International Journal of Research in English Education

Online ISSN: 2538-3027

Homepage: https://ijreeonline.com

Pedagogical Utility of Audio Assisted Reading in Improving EFL Learners' Reading Fluency and Comprehension

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Article Info

Article type:
Research Article

Article history:
Received: July 1, 2025
Revision: December 6, 2025
Accepted: December 21, 2025
Available online: December 30, 2025

***Keywords*:**
Audio Assisted Reading,
AAR,
Repeated Reading,
Reading Comprehension,
Reading Fluency

ABSTRACT

Objective: There has been an increasing interest in exploring various methods to enhance the reading fluency and comprehension of EFL/ESL learners, both of which play a crucial role in successful reading. However, this area of research has not received sufficient attention within the Iranian context. Consequently, the present study aimed to investigate the effects of Audio-Assisted Reading (AAR) on the reading fluency and comprehension of Iranian high school students.

Methods: To this end, adopting convenience sampling, a total of 61 female students were selected and assigned to experimental and control groups. AAR technique was presented to the experimental group whereby the reading passages were taught alongside their audio versions. Each passage was read five times and the students' reading rate was observed based on the number of words articulated per minute.

Results: The initial and final readings were followed by comprehension check questions. By contrast, the control group followed a traditional reading approach, which required students to read and translate the targeted passages into their L1. The findings revealed that AAR positively affected the students' reading fluency, while no significant difference was found among the targeted groups in terms of comprehension.

Conclusion: Notably, the results of the study may provide both EFL/ESL learners and teachers with insightful and promising pedagogical guidelines for meeting the objectives of reading comprehension classrooms.

Cite this article: Biria, Y., Mohammad-Salehi, B., & Biria, R. (2025). Pedagogical utility of audio assisted reading in improving EFL learners' reading fluency and comprehension. ***International Journal of Research in English Education***, *10*(4), 35-53.

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Publisher: Science Academy Publications.

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1. Introduction

According to Pardo (2004), one of the basic requirements of any teaching program is the ability to comprehend course texts. Barnett (1989) asserts that reading involves a complex cognitive process that requires simultaneous bottom-up and top-down processing. This process serves as a significant means of exposing learners to L2 input and experience, especially in contexts where the L2 is less widely used. Consequently, obtaining sufficient L2 input and language practice poses a constant challenge for second language learners (Yang, 2007). Although achieving mastery in reading to become a fluent reader is a demanding task, implementing effective activities to enhance learners' reading fluency is an essential component of L2 instruction.

Reading fluency refers to "ability [of a learner] to read rapidly with ease and accuracy, and to read with appropriate expression and phrasing when asked to read orally" (Grabe, 2009, p. 291). Fluent readers demonstrate both speed and accuracy in their word recognition skills, as well as in higher-order comprehension processes (Gorsuch & Taguchi, 2008). Numerous L2 researchers regard reading fluency to be a critical competency for L2 learners, asserting that reading is one of the most effective means for these learners to acquire the necessary linguistic input (Gorsuch et al., 2015). They concur that an insufficient amount of reading input leads to poor text processing among L2 learners (Nation, 2014).

Reading fluency is a critical criterion for distinguishing between proficient and struggling readers. Furthermore, it serves as a predictive tool for assessing learners' potential success or failure in comprehending the intended texts (Stanovich, 2013). Fluent readers can grasp the meaning of a text in a smooth and efficient manner at an appropriate pace. Unfortunately, fluency practice often does not receive the attention it warrants in most educational courses, which may adversely affect learners' efforts to acquire new material. Consequently, oral reading fluency (ORF), one of the key measures used to evaluate reading skills, is defined as "the ability to read a text quickly, accurately, and with proper expression" (National Reading Panel, 2000, p. 3).

ORF comprises three components: accuracy, rate, and expression. Among these, accuracy and rate have been the primary focus of most studies. These two elements are commonly combined into a single measure known as Words Correct Per Minute (WCPM), which is used to evaluate individuals' reading abilities. Therefore, the present study primarily aims to focus on reading rates as an indicator of reading fluency.

Research indicates that a variety of factors can influence reading fluency. First, the difficulty level of vocabulary and grammar, as well as familiarity with the topic and genre, may lead to variations in reading fluency (Kuhn et al., 2010). Second, differences between L1 and L2 orthography can also play a role. Finally, lower proficiency in automatic word processing and recognition is another contributing factor (Akamatsu, 1999). Many scholars consider automatic word recognition to be a crucial component of fluent and effortless reading among L2 learners, with its absence identified as a significant cause of reading difficulties. This skill can be improved through exposure to extensive reading materials (Day & Bamford, 1998; Grabe & Stoller, 2019).

Many scholars have investigated effective methods and strategies to enhance L2 learners' reading fluency, encompassing all its components (Rasinski, 2012). As noted by Logan (1997), these strategies primarily emphasize the importance of automatic word recognition for reading

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effortlessly and smoothly. Several researchers (e.g., Beglar & Hunt, 2014; Nation, 2008; Segalowitz, 2003) assert that it is essential to expose learners to substantial amounts of reading to develop their automatic word recognition skills and overall reading fluency.

The primary objective of reading a text is comprehension (Protopsaltis & Bouki, 2005). In their study, Anderson and Pearson (2016) relied on schema theory and defined comprehension as the interaction between new information and existing knowledge, or schemata. In another study, Woolley and Woolley (2011) offered a similar perspective, describing reading comprehension as a process of inferring and deriving meaning from a text. According to Gestalt psychology, the meaning-making process involves an overall understanding of a text rather than a mere focus on isolated words. Furthermore, comprehension is a cognitive process influenced by a combination of cognitive skills, each of which may enhance or hinder it (Cain & Oakhill, 2007).

Adopting a componential view, Perfetti et al. (2005) asserted that reading comprehension depends on a variety of linguistic and cognitive abilities. LaBerge and Samuels (1974) noted that students who are capable of automatic word recognition can allocate much of their cognitive resources to higher-order activities involved in reading, such as comprehension. In fact, even minor impediments in the word recognition process may divert readers' attention from the intended meaning of the text, to the extent that understanding may require rereading, which consequently decreases the reading rate.

One of the most commonly used approaches to promoting the provision of substantial quantities of reading materials for L2 learners to develop reading-related skills is extensive reading (ER). In this approach, a wide range of carefully graded reading materials, suitable for learners' proficiency levels, is provided to the students (Bamford & Day, 1998). As they rightly point out, reading large quantities of diverse materials, particularly at the same level, offers learners opportunities to repeatedly encounter similar words, phrases, and grammatical structures. Consequently, this exposure allows them to implicitly acquire L2 vocabulary and grammar while improving their word recognition abilities. However, extensive reading is not without its limitations, as it does not adequately address learners' comprehension (Bell, 2001; Day & Bamford, 1998).

Repeated reading (RR) was introduced by Samuels (1979) as an alternative approach to extensive reading (ER). Unlike ER, RR involves learners reading the same text multiple times to learn its vocabulary and grammatical structures. This method was initially developed for beginner L1 readers. As Samuels (1979) acknowledged, it is not a comprehensive method and should be considered supplementary. According to Kuhn and Stahl (2003), RR has been shown to be effective in enhancing fluency among beginner L1 readers; however, it did not receive significant attention in L2 pedagogy (Taguchi et al., 2006) until more empirical research on L2, including studies by Grabe (1991), Taguchi (1997), Taguchi and Gorsuch (2002), and Taguchi et al. (2004), demonstrated its effectiveness in improving reading fluency and comprehension among L2 learners.

It has been suggested that RR can be employed in either non-assisted or assisted forms. Non-assisted RR requires learners to read texts repeatedly, either aloud or silently. In contrast, assisted RR involves the instructor enhancing learners' reading abilities by providing various forms of scaffolding, such as repetition and multimedia resources. This approach assists learners with new vocabulary and grammatical structures (Chen, 2021; Nushi & Jahanbin, 2024) and offers additional information to improve comprehension (Taguchi et al., 2016).

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Audio-assisted reading (AAR)—a method in which learners read along with a recording—has been proposed as a beneficial instructional technique because it combines auditory and visual input to reinforce word recognition, pacing, and intonation (Chang & Millet, 2015). However, despite its potential advantages, the extent to which AAR improves reading fluency and comprehension among EFL learners remains under-researched. Furthermore, there is a lack of consensus on the most effective implementation methods (e.g., synchronous vs. asynchronous reading, repeated vs. single exposure) and whether its benefits vary across different proficiency levels (Webb & Chang, 2015). This study aims to investigate the pedagogical utility of AAR in enhancing EFL learners' reading fluency and comprehension, thereby addressing gaps in current research and instructional practices.

Despite the growing body of research emphasizing the importance of reading fluency and comprehension in EFL/ESL instruction, there remains a noticeable lack of empirical studies examining effective instructional approaches for developing these skills within the Iranian educational context, particularly at the high school level. Although Audio-Assisted Reading (AAR) has been suggested as a promising technique for enhancing reading performance, its impact on Iranian EFL learners' reading fluency and comprehension has not been sufficiently investigated (Khalili et al., 2021). Moreover, existing studies have yielded mixed findings regarding whether improvements in reading fluency necessarily translate into gains in reading comprehension (Taguchi et al., 2016; Tusmagambet, 2020). This gap in context-specific and outcome-focused research highlights the need for systematic investigation into the pedagogical value of AAR.

Therefore, the present study addresses this problem by examining the effects of AAR on the reading fluency and comprehension of Iranian high school EFL learners, with the aim of providing empirical evidence to inform instructional practices in reading classrooms. The findings will contribute to evidence-based strategies for EFL reading instruction and inform best practices for integrating AAR into language curricula.

2. Review of Literature

According to previous studies, the theoretical background of reading fluency primarily has its roots in automaticity theory (Segalowitz & Hulstijn, 2023). Automaticity theory points out that individuals' attention in working memory is limited; therefore, it should be managed in a way that higher order activities such as comprehension receive the maximum, while lower order ones such as letter/word recognition receive the minimum amount of attention (LaBerge & Samuels, 1974). It has been viewed as ranging on a continuum from less automatic stage, which requires considerable attention, to full automatic stage, which requires scant or no attention (Kuhn et al., 2010).

Automaticity theory proposes two steps in reading activities: first, word recognition; second, comprehension (Samuels, 1994). Non-fluent readers constantly switch between these steps, and as a result, their reading would be laborious and of low rate. Research has confirmed a link between non-fluent reading and comprehension problems (Rasinski et al., 2005). Learners' inability to read fluently makes them pay much of their attention to processing the texts at the level of words and consequently prevents them from grasping the meaning. On the other hand, fluent readers need minimum attention for word recognition step and consequently not only their reading rate increases but also, they can devote much of their attention to comprehension.

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Factors thought to be constituting automaticity are speed, effortlessness, autonomy, and lack of conscious awareness (Logan, 1997). Automaticity involves performing reading tasks at a reasonable rate without many pauses; effortless, non-struggling word recognition, autonomous initiation and completion of the task, and unconscious awareness of the words encountered.
Findings of many studies revealed that learners' reading comprehension abilities are highly influenced by their automatic word recognition skills (May, 1998; Rasinski et al., 2011; Stanovich, 1993). Therefore, students with poor abilities in automatic word recognition not only would find reading laborious, but also would fail to comprehend the texts, and as a consequence are highly probable of turning out demotivated to read (Levine, 2006).

Samuels' (1979) original RR method was an attempt to improve reading fluency among native English-speaking children who were required to repeatedly read a number of short passages of the same level of difficulty. They continued rereading the same text until they could correctly read aloud 100 words per minute (WPM). In the initial practices, they needed to read several times to achieve the specified criterion; however, as they progressed, they needed less re-readings and their reading errors were reduced remarkably even when they read more difficult texts. Therefore, it was concluded that reading fluency gained as the result of RR transfers to unpracticed texts.

Although the original method of RR proposed by Samuels' (1979) was non-assisted RR, some other researchers such as (Chomsky, 1976) and (Carbo, 1978; Carbo, 1981) implemented assisted RR through utilizing audio reading models. Similarly, in recent years several studies, such as (Clinton-Lisell, 2023) and (Taguchi et al., 2021) have focused on assisted RR on the grounds that L2 learners' limited access to spoken form of the target language plays a role in their reading problems and providing an audio model would result in improving reading fluency among them.
Research on RR has been pervasive in L1 and previous research has also dealt with the issue in L2 in EFL contexts. In some early studies, Taguchi, Gorsuch, and other researchers employed silent reading as part of RR intervention with university students. In the majority of their investigations, a recorded model of reading was employed (Taguchi, 1997; Taguchi & Gorsuch, 2002; Taguchi et al., 2004). Conversely, the study conducted by Gorsuch and Taguchi (2008) involving Vietnamese university students utilized a live reading-aloud intervention via an audio model. The results indicated that the participants demonstrated a consistent increase in their silent reading rates with only minor variations observed. Additionally, the students' comprehension also showed improvement (Gorsuch & Taguchi, 2008; Taguchi, 1997; Taguchi & Gorsuch, 2002; Taguchi et al., 2021; Taguchi et al., 2012).

Chang and Millett (2013) explored the effects of timed RR on improving reading fluency among 26 Taiwanese college students. The findings revealed RR led to considerable improvements in both their reading fluency and comprehension. To further investigate the effects of RR on L2 learners, (Gorsuch et al., 2015) examined 14 American students learning Japanese. They reported that RR was significantly influential in enhancing both reading rate and comprehension among the learners. In a mixed-methods study, Tusmagambet (2020) investigated the impact of an audio program on the development of reading fluency, comprehension, and motivation to read among 28 ninth-grade Kazakhstani EFL learners in the K-11 system. The findings indicated that the experimental group exhibited greater reading fluency compared to the control group, while maintaining substantial comprehension of the texts. Qualitative analysis of interview data revealed a positive impact of audiobooks on students' perceptions of their use and reading comprehension. In another similar study in the Indonesian EFL context, Pratiwi et al. (2022) aimed to explore the use of audiobooks

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to enhance English language proficiency, specifically in reading fluency during emergency remote teaching. The findings indicated that audiobooks had a positive impact on students' reading fluency.

In a quasi-experimental study, Al Mahmud (2022) assessed the efficacy of utilizing audio-visual aids in enhancing reading fluency and comprehension among 104 Saudi Arabian EFL students. Data were gathered from students' performance in comprehension and fluency tests of reading, measured in WPM. The results of statistical analysis of the four control and experimental groups revealed that the experimental groups exhibited superior performance in reading comprehension and fluency. Furthermore, the study explored potential discrepancies between male and female students in terms of reading fluency and comprehension, finding no significant differences between the two. These favorable findings indicated that the integration of audio-video materials could effectively support the development of reading skills among English language students, suggesting their potential as supplementary resources alongside traditional textbooks.

In a recent systematic review and meta-analysis, Clinton-Lisell (2023) aimed at synthesizing extant research on the practice of reading while listening in order to ascertain its efficacy for specific populations and in particular circumstances. This study included 30 eligible studies with 62 effect sizes. Utilizing robust variance analysis, a marginal overall advantage of reading while listening over solitary reading in terms of comprehension was identified. Through meta-regression, it was observed that this advantage was predominantly evident in studies where the reading pace was controlled by the experimenter. Conversely, no significant effects of reading while listening were discerned when reading was self-paced. It is suggested that struggling L2 readers' overall comprehension may potentially benefit from audio-assisted reading, although the current body of research is insufficient to draw definitive conclusions on these assertions.

Lhamo and Sakulwongs (2023) sought to evaluate the reading comprehension abilities of fifth-graders in the Bhutanese EFL context by comparing their performance before and after the implementation of an audio-assisted reading strategy. The intervention included lesson plans, while data collection involved reading comprehension tests and semi-structured interviews. The findings indicated that the mean post-test score surpassed the mean pre-test score. Interview data revealed that participants were motivated and satisfied with the use of audio-assisted reading strategy. The study recommends integrating this strategy as an effective approach to enhancing students' reading comprehension skills.

Taguchi et al. (2021) focused on 27 US college students learning Japanese divided into three ability levels ranging from mid-beginner to pre-intermediate. The study aimed to investigate the impact of a modest semester-long RR program on the development of the students' fluency, as well as to assess the students' perceptions of the method through a questionnaire. The findings indicated that the use of audio-supported RR had positive effects on the students' reading rate growth, while maintaining good comprehension. The study also revealed a significant improvement in reading rates as students re-read the same passage, and one of the groups demonstrated a notable increase in reading speed when presented with new, unpractised passages, indicating a transfer of the practice effect. Furthermore, the questionnaire responses indicated that students perceived beneficial effects from the RR program.

A significant amount of previous research on RR has been conducted in L1 contexts, while limited attention has been given to this method in L2 settings, particularly in EFL contexts. However, researchers have recently demonstrated an increased interest in examining the

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effectiveness of RR on the EFL/ESL learners' reading development. Current literature indicates that numerous studies have investigated the effects of AAR on EFL learners' reading fluency and comprehension. Nevertheless, to the best of the authors' knowledge, no reports have been found that utilize this type of scaffolding in the Iranian EFL context. Consequently, the following research questions were addressed in this study:

RQ1. Does AAR technique have any significant effect on developing intermediate Iranian EFL learners' reading fluency?
RQ2. Does AAR technique have any significant effect on developing intermediate Iranian EFL learners' reading comprehension?

3. Method

3.1 Design of the Study

This study employed a quasi-experimental pre-test–post-test control group design to examine the effects of Audio-Assisted Reading (AAR) on Iranian EFL learners' reading fluency and comprehension (Mackey & Gass, 2016). AAR served as the independent variable and reading fluency and comprehension as the two dependent variables. Two intact high school classes were selected via convenience sampling and assigned to an experimental group and a control group. Both groups completed pre-tests and post-tests measuring reading fluency and comprehension both before and after the intervention. This design allowed for the comparison of within-group changes over time as well as between-group differences, thereby enabling a systematic evaluation of the effectiveness of AAR on the targeted reading outcomes.

3.2 Participants

The participants in the current study consisted of 61 female students who were randomly selected from a population pool of 100 at a high school in Isfahan. They attended a 75-minute English class once a week as part of their curriculum. The participants were homogeneous in several aspects: their first language was Persian, they were all 17 years old, and they had similar socio-economic backgrounds. Additionally, as their language learning experience was limited to the school curriculum, categorizing them as intermediate-level learners. Consequently, the participants were divided into two intact classes, with 31 students in one class and 30 in the other. The former served as the experimental group and received the ARR treatment, while the latter functioned as the control group, which was taught using traditional reading techniques, including translation. In keeping with ethical guidelines, an informed oral consent was obtained from each participant and their parents were notified of their participation in the study.

3.3 Materials

The materials for the RR treatment were sourced from the English set text currently used in Iranian high schools. This textbook was accompanied by an audio file featuring the reading sections narrated by language experts. Although the materials were selected from the set book, the readability of the passages was assessed using McAlpine's EFLAW® readability scale (2004) to

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ensure their appropriateness for the learners. The readability scores ranged from 26 to 29, indicating that the texts were somewhat challenging.

3.4 Instruments

In the first week of the experiment, both the experimental and control groups were assessed using a pre-test. The initial reading section of the set book (*Why exercise is important),* was used as the pre-test (see Appendix A). This text comprised eight paragraphs totaling 631 words; however, due to time constraints, only the first three paragraphs, which contained 236 words, were assigned. Participants in both groups read the paragraphs once, timed themselves, and answered five comprehension questions. To evaluate the impact of the treatment on students' reading fluency and comprehension, the same paragraphs and procedures were utilized as the post-test in the tenth week. To assess the effectiveness of the treatment directly, the same text and comprehension questions were used in both the pre- and post-tests. Reading fluency was measured in words per minute (WPM) using the formula: total words divided by total seconds, multiplied by 60. Additionally, reading comprehension was evaluated based on the total number of correct responses, with one point awarded for each accurate answer.

3.5 Data Collection Procedure

At the outset of the experiment, students were introduced to the course. This experiment was conducted over a period of 10 weeks, from early October to mid-December. Participants were required to read one passage during each session, resulting in 10 passages. Approximately one-third of each regularly scheduled English class was dedicated to the project. Participants were encouraged to read quickly without compromising their comprehension. The experimental group in this study adhered to the established procedure for ten treatment sessions.

Regarding reading fluency, participants silently read a passage consisting of three paragraphs, totaling approximately 236 words, while timing themselves using their cellphones. They then recorded their reading times on a chart prepared by the teacher (see Appendix B). Subsequently, they silently read the text for a second and third time while listening to an audio recording. For the fourth reading, students again read the text silently. Finally, they read the passage aloud for the fifth time, during which their voices were recorded by the teacher. The same instructor taught both the experimental and control groups. However, the instructor used a traditional method for teaching reading, which involved the teacher reading and translating the texts.

As for reading comprehension, five comprehension check questions were administered to the participants after the first and fifth readings. The items were selected from the textbook and included a variety of assessment techniques, such as multiple-choice, gap-fill, and true-false items in three different categories. The questions were piloted with students from similar classes and grade levels. After pilot testing, the items were examined for the internal consistency based on Cronbach's alpha, and it was indicated that the test enjoyed a satisfactory reliability index (α = 0.86). The time allocated for answering the comprehension questions was fifteen minutes. The comprehension questions were identical for both the experimental and control groups.

3.6 Data Analysis

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To analyze the data, both descriptive and inferential statistics were employed. Descriptive statistics included the calculation of means and standard deviations (SDs). Inferential analyses involved both parametric and non-parametric statistical procedures, including repeated measures ANOVA, the Mann–Whitney U test, and the Wilcoxon signed-ranks test.

Prior to conducting the inferential analyses, the assumptions underlying parametric tests were examined. Data normality and homogeneity of variances were assessed using the Kolmogorov–Smirnov test and Levene's test, respectively. The results indicated that scores for reading fluency, one of the dependent variables, were normally distributed; therefore, parametric statistical procedures were deemed appropriate. Because both within-group and between-group differences over time were of interest, a repeated measures ANOVA was used to analyze reading fluency outcomes.

In contrast, the reading comprehension scores were found to deviate from a normal distribution. Consequently, non-parametric statistical methods were employed to analyze reading comprehension data, with the Mann–Whitney U test used for between-group comparisons and the Wilcoxon signed-ranks test used for within-group comparisons.

4. Findings

Before comparing the performance of the control and experimental groups, it is essential to first confirm that the basic assumptions required for parametric tests are met. Pallant (2020) explains that parametric tests come with several key assumptions: the data should be normally distributed, the variances across groups need to be similar, and the variables and measurements must be independent and measured at the interval level. As shown in Table 1, the Kolmogorov–Smirnov test indicated that reading fluency scores were normally distributed at both pre-test and post-test ($p > .05$), whereas reading comprehension scores violated the normality assumption ($p < .05$).

Table 1. Kolmogorov–Smirnov test of normality for reading fluency and comprehension scores (N = 61)

Variable	KS Stat	P
RF pre-test	.089	.200
RF post-test	.089	.146
RC pre-test	.161	.015
RC post-test	.170	.010

Note. p values are based on the Kolmogorov–Smirnov test with Lilliefors correction. The significance level was set at $\alpha = .05$.

Based on Table 2, Levene's test showed that the assumption of homogeneity of variances was met for all measures except the reading fluency post-test ($p < .05$).

Table 2. Levene's test for homogeneity of variances between control and experimental groups

Variable	Levene Stat	P
RF pre-test	0.42	.520
RF post-test	4.36	.041
RC pre-test	0.88	.352

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RC post-test	1.02	.316

Note. A significance level of α = .05 was applied.

To address the first research question, the means and SDs of learners' reading fluency, measured in words per minute (WPM), were calculated. As shown in Table 3, the reading fluency scores for both the experimental group (EG) and the control group (CG) were approximately the same prior to the intervention (EG = 41.23, CG = 40.77). The results of the post-test indicated progress in reading fluency for both groups; however, the improvement in the EG was more pronounced. To determine whether these improvements were statistically significant, a repeated measures ANOVA was conducted.

Table 3. Means and SDs of learners' reading fluency measured by WPM

	CG (N=30)		EG (N=31)		p-value‡		
	Mean	SD	Mean	SD	group	Time	Interaction
Pre-test	40.77	6.02	41.23	5.86	.002	<.001	<.001
Post-test	51.40	6.55	61.68	8.80			

‡: p-value from ANOVA repeated measure

As indicated in Table 4, EG and CG exhibited significantly different changes over time, with a notable difference in the reading fluency gains of the two groups ($p < .05$). Additionally, a significant interaction effect ($p < .05$) between the two groups was observed. Based on these findings, it can be concluded that the reading fluency of EG learners improved significantly. To further investigate this significant difference, a Bonferroni post hoc test was performed. The results revealed no significant difference between the means of the two groups in the reading fluency pre-test ($p > .05$). However, the means of the post-test showed a significant difference in the gains of the EG following the treatment ($p < .001$) (see Table 4).

Table 4. Comparing the Means and SDs of learners' reading fluency in pre- and post-tests

Time	Group (I)	Group (J)	Mean Difference (J-I)	Std. Error	p-value
Pre-test	CG	EG	.45	1.52	.76
Post-test	CG	EG	10.27	1.99	< .001

One notable finding from the data was the significant improvement in reading fluency observed in both the CG and the EG ($p < .001$). Table 5 provides a detailed comparison of both within-group and between-group results to further highlight the differences between the two groups. As shown in Table 3, the mean difference in the EG (J-I = 20.45) was considerably greater than that in the CG (J-I = 10.63). Therefore, it can be concluded that the EG outperformed the CG in reading fluency on the post-test.

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Table 5. Comparison of reading fluency in EG and CG (within- and between-groups)

Group	Time (I)	Time (J)	Mean Difference (J-I)	Std. Error	p-value	
					Within-group	Between-group
CG	Pre-test	Post-test	10.63	.83	< .001	< .001
EG	Pre-test	Post-test	20.45	.81	< .001	

To answer the second research question, the means and SDs of learners' reading comprehension were measured. As mentioned earlier, the results of the reading comprehension tests were not normally distributed; therefore, they were analyzed using non-parametric descriptive measures (See Table 6).

Table 6. Descriptive analysis of reading comprehension pre- and post-tests in CG and EG

	CG		EG	
	Mean	SD	Mean	SD
Pre-test	4.10	.76	4.26	.82
Post-test	4.50	.63	4.81	.40

As presented in Table 7, the results obtained from the Mann-Whitney test indicated no significant difference ($p > .05$) in reading comprehension between EG and CG learners prior to the treatment, as evidenced by the pre-test scores. However, a significant difference was observed in the post-test means of the two groups ($p < .05$).

Table 7. Comparing the Means of learners' reading comprehension in pre- and post-tests

Time	Group (I)	Group (J)	Mean Difference (J-I)	Std. Error	p-value‡
Pre-test	CG	EG	.16	.20	.38
Post-test	CG	EG	.31	.13	.03

‡: p-value from Mann-Whitney test

Moreover, as shown in Table 8, the results indicate a significant increase in the means of both CG and EG in the post-test ($p < .05$). However, a comparison of the gains between the two groups revealed no significant difference ($p > .05$).

Table 8. Comparison of reading comprehension in EG and CG (within- and between-groups)

Group	Time (I)	Time (J)	Mean Difference (J-I)	Std. Error	p-value	
					Within group§	Between group‡
CG	Pre-test	Post-test	.40	.67	.005	.46
EG	Pre-test	Post-test	.55	.62	< .001	

§: p-value from Wilcoxon signed ranks test
‡: p-value from Mann-Whitney test

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According to these results, while both CG and EG showed significant changes within their respective groups, no statistically significant difference was observed between them regarding reading comprehension ($p > .05$).

5. Discussion

The present study investigated the pedagogical utility of Audio-Assisted Reading (AAR) in enhancing EFL learners' reading fluency and comprehension. The findings revealed that AAR significantly improved reading fluency but did not produce a statistically significant difference in comprehension across the groups. These results contribute to a growing body of evidence on multimodal reading interventions in EFL contexts and offer important pedagogical implications.

The fluency gains observed in this study are consistent with a vast body of research emphasizing the benefits of AAR and repeated reading. Several studies have shown that when learners read along with audio support, their reading speed and accuracy improve due to increased exposure to correct pronunciation, suprasegmental features, and phrasing (Taguchi, 1997; Taguchi & Gorsuch, 2002; Taguchi et al., 2004; Gorsuch & Taguchi, 2008). The results are also aligned with Taguchi et al. (2021), who found that assisted repeated reading helped learners develop automaticity and confidence in reading. These results emphasize the significance of automaticity theory in enhancing reading rates.

Similarly, Pratiwi et al. (2022) and Tusmagambet (2020) found that audiobooks in AAR contexts positively affected students' fluency and motivation. AAR may reduce cognitive load by providing auditory reinforcement, which allows learners to process text more efficiently. As Meyer et al. (1999) argue, increased reading rate is often associated with better retrieval of information, though not necessarily with deeper understanding.

Despite these gains in fluency, the lack of significant improvement in reading comprehension aligns with previous mixed findings. Clinton-Lisell's (2023) meta-analysis found no consistent advantage of reading-while-listening over reading alone in terms of comprehension, suggesting that audio support may not sufficiently promote deeper cognitive processing such as inference-making, schema activation, or integration of ideas. Similarly, Lhamo and Sakulwongs (2023) found limited effects of AAR on comprehension despite improvements in reading accuracy.

The present findings also echo Chang and Millett (2013), who emphasized that fluency training alone is not a sufficient condition for improving comprehension. Comprehension involves higher-order thinking skills that extend beyond decoding and fluency, such as evaluating, predicting, and synthesizing information. As Gorsuch et al. (2015) observed, although repeated reading enhances speed and some strategies, comprehension gains require more explicit instruction and strategy use. Interestingly, Al Mahmud (2022) noted similar outcomes among Saudi EFL learners: while video- and audio-assisted reading improved fluency, the results for comprehension were inconsistent. This suggests that AAR may be more effective when integrated into a broader instructional framework that includes comprehension-focused activities, such as summary writing, inferencing tasks, or metacognitive strategy training. One possible explanation for these contradictory results in the current context may be the limited number of reading items, which may not have effectively assessed the learners' comprehension.

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Furthermore, studies like Taguchi et al. (2012) highlight the importance of long-term engagement with AAR to support both fluency and comprehension. A short-term intervention may not be sufficient for deeper learning to occur, especially for learners who lack foundational comprehension skills. The current study's results underscore this, suggesting that while fluency can improve relatively quickly through repeated audio-supported exposure, comprehension may require more time and targeted scaffolding.

In summary, this study offers compelling evidence regarding the effectiveness of AAR in enhancing the reading fluency of EFL learners. Although Meyer et al. (1999) noted that the relationship between reading rate and comprehension can be complex, the insignificant difference in reading comprehension improvements between the EG and the CG in this study suggests that learners' focus on rapid reading may negatively affect their comprehension.

6. Conclusion

The present study investigated the effects of Audio-Assisted Reading (AAR) on the reading fluency and comprehension of Iranian high school EFL learners. The findings demonstrated that AAR had a significant positive impact on learners' reading fluency, indicating that repeated exposure to synchronized audio and written texts can enhance reading rate and automaticity. However, the results revealed no statistically significant difference between the experimental and control groups in terms of reading comprehension. These findings suggest that while AAR is effective in supporting lower-level reading processes, its influence on higher-level comprehension skills may be limited when implemented as a single instructional technique.

Overall, the study contributes empirical evidence to the growing literature on technology-assisted reading in EFL contexts, particularly within under-researched educational settings. The results underscore the importance of distinguishing between fluency and comprehension in reading instruction and highlight the need for integrated pedagogical approaches that address both components. By demonstrating the pedagogical utility of AAR for improving reading fluency, this study offers practical insights for EFL teachers seeking to enhance learners' reading performance, while also pointing to directions for future research aimed at strengthening comprehension outcomes. Thus, further research is necessary to evaluate the effectiveness of AAR and the relationship between reading fluency and reading comprehension. Future research could explore hybrid models that combine AAR with explicit instruction in comprehension strategies or examine the longitudinal effects of extended AAR use as well.

6.1 Implications of the Study

The results of this study suggest that Audio-Assisted Reading can be an effective pedagogical tool for improving EFL learners' reading fluency, particularly in contexts where learners have limited exposure to authentic spoken input. However, the lack of a significant impact on reading comprehension indicates that fluency-focused interventions should be complemented with explicit comprehension instruction. The findings contribute to theoretical distinctions between fluency and comprehension and provide context-specific evidence for the use of AAR in EFL classrooms.

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6.2 Limitations of the Study

Despite its contributions, this study has several limitations. First, the use of convenience sampling and intact classes limits the generalizability of the findings beyond the specific context and population examined. Second, the sample consisted solely of female high school students, which restricts the applicability of the results to male learners or mixed-gender settings. Third, the relatively short duration of the intervention may not have been sufficient to produce measurable gains in reading comprehension. In addition, reading comprehension was assessed using a limited set of test items, which may not have fully captured learners' deeper understanding of the texts. Finally, although the study controlled instructional procedures across groups, other uncontrolled variables such as learners' motivation, prior exposure to audio materials, or individual learning differences may have influenced the outcomes.

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Appendix A: Reading

Why Exercise Is Important!

1. You know what exercise is, but do you know why Exercise Is Important? It is important because it keeps people's bodies and minds healthy. Without it, we would not be feeling or looking very good. Actually, there are so many reasons why exercise is good for you. It is time to get right into it and see why it is good to be fit!
2. Your heart is one hardworking part of your body, pumping blood every day of your life. The heart is a muscle, and it is the strongest muscle in your body, but it can always become stronger! Since it cannot lift weights to get stronger, it relies on you to do aerobic exercise.
3. Aerobics is a word for needing oxygen, and aerobic exercise is any kind of activity that makes your muscles use oxygen. Aerobic exercise is repetitive, meaning it is an activity that you do over and over, to keep bringing fresh oxygen to all of your muscles. When you do aerobic exercise and bring in that oxygen, your heart becomes stronger, and even a bit bigger! The number of blood cells in your blood increases, so the blood can carry even more oxygen. The blood in your body even moves more easily through the blood vessels. All these things mean that your body works more efficiently to keep you healthy, and you can do a lot of exercise without getting tired.

Appendix B: Time Chart

Student Name:			
Session	Time 1	Time 2	Average
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

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