.	3.90	0.73	
	Overall Mean(M) / Standard Deviation(SD)	3.95	0.65	
Ease of Use	4. Google Read-Along is easy for me to use.	4.05	0.65	High
	5. I can use Google Read-Along without much help from my teacher or parents.	4.00	0.69	
	6. The app gives clear instructions for reading.	4.15	0.58	
	Overall Mean(M) / Standard Deviation(SD)	4.07	0.64	
Engagement	7. I enjoy using Google Read-Along.	4.13	0.68	High
	8. The app makes reading fun and interesting.	4.05	0.70	

/ Enjoyment	9. I feel excited to read when I use Google Read-Along.	3.88	0.61	
	Overall Mean(M) / Standard Deviation(SD)	4.02	0.66	
Reading Confidence	10. I feel more confident reading aloud after using Google Read-Along.	4.10	0.51	Moderate–High
	11. I can read longer texts without giving up.	3.90	0.54	
	12. I believe I can become a good reader if I keep using the app.	3.85	0.69	
	Overall Mean(M) / Standard Deviation(SD)	3.95	0.58	
Reading Anxiety	13. I feel less nervous when I read in English after using Google Read-Along.	3.90	0.75	Moderate–High improvement
	14. I do not worry so much about making mistakes when reading.	3.95	0.59	
	15. Google Read-Along helps me feel calm when reading in class.	3.55	0.72	
	Overall Mean(M) / Standard Deviation(SD)	3.80	0.69	
Motivation	16. I want to read more English books because of Google Read-Along.	3.97	0.64	High
	17. I am more willing to try difficult words after using the app.	4.10	0.71	
	18. Google Read-Along makes me want to read more often.	4.12	0.61	
	Overall Mean(M) / Standard Deviation(SD)	4.06	0.65	

For Usefulness, pupils indicated high agreement that the app improved their English reading (M = 4.05, SD = 0.62), helped them understand stories better (M = 3.90, SD = 0.60), and made reading easier (M = 3.90, SD = 0.73), resulting in an overall high construct mean (M = 3.95, SD = 0.65). Ease of Use recorded the highest overall mean among all constructs (M = 4.07, SD = 0.64). Pupils strongly agreed that the app provided clear instructions (M = 4.15, SD = 0.58), was easy to use (M = 4.05, SD = 0.65), and required minimal assistance (M = 4.00, SD = 0.69), reflecting consistently positive usability perceptions. For Engagement, pupils enjoyed using the app (M = 4.13, SD = 0.68), found it fun and interesting (M = 4.05, SD = 0.70), and felt more excited to read (M = 3.88, SD = 0.61), producing an overall high mean (M = 4.02, SD = 0.66).

In terms of Reading Confidence, pupils felt more confident reading aloud (M = 4.10, SD = 0.51), were more willing to persist with longer texts (M = 3.90, SD = 0.54), and believed they could become better readers (M = 3.85, SD = 0.69), contributing to a moderate–high overall mean (M = 3.95, SD = 0.58). For Reading Anxiety, pupils agreed that the app helped reduce nervousness (M = 3.90, SD = 0.75) and worry about mistakes (M = 3.95, SD = 0.59), although the item "I feel calm when reading in class" recorded a comparatively lower score (M = 3.55, SD = 0.72). This resulted in a slightly lower but still moderate–high overall mean for anxiety improvement (M = 3.80, SD = 0.69), indicating that anxiety reduction was positive, though less consistent across items compared to other constructs.

Finally, Motivation also received a high overall mean (M = 4.06, SD = 0.65), with pupils reporting greater willingness to attempt difficult words (M = 4.10, SD = 0.71), increased desire to read more often (M = 4.12, SD = 0.61), and higher interest in English books (M = 3.97, SD = 0.64).

Overall, the findings reveal that pupils held positive perceptions of Google Read-Along across all six constructs. They viewed the app as useful, easy to use, engaging, and motivating, and reported increased confidence alongside reduced anxiety in reading English.

Teachers' Perceptions of the Pedagogical Fit, Usefulness, and Feasibility of Google Read-Along (RQ3)

The qualitative data gathered from four English teachers revealed five major themes that describe how Google Read-Along fits into classroom instruction, aligns with curriculum goals, and reshapes teachers' pedagogical practices in suburban Malaysian primary ESL classrooms. These themes emerged through a reflexive thematic analysis supported by ATLAS.ti and reflect teachers' lived experiences and classroom observations.

Theme 1: Complementing Traditional Reading Instruction

Teachers viewed Google Read-Along as a complementary digital resource rather than a replacement for conventional reading instruction. It served mainly as a pre-reading or fluency enhancement activity that integrated smoothly with existing pedagogical routines. Teachers described how the app engaged pupils before textbook reading and sustained their participation throughout lessons. For example, one teacher noted:

"Traditionally, we use the textbook, pupils read after teacher… but when I correct one pupil, the others switch off. With Read-Along, they can practise simultaneously." (Teacher 3, ¶9)

Another explained how the app supported learner confidence before reading comprehension tasks:

"I like to use it as a warm-up activity before reading the textbook passage. For example, I'll let them use the app to practise pronunciation of key vocabulary first. Then, when we read the textbook, they are more confident." (Teacher 2, ¶9)

Overall, teachers reported that Google Read-Along complemented their reading lessons by providing additional pronunciation and fluency practice, which they felt was less emphasised in traditional approaches.

Theme 2: Alignment with CEFR and Curriculum Flexibility

Teachers generally perceived Google Read-Along as suitable for CEFR beginner proficiency levels (A1–A2), particularly in supporting pupils' fluency and ability to read short, simple texts. They noted that the app provided the type of support expected in early CEFR reading descriptors. As one teacher shared:

"The CEFR goal of 'can read short, simple texts with support' fits perfectly because the app provides that support." (Teacher 3, ¶15)

Although the stories in the app were not fully aligned with the national syllabus, teachers described selecting stories that matched their textbook themes or lesson topics. Another echoed:

"The content is not exactly 100% same as our syllabus… but if I choose properly—for example, when our textbook theme is 'Animals,' I find stories about animals in the app—then it matches quite well lah." (Teacher 1, ¶11)

Teachers therefore adapted the app's content by choosing stories that corresponded with the themes or learning outcomes they were teaching at the time.

Theme 3: Shifting Teacher Roles from Instructor to Facilitator

Teachers described shifting from a teacher-directed approach to a more facilitative role when using Google Read-Along. They reported that pupils needed guidance on how and when to use the app, and that structured

planning was necessary for the activity to run smoothly. One teacher emphasised the need for clear integration into lessons, explaining,

"Don't just let pupils play with the app. You must plan how to integrate it… maybe as a warm-up or part of a reading rotation. If you just give them and say 'Go read,' it won't work lah." (Teacher 2, ¶37)

Another teacher highlighted the importance of using the app alongside other classroom activities, stating that,

"Teachers must be flexible. The best is to integrate it with other activities—group reading, vocabulary games, or comprehension tasks." (Teacher 3, ¶39)

Teachers noted that although the app allowed learners to work at their own pace, it still required teacher oversight, scaffolding, and planning to ensure pupils remained focused and used the tool meaningfully.

Theme 4: Practical Feasibility and Classroom Management Benefits

Teachers described Google Read-Along as practical and helpful for managing large, mixed-ability classes. They explained that the app's built-in speech feedback enabled many pupils to practise reading at the same time, which made lesson time easier to manage. One teacher commented:

"Everyone reads with the app, and the app gives feedback instantly. So, time is better used. I can walk around and observe rather than correcting every word myself." (Teacher 3, ¶9)

Teachers also noted that the app reduced the need for repeated oral demonstrations, making reading lessons less physically demanding. As one teacher explained,

"Last time, I had to read aloud so many times until throat pain. Now, the app can demonstrate, and I just focus on feedback and comprehension." (Teacher 3, ¶33)

Teachers reported that these features supported smoother lesson flow and helped them manage instructional tasks more efficiently.

Theme 5: Support for Multilingual and Contextual Learning

Teachers found Google Read-Along could be used alongside their existing multilingual practices in the ESL classroom. They described drawing on pupils' home languages—such as Mandarin and Malay—to support comprehension during reading activities. One teacher explained this approach by saying,

"I'll pause and ask, 'Okay, what is this word? Can anyone tell the meaning in Mandarin or Malay?'" (Teacher 3, ¶13)

Teachers shared that code-switching was commonly used to help pupils understand vocabulary and story content, and they incorporated these practices while using the app during lessons.

Facilitators and Barriers in Implementing Google Read-Along in Suburban Primary ESL Classrooms (RQ4)

While teachers perceived Google Read-Along as an engaging and useful tool for promoting reading fluency, their implementation experiences were shaped by a combination of contextual facilitators and barriers. The thematic analysis of four teacher interviews revealed six major themes.

Theme 1: Institutional and Peer Support as Key Enablers

Teachers explained that institutional and collegial support facilitated the use of Google Read-Along in their classrooms. They described how English panel heads, ICT coordinators, and PLC sessions provided assistance and opportunities to share strategies. One teacher explained,

"*My English panel was very supportive. She encouraged us to share our experiences during our PLC sessions. We even showed each other which stories work best. That peer sharing helped a lot because we learned practical tips from each other." (Teacher 2, ¶ 29)*

Another teacher noted the role of the ICT coordinator in supporting classroom implementation, stating,

"Our ICT coordinator helped install the app on school devices." (Teacher 3, ¶29)

Teachers described these forms of support as helpful in enabling smoother use of the app during lessons.

Theme 2: Resource and Technical Limitations

Teachers reported facing resource and technical constraints when implementing Google Read-Along. Several teachers highlighted the limited number of devices available, noting that pupils often had to share tablets in small groups. One teacher explained,

"We have maybe eight tablets for sharing, so pupils need to take turns in small groups." (Teacher 4, ¶20)

Teachers also described frequent technical issues during lessons, particularly related to unstable internet connectivity. As one teacher shared,

"Internet connection is another issue; sometimes the app doesn't load properly, especially when too many pupils use it at once." (Teacher 4, ¶20)

To manage these challenges, teachers described using practical workarounds such as pre-downloading stories before class or rotating groups during activities. One teacher stated,

"I download the stories in advance. That helps a lot. I also rotate usage… while one group uses the app, others do comprehension tasks." (Teacher 3, ¶25)

Teachers' accounts show that both limited devices and connectivity issues affected the smooth implementation of the app during lessons.

Theme 3: Pedagogical and Linguistic Challenges

Teachers reported encountering challenges related to pronunciation and linguistic alignment when using Google Read-Along. One teacher noted that the app's American-accented audio sometimes conflicted with the Malaysian-British pronunciation model used in their classroom, explaining,

"The app uses an American accent. Pupils sometimes get confused because I use more Malaysian-British pronunciation." (Teacher 2, ¶31)

Teachers also described difficulties with the automated speech scoring system. One teacher shared that the app occasionally marked correct local pronunciations as errors, stating,

"Even when they pronounce correctly, the app still marks it wrong. Then they get frustrated." (Teacher 3, ¶31)

Teachers viewed these pronunciation-related issues as a challenge during reading activities, particularly when pupils relied on the app's feedback for accuracy.

Theme 4: Time and Curriculum Constraints

Teachers informed limited instructional time affected their ability to use Google Read-Along during lessons. They explained that English periods were often short and heavily focused on CEFR requirements, leaving little room for additional digital activities. One teacher stated,

"The English periods are short, and we already have to cover the textbook, workbook, and CEFR-based assessments." (Teacher 4, ¶24)

Teachers also described difficulties completing story-based tasks within the allocated time due to tight lesson pacing. As one teacher explained,

"Sometimes the lesson plan is too packed — no time to let every group finish their story." (Teacher 2, ¶31)

Together, these comments illustrate how curricular demands and time constraints limit opportunities to incorporate the app consistently during reading lessons.

Theme 5: Mixed Parental Perceptions and Support

Teachers described varying levels of parental support for the use of Google Read-Along. Some parents were perceived as undervaluing the app's educational purpose, with one teacher explaining that

"Some parents still think reading apps are just games, not real learning." (Teacher 1, ¶25)

Other parents were more supportive but continued to prefer traditional reading approaches, as another teacher noted,

"Parental support is mixed; some parents are very supportive, others prefer traditional methods." (Teacher 4, ¶22)

Teachers reported that these differing parental attitudes contributed to varying levels of home practice, with some pupils receiving consistent encouragement to use the app and others practising less frequently.

Theme 6: Recommendations for Improvement and Localization

Teachers provided several suggestions for improving Google Read-Along to better support classroom use. Some teachers expressed the need for adjustable reading speed to help weaker readers follow along more comfortably. One teacher noted,

"I hope they add a function where teachers can adjust the reading speed or voice clarity. Some of my pupils still cannot catch up when the app reads too fast." (Teacher 3, ¶35)

Teachers also suggested incorporating content that reflects Malaysian cultural contexts. For example, one teacher shared,

"Include more culturally relevant stories — local themes that pupils can relate to, like Malaysian festivals, food, or daily school life." (Teacher 4, ¶28)

In addition, teachers mentioned that clearer progress indicators would be useful, with one teacher stating,

"It would be better if it can show which words pupils mispronounce, or give a simple report after reading." (Teacher 3, ¶35)

Teachers' suggestions focused on features they felt would support pupils' comprehension and make the app easier to use during lessons.

DISCUSSION

Learners' Perceptions and Reported Changes (RQ1 & RQ2)

The survey results showed that pupils generally had a positive view of Google Read-Along. Ease of use received the highest mean score (M = 4.07), followed closely by usefulness (M = 3.95). These patterns mirror what the

Technology Acceptance Model (Davis, 1989) highlights—when something is easy to use and genuinely helpful, learners are far more willing to adopt it. In this case, pupils seemed comfortable navigating the app, which supports Teo's (2019) point that younger learners, in particular, depend heavily on simple and accessible interfaces.

High engagement (M = 4.02) and motivation (M = 4.06) further indicate that the app's gamified features sustained learners' interest. These quantitative patterns were reinforced by qualitative accounts from teachers. One teacher described how pupils "suddenly want to read" when the app is introduced, illustrating its immediate motivational appeal (Teacher 1, ¶17). Another shared that a pupil voluntarily practised at home and excitedly reported, "Teacher, I read two stories last night!" (Teacher 1, ¶17). Such behaviour aligns with constructivist principles (Bruner, 1986), wherein learners actively engage, explore, and construct meaning through interactive, feedback-rich environments. The star-based reward system and encouraging feedback from Diya appear to facilitate this learner-driven engagement, echoing Alazemi's (2024) argument that gamification increases perseverance and enjoyment.

Affective improvements were also evident. Reading confidence increased (M = 3.95), while reading anxiety decreased (M = 3.80), indicating a shift toward a more comfortable reading environment. Teacher observations triangulate these patterns: one teacher reported that "weaker pupils, previously hesitant to read aloud, became more willing to volunteer when they had practised privately with the app" (Teacher 4, ¶13). This aligns with studies showing that AI-supported reading tools lower anxiety because they offer a safe space for practice (Wiyaka et al., 2024; Ramasamy et al., 2025). Through a Sociocultural Theory lens, the app acts as a mediating tool within the learner's Zone of Proximal Development (Vygotsky, 1978). For shy or struggling readers, being able to rehearse privately with instant feedback gives them the confidence they need before reading in front of others.

However, the slightly lower score for anxiety reduction indicates that while the app helped many pupils feel more comfortable, some learners may still need additional teacher scaffolding, explicit confidence-building strategies, or repeated oral reading practice. This nuance is consistent with Zhou, Ma, and Guo (2022), reading anxiety can persist even with supportive tools, and some students may simply need more time, more teacher encouragement, or more guided oral reading opportunities.

In summary, pupils viewed Google Read-Along positively, reporting high usefulness, ease of use, engagement, and motivation. The app also increased reading confidence and helped reduce reading anxiety, particularly for weaker readers who benefited from practising privately with immediate feedback. Although some pupils still experienced mild anxiety, the overall findings show that Google Read-Along effectively supports both reading development and emotional comfort in ESL learning.

Teachers' Perceptions of Pedagogical Fit, Usefulness, and Feasibility (RQ3)

The qualitative findings indicate that teachers perceived Google Read-Along as a valuable supplement to traditional instruction rather than a replacement for teacher-led reading activities. This perspective aligns with Vygotsky's Sociocultural Theory, which conceptualises digital tools as mediational aids embedded within social interaction and guided scaffolding (Vygotsky, 1978; Lantolf & Thorne, 2006). Teachers consistently emphasised that the app was most effective when integrated purposefully—for instance, as a pre-reading warm-up or fluency practice before textbook comprehension tasks. This practice resonates with Bruner's Constructivist Theory, where learning is constructed through repeated exposure, active performance, and feedback (Bruner, 1986). The app's supportive feedback features allowed pupils to rehearse reading, self-correct, and build fluency prior to whole-class engagement, mirroring the iterative learning processes described in constructivist literature.

Teachers demonstrated curriculum flexibility and agency by selectively choosing stories aligned with textbook themes or CEFR A1–A2 learning outcomes. This aligns with Ertmer and Ottenbreit-Leftwich's (2010) argument that teachers' beliefs and autonomy determine how effectively technology is integrated, particularly in contexts with rigid curricula. Similar patterns have been noted in Malaysian AI literacy studies where teachers routinely adapt digital content for syllabus alignment (Ramasamy et al., 2025). The present study reinforces this by

showing that teachers not only selected suitable stories but also sequenced the app within their established reading routines, reflecting professional judgment and contextual decision-making.

A recurring emphasis among teachers was the need for guided facilitation and structured integration. They reported that unstructured or unguided use often resulted in distraction, mechanical clicking, or pupils focusing mainly on rewards rather than comprehension. This pattern aligns with Sociocultural Theory, which views learning tools as effective only when mediated through purposeful, teacher-guided interaction (Vygotsky, 1978). Without such mediation, pupils are less able to engage meaningfully with the content or use the app to extend their reading abilities. This concern is supported by findings in AI-assisted reading research (e.g., Wilang et al., 2025; Alazemi, 2024), which similarly show that when digital tools are used without teacher involvement, learners tend to operate at a surface level. The current study reinforces this by showing that teachers deliberately embed Google Read-Along within structured literacy tasks—such as guided vocabulary review, reading rotations, or post-reading discussions—to ensure that pupils' engagement remains focused on comprehension and fluency development rather than reward accumulation.

Besides, the findings indicate that teachers perceived Google Read-Along as highly practical for managing large, mixed-ability classrooms. The app's automated speech feedback enabled many pupils to practise reading at the same time, reducing the need for constant one-to-one correction. This allowed teachers to use their instructional time more efficiently by focusing on monitoring pupils' progress, offering targeted support, and guiding comprehension activities. Such efficiency echoes findings in ESL technology research, which emphasise that AI-based tools can streamline instructional tasks and support classroom management, particularly when dealing with diverse learner proficiency levels (Yunus et al., 2021; Elmaadaway et al., 2025). Teachers also reported that the app helped reduce the physical strain associated with repeatedly modelling reading passages, as the built-in audio provided a consistent model for pupils to follow. This aligns with constructivist principles, particularly Bruner's (1986) view that learning tools can serve as scaffolds that support independent practice while enabling teachers to concentrate on more complex instructional decisions. The reduced need for repeated modelling and mechanical correction mirrors patterns observed in other AI-supported reading interventions, where automated modelling has been shown to improve lesson flow and decrease teacher fatigue (Rodríguez-Fuentes et al., 2024).

The findings show that teachers integrated Google Read-Along into their multilingual teaching practices, using Mandarin and Malay to clarify vocabulary and support comprehension. Such code-switching is common in Malaysian primary ESL classrooms and has been shown in Malaysian studies to help pupils connect English texts with familiar linguistic and cultural contexts (Chew & Wong, 2017; Ismail & Tan, 2019). Teachers found that the app worked well alongside these practices, as they could pause activities to provide quick explanations or relate story elements to pupils' prior knowledge. While previous research on Google Read-Along has focused largely on pronunciation and fluency gains (Ngo & Chen, 2025; Abimanto & Sumarsono, 2024), the present study highlights its compatibility with multilingual scaffolding—an aspect less discussed in existing literature. By blending the app with pupils' home languages, teachers made reading tasks more accessible and meaningful, demonstrating that digital tools can support comprehension effectively when integrated within multilingual classroom routines.

In summary, teachers perceived Google Read-Along as a useful and feasible supplementary tool that supports fluency development, classroom management, and multilingual scaffolding. They valued the app's ability to enhance pronunciation practice, provide automated feedback, and ease the demands of managing mixed-ability classrooms. However, its effectiveness relied heavily on purposeful integration within structured literacy routines, where teachers exercised curriculum flexibility, guided facilitation, and multilingual support. Overall, the app was seen as beneficial when mediated through thoughtful teacher planning and aligned with pupils' linguistic and curricular needs.

Facilitators and Barriers in Implementation (RQ4)

Although teachers generally viewed Google Read-Along positively, the interviews showed that its use in the classroom depended on a mix of supports and ongoing challenges. One of the strongest enabling factors was the support system around the teachers. English panel heads, ICT coordinators, and even informal PLC discussions helped teachers talk through ideas, sort out small technical problems, and fine-tune their lesson plans. These

collaborative spaces made it easier for teachers to experiment with the app and build confidence. This observation is consistent with earlier research, which notes that organisational readiness and strong professional networks often determine whether technology use can be sustained in schools (Ertmer & Ottenbreit-Leftwich, 2010).

Despite these supports, several barriers limited teachers' ability to integrate the app consistently. Resource and technical limitations were among the most prominent challenges. Many suburban schools continued to face shortages of devices, with some classes relying on only a handful of tablets. This required pupils to share devices in small groups and reduced the time available for individual practice. Unstable internet connectivity further disrupted lessons, prompting teachers to rely on workarounds such as pre-downloading stories or rotating group activities. These infrastructural issues mirror national findings that highlight unequal digital access and inconsistent connectivity across Malaysian primary schools (Ismail, 2025; Muniandy & Kamsin, 2024).

Pedagogical and linguistic challenges also emerged as significant barriers. The app's American-accented narration sometimes conflicted with classroom models of Malaysian-British English, causing confusion among pupils. Teachers also noted that the automatic speech-recognition system occasionally misjudged correct local pronunciations as errors. This reflects a broader issue identified in recent ASR studies, where AI tools are shown to struggle with regional and non-native accents, leading to inaccurate feedback and heightened learner frustration (Anggraini & Darmayunata, 2022).

Lesson time and curriculum demands further constrained meaningful integration. English periods in Malaysian primary schools are typically short and heavily focused on CEFR-aligned textbook and assessment coverage, leaving little room for extended digital activities. This echoes research showing that heavy syllabus requirements and limited instructional time remain major barriers to sustained technology use in Malaysian ESL classrooms (Muniandy & Kamsin, 2024).

Another moderating factor was parental perception. Teachers reported varied levels of home support: some parents viewed reading apps as mere entertainment, while others preferred traditional reading methods. These differing attitudes influenced how much pupils engaged with the app outside of school. This pattern is consistent with recent studies showing that inconsistent parental digital literacy and limited awareness of mobile-assisted learning reduce the sustainability of home-based practice (Dhaliwal & Hashim, 2025).

Teachers offered several practical recommendations for improving Google Read-Along, emphasising the need for the app to better respond to local classroom contexts. The request for adjustable reading speed reflects the need to support weaker readers who struggle with fast narration, a challenge also highlighted in AI-assisted reading studies where flexible pacing has been shown to enhance fluency practice (He, 2024). Teachers further underscored the importance of cultural relevance, suggesting the inclusion of stories that feature Malaysian themes and familiar daily experiences. This aligns with local literacy research showing that culturally meaningful content boosts engagement and comprehension among primary ESL learners (Chew & Wong, 2017). Teachers also called for clearer progress indicators to help track pupils' pronunciation and reading development. Similar recommendations have been identified in recent AI literacy research, which emphasises the value of transparent, actionable feedback for informing instructional decisions (Taylor et al., 2023).

Together, these findings indicate that while Google Read-Along is generally useful, its impact could be strengthened through greater adaptability, cultural localisation, and enhanced feedback features tailored to Malaysian classroom needs.

CONCLUSION

This mixed-methods study examined how ESL learners and teachers in Malaysian suburban primary schools perceive the use of Google Read-Along for developing reading fluency. Pupils reported that the app was useful, easy to use, highly engaging, and motivating, while also experiencing increased reading confidence and reduced anxiety. Teachers' perspectives supported these findings, as they viewed the app as pedagogically suitable and effective as a supplementary tool within CEFR-aligned literacy practices. However, teachers also emphasized

that engagement alone was inadequate; purposeful instructional planning and scaffolding were necessary to ensure that engagement translated into meaningful learning rather than superficial clicking.

Several challenges affected implementation, including limited access to devices, unreliable internet connectivity, accent-recognition issues, and time constraints within CEFR-driven timetables. Additionally, varied parental perceptions influenced home usage. These limitations underscore the need for improved technological infrastructure, stronger institutional support, and clearer communication with parents regarding educational technology.

Overall, the study suggests that Google Read-Along can markedly enhance fluency, motivation, and learner engagement when integrated into scaffolded, teacher-supported instruction. Schools and policymakers should consider investing in digital literacy training, classroom resources, and teacher professional development to facilitate effective implementation. Future research should examine long-term engagement sustainability, usage patterns across diverse learner profiles, and how engagement interacts with fluency development over time.

REFERENCES

1. Abimanto, D., & Sumarsono, W. (2024). Improving English pronunciation with AI speech-recognition technology. Acitya: Journal of Teaching and Education, 6(1), 146–156. https://doi.org/10.30650/ajte.v6i1.3810
2. Alamer, A. (2021). The role of mixed methods in language learning motivation: Combining close-ended scales and open-ended responses. System, 97, 102431. https://doi.org/10.1016/j.system.2020.102431
3. Alazemi, L. (2024). Formative assessment in artificial-intelligence-integrated instruction: Effects on reading comprehension, enjoyment, and mindfulness. Language Testing in Asia, 14(1), 1–15. https://doi.org/10.1186/s40468-024-00232-y
4. Anggraini, K., & Darmayunata, Y. (2022). Speech recognition for English sentences with Malay accent. Digital Zone, 13(2), 82–89. https://doi.org/10.31849/digitalzone.v13i2.10759
5. Azahar, S. (2023, October 12). New digital education policy must be inclusive. ISIS Malaysia. https://www.isis.org.my/2023/10/12/new-digital-education-policy-must-be-inclusive/
6. Bandura, A. (1997). Self-efficacy: The exercise of control. W. H. Freeman.
7. Bruner, J. (1986). Actual minds, possible worlds. Harvard University Press.
8. Chua, Y. P., & Sulaiman, T. (2021). Exploring the reading comprehension difficulties of Year 4 ESL pupils in Malaysia. International Journal of Academic Research in Progressive Education and Development, 10(2), 14–29. https://doi.org/10.6007/IJARPED/v10-i2/10123
9. Creswell, J. W., & Plano Clark, V. L. (2018). Designing and conducting mixed methods research (3rd ed.). SAGE Publications.
10. Creswell, J. W., & Poth, C. N. (2018). Qualitative inquiry and research design: Choosing among five approaches (4th ed.). Thousand Oaks, CA: Sage Publications.
11. Crompton, H., & Burke, D. (2023). Artificial intelligence in education: A systematic literature review of AI applications in language learning. British Journal of Educational Technology, 54(6), 1432–1451. https://doi.org/10.1111/bjet.13335
12. Dhaliwal, P. K., & Hashim, H. (2025). Perceptions and challenges of ESL teaching in Malaysian primary schools during COVID-19: A qualitative exploration. International Journal of Research and Innovation in Social Science, 9(3), 689–705. https://doi.org/10.47772/IJRISS.2025.903SEDU0043
13. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319–340. https://doi.org/10.2307/249008
14. Dja'far, M. H., & Hamidah, S. (2024). The effectiveness of Google Read-Along in improving EFL learners' oral reading fluency. Journal of English Education and Teaching, 8(1), 55–70. https://doi.org/10.33369/jeet.8.1.55-70
15. Dörnyei, Z. (2007). Research methods in applied linguistics. Oxford University Press.
16. Elmaadaway, M. A. N., El-Naggar, M. E., & Abouhashesh, M. R. I. (2025). Improving primary school students' oral reading fluency through voice chatbot-based AI. Journal of Computer Assisted Learning, 41(2), e70019. https://doi.org/10.1111/jcal.70019

17. Ertmer, P. A., & Ottenbreit-Leftwich, A. T. (2010). Teacher technology change: How knowledge, confidence, beliefs, and culture intersect. Journal of Research on Technology in Education, 42(3), 255–284. https://doi.org/10.1080/15391523.2010.10782551
18. Fetters, M. D., & Freshwater, D. (2015). The 1 + 1 = 3 integration challenge. Journal of Mixed Methods Research, 9(2), 115–117. https://doi.org/10.1177/1558689815581222
19. García, O., & Wei, L. (2014). Translanguaging: Language, bilingualism and education. Palgrave Macmillan.
20. George, D., & Mallery, P. (2019). IBM SPSS Statistics 26 step by step: A simple guide and reference (16th ed.). New York, NY: Routledge. https://doi.org/10.4324/9780429056765
21. Google. (2020). Read Along by Google (formerly Bolo). https://readalong.google
22. Google. (2022, August 9). Help kids learn to read with Read Along, now available on the web. Google Keyword Blog. https://blog.google/products/education/read-along-web
23. He, X. (2024). Enhancing reading comprehension with AI-generated adaptive texts. International Journal of New Developments in Education, 6(7), 46–52. https://doi.org/10.25236/IJNDE.2024.060708
24. Hidayat, A. (2024). The role of adaptive learning platforms in enhancing reading comprehension: A study of ReadTheory in Indonesian secondary schools. Indonesian Journal of English Language Teaching, 19(1), 89–105. https://doi.org/10.25170/ijelt.v19i1.1675
25. Horwitz, E. K., Horwitz, M. B., & Cope, J. (1986). Foreign language classroom anxiety. The Modern Language Journal, 70(2), 125–132. https://doi.org/10.1111/j.1540-4781.1986.tb05256.x
26. Ismail, R. A. (2025). Bridging the digital divide in Malaysian education. Penang Institute.
27. Koehler, M. J., & Mishra, P. (2009). What is technological pedagogical content knowledge (TPACK)? Contemporary Issues in Technology and Teacher Education, 9(1), 60–70.
28. Lantolf, J. P., & Thorne, S. L. (2006). Sociocultural theory and the genesis of second language development. Oxford University Press.
29. Muniandy, V. A. P., & Kamsin, I. F. (2024). Readiness and challenges in implementing digital learning. International Journal of Academic Research in Business and Social Sciences, 14(11), 1–16. https://doi.org/10.6007/IJARBSS/v14-i11/23668
30. Ngo, T. T. N., & Chen, H. H.-J. (2025). The impact of ASR-based reading tutor on young EFL learners' oral skills: A case study of Google Read Along. Computer Assisted Language Learning. Advance online publication. https://doi.org/10.1080/09588221.2025.2528784
31. Ramasamy, J. V., Yunus, M. M., & Ismail, H. H. (2025). Effectiveness of Google Read-Along application in improving reading skills of rural area upper primary ESL classroom. International Journal of Academic Research in Progressive Education and Development, 14(2), 2188–2212. https://doi.org/10.6007/IJARPED/v14-i2/19997
32. Rasinski, T. V., Homan, S., & Biggs, M. (2016). Teaching reading fluency to struggling readers: Method, materials, and evidence. Reading & Writing Quarterly, 33(6), 1–16. https://doi.org/10.1080/10573569.2015.1072062
33. Rodríguez-Fuentes, R. A., Ferrer Ariza, E., & Linero, J. (2024). Digital reading-aloud protocols and their effects on EFL fluency. System, 117, 102973. https://doi.org/10.1016/j.system.2023.102973
34. Saito, Y., Garza, T. J., & Horwitz, E. K. (1999). Foreign language reading anxiety. The Modern Language Journal, 83(2), 202–218. https://doi.org/10.1111/0026-7902.00016
35. Schunk, D. H. (2003). Self-efficacy for reading and writing: Influence of modeling, goal setting, and self-evaluation. Reading & Writing Quarterly, 19(2), 159–172. https://doi.org/10.1080/10573560308219
36. Sun, P., Teng, F., & Yang, Y. (2023). Artificial intelligence in English language education: A systematic review of current trends and future directions. Education and Information Technologies, 28(5), 5927–5954. https://doi.org/10.1007/s10639-023-11628-1
37. Taylor, P., Argasvipart, K., Kanokpermpoon, M., Rattanawisadrat, N., & Hrylytskyy, A. (2023). Stakeholders' perceptions related to technology acceptance of Reading Progress in Microsoft Teams (Thailand). LEARN Journal: Language Education and Acquisition Research Network, 16(2), 365–392.
38. Teo, T. (2019). Students and teachers' intention to use technology: Assessing their measurement equivalence and structural invariance. Journal of Educational Computing Research, 57(8), 2019–2041. https://doi.org/10.1177/0735633118816658
39. Tessensohn, T. C., Yunus, M. M., & Ismail, H. H. (2025). Using AI-powered tools in enhancing reading skills in the ESL classroom: A systematic review. International Journal of Academic Research in

Progressive Education and Development, 14(2), 402–418. https://doi.org/10.6007/IJARPED/v14-i2/19957

40. Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Harvard University Press.
41. Wigfield, A., & Guthrie, J. T. (1997). Relations of children's motivation for reading to the amount and breadth of their reading. Journal of Educational Psychology, 89(3), 420–432. https://doi.org/10.1037/0022-0663.89.3.420
42. Wilang, J. D., Seepho, S., & Kitjaroonchai, N. (2025). Exploring the relationship of reading fluency and accuracy in L2 learning: Insights from a reading assistant software. Education Sciences, 15(1), 39. https://doi.org/10.3390/educsci15010039
43. Wiyaka, Silitonga, L. M., Sunardi, S., & Pramudi, Y. T. C. (2024). From nervous to fluent: The impact of AI chatbot-assisted assessment on English reading anxiety and performance in Indonesia. Theory and Practice in Language Studies, 14(12), 3851–3860. https://doi.org/10.17507/tpls.1412.20
44. Yunus, M. M., Ang, W. S., & Hashim, H. (2021). Factors affecting teaching English as a second language (TESL) postgraduate students' behavioral intention for online learning during the COVID-19 pandemic. Sustainability, 13(6), 3524. https://doi.org/10.3390/su13063524
45. Yunus, M. M., Salehi, H., & Amini, M. (2019). Impact of using drama techniques in teaching English among Year 4 pupils. Creative Education, 10(12), 2564–2575. https://doi.org/10.4236/ce.2019.1012187
46. Zhou, Y., Ma, Z., & Guo, X. (2022). A meta-analysis of the effects of foreign language reading anxiety on reading performance. System, 108, 102844. https://doi.org/10.1016/j.system.2022.102844
47. Zhu, M., & Wang, C. (2025). A systematic review of research on AI in language education: Current status and future implications. Language Learning & Technology, 29(1), 1–29. https://hdl.handle.net/10125/73606
48. Zimmerman, B. J. (2000). Attaining self-regulation: A social cognitive perspective. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), Handbook of self-regulation (pp. 13–39). Academic Press. https://doi.org/10.1016/B978-012109890-2/50031