



OPEN ACCESS

EDITED BY

Mohammad H. Al-khresheh,
Northern Border University, Saudi Arabia

REVIEWED BY

Mayez Almayez,
University of Hail, Saudi Arabia
Abdullahi Yusuf,
Sokoto State University, Nigeria

*CORRESPONDENCE

Zahra Majdi
✉ z.majdi1994@gmail.com

RECEIVED 07 January 2025

ACCEPTED 23 April 2025

PUBLISHED 21 May 2025

CITATION

Majdi Z, Khalili Sabet M and
Mahdavi-Zafarghandi A (2025) Exploring
the effect of using active learning strategies
on Iranian intermediate female EFL learners
reading comprehension: a mixed methods
study.

Front. Educ. 10:1539722.

doi: 10.3389/feduc.2025.1539722

COPYRIGHT

© 2025 Majdi, Khalili Sabet and
Mahdavi-Zafarghandi. This is an open-access
article distributed under the terms of the
[Creative Commons Attribution License
\(CC BY\)](https://creativecommons.org/licenses/by/4.0/). The use, distribution or reproduction
in other forums is permitted, provided the
original author(s) and the copyright owner(s)
are credited and that the original publication
in this journal is cited, in accordance with
accepted academic practice. No use,
distribution or reproduction is permitted
which does not comply with these terms.

Exploring the effect of using active learning strategies on Iranian intermediate female EFL learners reading comprehension: a mixed methods study

Zahra Majdi^{1,2*}, Masoud Khalili Sabet² and
Amir Mahdavi-Zafarghandi²

¹Department of English Language and Literature, Faculty of Literature and Humanities, University of Guilan, Rasht, Iran, ²Department of Foreign Languages, University of Guilan, Rasht, Iran

This study investigates the impact of active learning strategies (ALSs) on reading comprehension, engagement, motivation, and enjoyment among intermediate Iranian EFL learners, and explores their perceptions of ALS in reading. It addresses the prevalence of passive learning methods in Iranian EFL education and aims to evaluate the potential of ALS. Eighty female high school students were divided into experimental and control groups. The experimental group participated in ten active learning sessions. Quantitative data (pre- and post-tests) assessed reading comprehension, engagement, motivation, and enjoyment. Qualitative data were gathered via semi-structured interviews to explore student perceptions. Quantitative data revealed significantly higher post-test scores in reading comprehension for the experimental group using ALSs. Qualitative data highlighted positive student perceptions, including improved reading skills, strategic approaches to texts, and enhanced comprehension due to diverse activities and supportive peer interaction. No significant differences were found in engagement, motivation, or enjoyment. The findings underscore the potential of ALS to improve EFL reading comprehension. The discrepancy in engagement, motivation, or enjoyment may be attributable to cultural factors and learning preferences within the Iranian EFL context. Challenges such as difficulties with complex texts, unfamiliar vocabulary, time constraints, and occasional issues with group dynamics were also identified. The findings emphasize the need for culturally sensitive implementation, ongoing support, and strategic adjustments. Further research is recommended on the long-term effects of ALSs on learner engagement and motivation.

KEYWORDS

active learning strategies, reading comprehension, EFL learners, motivation, engagement, qualitative perceptions

1 Introduction

Reading comprehension is widely regarded as a foundational skill that requires active cognitive engagement with text to extract and interpret meaning (Chi and Wylie, 2014; Harvey and Goudvis, 2023). While early models primarily described comprehension through a cognitive lens, emphasizing reasoning and text-based interpretation (National Center for Educational Statistics, 2005), more recent perspectives recognize reading comprehension as a dynamic, interactive, and constructive process (Yunus and Ubaidillah, 2021). Indeed, the National Assessment Governing Board (2008) acknowledges the complexity inherent in comprehension, highlighting that understanding text involves engaging with its purpose, structure, and broader context. For EFL learners, reading comprehension is often identified as particularly challenging (Dörnyei, 2019). This challenge is compounded by the fact that reading processes and learners' mental engagement with the text are usually less visible and directly observable in classroom settings (Hovland, 2019). Consequently, fostering EFL reading comprehension necessitates the incorporation of strategies that promote active interaction with the text, stimulating cognitive, emotional, and social engagement to facilitate deep and meaningful understanding (Amjadi and Talebi, 2024).

Among the various instructional approaches, active learning has emerged as a prominent pedagogical strategy to enhance engagement with reading materials. Rooted in the constructivist theories of Dewey (1930), Bruner (1961), Vygotsky (1962), and Piaget (1980), active learning shifts the educational focus from teacher-centered knowledge transmission to student-centered engagement. According to Bonwell and Eison (1991), active learning involves "students in doing things and thinking about the things they are doing" (p. 2), necessitating that students take an active role in constructing knowledge through activities that promote reflection, analysis, and problem-solving. In alignment with constructivist principles, students do not passively receive information; rather, they actively process and build upon existing knowledge through structured tasks (McLaughlin, 2012). This paradigm shift from passive to active learning has prompted educational practitioners, including those in EFL contexts, to increasingly adopt methodologies that encourage students to engage actively in the learning process, thereby fostering deeper comprehension and retention.

Active learning strategies (ALSs) are supported by a substantial body of theoretical literature and have demonstrated effectiveness across various educational contexts. While research has examined the application of active learning principles in EFL settings, including listening comprehension and general language acquisition (e.g., Ashraf et al., 2013; Hajhosseini et al., 2016), there has been less emphasis on understanding the specific impacts of ALSs on reading comprehension, particularly within the Iranian EFL context. This is noteworthy given the prevalent traditional, passive learning model in many Iranian EFL classrooms, where teachers often assume the role of information transmitters, and students are positioned as passive recipients of knowledge (Mayer, 2002; Fahim and Ahmadian, 2012). This pedagogical strategy can limit students' engagement with reading content, potentially leading to a memorization-focused approach that may not foster active cognitive engagement (Stewart-Wingfield and Black, 2005).

Therefore, a deeper understanding of how ALSs can be effectively utilized to enhance reading comprehension within the Iranian EFL setting is essential.

This study aims to address a significant research gap by investigating the effectiveness of 10 selected ALSs (Bonwell and Eison, 1991; Harmin and Toth, 2006) on the EFL learners' reading comprehension in Iran. Specifically, the study seeks to determine whether ALSs can enhance learners' motivation, engagement, and enjoyment in reading comprehension courses, as these factors are critical indicators of the success of active learning (Cole et al., 2021). Although reading comprehension has long been recognized as challenging to assess directly, ALSs present potential solutions by engaging students in activities such as questioning, peer teaching, and problem-solving, which encourage visible interaction with texts (Pressley, 2000). Consequently, this research aims to broaden the understanding of active learning's potential to transform EFL classrooms in Iran into a more interactive, student-centered environments and to provide insights into how such strategies may better support learners in constructing meaning.

2 Review of Literature

2.1 Theoretical backgrounds

Constructivist learning theory posits that learners actively construct knowledge rather than passively receive it, shaping their understanding through experience, reflection, and interaction with their environment (Dewey, 1930; Vygotsky and Cole, 1978). Originating from the work of early theorists such as John Dewey, Jean Piaget, and Lev Vygotsky, constructivism emphasizes cognitive engagement as a critical aspect of learning. Dewey's pragmatism laid the foundation for constructivist principles, asserting that learning occurs most effectively when students engage meaningfully with content, often through problem-solving and experiential learning (Dewey, 1930). Piaget (1970) further advanced this theory by emphasizing the role of cognitive development stages, suggesting that knowledge is constructed progressively through the accommodation and assimilation of new information.

Constructivism also challenges behaviorist models that view learning as a direct outcome of stimulus-response interactions. Constructivists perceive learning as an active cognitive process driven by students' internal motivation and prior knowledge. Piaget argued that learners are constructing their cognitive frameworks through interactions with both the content and context of learning (Anthony, 1996). The constructivist approach aligns with ALSs, as both emphasize the learner's active role in acquiring knowledge. Mayer (2009) clarifies this alignment by distinguishing between constructivism as a theory of learning, which stresses cognitive processes, and constructivism as an instructional strategy, which focuses on experiential, hands-on activities. In other words, while active learning may involve behavioral activities such as group work or problem-solving exercises, its primary objective is to engage learners cognitively by prompting reflection, analysis, and synthesis. Therefore, constructivist learning theory underpins ALSs by asserting that meaningful learning requires students to

engage deeply with content, transforming information into relevant knowledge structures (Mayer, 2002, 2008; Zajda, 2021).

Social constructivist learning theory builds upon traditional constructivism by emphasizing the social nature of knowledge construction. Vygotsky and Cole (1978) work on the Zone of Proximal Development (ZPD) and Bandura and Walters (1977) social learning theory highlight the importance of collaborative learning environments, where learners achieve cognitive growth through interactions with more knowledgeable peers or mentors. According to Vygotsky, learners attain higher levels of understanding when they engage in social interactions that scaffold their learning processes, enabling them to gradually tackle more challenging tasks within their ZPD (Erbil, 2020). Bandura and Walters (1977) also emphasized the role of reciprocal interactions, positing that learning arises from both individual cognition and environmental influences. Together, these concepts suggest that knowledge is co-constructed within social contexts, and understanding is enriched through dialogue, shared experiences, and guided practice. In language acquisition, the social constructivist framework has become a crucial foundation for understanding how learners interact with language and develop communicative skills. Social interaction fosters linguistic development by allowing learners to practice and refine their language in authentic, meaningful contexts (Lantolf, 2005; Rowe and Weisleder, 2020). Such interactions involve not only linguistic exchanges but also the negotiation of meaning (Rannikmäe et al., 2020), which is essential for reading comprehension. In particular, EFL classrooms benefit from collaborative, interactive environments where students can engage in tasks that promote both cognitive and emotional development through shared learning experiences (Brown, 2000; Huang and Lajoie, 2023; Alzubi et al., 2024).

Social constructivist principles strongly support active learning, particularly its cooperative and interactive approaches (Holec and Marynowski, 2020; Doolittle et al., 2023). This framework aligns closely with ALSs by prioritizing active participation, reflection, and the application of prior knowledge. Mayer (2002) asserts that active learning environments cultivate cognitive engagement by requiring students to select pertinent information, arrange it into coherent mental models, and integrate it with pre-existing knowledge. Smith et al. (2021) and Dugasa et al. (2022) echo this in the context of reading comprehension, emphasizing that comprehension involves actively constructing meaning by integrating textual information with the reader's background knowledge and personal experiences. ALSs, such as peer teaching, group discussions, and role-playing, operationalize constructivist concepts. These strategies foster environments where learners collaborate to solve problems, interpret information, and collectively construct knowledge. They transform students from passive recipients into active participants, promoting agency and stimulating critical thinking for deeper understanding. Through tasks like group problem-solving, questioning, and interactive discussions, ALSs encourage learners to engage with content at a higher cognitive level, thereby supporting comprehension and long-term retention (Michel et al., 2009). In EFL contexts, for example, studies indicate that ALSs enhance students' engagement with texts (Li et al., 2021) by creating opportunities for meaning negotiation and connecting personal experiences with the material. ALSs provide structured opportunities for learners to analyze texts,

discuss interpretations, and reflect on how their understanding evolves through engagement with peers and instructors.

Constructivist theories posit that learning is most effective when new knowledge is connected to existing knowledge structures. ALSs facilitate this connection through structured tasks that promote analysis and synthesis (Bonwell and Eison, 1991; Børte et al., 2020). This aligns with Watson-Gegeo and Nielsen (2003) assertion that constructivist classrooms encourage students to learn not only from the instructor but also from one another, fostering a more dynamic and inclusive learning experience. Furthermore, the constructivist approach to active learning not only enhances academic performance but also fosters the social growth of learners (Qureshi et al., 2021), creating a holistic and transformative learning experience. Together, constructivist and social constructivist theories provide a robust theoretical foundation for ALSs in EFL classrooms, where cognitive and social engagement are crucial for reading comprehension. These theories underscore the necessity of teaching approaches that prioritize active student involvement, scaffolded interactions, and the co-construction of knowledge—essential components for fostering deeper understanding in reading tasks. In essence, by promoting active cognitive processing, ALSs enable students to transcend rote memorization and develop a deeper, more meaningful comprehension of the content.

2.2 Previous research on active learning (strategies)

ALSs have received considerable attention across educational disciplines for their capacity to cognitively engage students, enhance motivation, and improve overall learning outcomes. Bonwell and Eison (1991) foundational work defined active learning as any activity that "involves students in doing things and thinking about the things they are doing" (p. 2), establishing it as a key pedagogical approach. Their research posited that ALSs, such as group discussions, problem-solving exercises, and case studies, encourage students to transcend passive listening by actively constructing knowledge.

Empirical evidence increasingly supports the positive impact of ALSs. For example, Carr et al. (2015), utilizing the Australasian Survey of Student Engagement with over 5,800 participants, reported that frequent engagement in ALSs correlated with higher levels of student engagement and satisfaction. This aligns with Bruff (2009) assertion that interactive methods, such as small-group discussions, often lead to greater learning outcomes compared to traditional lectures. Bachelor et al. (2012) found that incorporating ALSs like role-playing and peer-led discussions significantly increased student motivation and engagement, while Camacho and Legare (2015) demonstrated that ALSs foster a more productive and appealing learning environment, resulting in heightened participation. More recently, Mohammed and Al-hassan (2023) underscored the positive effects of ALSs on EFL learners' motivation, attitudes, aptitudes, and skills.

Collectively, studies indicate that ALSs enhance students' cognitive engagement, motivation, and perceptions of their educational experiences. However, it's important to acknowledge

that not all research reports uniformly positive outcomes. [Stewart-Wingfield and Black \(2005\)](#), for instance, found that an active course design didn't necessarily lead to higher satisfaction scores or improved academic results; while students appreciated the collaborative environment, they didn't report significantly higher levels of satisfaction or learning outcomes. This highlights potential variability in how ALSs are perceived across different contexts, suggesting that their effectiveness may depend on factors like subject matter, instructional quality, and learner preferences. Despite these mixed findings, the overall body of research suggests a positive impact of ALSs on cognitive engagement, motivation, and learning outcomes.

Increasing research has focused on applying ALSs in EFL and ESL contexts, examining their influence on language learning outcomes, particularly regarding motivation, cognitive engagement, and language skills. Recognizing the traditional reliance on passive approaches in EFL classrooms, studies have demonstrated promising results when integrating ALSs to enhance learner engagement and autonomy ([Ashraf et al., 2013](#); [Naderi and Ashraf, 2013](#)). For instance, [Ashraf et al. \(2013\)](#) found that intermediate-level EFL learners engaging in ALSs like peer teaching, jigsaw tasks, and information transfer activities significantly improved their listening comprehension compared to a control group. [Naderi and Ashraf \(2013\)](#) similarly found that ALS instruction led to Iranian EFL learners in the experimental group reporting higher levels of listening self-efficacy. Echoing these findings, [Gasmi and Al Nadabi \(2023\)](#) reported Omani students' appreciation of ALSs, noting improvements in learners' critical thinking, evaluation, problem-solving, motivation, and engagement. These results align with principles of cognitive psychology ([Mizokami, 2018](#)), suggesting that ALSs promote active engagement and collaboration, enabling more effective internalization of language concepts.

Overall, ALS outcomes in EFL contexts indicate that these strategies positively impact cognitive and motivational outcomes, enhancing language acquisition through interactive, student-centered learning approaches. While most studies have concentrated on language skills such as listening and speaking, there has been less emphasis on understanding the effects of ALSs on reading comprehension. This gap highlights the need for further investigation into how ALSs can specifically support reading comprehension in EFL classrooms, where active engagement with texts may promote deep understanding and retention. By applying ALSs to reading comprehension, educators may bridge the divide between passive content delivery and active engagement, providing EFL learners with more meaningful opportunities to develop their reading proficiency.

2.3 Active learning and reading comprehension

ALSs positively influence reading comprehension by fostering cognitive engagement and enhancing motivation, leading to improved understanding. Research supports this, indicating that active participation in reading tasks promotes deep comprehension and effective information retention. For instance, [TeKippe \(2017\)](#) found that pre-service teachers engaging in problem-based

learning (PBL) within a reading methodology course demonstrated increased knowledge retention and improved comprehension abilities. This aligns with [Freeman et al. \(2014\)](#) findings, emphasizing that active participation aids students in internalizing complex concepts and enhances their overall comprehension.

Several studies demonstrate the cognitive benefits of ALSs. [Güneyli \(2008\)](#) found that fifth-grade students who engaged in discussion and problem-solving activities (ALSs) exhibited significantly higher reading comprehension scores compared to those using traditional methods. This suggests that ALSs enhance cognitive development by promoting active processing and interpretation of text.

Similarly, [Lin \(2017\)](#) found that Taiwanese university students in an EFL reading course utilizing PBL outperformed their peers on reading comprehension post-tests, suggesting that ALSs promote effective comprehension and positive attitudes toward reading in EFL contexts. [Er et al. \(2012\)](#) also found that male college students employing ALSs like group discussions, peer teaching, and interactive reading achieved significantly higher comprehension scores than the control group, underscoring the cognitive and motivational benefits of active engagement. However, their study revealed that ALSs did not significantly correlate with enhanced self-concept, suggesting that while ALSs improve reading comprehension, their impact on self-perception may vary.

Furthermore, ALSs can promote more active and reflective reading experiences. [Hovland \(2019\)](#) found that ALSs like reading logs and structured discussions enhanced comprehension and complex thinking skills in an advanced EFL course by actively connecting new information to existing knowledge. This indicates that ALSs not only improve comprehension but also encourage learners to take ownership of their reading. More recently, [Korkmaz and Öz \(2021\)](#) found that the online game "Kahoot!" significantly increased EFL learners' motivation and comprehension abilities, and [Indriyani et al. \(2024\)](#) reported the effectiveness of active learning models in enhancing reading comprehension.

While ALSs have demonstrated benefits for general reading comprehension, there is a relative paucity of studies focusing on their application in Iranian EFL contexts, particularly concerning Iranian learners who may encounter unique cultural and linguistic challenges. Significant gaps persist in research on ALSs and reading comprehension specifically within this context, as much of the existing research emphasizes other language skills, such as listening and speaking. Given the distinctive challenges faced by EFL learners, including vocabulary limitations and unfamiliar cultural references, research in this area is crucial to understanding how ALSs can effectively address these challenges and enhance reading outcomes. Additionally, there is a notable lack of research on EFL learners' attitudes toward ALSs in reading comprehension, which could yield valuable insights into their perceptions of these strategies. Moreover, most recent research related to these factors has been conducted outside of language education ([Owens et al., 2020](#); [Abujreiban, 2023](#); [Sia et al., 2024](#)), particularly in STEM-based active learning courses ([Julia and Antolí, 2019](#); [Stieha et al., 2024](#)). However, [Phan \(2022\)](#) recently demonstrated that active learning fosters learners' critical thinking, reading comprehension, interpersonal skills, and problem-solving abilities through teachers' perceptions of active learning techniques.

2.4 The current study

The theoretical and empirical literature provides robust support for the positive impact of ALSs on cognitive engagement, motivation, and learning outcomes. Therefore, multiple perspectives underscore the significance of the current study. As previously noted, despite growing evidence of the effectiveness of ALSs, research remains limited within the Iranian EFL context, particularly regarding their specific impact on reading comprehension. Iranian classrooms traditionally rely on passive, teacher-centered methods (Zarei et al., 2019; Fahim and Ahmadian, 2012), limiting active, student-centered participation; consequently, the potential of ALSs to enhance reading comprehension among Iranian EFL learners remains largely unexplored.

Few studies address the influence of ALSs on learner motivation, engagement, and enjoyment—critical factors for successful language acquisition and central to active learning environments (Carr et al., 2015; Bachelor et al., 2012). Notably, most recent research related to these factors has been conducted outside of language education (Owens et al., 2020; Abujreiban, 2023; Sia et al., 2024), particularly in STEM-based active learning courses (Julia and Antolí, 2019; Stieha et al., 2024). Understanding how these factors manifest in the reading comprehension process for EFL learners can provide valuable insights into the broader benefits of ALSs. Furthermore, there is limited research on Iranian EFL learners' perceptions of ALSs in reading comprehension courses, which could offer practical insights into how learners experience and respond to these strategies and inform educators about the adaptability of ALSs within Iranian EFL classrooms.

To address these gaps, the present study aims to explore the impact of ALSs on the reading comprehension of intermediate Iranian female EFL learners, focusing on three key areas:

1. Do active learning strategies significantly affect the reading comprehension of intermediate female EFL learners in two public high schools in Mazandaran?
2. Do intermediate female EFL learners in two public high schools in Mazandaran differ significantly in terms of engagement, enjoyment, and motivation in reading comprehension courses when exposed to ALSs?
3. What are the perceptions of intermediate female EFL learners in two public high schools in Mazandaran regarding active learning strategies in a reading comprehension classroom, as revealed through semi-structured interviews?

3 Materials and methods

3.1 Design of the study

This study employed an explanatory sequential mixed-methods design to explore the impact of ALSs on reading comprehension. Following Creswell and Clark (2017), quantitative data were collected prior to the qualitative phase, allowing the statistical findings from pretest-posttest control group design (tests and

questionnaires) to be further described through qualitative data, to gain a deeper understanding of learners' perspectives. In this design, the experimental group received instruction based on ALSs, while the control group followed traditional reading instruction methods, with the objective of identifying statistically significant trends in reading comprehension performance, engagement, enjoyment, and motivation. Informed by the quantitative findings, the qualitative phase employed semi-structured interviews to explore participants' perspectives on the impact of ALSs on their learning.

3.2 Context and participants

This study was conducted in a northern city of Iran by one researcher, who served as an English teacher in both participating schools. The participants included 80 intermediate-level female EFL students (ages 16–18, Farsi L1) from two public high schools in Mazandaran. Participants were initially selected through convenience sampling, and their English proficiency was subsequently verified using the Oxford Placement Test (OPT) to ensure homogeneity; only those meeting the required intermediate proficiency level were included. The final cohort of 80 participants was randomly assigned to either an experimental group or a control group (40 students in each). The study exclusively involved female participants due to gender-segregated education policies in Iranian schools. The students were from grades 10, 11, and 12, studying various fields. Ethical considerations, in accordance with the principles outlined by the British Educational Research Association (BERA), were carefully followed. Informed consent was obtained from both the students and school administrators. All respondents were thoroughly briefed on the study's purpose and procedures, and anonymity and confidentiality were strictly maintained. Participants were assured that the study results would be used solely for research purposes. A committee of professors at the University of Guilan also reviewed the research design, methodology, and ethical considerations.

3.3 Materials and instruments

The instructional materials for this study were selected from Objective IELTS Intermediate, chosen for its alignment with the students' proficiency levels and engaging reading topics. Ten lessons, representing a diverse range of subjects suitable for incorporating ALSs, were selected (Table 1). Each lesson implemented one or more strategies from Bonwell and Eison (1991) active learning framework, supplemented by additional strategies from Harmin and Toth (2006) to ensure varied and interactive engagement during the pre-reading, while-reading, and post-reading stages (Table 2). Activities such as questioning, role-playing, and cooperative learning were used to promote active participation in reading comprehension.

Four main instruments were employed to collect data: the OPT, two reading comprehension tests (pre-test and post-test), three engagement-related questionnaires, and a semi-structured interview. The OPT, a 60-min standardized placement test comprising 60 multiple-choice questions that assess vocabulary and

TABLE 1 Selected reading texts from objective IELTS intermediate student's book.

Sessions	Topic	Task type
1	Communicate (Unit 1, p. 8)	True/False/Not given Short-answer questions
2	Ways of Learning (Unit 4, p. 26)	Reading effectively
3	Discovering the past (Unit 5, p. 34)	True/False/Not given Multiple choice Note completion
4	Selling dreams? (Unit 7, p. 46)	Multiple choice Headings
5	Climate change (Unit 9, p. 60)	Summary completion
6	Animal life (Unit 11, p. 72)	Multiple choice
7	Sport: Just for Fun? (Unit 12, p. 78)	Matching
8	Choices (Unit 13, p. 86)	Locating information
9	Books, writing and signs (Unit 16, p. 104)	Classification True/False/Not given
10	Moving abroad (Unit 20, p. 130)	Global multiple choice Locating information Flow-chart completion

grammar, was initially utilized to identify participants' intermediate proficiency levels. Following a pilot study, the OPT demonstrated acceptable reliability, affirming its appropriateness as a measure of proficiency. To assess reading comprehension, two IELTS-based reading tests were administered before after the intervention. Each test included two reading passages with various question types, such as multiple-choice, True/False/Not Given, and matching headings. The readability of these texts was verified using the Flesch Reading Ease formula to ensure equivalence in difficulty, and both tests were piloted to establish reliability. These reading assessments facilitated the measurement of comprehension gains resulting from the intervention.

To investigate the potential mediating role of affective factors between ALSs and reading comprehension, students' engagement, enjoyment, and motivation were assessed ([Supplementary Appendix A](#)). Engagement, adapted from [Wang et al. \(2016\)](#), utilized a 33-item questionnaire to evaluate behavioral, emotional, cognitive, and social dimensions, demonstrating strong construct validity and internal consistency. Motivation, adapted from [Gardner \(1985\)](#) Attitudes/Motivation Test Battery, is widely employed in EFL research, measuring motivational intensity, attitude, and desire to learn English through a 19-item questionnaire, which exhibits acceptable construct and predictive validity ([Gardner, 1985](#); [Tremblay and Gardner, 1995](#)). Enjoyment, adapted from [Dewaele and MacIntyre \(2014\)](#) Foreign Language Enjoyment (FLE) Scale, employed a six-item questionnaire to assess overall classroom enjoyment, demonstrating good face validity and internal consistency ([Dewaele and MacIntyre, 2014](#); [Lee, 2022](#)). To ensure appropriateness, the questionnaires were translated into Persian and reviewed by EFL professors for content validity. All questionnaires exhibited acceptable internal consistency reliability scores in this study.

To further investigate participants' perceptions of ALSs, in-depth, semi-structured interviews were conducted with ten randomly selected students from the experimental group. These interviews were designed to explore their experiences with active learning in reading comprehension and included three yes/no questions and two open-ended questions ([Supplementary Appendix B](#)) that probed motivation, engagement, and challenges. Conducted in Persian to facilitate clearer expression, the interviews were recorded, transcribed, and thematically analyzed to identify recurring patterns and key insights into the participants' experiences with ALSs.

3.4 Procedures

The study procedure was organized into three phases: pre-instruction, during instruction, and post-instruction. In the pre-instruction phase, both groups attended an introductory session where the study's objectives and procedures were explained by the researcher, who also served as the students' reading teacher. The OPT was then administered to ensure participants' homogeneity at the intermediate proficiency level. After random assignment into experimental and control groups, participants completed a reading comprehension pre-test to establish baseline performance.

During the instructional phase, the experimental group participated in ten sessions focused on ALS, while the control group followed a traditional reading instruction approach. With the school management's approval, one hour per week was dedicated to this study over a three-month period, as the Iranian education system allocates only three hours per week for English language instruction. The instruction for the experimental group incorporated ALSs as outlined by [Bonwell and Eison \(1991\)](#), along with additional strategies from [Harmin and Toth \(2006\)](#). Activities such as questioning, role-playing, peer teaching, and problem-solving were utilized to promote active engagement through pre-reading, while-reading, and post-reading activities. For instance, during questioning exercises, students collaborated in pairs to actively discuss the content, while role-playing enabled them to explore the meaning of the text together. In contrast, the control group engaged in teacher-centered, explicit instruction, focusing on skimming, scanning, and translation techniques without any interactive activities, using the same reading materials.

In the post-instruction phase, both groups took the same reading comprehension post-test. Following the post-test, questionnaires assessing engagement, enjoyment, and motivation were distributed to all participants. Additionally, semi-structured interviews with selected participants from the experimental group provided qualitative data on learners' perceptions of ALS. The interview responses were recorded, transcribed, and thematically analyzed to complement the quantitative findings.

3.5 Data analysis

A mixed-methods approach was employed in the data analysis, utilizing both quantitative and qualitative techniques. Quantitative data from the OPT, reading comprehension tests, and questionnaires were analyzed using descriptive statistics

TABLE 2 Active learning strategies.

No of instructional Session	Reading Text	Active learning strategy Bonwell and Eison (1991)	Additional strategy Harmin and Toth (2006)	Purpose
1	Whistling in La Gomera	Questioning (p. 27)	Voting questions (p. 132) Paired Reading (p. 189)	• To gather the attention of students • To structure high engagement reading
2	Reading for comprehension	Peer teaching (p. 50)	Know and Want to Know (p. 158) Brainstorming (p. 262)	• To build on students' knowledge and questions. • To ask students to exercise creative thinking skills in a content area.
3	The Mogi of Easter Island	Cooperative learning (p. 43)	Make a Prediction (p. 160) Class Leaders (p. 77) Cooperative Reading Groups (p. 193)	• To motivate students in a topic and to exercise their ability to think ahead • To give students class managing responsibility • To inspire students to study readings cooperatively and supportively
4	How I made my first viral	Computer-based instruction (p. 33)	Set of Speakers (p. 211) Under explain and Learning Pairs (p. 182)	• To select speakers efficiently • To maximize thoughtful involvement and minimize student frustration
5	A disaster in the making	Problem solving (p. 38)	Mini task (p. 223) Think Aloud (p. 184)	• To engage students in review tasks • To give students a model of how they might think through a problem
6	Social organization among animals	Discussion (p. 29)	Comparing (p. 258) Learning Map (p. 225) Paper Exchange (p. 226)	• To advance skills of discrimination and perception. • To review the relationships between concepts and ideas • To arrange for students to help one another improve written work
7	History of sport	Writing in class (p. 35)	Note-Taking Template (p. 174) Summarizing (p. 260)	• To keep students engaged in the content as it is presented • To encourage students to think comprehensively about a topic
8	Six thinking hats	Role playing (p. 47)	Teacher Role-Play (p. 230) Directed Reading (p. 195)	• To provide all students to teach part of the course content to others • To keep students engaged and focused on reading material
9	A variety of writing systems	Visual-based instruction (p. 33)	Visual Aids and Graphic Organizers (p. 170) Mental Pictures (p. 287)	• To help students keep their attention focused • To make learning more vivid and to respect the needs of visual learners
10	Immigration: an introduction	Debates (p. 45)	Best choice debate (p. 240) Self-selected learning reports (p. 386)	• To promote open-minded consideration of controversial issues • To individualize learning reports

(mean, standard deviation) and inferential statistics. To confirm the homogeneity of the experimental and control groups, an independent-samples t-test was conducted on the OPT scores. To examine the effectiveness of ALSs, a one-way ANCOVA was applied to the post-test reading comprehension scores, with pre-test scores as covariates. Normality tests for skewness and kurtosis were conducted to validate the data distribution for each variable. Regarding engagement, enjoyment, and motivation scores, normality was not assumed; therefore, a Mann-Whitney test was conducted to compare the median scores between groups. For qualitative data, responses from the semi-structured interviews were coded and analyzed following Dornyei (2007) three-level system of open, axial, and selective coding, using MAXQDA software to identify recurring themes. The integration of quantitative and qualitative data provided a comprehensive analysis of the impact of ALSs on reading comprehension and

student engagement, adding depth to the understanding of learner perceptions in an EFL context.

4 Results

4.1 Quantitative analysis

The quantitative data were analyzed for normality and homogeneity to determine the appropriateness of parametric and non-parametric tests. Normality was assessed by calculating the skewness and kurtosis indices for the OPT, as well as the reading comprehension pre-test and post-test scores, and the questionnaire scores for engagement, enjoyment, and motivation. The results indicated that the skewness and kurtosis values for the OPT and reading comprehension scores fell within the acceptable range of ± 1.96 , suggesting that these distributions could be assumed

to be approximately normal (Raykov and Marcoulides, 2008). Consequently, these variables were analyzed using parametric techniques, including independent-samples *t*-tests and ANCOVA. However, the distributions for engagement and motivation exhibited skewness and kurtosis indices outside the acceptable range, indicating significant deviations from normality. As a result, non-parametric Mann-Whitney *U* tests were employed for the engagement, enjoyment, and motivation scores. Table 3 presents the skewness and kurtosis indices for all measures utilized in the study.

Homogeneity of variances was assessed for all measures using Levene's test. The results indicated that the variances were homogeneous for the OPT and reading comprehension pre- and post-tests ($p > 0.05$), supporting the assumption that these measures could be compared between groups using parametric tests. However, the variance for engagement and motivation scores was non-homogeneous, reinforcing the decision to employ non-parametric tests for these measures.

Furthermore, to confirm the equivalence of the experimental and control groups prior to intervention, an independent-samples *t*-test was conducted on the OPT scores. The mean scores for the experimental group ($M = 35.10$, $SD = 2.15$) and the control group ($M = 35.23$, $SD = 2.08$) were very similar, indicating comparable baseline levels of general English proficiency. Table 4 presents the descriptive statistics for the OPT scores in each group.

The results of the independent-samples *t*-test, as presented in Table 5, confirmed that there was no significant difference between the groups regarding OPT scores [$t(78) = 0.267$, $p > 0.05$]. Consequently, the groups were considered homogeneous in terms of general language proficiency prior to the intervention, ensuring that any differences observed in the post-test could be attributed to the experimental treatment.

This analysis demonstrated that the experimental and control groups had comparable baseline abilities in English proficiency, as measured by the OPT. This finding validates the assignment of participants to these groups for subsequent testing.

4.1.1 Analysis of reading comprehension

To investigate the first research question—whether ALSs significantly affect reading comprehension among intermediate female EFL learners in public high schools in Mazandaran—a One-Way Analysis of Covariance (ANCOVA) was conducted. This analysis facilitated a comparison of post-test reading comprehension scores between the experimental and control groups while controlling for pre-test scores. The first null hypothesis (H_{01}), which posits that ALSs have no significant effect on reading comprehension, was tested in this analysis.

Before interpreting the results of the ANCOVA, three statistical assumptions were verified: (1) the linearity of the relationship between pre-test and post-test reading comprehension scores, (2) the homogeneity of regression slopes, and (3) the homogeneity of variances. The assumption of linearity was supported, as indicated by a significant *F*-statistic [$F(1, 67) = 196.76$, $p < 0.05$, $\eta^2 = 0.754$], which demonstrates a strong linear relationship between the pre-test and post-test scores. This finding suggests that the covariate (pre-test score) is suitable for adjusting the post-test scores. Table 6 presents a summary of the linearity test.

The homogeneity of regression slopes was assessed by examining the interaction between the covariate (pre-test) and the independent variable (group). The results revealed a non-significant interaction [$F(1, 76) = 1.32$, $p > 0.05$, $\eta^2 = 0.017$], which supports the assumption that the relationship between pre-test and post-test scores did not differ significantly across groups.

TABLE 3 Skewness and kurtosis indices of normality for study measures.

Measure	Group	N	Skewness	Std. error	Kurtosis	Std. error
OPT	Experimental	40	0.620	0.374	−0.978	0.733
	Control	40	0.690	0.374	−0.747	0.733
Pre-test	Experimental	40	0.527	0.374	−0.533	0.733
	Control	40	0.393	0.374	−1.009	0.733
Post-test	Experimental	40	0.423	0.374	−0.808	0.733
	Control	40	0.395	0.374	−0.859	0.733
Engagement	Experimental	40	0.713	0.374	2.480	0.733
	Control	40	−0.027	0.374	−1.019	0.733
Enjoyment	Experimental	40	−0.238	0.374	−1.245	0.733
	Control	40	−0.136	0.374	−1.142	0.733
Motivation	Experimental	40	1.129	0.374	4.449	0.733
	Control	40	0.134	0.374	−0.080	0.733

TABLE 4 Descriptive statistics for oxford placement test scores by group.

Group	N	Mean	SD	Std. error mean
Control	40	35.23	2.082	0.329
Experimental	40	35.10	2.158	0.341

TABLE 5 Independent-samples t-test for OPT scores by group.

Levene's test for equality of variances	T-test for equality of means
<i>F</i>	Sig.
0.011	0.917

This finding indicates that the influence of the pre-test on the post-test was consistent for both the experimental and control groups. Table 7 provides a summary of this analysis. Finally, Levene's test confirmed the homogeneity of variances for post-test reading comprehension scores [$F(1, 75) = 1.05, p > 0.05$], thereby supporting the use of ANCOVA.

After verifying the assumptions, the adjusted post-test reading comprehension scores were compared between the experimental and control groups. The experimental group's adjusted mean post-test score ($M = 12.87, SE = 0.246$) was higher than that of the control group ($M = 11.58, SE = 0.246$), indicating an improvement due to ALSs. The ANCOVA results, presented in Table 8, revealed a statistically significant effect of ALSs on reading comprehension [$F(1, 77) = 13.73, p < 0.05, \eta^2 = 0.151$]. Consequently, the first null hypothesis was rejected, supporting the conclusion that ALSs had a significant positive impact on reading comprehension scores.

The results indicate that ALSs significantly contributed to improvements in reading comprehension for the experimental group. These findings suggest that the implementation of active learning techniques can positively influence reading outcomes for intermediate EFL learners in high school settings.

4.1.2 Analysis of engagement, enjoyment, and motivation

To address the second research question—whether ALSs influenced engagement, enjoyment, and motivation among intermediate female EFL learners—a non-parametric Mann-Whitney U test was conducted for each variable. Given the non-normal distribution of the data, as indicated by skewness and kurtosis indices outside the range of ± 1.96 (see Table 3 in the previous section), the Mann-Whitney U test was chosen to compare the median scores between the experimental and control groups. This analysis also tested the second null hypothesis (H02), which posits that there is no significant difference in engagement, enjoyment, or motivation between the groups.

The Mann-Whitney U test (Table 9) revealed that the median score for engagement in the experimental group ($Mdn = 3.09$) was slightly lower than that of the control group ($Mdn = 3.14$). However, this difference was not statistically significant ($U = 782.50, z = -0.304, p = 0.761$), and the effect size was negligible ($GMRBC = 0.039$). Therefore, the results do not provide sufficient evidence to reject the null hypothesis regarding engagement, indicating that ALSs did not have a significant impact on engagement levels compared to traditional instruction.

The analysis of enjoyment scores indicated that the median enjoyment score for the experimental group ($Mdn = 4.50$) was slightly higher than that of the control group ($Mdn = 4.25$). However, the Mann-Whitney U test revealed no statistically significant difference between the two groups ($U = 770.00, z = -0.787, p = 0.432$), with a weak effect size ($GMRBC = 0.101$). Consequently, no significant difference in enjoyment was observed between the experimental and control groups, and the null hypothesis regarding enjoyment is retained.

TABLE 6 Testing assumption of linearity between pre-test and post-test reading comprehension scores.

Source	Sum of squares	df	Mean square	<i>F</i>	Sig.	η^2
Posttest * pretest (combined)	596.937	12	49.745	17.091	0.000	–
Linearity	572.709	1	572.709	196.763	0.000	0.754
Deviation from linearity	24.227	11	2.202	0.757	0.681	–
Within groups	195.013	67	2.911			

TABLE 7 Testing homogeneity of regression slopes for reading comprehension by group with pre-test as covariate.

Source	Type III sum of squares	df	Mean square	<i>F</i>	Sig.	η^2
Group	0.019	1	0.019	0.008	0.929	0.000
Pretest	515.584	1	515.584	214.289	0.000	0.738
Group * Pretest	3.197	1	3.197	1.329	0.253	0.017
Error	182.858	76	2.406			

TABLE 8 ANCOVA results for post-test reading comprehension by group with pre-test as covariate.

Source	Type III sum of squares	df	Mean square	<i>F</i>	Sig.	η^2
Pretest	583.845	1	583.845	241.628	0.000	0.758
Group	33.186	1	33.186	13.734	0.000	0.151
Error	186.055	77	2.416			

TABLE 9 Mann-Whitney U tests for engagement, enjoyment, and motivation by group.

Variable	Group	N	Mean rank	Sum of ranks	Median	z	Sig.	GMRBC
Engagement	Experimental	40	39.71	1588.50	3.09	-0.304	0.761	0.039
	Control	40	41.29	1651.50	3.14			
Enjoyment	Experimental	40	42.53	1701.00	4.50	-0.787	0.432	0.101
	Control	40	38.48	1539.00	4.25			
Motivation	Experimental	40	42.13	1685.00	3.05	-0.628	0.530	0.081
	Control	40	38.88	1555.00	3.03			

The results of the Mann-Whitney U test for motivation scores indicated that the median motivation score of the experimental group (Mdn = 3.05) was nearly identical to that of the control group (Mdn = 3.03). Similarly, no significant difference was detected between the groups ($U = 770.00$, $z = -0.628$, $p = 0.530$), with a weak effect size (GMRBC = 0.081). Consequently, the null hypothesis regarding motivation is retained, indicating no significant difference in motivation levels between the groups.

The results regarding engagement, enjoyment, and motivation indicate that ALSs did not yield a statistically significant difference in these areas for the experimental group when compared to the control group. Consequently, the second null hypothesis was supported, suggesting that the instructional method (active learning versus traditional) had a minimal impact on these affective variables among intermediate EFL learners.

4.2 Qualitative analysis

The qualitative phase of this study explored the perceptions of intermediate female EFL learners regarding ALSs in their reading comprehension classes. To facilitate this exploration, questions were vetted by professors prior to conducting WhatsApp voice message interviews, and participants were informed about the study's purpose. After meticulously verifying the transcriptions the voice recordings for accuracy, the raw data was analyzed by identifying, naming, and categorizing the essential ideas related to the research question. The representation of the recorded interview data through identified concepts and categories was examined during the open coding process, which was followed by a re-reading of the texts in the axial coding phase. Subsequently, connections were established between the identified concepts and categories by expanding upon one of the most significant categories. In the final step, one core category was selected based on the findings from the previous two steps, and all other categories were linked to this core category, which facilitated the final analysis. To analyze the interview data, a systematic coding process was employed, which included open coding (resulting in 127 initial codes), axial coding (grouping codes into 22 subcategories), and selective coding. From this process, four major themes emerged: positive attitudes toward reading, negative attitudes toward reading, positive outcomes of active learning, and effective teacher performance. These themes ultimately converged into the core category of the study: learners' perceptions of active learning in the reading course. To ensure the accuracy of the qualitative data, member checking was conducted. To ensure the trustworthiness of the qualitative data, in addition to revising codes and reviewing of transcripts, member checking was

conducted with the learners to confirm the accuracy of interview transcripts. The coding scheme and a selection of interview transcripts were also reviewed by a peer researcher for feedback on clarity and consistency. However, due to resource constraints, formal inter-rater reliability measures were not employed across the entire dataset. The following section provides a comprehensive examination of each theme, focusing on how ALSs contributed to or hindered learners' engagement and comprehension.

4.2.1 Positive perceptions of active learning

The qualitative data revealed a strong theme: students held positive perceptions of ALS. They consistently described ALS as transforming the classroom into a collaborative, engaging, and motivating environment, leading to increased enjoyment and participation. Students reported heightened engagement due to the interactive and student-led nature of ALS, fostering a sense of active contribution rather than passive reception.

ALS fostered collaboration and increased motivation among students. Hasti noted that student engagement was strong from the start of the course and strengthened over time, contributing to a network of peer support as ALS encouraged students to seek guidance from one another. Fatemeh highlighted the value of peer feedback in promoting interaction, describing a session where students exchanged and discussed individual assignments. These interactions underscore the fundamental role of collaboration, allowing students to benefit from mutual support and diverse perspectives. Furthermore, students reported increased motivation and enthusiasm due to the novelty and variety ALS introduced. Niloofar reported an increased passion for language learning, stating, "*Yes, my passion for language learning has increased...*" while Fatemeh described entering each session with anticipation of something new and exciting, knowing that something new and exciting awaited us. This positive learning environment stimulated students' desire to learn and actively engage.

The interactive and student-centered nature of ALS fostered a positive classroom environment characterized by friendliness and support. Participants consistently described the class as a safe space where they felt encouraged to take risks and express ideas without fear of judgment. Mobina highlighted this, stating, "*Class fostered a friendly atmosphere, which was very good.*" This supportive environment was central to their learning experience, making them feel more at ease and willing to participate, aligning with social constructivist theories emphasizing the importance of a safe and collaborative environment for deeper engagement. Furthermore, engagement was fostered through diverse activities and learning methods, ranging from group discussions to role-playing, offering multiple avenues for interaction and learning. Saghar noted that,

“The class activities did not focus on a single student. Most of the time, everyone participated, whether in role-playing or class discussions.” By incorporating various ALS techniques, the teacher effectively addressed diverse learning preferences and prevented monotony, maintaining the entire class’s engagement, in contrast to traditional lecture-based instruction.

ALS also fostered a sense of personal accountability, motivating students to actively participate, share their knowledge, and consider diverse perspectives within collaborative pairs and groups. Niloofar highlighted this collective responsibility, stating, *“We learned to respect one another’s viewpoints, which made the learning experience more meaningful.”* Students believed ALS fostered a learning environment where they actively learned from each other, built upon shared ideas, and enhanced their understanding of the reading material. Overall, these positive perceptions underscore the effectiveness of ALS in creating a collaborative, motivating, and engaging classroom. The methods’ diversity, opportunities for peer interaction, and supportive environment all contributed to increased learner engagement and motivation, demonstrating the benefits of ALS in EFL reading comprehension.

4.2.2 Effective teacher performance in active learning environment

The qualitative data also highlighted the crucial role of Effective Teacher Performance in an Active Learning Environment, emphasizing the teacher’s impact on creating a conducive and supportive learning space for ALS. Participants indicated that the teacher’s diverse instructional methods, adaptability, and facilitative approach were central to their positive classroom experiences. The teacher’s responsibilities extended beyond content delivery to creating an engaging atmosphere where students felt encouraged to fully participate. The teacher’s approach enhanced understanding, with students valuing the diverse ALS employed to accommodate various learning activities. Niloofar highlighted the positive impact of these methods, stating, *“The class activities and strategies were diverse, which prevented boredom. Each session felt unique, helping to maintain my interest throughout the course.”* This approach not only captured students’ attention but also accommodated their diverse learning preferences, making each class session feel unique and engaging.

Furthermore, students appreciated the teacher’s facilitative role in fostering active participation and independent learning. By providing opportunities for students to take responsibility for their learning, the teacher encouraged independence and self-reliance. Tina noted how group work, in particular, allowed for exchanging ideas and helping one another, stating, *“I think some activities, such as group work, were useful for exchanging ideas and for helping one another. The teacher encouraged us to solve problems collaboratively, which enhanced our learning experience.”* This fostered autonomy and a sense of ownership over their educational progress. A recurring sub-theme was the teacher’s supportive demeanor, which students consistently identified as key to enhancing motivation and confidence. Negin remarked on the reduction of anxiety and increased engagement fostered by the teacher’s calmness and openness to questions, stating, *“Your teaching was characterized by calmness and intimacy, which reduced my anxiety and encouraged me to be more engaged. I no longer felt nervous about participating in class discussions.”* This supportive approach, aligning with constructivist principles,

created a safe and respectful environment enabling deeper engagement with the material.

Feedback and guidance were also identified as key components of effective teacher performance, significantly contributing to students’ comprehension and learning outcomes. Students appreciated timely and constructive feedback, helping them identify areas for improvement and feeling acknowledged for their progress. Fatemeh shared that, *“Of course, she guided us and occasionally provided feedback to enhance our work. It was beneficial to understand what I was doing well and what required more effort.”* This constructive feedback guided students toward improved performance and reinforced their motivation, encouraging them to view learning as a process of growth. Furthermore, the teacher’s proficiency in employing ALS that promoted group interaction and peer feedback significantly enriched the collaborative atmosphere. Hasti, reflecting on the value of role-plays and group discussions, stated, *“I really liked the class, particularly the role plays and group discussions. These activities provided an excellent opportunity to observe how others interpreted the text and to think about it differently.”* By structuring opportunities for peer interaction, the teacher fostered collaborative knowledge construction, gaining insights from diverse perspectives. In summary, effective teacher performance in an active learning environment relies on diverse instructional methods, a facilitative approach, supportive interactions, and formative feedback. These elements contribute to a classroom atmosphere where students feel motivated, understood, and actively engaged, underscoring the significance of the teacher’s role in fostering a productive active learning environment and reinforcing the advantages of ALS in enhancing comprehension and promoting learner autonomy.

4.2.3 Learner views on reading comprehension and active learning challenges

The final theme, Views on Reading Comprehension and Active Learning Challenges, explored students’ perspectives on the influence of ALS on their reading comprehension skills, as well as any obstacles encountered. While many reported positive changes, they also identified challenges related to text complexity, vocabulary, time limitations, and group dynamics. Many participants stated that ALS contributed to enhanced reading skills and academic progress, enabling them to approach reading tasks more effectively. Students highlighted improvements in understanding, vocabulary, and confidence. Mobina expressed that, *“It was extremely beneficial that we examined all aspects of the reading. I believe my reading skills have improved because we focused on various parts, rather than solely on translation.”* Similarly, Niloofar emphasized the practical applications of the strategies, explaining they now enabled her to manage complex passages more effectively: *“The techniques we learned were practical and beneficial for me. I can now read faster and comprehend more, even when the text is challenging.”* These reflections highlight that active learning can improve reading comprehension by equipping students with techniques that encourage analytical and strategic text engagement, enhancing their confidence and ability to tackle more challenging materials.

However, despite these benefits, students also identified several challenges that occasionally hindered their engagement and progress. A common issue was the complexity of the reading passages, which some found overwhelming. Fatemeh described

struggling with dense texts, stating, “Some passages were difficult to fully understand, especially when they contained an excessive number of complex sentences or ideas. At times, it was difficult to maintain focus.” Additionally, vocabulary difficulty was often cited, with unfamiliar terms challenging their ability to grasp the main ideas. Mobina shared, “The reading passages contained many challenging and unfamiliar words. At times, I struggled to understand the meanings of certain terms, which was quite frustrating.” These vocabulary challenges suggest a need for supplementary resources when faced with unfamiliar words. Time constraints also emerged, with Niloofar mentioning feeling pressured to complete readings quickly: “The time allocated to read the entire text wasn’t always enough. I felt that I needed additional time to fully comprehend everything.” This limited timeframe may have hindered their ability to effectively apply active learning techniques. Finally, students identified issues related to group cooperation. Hasti expressed frustration with uncooperative group dynamics, stating, “In some groups, a few individuals were unwilling to assist or participate, which made it more challenging for the rest of us to complete the work effectively.” These dynamics may have diminished the overall effectiveness of ALS. In conclusion, Learner Views regarding Reading Comprehension and Active Learning Challenges indicate that while students recognized significant benefits, they also faced difficulties related to complex texts, vocabulary, limited time, and group collaboration. These challenges highlight the need for ongoing support and adjustments to address specific barriers to engagement and comprehension in active learning environments.

5 Discussion

This study explored the impact of ALSs on reading comprehension, engagement, motivation, and enjoyment among intermediate Iranian EFL learners, as well as their perceptions of ALSs in reading. Given the prevalent use of passive learning methods in Iranian EFL education, this research aimed to evaluate the potential of ALSs to enhance comprehension and student attitudes. While the following discussion considers the findings in relation to existing literature, the emphasis is on the theoretical underpinnings and cultural differences that may explain the observed results. Consistent with prior research (e.g., Hovland, 2019; Güneşli, 2008; Er et al., 2012), the experimental group using ALSs showed significantly higher post-test scores in reading comprehension, supporting the claim that ALSs promote deeper engagement and processing.

Aligned with Vygotsky and Cole (1978) social constructivist theory, the collaborative elements inherent in ALSs, such as peer teaching and discussions, foster cognitive development through social interaction, facilitating meaning-making and knowledge construction. This aligns with the idea that learning is a social process where knowledge is co-constructed. While our study showed improved reading comprehension scores, further research is warranted to explore the extent to which ALSs cultivate critical analysis and challenge existing power dynamics, going beyond test score improvements (Bean and Melzer, 2021; Hajhosseini et al., 2016; Hamouda and Tarlochan, 2015; Kim et al., 2013; Nelson and Crow, 2014; Sgambi et al., 2019). The demonstrated benefits of ALSs across various language skills (e.g., Ashraf et al., 2013; Bean and Melzer, 2021; Askia, 2016) necessitate a critical examination of

whether these strategies genuinely empower EFL learners to engage with diverse perspectives within their specific contexts.

Contrary to expectations and much of the theoretical literature (e.g., Chi and Wylie, 2014; Hodges, 2020; Venton and Pompano, 2021), the quantitative results revealed no significant differences in students’ engagement, motivation, and enjoyment. This discrepancy raises the question of whether cultural and contextual factors influenced learning preferences and classroom dynamics, ultimately mediating the effectiveness of ALSs in enhancing learners’ affective responses. As noted earlier, many Iranian classrooms are traditionally teacher-centered, with students accustomed to a passive learning role (Mayer, 2002; Blaz, 2022). This cultural predisposition may have affected students’ responses to ALSs, as shifting from passive to active roles could require a substantial period of adjustment and the development of new academic habits. Consequently, even though the data do not show significant changes in engagement, motivation, or enjoyment, this may reflect the specific learning context rather than an inherent limitation of ALSs. As Yusuf et al. (2024) have shown, cultural values can impact student responses to various pedagogical approaches. Building on this, the specific ALSs employed in this study may not have been optimally suited to the learners’ cultural backgrounds and preferences. For instance, role-play, while intended to promote participation, may have appeared intimidating to students accustomed to formal classroom settings.

From a social constructivist perspective (Vygotsky and Cole, 1978), learning is most effective within a learner’s Zone of Proximal Development (ZPD). If the role-play, for instance, pushed students too far beyond their comfort zones, it could have increased anxiety. Recent research by Howell (2021) underscores the importance of considering learners’ experiences when selecting ALSs. While statistically significant differences in engagement, motivation, and enjoyment were not observed, qualitative data suggest that the implemented ALSs initiated a positive shift in student perceptions. Students consistently highlighted the benefits of group work and interactive activities, noting how collaboration and peer support facilitated understanding, aligning with both social constructivist principles and research demonstrating active learning’s ability to foster positive attitudes (e.g., Lumpkin et al., 2015; Demirci, 2017). Furthermore, students valued the teacher’s facilitative role, indicating that varied methods and supportive guidance increased their motivation and confidence—a finding supported by research highlighting the importance of a facilitative teacher in active learning environments (Blaz, 2022; Cattaneo, 2017). These subjective experiences captured through qualitative insights provide a valuable understanding of the process of change, suggesting that even without immediate, observable behavioral shifts, ALSs can create a more interactive and supportive learning environment (Detlor et al., 2012) and potentially lead to more positive perceptions of learning. This is particularly relevant given the relatively short duration of the study (ten sessions), which may have limited the observable impact on these affective factors (Nurbavliyev et al., 2022).

The interplay between constructivist principles and the prevailing educational culture in Iranian EFL settings could induce cognitive dissonance as students accustomed to teacher-centered methods adjust to active learning. This pedagogical tradition, characterized by rote memorization and deference to authority, may clash with the active and participatory nature of ALSs. This potential discomfort further explains the lack of significant

immediate impact on engagement, motivation, and enjoyment. To reduce this cultural mismatch, future ALS implementation should carefully scaffold activities, initially incorporating elements familiar to students, such as structured group discussions with clearly defined roles and tasks, before introducing more open-ended or unfamiliar activities like unscripted role-plays. The discrepancy between these findings and the broader ALS literature highlights the critical role of cultural and contextual factors in mediating the effectiveness of ALSs, particularly in influencing learners' affective responses. Future research should investigate the long-term effects of ALS implementation, while also considering the impact of teacher training, classroom environment, and culturally sensitive adaptations of ALSs to maximize their potential benefits for Iranian EFL learners. To maximize motivation within ALSs, instructors should prioritize autonomy, competence, and relatedness, key elements of Self-Determination Theory (Deci and Ryan, 2012). This can be achieved by offering students choices, designing achievable activities with positive feedback, and incorporating collaborative tasks.

While these responses suggest that ALSs positively influenced some students' attitudes toward reading, the absence of statistically significant changes in overall motivation, engagement, and enjoyment requires careful interpretation. The qualitative data may be tapping in to a more immediate response to the learning experience, while the quantitative measures capture a more global and potentially delayed evaluation. The discrepancy between the two could be explained by several factors. First, students may have experienced localized improvements in specific aspects of engagement or motivation during the ALS activities, but these improvements may not have been substantial enough to translate into a statistically significant shift in their overall scores on standardized questionnaires. The questionnaires, designed to measure overall perceptions, might have lacked the sensitivity to detect these context-specific changes. It's possible students felt more engaged during a particular group activity or more motivated to read a certain passage, yet their overall perception of reading enjoyment remained largely unchanged. Future research should employ more granular measures of motivation and engagement, such as observational protocols or open-ended questions. Interventions should also help students connect ALS experiences to their broader learning goals, for instance, through reflective journals or discussions on the benefits of active learning. Costa and Hauck Filho (2019) point out the limitations of self-report questionnaires in capturing the complexities of individual experiences due to response styles and generalized answers. Second, the positive impacts of ALSs on attitudes may require a longer period to fully manifest, leading to measurable changes in overall perceptions. As Lim (2024) suggests, quantitative data provide a snapshot in time, while qualitative data offer richer, longitudinal insights. The students' immediate positive experiences might represent the initial stages of a shift in attitudes that would become more pronounced over time. Finally, it's important to acknowledge that the qualitative data may over-represent the experiences of those who benefited most from ALSs. The interviews, while providing rich detail, might not capture the perspectives of students who found the strategies less helpful or even detrimental. The qualitative findings provide valuable insights into how ALSs can effectively promote learning, but they should not be interpreted as representing the experiences of all students. Therefore, future research should implement more sensitive quantitative measures

that can capture these localized and immediate changes in student attitudes.

It is essential to notice that despite these positive perceptions, some students reported challenges associated with ALSs. A common difficulty was managing complex texts and unfamiliar vocabulary, which some students felt hindered their comprehension. This aligns with previous studies, Lin (2017) and Lipson and Wixson (1997) that show vocabulary difficulties can be a major barrier to reading comprehension, particularly for EFL learners. Addressing this issue may require additional scaffolding strategies to support vocabulary acquisition and comprehension, especially for students who are new to active learning methods. Time constraints were another challenge highlighted by students, who reported feeling pressured to complete readings within limited timeframes. This feedback suggests that some ALSs, while effective in promoting engagement, may impose additional demands on students' time and cognitive resources. To address these challenges, instructors could consider modifying the pace of ALS activities or providing additional support to help students adapt to the active learning format. Overall, the qualitative findings reflect a generally positive reception of ALSs, with students recognizing both the benefits and challenges of this approach. These perceptions align with studies indicating that active learning positively influences students' attitudes and perceptions by fostering a more interactive, student-centered learning environment (Özer, 2020; Cook and Hazelwood, 2002). However, the challenges identified by students suggest that careful planning and adaptation are essential to ensure that ALSs are both effective and accessible for all learners. This suggests teachers to select and adapt ALSs to suit the needs and proficiency levels of their students.

The findings of this study have significant implications for EFL teaching and learning, particularly in contexts like Iran, where traditional, teacher-centered approaches are prevalent. This research supports the adoption of ALSs in EFL classrooms, with a specific focus on elements that foster intrinsic motivation and engagement. By shifting from passive to active learning, students can develop essential language proficiency skills, including critical thinking, problem-solving, and collaboration. The positive impact of ALSs on reading comprehension underscores their potential to enhance language skills that require higher-order cognitive processing. The qualitative findings further suggest that ALSs can contribute to a more supportive and interactive classroom environment, even if immediate quantitative changes in motivation, engagement, and enjoyment are not apparent. To maximize the benefits of ALSs, teachers should consider incorporating diverse activities tailored to various learning preferences and gradually introduce students to the active learning format to facilitate a smoother transition. For instructors, this highlights the importance of creating a positive, student-centered learning environment that values participation and fosters a sense of community. As Ginting (2021) suggests, this requires providing consistent feedback and promoting open communication. Furthermore, it involves identifying individual learning challenges and varying levels of prior knowledge, and encouraging collaborative, team-based activities to enhance motivation and involvement (Munna and Kalam, 2021). Finally, the study highlights the need to address common challenges associated with ALSs, such as vocabulary difficulties and time constraints. For EFL learners who may struggle with the demands of active learning, instructors should implement scaffolding techniques and provide

language support to ensure equitable benefits from this approach. Overall, this research indicates that, with appropriate adaptations, ALSs can provide a valuable framework for enhancing reading comprehension and promoting positive attitudes toward learning in EFL classrooms.

6 Limitation

The findings of this study should be interpreted in light of the following limitations. First, the limited generalizability due to the study's focus on Iranian EFL learners in a specific geographic location (Mazandaran) and educational level, coupled with the all-female sample, restricts the applicability of the results to other populations and contexts. To address this, future research should employ random sampling across broader demographics and settings, expand the scope of ALSs to include other language skills (writing, speaking) and diverse educational levels, and incorporate mixed-gender samples across various learning environments (traditional, online, blended).

Second, the lack of data on teacher perceptions limits our understanding of ALS feasibility and classroom dynamics. Future studies should incorporate teacher perspectives through interviews or observations to better understand implementation.

Third, the relatively short intervention duration, limited by curriculum schedules, may not have allowed for the observation of sustained engagement and motivation, or for measurable changes in these variables to fully manifest. Therefore, future research should examine the effects of extended ALS interventions to identify the optimal duration for maximizing learning outcomes and investigate long-term effects, particularly in blended or online environments.

Fourth, while member checking and peer review were utilized to enhance the trustworthiness of the qualitative findings, the absence of formal inter-rater reliability measures represents a limitation. To enhance the rigor of future research, studies should ensure inter-rater reliability through independent coding by multiple researchers, with disagreements resolved through discussion and consensus.

7 Conclusion

This study investigated ALSs and their impact on Iranian EFL learners' reading comprehension, engagement, motivation, and enjoyment. While ALSs significantly improved reading comprehension, quantitative data revealed a more complex picture, with no significant differences in engagement or motivation, contrasting with students' positive perceptions of the interactive learning environment. These mixed results highlight the critical role of cultural context and the significance of the limitations of relying solely on quantitative measures. While existing literature often presents ALSs as universally beneficial, this study suggests that their impact is mediated by cultural background and implementation strategies. Therefore, teachers should adapt ALSs to suit student proficiency levels, using scaffolding and creating student-centered environments that foster autonomy, competence, and relatedness. To ease the transition, activities should initially incorporate familiar elements, such as structured

group discussions. Theoretically, these findings call for refining active learning models to better account for cultural factors. Future research should explore targeted adaptation strategies, investigate the long-term effects of ALS interventions on both cognitive and affective outcomes using granular measures to capture localized changes in student attitudes and engagement. Interventions should also connect ALS experiences to broader learning goals. Further studies are needed to determine how best to train teachers in designing culturally responsive ALSs. The aim is to empower instructors with effective strategies for using active learning within diverse EFL settings. Furthermore, future studies should investigate which aspects of learning—beyond just reading comprehension—are most amenable in this particular context.

Data availability statement

The original contributions presented in this study are included in this article/[Supplementary material](#), further inquiries can be directed to the corresponding author.

Ethics statement

Ethical considerations were carefully followed throughout the study, in accordance with the principles outlined by BERA (2011). Informed consent was obtained from both the students and school administrators prior to participation. All respondents were thoroughly briefed on the study's purpose and procedures. The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent for participation in this study was provided by the participants' legal guardians/next of kin. Written informed consent was obtained from the individual(s), and minor(s)' legal guardian/next of kin, for the publication of any potentially identifiable images or data included in this article.

Author contributions

ZM: Writing – original draft, Writing – review & editing. MK: Writing – review & editing. AM-Z: Writing – review & editing.

Funding

The author(s) declare that financial support was received for the research and/or publication of this article. The research was conducted in the absence of any commercial or financial relationships.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The authors declare that no Generative AI was used in the creation of this manuscript.

Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the

reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

Supplementary material

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/feduc.2025.1539722/full#supplementary-material>

References

- Abujreiban, T. (2023). Impact of using some zctive learning strategies in a curricula and teaching methods course on the learning motivation level and the development of critical thinking skills among the students of the Faculty of Arts at Al-Zaytoonah University. *J. High. Educ. Theory Practice* 23. doi: 10.33423/jhetp.v23i20.6691
- Alzubi, A. A., Nazim, M., and Ahamad, J. (2024). Examining the effect of a collaborative learning intervention on EFL students' English learning and social interaction. *J. Pedagogical Res.* 8, 26–46. doi: 10.33902/JPR.202425541
- Amjadi, A., and Talebi, S. H. (2024). Extending the efficacy of collaborative strategic reading (CSR) in teaching reading strategies: A socio-cultural emotional perspective. *Lang. Teach. Res.* 28, 714–748. doi: 10.1177/13621688211011501
- Anthony, G. (1996). Active learning in a constructivist framework. *Educ. Stud. Math.* 31, 349–369.
- Ashraf, H., Fatemi, M. A., and Naderi, S. (2013). The effect of active learning instruction on the intermediate Iranian EFL learners' listening comprehension ability. *Int. J. Linguist.* 5, 225–242. doi: 10.5296/ijl.v5i5.4264
- Askia, S. (2016). Improving speaking skills through active learning strategy of the year eight students. *e-J. Eng. Lang. Teach. Soc.* 4, 1–13.
- Bachelor, R. L., Vaughan, P. M., and Wall, C. M. (2012). *Exploring the Effects of Active Learning on Retaining Essential Concepts in Secondary and Junior High Classrooms*. Newtown: Saint Xavier University.
- Bandura, A., and Walters, R. H. (1977). *Social Learning Theory*. Hoboken, NJ: Prentice Hall.
- Bean, J. C., and Melzer, D. (2021). *Engaging Ideas: The Professor's Guide to Integrating Writing, Critical Thinking, and Active Learning in the Classroom*. Hoboken, NJ: John Wiley & Sons.
- Blaz, D. (2022). *The World Language Teacher's Guide to Active Learning: Strategies and Activities for Increasing Student Engagement*. London: Routledge. doi: 10.4324/9781003293262
- Bonwell, C. C., and Eison, J. A. (1991). *Active Learning: Creating Excitement in the Classroom*. Washington, DC: U.S. Department of Education.
- Børte, K., Nesje, K., and Lillejord, S. (2020). Barriers to student active learning in higher education. *Teach. High. Educ.* 28, 597–615. doi: 10.1080/13562517.2020.1839746
- Brown, H. D. (2000). *Principles of Language Learning and Teaching*. London: Pearson Longman. doi: 10.1017/S027226310000752X
- Bruff, D. (2009). *Teaching with classroom response systems: Creating active learning environments*. John Wiley & Sons.
- Bruner, J. S. (1961). The act of discovery. *Harvard Educ. Rev.* 31, 21–32. doi: 10.1016/s0260-691780004-4
- Camacho, D. J., and Legare, J. M. (2015). Opportunities to create active learning techniques in the classroom. *J. Instruct. Res.* 4, 38–45.
- Carr, R., Palmer, S., and Hagel, P. (2015). Active learning: The importance of developing a comprehensive measure. *Active Learn. High. Educ.* 16, 173–186. doi: 10.1177/1469787415589529
- Cattaneo, K. H. (2017). Telling active learning pedagogies apart: From theory to practice. *J. N. Approach. Educ. Res.* 6, 144–152. doi: 10.7821/naer.2017.7.237
- Chi, M. T., and Wylie, R. (2014). The ICAP framework: Linking cognitive engagement to active learning outcomes. *Educ. Psychol.* 49, 219–243. doi: 10.1080/00461520.2014.965823
- Cole, A. W., Lennon, L., and Weber, N. L. (2021). Student perceptions of online active learning practices and online learning climate predict online course engagement. *Interactive Learn. Environ.* 29, 866–880. doi: 10.1080/10494820.2019.1619593
- Cook, E. D., and Hazelwood, A. C. (2002). An active learning strategy for the classroom “who wants to win. some mini chips ahoy?”. *J. Account. Educ.* 20, 297–306. doi: 10.1016/S0748-5751(02)00012-X
- Costa, A. R. L., and Hauck Filho, N. (2019). Methods for the control of extreme response styles in self-report instruments: A review. *Trends Psychol.* 27, 309–323. doi: 10.9788/TP2019.2-02
- Creswell, J. W., and Clark, V. L. P. (2017). *Designing and Conducting Mixed Methods Research*, 3rd Edn. London: SAGE Publications.
- Deci, E. L., and Ryan, R. M. (2012). “Self-determination theory,” in *Handbook of Theories of Social Psychology*, Vol. 1, eds P. A. M. Van Lange, A. W. Kruglanski, and E. T. Higgins (London: Routledge), 416–436.
- Demirci, C. (2017). The effect of active learning approach on attitudes of 7th grade students. *Int. J. Inst.* 10, 129–144. doi: <https://org/10.12973/iji.2017.1048a>
- Detlor, B., Booker, L., Serenko, A., and Julien, H. (2012). Student perceptions of information literacy instruction: The importance of active learning. *Educ. Informat.* 29, 147–161. doi: 10.3233/EFI-2012-0924
- Dewaele, J. M., and MacIntyre, P. D. (2014). The two faces of Janus? Anxiety and enjoyment in the foreign language classroom. *Stud. Sec. Lang. Learn. Teach.* 4, 237–274. doi: 10.14746/ssl.2014.4.2.5
- Dewey, J. (1930). The quest for certainty: A study of the relation of knowledge and action. *J. Philos.* 27, 14–25. doi: 10.2307/2014669
- Doolittle, P., Wojdak, K., and Walters, A. (2023). Defining active learning: A restricted systematic review. *Teach. Learn. Inq.* 11, 1–23. doi: 10.20343/teachlearninq.11.25
- Dornyei, Z. (2007). *Research methods in applied linguistics*. London: Oxford University Press.
- Dörnyei, Z. (2019). Psychology and language learning: The past, the present, and the future. *J. Psychol. Lang. Learn.* 1, 27–41. doi: 10.52598/jpll/1/1/3
- Dugasa, G., Olana, T., and Ali, S. (2022). Effects of explicit reading strategy instruction on grade 9 students' achievement in reading comprehension. *Educ. Res. Int.* 2022:7872840. doi: 10.1155/2022/7872840
- Er, M., Altunay, U., and Yurdabakan, A. (2012). The effects of active learning on foreign language self-concept and reading comprehensive on achievement. *IJONTE* 3: 43–58.
- Erbil, D. G. (2020). A review of flipped classroom and cooperative learning method within the context of Vygotsky theory. *Front. Psychol.* 11:1157. doi: 10.3389/fpsyg.2020.01157
- Fahim, M., and Ahmadian, M. (2012). Critical thinking and Iranian EFL context. *J. Lang. Teach. Res.* 3, 793–800. doi: 10.4304/jltr.3.4.793-800
- Freeman, S., Eddy, S. L., McDonough, M., Smith, M. K., Okoroafor, N., Jordt, H., et al. (2014). Active learning increases student performance in science, engineering, and mathematics. *Proc. Natl. Acad. Sci. U. S. A.* 111, 8410–8415. doi: 10.1073/pnas.1319030111
- Gardner, R. C. (1985). *Social Psychology and Second Language Learning: The Role of Attitudes and Motivation*. London: Edward Arnold.
- Gasmi, A. A., and Al Nadabi, Z. S. (2023). An exploratory study of learners' perceptions about the effectiveness of active learning approaches. *J. Lang. Teach. Res.* 14, 1223–1232. doi: 10.17507/jltr.1405.10

- Ginting, D. (2021). Student engagement and factors affecting active learning in English language teaching. *Voices Engl. Lang. Educ. Soc.* 5, 215–228. doi: 10.29408/veles.v5i2.3968
- Güneyli, A. (2008). The impact of active learning approach on improving the reading skills in native language teaching. *J. Lang. Linguist. Stud.* 4, 1–14.
- Hajhosseini, M., Zandi, S., Hosseini Shabanan, S., and Madani, Y. (2016). Critical thinking and social interaction in active learning: A conceptual analysis of class discussion from Iranian students' perspective. *Cogent Educ.* 3:1175051. doi: 10.1080/2331186X.2016.1175051
- Hamouda, A. M. S., and Tarlochan, F. (2015). Engaging engineering students in active learning and critical thinking through class debates. *Procedia-Soc. Behav. Sci.* 191, 990–995. doi: 10.1016/j.sbspro.2015.04.379
- Harmin, M., and Toth, M. (2006). *Inspiring Active Learning: A Complete Handbook for Today's Teachers*. Arlington, VA: Assn for Supervision & Curriculum.
- Harvey, S., and Goudvis, A. (2023). *Strategies that Work: Teaching Comprehension for Engagement, Understanding, and Building Knowledge, Grades K-8*. London: Routledge.
- Hodges, L. C. (2020). "Student engagement in active learning classes," in *Active Learning in College Science*, eds J. J. Mintzes and E. M. Walter (Cham: Springer), doi: 10.1007/978-3-030-33600-4_3
- Holec, V., and Marynowski, R. (2020). Does it matter where you teach? Insights from a quasi-experimental study of student engagement in an active learning classroom. *Teach. Learn. Inq.* 8, 140–164. doi: 10.20343/teachlearning.8.2.10
- Hovland, I. (2019). Bringing reading into the classroom: Using active learning to practice the invisible skill. *Int. J. Teach. Learn. High. Educ.* 31, 512–523.
- Howell, R. A. (2021). Engaging students in education for sustainable development: The benefits of active learning, reflective practices and flipped classroom pedagogies. *J. Cleaner Product.* 325:129318. doi: 10.1016/j.jclepro.2021.129318
- Huang, X., and Lajoie, S. P. (2023). Social emotional interaction in collaborative learning: Why it matters and how can we measure it? *Soc. Sci. Human. Open* 7:100447. doi: 10.1016/j.ssaho.2023.100447
- Indriyani, V., Fendi, H., Jasmienti, J., and Rahmayani, R. D. (2024). Comparing problem-based learning (PBL) and active learning in augmenting students' proficiency in reading comprehension. *Jurnal Pendidikan Progresif* 14, 74–88. doi: 10.23960/jpp.v14.i1.202406
- Julia, C., and Antolí, J. Ö (2019). Impact of implementing a long-term STEM-based active learning course on students' motivation. *Int. J. Technol. Design Educ.* 29, 303–327. doi: 10.1007/s10798-018-9441-8
- Kim, K., Sharma, P., Land, S. M., and Furlong, K. P. (2013). Effects of active learning on enhancing student critical thinking in an undergraduate general science course. *Innovat. High. Educ.* 38, 223–235. doi: 10.1007/s10755-012-9236-x
- Korkmaz, S., and Öz, H. (2021). Using Kahoot to improve reading comprehension of English as a foreign language learners. *Int. Online J. Educ. Teach.* 8, 1138–1150.
- Lantolf, J. P. (2005). "Sociocultural and second language learning research: An exegesis," in *Handbook of Research in Second Language Teaching and Learning*, ed. E. Hinkel (London: Routledge), 335–353.
- Lee, J. S. (2022). The role of grit and classroom enjoyment in EFL learners' willingness to communicate. *J. Multiling. Multicult. Dev.* 43, 452–468. doi: 10.1080/01434632.2020.1746319
- Li, H., Majumdar, R., Chen, M. R. A., and Ogata, H. (2021). Goal-oriented active learning (GOAL) system to promote reading engagement, self-directed learning behavior, and motivation in extensive reading. *Comput. Educ.* 171:104239. doi: 10.1016/j.compedu.2021.104239
- Lim, W. M. (2024). What is qualitative research? An overview and guidelines. *Aust. Market. J.* 33, 199–229. doi: 10.1177/14413582241264619
- Lin, L. F. (2027). Impacts of the problem-based learning pedagogy on English learners' reading comprehension, strategy use, and active learning attitudes. *J. Educ. Train. Stud.* 5, 109–125.
- Lipson, M. Y., and Wixson, K. K. (1997). *Assessment & Instruction of Reading and Writing Disability: An Interactive Approach*. London: Pearson Longman.
- Lumpkin, A., Achen, R. M., and Dodd, R. K. (2015). Student perceptions of active learning. *Coll. Student J.* 49, 121–133.
- Mayer, R. E. (2002). Multimedia learning. *Psychol. Learn. Motiv.* 41, 85–139. doi: 10.1016/S0079-7421(02)80005-6
- Mayer, R. E. (2008). *Learning and Instruction*. London: Pearson Merrill Prentice Hall.
- Mayer, R. E. (2009). "Constructivism as a theory of learning versus constructivism as a prescription for instruction," in *Constructivist Instruction: Success or Failure?*, eds S. Tobias and T. M. Duffy (London: Routledge), 196–212.
- McLaughlin, M. (2012). Reading comprehension: What every teacher needs to know. *Read. Teach.* 65, 432–440. doi: 10.1002/TRTR.01064
- Michel, N., Cater, I. J. J., and Varela, O. (2009). Active versus passive teaching styles: An empirical study of student learning outcomes. *Hum. Resour. Dev. Q.* 20, 397–418. doi: 10.1002/hrdq.20025
- Mizokami, S. (2018). "Deep active learning from the perspective of active learning theory," in *Deep Active Learning*, ed. K. Matsushita (Cham: Springer), 79–91. doi: 10.1007/978-981-10-5660-4_5
- Mohammed, A. M. K. A., and Al-hassan, M. M. A. A. (2023). Effectiveness of implementing active learning strategies in enhancing EFL learners' motivation, attitudes, aptitudes and skills. *Glob. J. Arts Human. Soc. Sci.* 11, 79–87. doi: 10.37745/gjahss.2013/vol11n67987
- Munna, A. S., and Kalam, M. A. (2021). Impact of active learning strategy on the student engagement. *GNOSI* 4, 96–114.
- Naderi, S., and Ashraf, H. (2013). The effect of active learning instruction on the intermediate Iranian EFL learners' listening self-efficacy beliefs. *Int. J. Ling.* 5:91. doi: 10.5296/ijl.v5i6.4349
- National Assessment Governing Board (2008). *Reading framework for the 2009 national assessment of educational progress*. Washington, DC: U.S. Government Printing Office.
- National Center for Educational Statistics (2005). *2009 NAEP reading framework*. Washington, DC: Author.
- Nelson, L. P., and Crow, M. L. (2014). Do active-learning strategies improve students' critical thinking? *High. Educ. Stud.* 4, 77–90. doi: 10.5539/hes.v4n2p77
- Nurbavliyev, O., Kaymak, S., and Sydykov, B. (2022). The effect of active learning method on students' academic success, motivation, and attitude towards mathematics. *J. Lang. Linguist. Stud.* 18, 701–713.
- Owens, D. C., Sadler, T. D., Barlow, A. T., and Smith-Walters, C. (2020). Student motivation from and resistance to active learning rooted in essential science practices. *Res. Sci. Educ.* 50, 253–277. doi: 10.1007/s11165-017-9688-1
- Özer, S. (2020). The effect of active learning on achievement and attitude in vocational english course. *Inq. Educ.* 12:13.
- Phan, M. N. V. (2022). EFL teachers' perceptions of the implementation of active learning in reading classroom. *Int. J. Lang. Instruct.* 1, 65–85. doi: 10.54855/ijli.22117
- Piaget, J. (1970). *Structuralism*. New York, NY: Basic Books.
- Piaget, J. (1980). "The psychogenesis of knowledge and its epistemological significance," in *Language and Learning: The Debate Between Jean Piaget and Noam Chomsky*, ed. M. Piattelli-Palmarini (Cambridge, MA: Harvard University Press), 1–23.
- Pressley, M. (2000). "What should comprehension instruction be the instruction of?," in *Handbook of Reading Research*, eds M. L. Kamil, P. B. Mosenthal, P. D. Pearson, and R. Barr (Mahwah, NJ: Lawrence Erlbaum Associates Publishers), 545–561.
- Qureshi, M. A., Khaskheli, A., Qureshi, J. A., Raza, S. A., and Yousufi, S. Q. (2021). Factors affecting students' learning performance through collaborative learning and engagement. *Interactive Learn. Environ.* 31, 2371–2391. doi: 10.1080/10494820.2021.1884886
- Rannikmäe, M., Holbrook, J., and Soobard, R. (2020). "Social Constructivism—Jerome Bruner," in *Science Education in Theory and Practice: An Introductory Guide to Learning Theory*, eds B. Akpan and T. J. Kennedy (Cham: Springer), 259–275. doi: 10.1007/978-3-030-43620-9_18
- Raykov, T., and Marcoulides, G. A. (2008). *An introduction to applied multivariate analysis*. Routledge. doi: 10.4324/9780203809532
- Rowe, M. L., and Weisleder, A. (2020). Language development in context. *Annu. Rev. Dev. Psychol.* 2, 201–223. doi: 10.1146/annurev-devpsych-042220-121816
- Sgambi, L., Lylian, K., Noemi, B., and Elsa, G. (2019). Active learning for the promotion of students' creativity and critical thinking: An experience in structural courses for architecture. *Archnet-IJAR* 13, 386–407. doi: 10.1108/ARCH-11-2018-0018
- Sia, C. W., Idress, M. B., Md Akhri, N. A., Md Jamin, N. H., and Bakar, N. H. (2024). "Enhancing students' engagement and motivation: Exploring the impact of active learning approaches in educational settings," in *Proceedings of the International Conference on Advancing and Redesigning Education 2023. ICARE 2023*, eds M. F. B. Romlie, A. Shaikh, Z. B. Hari, and M. C. Leow (Singapore: Springer), doi: 10.1007/978-981-97-4507-4_24
- Smith, R., Snow, P., Serry, T., and Hammond, L. (2021). The role of background knowledge in reading comprehension: A critical review. *Read. Psychol.* 42, 214–240. doi: 10.1080/02702711.2021.1888348
- Stewart-Wingfield, S., and Black, G. S. (2005). Active versus passive course designs: The impact on student outcomes. *J. Educ. Bus.* 81, 119–123. doi: 10.3200/JOEB.81.2.119-128
- Stieha, V., Earl, B., Hagens, H., Haynes, M., Ulappa, A., Bond, L., et al. (2024). An exploration of the relationship between active learning and student motivation in STEM: A mixed methods study. *Adv. Physiol. Educ.* 48, 621–638. doi: 10.1152/advan.00247.2022
- TeKippe, S. S. (2017). A roadmap to increase active learning: Reading methodology courses with problem-based learning in professional learning communities. *J. High. Educ. Theory Practice* 17, 1–12.
- Tremblay, P., and Gardner, R. C. (1995). Expanding the motivation construct in language learning. *Modern Lang. J.* 79, 505–518. doi: 10.1111/j.1540-4781.1995.tb05451.x

- Venton, B. J., and Pompano, R. R. (2021). Strategies for enhancing remote student engagement through active learning. *Anal. Bioanal. Chem.* 413, 1507–1512. doi: 10.1007/s00216-021-03159-0
- Vygotsky, L. S. (1962). *Thought and language*. Cambridge: MIT press.
- Vygotsky, L. S., and Cole, M. (1978). *Mind in Society: Development of Higher Psychological Processes*. Cambridge, MA: Harvard University Press.
- Wang, M. T., Fredricks, J. A., Ye, F., Hofkens, T. L., and Linn, J. S. (2016). The math and science engagement scales: Scale development, validation, and psychometric properties. *Learn. Instr.* 43, 16–26.
- Watson-Gegeo, K. A., and Nielsen, S. (2003). “Language socialization in SLA,” in *The Handbook of Second Language Acquisition*, eds C. Doughty and M. Long (Hoboken, NJ: Blackwell Publishing Ltd), 154–177. doi: 10.1002/9780470756492
- Yunus, M., and Ubaidillah, M. F. (2021). EFL teacher educators’ experiences in teaching critical reading: Evidence from Indonesia. *J. Engl. For. Lang.* 11, 422–441. doi: 10.23971/jeft.v11i2.3133
- Yusuf, A., Pervin, N., and Román-González, M. (2024). Generative AI and the future of higher education: A threat to academic integrity or reformation? Evidence from multicultural perspectives. *Int. J. Educ. Technol. High. Educ.* 21:21. doi: 10.1186/s41239-024-00453-6
- Zajda, J. (2021). “Constructivist learning theory and creating effective learning environments,” in *Globalisation and Education Reforms: Globalisation, Comparative Education and Policy Research*, Vol. 25, ed. Z. Joseph (Cham: Springer), doi: 10.1007/978-3-030-71575-5_3
- Zarei, N., Saeidi, M., and Ahangari, S. (2019). Exploring EFL teachers’ socioaffective and pedagogic strategies and students’ willingness to communicate with a focus on Iranian culture. *Educ. Res. Int.* 2019:3464163. doi: 10.1155/2019/3464163