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The Impact of Flipped Classroom Instruction on College EFL Trainees' Reading Proficiency, Perceptions, and Engagement

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This study examines the impact of FCI versus Conventional Classroom Instruction (CCI) with Explicit Reading Instruction (ERI) on reading comprehension proficiency, engagement, and perceptions among English as Foreign Language (EFL) trainees at Injibara College, Ethiopia, during 2023. Using a quasi-experimental pre-test–post-test non-equivalent group design, 53 participants were purposefully assigned to FCI (n = 28) and CCI (n = 25) groups. The intervention took place in the second semester over 12 weeks (February–May), with weekly one-hour sessions where both groups worked on identical reading materials from the same course. The FCI group prepared by viewing videos and reading materials before class and participated in collaborative, teacher-guided activities during sessions, whereas the CCI group received teacher-led explicit instruction in class followed by independent homework. Quantitative data were collected through four RCP assessments (pre-test, two interim tests, post-test) and questionnaires assessing engagement and perceptions. Qualitative data were gathered via interviews with six purposively selected FCI participants.Results indicated notable improvement in both groups, with the FCI group demonstrating greater and sustained gains, evidenced by a large effect size (η^2_p = .305) and significant interaction effects (F(3,48) = 3.67, p = .015), reflecting progressive enhancement. Participants reported positive perceptions, emphasizing critical thinking, flexibility, and preparation, although some expressed reluctance to recommend FCI. Engagement scores indicated high cognitive, behavioural, and emotional involvement. Qualitative analysis revealed increased learner autonomy, deeper comprehension, and peer collaboration, despite initial workload and technological challenges. Overall, findings affirm FCI's potential in EFL, influencing pedagogy, policy, technological integration, and innovative practices to sustain engagement and language proficiency.

Introduction

The integration of educational technology (EdTech) has significantly transformed teaching practices, shifting classrooms from teacher-centered to learner-centered environments. This transformation is mainly driven by the increased availability of digital resources, multimedia tools, and online content, which foster learner autonomy, motivation, and flexibility, especially in English as a Foreign Language (EFL) settings(Altbach et al.,

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2009; Metruk, 2022) . Globally, educators adopt innovative, student-centered methodologies that address diverse learning needs and foster deeper understanding (Asratie et al., 2023). In Ethiopia, although national policy supports the use of EdTech in language instruction to innovate educational practices, persistent challenges — such as inadequate infrastructure and limited teacher training — continue to hinder effective implementation (Ministry of Education [MoE], 2023; Simie & McKinley, 2025) . Despite these constraints, the growing global interest and emerging practices in EdTech integration—even in resource-limited contexts—reflect a strong commitment to improving language learning through innovative, technology-supported instruction.

Among emerging instructional approaches, Flipped Classroom Instruction (FCI) has gained notable attention for its potential to reshape how teachers and students interact in the classroom. Unlike conventional models, FCI requires learners to engage with core content—such as videos, readings, or multimedia materials—before class, which then allows in-person sessions to focus on collaborative activities like discussion, problem-solving, and applied practice (Bergmann & Sams, 2012). This model stands in contrast to Conventional Classroom Instruction (CCI), which is primarily lecture-driven and often limits opportunities for student engagement and independent thinking.

Research suggests that FCI fosters deeper learner involvement, enhances critical thinking, and supports differentiated instruction—qualities especially beneficial in language classrooms where both cognitive and communicative skills are essential (Afzali & Izadpanah, 2021; Bishop & Verleger, 2013; Tran et al., 2025). Therefore, FCI presents a promising alternative for contemporary EFL education by promoting active learning and addressing the constraints of teacher-centered instructional methods.

Reading comprehension refers to the ability to construct meaning from written texts by integrating prior knowledge with new information. It goes beyond simply decoding words and involves interpreting, analyzing, and synthesizing ideas in context (Israel & Duffy, 2009). In EFL settings, reading comprehension is especially crucial, as it supports vocabulary development, academic achievement, and access to global knowledge (Duke et al., 2021). Proficient readers use strategies such as summarizing, predicting, and questioning to engage with various text types and deepen understanding. However, Duke et al.(2021) argue that many EFL learners face significant challenges in comprehension due to limited vocabulary, unfamiliar cultural references, and insufficient instruction in reading strategies. A striking example of this challenge is found in Ethiopia, where only 3.2% of 845,000 students passed the university entrance examination in 2022/23, reflecting serious gaps in reading proficiency (MoE, 2023). Therefore, adopting modern, learner-centered, and strategy-based instruction is not only essential for improving EFL learners' academic and communicative competence, but also timely in addressing the urgent literacy challenges faced in today's classrooms.

Adapting conventional instructional methods to include contemporary approaches, such as FCI, is not only supported by research but also considered pedagogically sound. Thus, the growing use of FCI in EFL contexts is largely motivated by its potential to address persistent instructional limitations, particularly those seen in conventional reading instruction (CRI). A widely implemented model within CRI is Explicit Reading Instruction (ERI), which has been praised for its structured, strategy-based design (Olifant et al., 2020). In Ethiopia, ERI strategies are not only recommended by scholars such as Wendaferew and Damtew (2023), but also have already been formally incorporated into the national curriculum (Dugasa et al., 2022; Habtamu, 2025) . Teaching materials across educational levels—from primary to

university—are also aligned with ERI principles and practices.

Despite its well-established theoretical foundation, the practical application of ERI remains challenging in EFL classrooms. Through the use of ERI, teaching reading comprehension strategies effectively requires teachers to model cognitive processes, scaffold learning, and provide guided practice—skills that demand extensive training (Pearson & Dole, 1987). However, in Ethiopia, large class sizes, limited instructional time, and overloaded curricula restrict opportunities for individualized support (Gashaye & Alem, 2018) .Teachers often struggle to address the diverse cultural and linguistic backgrounds of learners, making differentiated instruction difficult. These limitations contribute to students' persistent difficulties in understanding texts, resulting in low reading comprehension proficiency (RCP). Consequently, despite ERI's inclusion in curricula and policy, it has not consistently yielded satisfactory learning outcomes, underscoring the need for more adaptive and learner-centered instructional approaches.

Given ERI's limitations, this study examines the theoretical foundations underpinning FCI as a pedagogically sound alternative to improve reading comprehension. Grounded primarily in Vygotsky (1978) social constructivist theory, which emphasizes learning as a socially mediated process facilitated by interaction and scaffolding, FCI reallocates content delivery to pre-class activities, freeing classroom time for collaborative reading tasks, teacher guidance, and peer feedback that foster deeper comprehension through social engagement. Complementing this, Mayer's (2024) cognitive theory of multimedia learning explains how pre-class video and visual materials reduce cognitive overload by engaging both visual and auditory channels, thereby enhancing learners' information processing and retention. This is especially pertinent in reading comprehension, which requires integration of textual features, vocabulary, and conceptual knowledge. Additionally, metacognitive theory underpins FCI's emphasis on learner autonomy by encouraging students to plan, monitor, and evaluate their understanding prior to class activities.

Although the theoretical and pedagogical advantages of FCI in language learning are well established, empirical research investigating its application within Ethiopian EFL contexts remains limited. International studies have demonstrated that FCI enhances reading comprehension and learner engagement. International research shows FCI improves reading comprehension and learner engagement(Abaeian & Samadi, 2016; Mohammaddokht & Fathi, 2022) ,yet only a few local studies have examined its effects on Ethiopian learners explicitly (Faro et al., 2024; Girma Moti & Seid, 2025; Mekonen et al., 2024; Mengesha, 2024) . Despite supportive national policies advocating digital technology integration in English instruction (MoE, 2023), FCI has not been broadly implemented within teacher education or the wider educational system. Many educators (Amare et al., 2024; Demissie et al., 2022; Girma Moti & Seid, 2025) cite insufficient training to effectively leverage digital resources, resulting in limited adoption of FCI in both teacher preparation and classroom practices. Therefore, this study is motivated by the need to address these gaps by providing empirical evidence on the effectiveness and perceptions of FCI in Ethiopian EFL contexts; consequently, it aims to inform teacher education and promote the wider adoption of technology-enhanced instructional practices.

Literature Review

This section reviews the expanding use of FCI in language education, highlighting its facilitation of active, learner-centered approaches and holistic language skill development. It

examines FCI's adoption in diverse EFL settings, emphasizing pedagogical benefits for reading comprehension. Additionally, the review addresses FCI's effects on learner proficiency, perceptions and engagement, associated implementation challenges, supporting digital technologies, and identifies critical research gaps.

Flipped Classroom Instruction in Language Education

FCI has attracted considerable attention in language education research due to its capacity to promote active, student-centered learning and foster holistic language skill development. Numerous studies indicate that FCI empowers learners by integrating technology-enabled pre-class preparation with collaborative and interactive in-class activities, leading to measurable gains across listening, speaking, reading, and writing skills (Filiz & Benzet, 2018; Hung, 2015; Pongpanich et al., 2025) In these settings, learners preview core materials—such as vocabulary and texts—outside of class, allowing classroom time to be devoted to the application of critical reading strategies and dynamic peer engagement, a structure that has been shown to improve motivation and performance notably in contexts ranging from Iran and South Korea to Turkey (Hashemifardnia et al., 2018; Lee & Wallace, 2018; Şimşek & Bakır, 2024). This pedagogical shift reflects a broader, global movement toward evidence-based, technology-supported methods that encourage deep, meaningful, and sustained language teaching (Altbach et al., 2009). Thus, FCI stands out as promising instructional approach, enabling language learners to benefit from more interactive, personalized, and effective educational experiences.

Key Pedagogical Benefits of Flipped Classrooms for EFL Reading

FCI offers significant pedagogical benefits for improving reading comprehension in EFL contexts by combining self-paced pre-class learning with interactive, higher-order classroom activities. One key benefit of FCI is enabling students to preview texts, vocabulary, and instructional content before class, which frees in-class time for deeper analysis and strategic reading practice (Hashemifardnia et al., 2018; Lee & Wallace, 2018). Another advantage is the promotion of learner autonomy and self-regulated learning, as students independently engage with multimedia pre-class materials and take greater responsibility for their own progress (Mohammaddokht & Fathi, 2022). In addition, FCI fosters higher-order cognitive skills—including inferencing, critical thinking, and problem-solving—by shifting classroom focus from teacher-led lectures to collaborative, task-based discussions (Karimi & Hamzavi, 2017; Şimşek & Bakır, 2024). Moreover, it enhances learner motivation and cognitive engagement through interactive peer activities and active participation, which strengthen knowledge retention and metacognitive awareness during reading tasks (Tran et al., 2025). Collectively, these benefits demonstrate that FCI is an effective instructional approach for fostering deeper comprehension, learner independence, and higher-order thinking in EFL reading classrooms.

Proficiency, Engagement, and Learner Perceptions in Flipped Classrooms

FCI's positive impact on EFL learners' proficiency and engagement is well-documented. Accessibility to pre-class content enables learners to revisit materials and clarify ambiguities at their own pace, facilitating better comprehension and application during interactive classroom activities (Aljaraideh, 2019; Samiei & Ebadi, 2021). For instance, Samiei and Ebadi (2021) found that flipped instruction in higher education significantly enhanced RCP , attributing the improvement to structured video lectures and peer-led discussions. Engagement is further stimulated through collaborative activities such as group

problem-solving and peer feedback, which correlate with increased motivation and active participation (Afzali & Izadpanah, 2021).

Learner perceptions of FCI are predominantly positive, emphasizing autonomy in pacing and meaningful peer interaction(Çiftci Aksoy & Takkaç Tulgar, 2024). However, challenges remain regarding learners' readiness for self-regulated learning and technological adaptability. While more proficient and digitally literate learners thrive in FCI's flexible environment, those with limited digital skills or self-discipline may find pre-class tasks burdensome without sufficient scaffolding. Additionally, perceptions of group work vary, with some students experiencing it as enriching and others as unevenly participatory, indicating the need for balanced task design and instructor guidance to ensure equitable engagements.

Challenges in Implementing Flipped Classrooms for EFL Reading

Despite its benefits, FCI faces challenges at the student, teacher, and institutional levels. Student-level barriers include limited digital literacy, inadequate self-regulation, and motivational issues, which impede effective engagement with pre-class materials (Afzali & Izadpanah, 2021). Teacher-related challenges involve the time-intensive nature of creating quality pre-class content, ongoing professional development needs, and adapting pedagogical approaches to maximize in-class interaction (Al-Samarraie et al., 2020). Institutional constraints such as insufficient technological infrastructure, unreliable internet connectivity, and limited device availability further hinder FCI's scalability, especially in resource-constrained settings (Al-Samarraie et al., 2020; Amare et al., 2024). In African EFL contexts, underfunding and lack of policy support exacerbate these challenges, necessitating context-specific adaptations to ensure effective implementation.

Digital Tools Facilitating Flipped Classroom Instruction in EFL

The effectiveness of FCI is closely tied to the strategic use of digital tools that enhance both content delivery and learner interaction. Learning management systems (LMS) such as Moodle and Google Classroom enable instructors to share annotated texts, track learner progress, and administer interactive quizzes, thereby supporting continuous monitoring and engagement (Basal, 2015). Multimedia platforms like YouTube further enrich instruction by providing authentic audiovisual materials that foster comprehension and motivation. Additionally, AI-driven adaptive learning platforms hold promise for creating personalized learning pathways tailored to individual needs; however, their successful integration requires alignment with pedagogical goals to avoid excessive dependence on technology.

Despite these advantages, infrastructural challenges pose significant barriers to effective implementation in many EFL contexts. Unreliable internet connectivity, device scarcity, and limited institutional support often undermine the consistent use of digital tools, especially in under-resourced regions (Al-Samarraie et al., 2020; Amare et al., 2024). These constraints highlight the need for sustained investment in technological infrastructure and training to ensure equitable access. Therefore, maximizing the potential of FCI requires not only the thoughtful integration of digital tools into pedagogy but also context-sensitive strategies that address systemic limitations in diverse educational settings.

Research Gaps and Future Directions

While FCI shows promise in enhancing EFL reading comprehension, critical gaps remain. Longitudinal studies examining retention of reading comprehension skills are scarce, with most research focusing on short-term gains (Basal, 2015; Karimi & Hamzavi, 2017). Comparative research in under-resourced contexts, such as Sub-Saharan Africa, is limited, restricting generalizability across diverse educational settings. Furthermore, Basel (2015) the interplay between FCI and self-regulated learning strategies—particularly in goal-setting and progress monitoring—requires deeper investigation to optimize instructional design. Finally, cultural and institutional factors influencing FCI effectiveness remain underexplored, highlighting the need for cross-contextual studies to inform scalable and culturally responsive implementations (Amare et al., 2024)

Research Aim and Questions

This study aims to compare the effects of Flipped Classroom Instruction (FCI) and Conventional Reading Instruction (CRI), emphasizing Explicit Reading Instruction (ERI), on reading comprehension, engagement, and perceptions among Ethiopian EFL teacher trainees. The primary goal is to generate evidence that can inform curriculum development and support the advancement of learner-centered, technology-enhanced pedagogies in EFL education.

Despite the proliferation of studies examining FCI internationally, substantial research gaps persist within the Ethiopian EFL context, particularly concerning its impact on reading comprehension proficiency. Moreover, limited empirical work has explored how FCI shapes learner perceptions and engagement—especially in direct comparison to established ERI approaches. Addressing these limitations, the present investigation examines the influence of FCI on college-level EFL trainees' reading comprehension proficiency (RCP), perceptions of instructional effectiveness, and engagement in reading tasks.

The following research questions guide this inquiry:

(1) Is there a significant difference in RCP between EFL trainees taught using FCI and those taught using ERI?
(2) What are the longitudinal effects of sustained FCI on EFL trainees' RCP over time?
(3) How do EFL trainees perceive the effectiveness of FCI in improving their reading comprehension?
(4) How does FCI affect trainees' engagement in reading tasks compared to ERI?

Method

This section presents the study's methodology, covering the research design, setting, participants, instructional materials, data collection tools, and data analysis procedures.

Research Design

This study employed a mixed method, quasi-experimental pre-test–post-test non-equivalent group design, appropriate for settings where random assignment is not feasible (Cohen et al., 2000). Two intact groups were purposively assigned: Experimental Group (EG; n = 28), which received FCI and Control Group (CG; n = 25), which received ERI. RCP was assessed using pre- and post-tests, with two interim assessments administered to the EG to monitor progress. Trainee engagement and perceptions were measured through structured Likert-scale questionnaires, and semi-structured interviews with six EG

participants provided additional qualitative insights. The combination of test scores, survey data, and interview responses offers a comprehensive understanding of FCI's instructional impact and trainees' experiences, as Creswell and Creswell (2018) suggest. To illustrate the structure of data collection across both groups, Table 1 presents an overview of the research design components and participant involvement at each stage of the study.

Table 1. Research Design Structure and Group Participation

Group	Pre-Test	Mid-Test 1	Mid-Test 2	Post-Test	Survey	Interview
EG – FCI	√	√	√	√	√	√
CG – ERI	√	x	x	√	x	x

Note:√ = Participated; x = Not Participated.

Study Setting

This study was conducted at Injibara College of Teachers Education (ICTE), located in the Awi Zone of Ethiopia, during the second semester of the 2023/24 academic year (February–June 2023). Following Creswell and Creswell (2018) recommendations on purposeful site selection to ensure contextual relevance and access to supportive infrastructures, ICTE was chosen for its institutional emphasis on technology-enhanced teaching and learning. The college provides internet-enabled facilities, including a digital library and connected learning spaces throughout the college , aligning with the technological requirements of the FCI approach, which Cohen et al.(2000) identify as critical for fostering collaborative and active learning environments. Additionally, ICTE offered accessible participants, administrative cooperation, and a learning environment conducive to innovation, which together created favourable conditions for implementing FCI by promoting instructor-trainee collaboration and active student engagement.

Participants and Sampling

Using purposive sampling, the study recruited 53 EFL trainees (4 males, 49 females) from two intact Citizenship Department classes at ICTE, selected for their contextual familiarity and potential exposure to FCI (Cohen et al., 2000). Institutional constraints prevented random assignment; thus, group allocation was determined through a technology access inventory. The EG (n = 28) demonstrated higher mobile device ownership, with 24 trainees possessing smartphones or tablets and 4 relying on institutional computer access to ensure equitable participation. The CG (n = 25) had comparatively fewer mobile-enabled students and received conventional instruction. Six EG participants—purposefully selected based on gender, digital access, and observed engagement—took part in semi-structured interviews. The same instructor taught both groups throughout the intervention. Participants' native languages included Awigni and Amharic, while English served as the medium of instruction. Table 2 presents demographic details.

Table 2. Research Participants

Group	Male	Female	Total	Age ranged	Department
Experimental	2	26	28	20 - 24.	
Control	2	23	25	21 – 23.	Citizenship
N	4	49	53		

Data Collection Instruments

The study employed three distinct data collection instruments: RCP tests, a Likert-scale questionnaire, and semi-structured interviews.

Reading Comprehension Proficiency Tests

Four parallel RCP tests—pre-test, two mid-tests, and a post-test—were developed to measure trainees' reading proficiency throughout the intervention. The tests were adapted from well-established sources curated on Ereading Worksheets (Morton, 2023) and British Council reading practice tests (British Council, 2020), and carefully modified to align with the course content and participants' proficiency levels . Each test comprised 23 items administered over 50 minutes and included a balanced mix of True/False (4 items), Matching (5), Multiple Choice (12), and Short Writing Tasks (2), all aligned with Bloom's Taxonomy (Anderson, 1999) and constructivist learning principles (Israel & Duffy, 2009). Topics spanned culturally relevant themes such as slavery, technology, teenage temptations, and cultural heritage. Expert validation and pilot testing with 20 trainees ensured linguistic clarity, cultural appropriateness, and strong internal consistency (α = .89–.92). Table 3 outlines the structure and scoring of each test.

Table 3. Reading Comprehension Proficiency Test Specifications

Test Reading Topic	Word	True/False	Matching	Choice	Writing	Total
1. Slavery	300	4 × 1 = 4	5 × 1 = 5	12 × 1 = 12	2 × 2 = 4	25
2. Impact of Technology	350	4 × 1 = 4	5 × 1 = 5	12 × 1 =12	2 × 2 = 4	25
3. Teenage Temptations	400	4 × 1 = 4	5 × 1 = 5	12 × 1 = 12	2 × 2 = 4	25
4. Cultural Heritage	450	4 × 1 = 4	5 × 1 = 5	12 × 1 = 12	2 × 2 = 4	25

Note: Each test has 23 items totalling 25 points; table shows scoring breakdown by question type.

Questionnaire

A 29-item Likert-scale questionnaire was used to assess trainees' perceptions of and engagement with FCI. Adapted from Afzali and Izadpanah (2021); Aljaraideh, (2019) and Christofalos et al.(2020). The tool featured two parts: Part I collected demographic information anonymously; Part II contained 13 items on perception (e.g., autonomy, satisfaction, and usefulness) and 16 items on engagement (behavioural, emotional, and cognitive). Items were translated into Amharic to ensure clarity and accessibility. Content validity was verified by four EFL experts (CVI ≥ 0.81), and reliability was supported by high Cronbach's alpha coefficients for both subscales—Perception (α = .927–.948) and Engagement (α = .709–.741) (see Tables 13 and 14 in the Results section).

Semi-Structured Interviews

To explore deeper trainees' perspectives, semi-structured interviews were conducted with six purposively selected FCI trainees. The interview guide, adapted from Aljaraideh (2019) and Karimi and Hamzav (2017), included ten open-ended questions addressing perceptions of FCI, engagement with digital and in-class tasks, and the role of technology in learning. The guide was reviewed by three language experts, translated into Amharic, and piloted with three trainees for clarity. Interviews lasted approximately 15 minutes, were audio-recorded, transcribed verbatim, and translated into English. Thematic analysis was conducted independently by two coders with an inter-coder agreement rate of 89%, and discrepancies were resolved in consultation with a qualitative expert to ensure analytical rigor.

Instructional Materials

The primary instructional resource for the study was the Communicative English Language Skills II (CELS II; FLEn 102) module, specifically adapted for Ethiopian teacher

education colleges. The module's reading component emphasized themes such as cultural heritage, environmental protection, and scientific inquiry, aiming to promote both cognitive development and practical application. Comprising 31 pages and representing 30% of the overall module content, the reading section included structured pre-, while-, and post-reading activities, including comprehension questions, vocabulary exercises, and peer discussions. These activities were intentionally designed to enhance reading comprehension within a constructivist pedagogical framework (Israel & Duffy, 2009). To maintain instructional consistency, identical reading materials were provided to both the EG and CG.

In addition to textual materials, the EG engaged with 20 pre-class instructional videos; each ranging from 10 to 15 minutes in duration, to supplement and reinforce the assigned readings. Half of these videos were sourced from reputable platforms such as Khan Academy and YouTube and concentrated on fundamental reading comprehension strategies, including skimming and summarizing. The other halves were developed by the researcher to closely align with the module texts and corresponding activities. These video resources facilitated independent learner engagement and effectively prepared trainees for interactive and collaborative in-class tasks (Israel & Duffy, 2009; Liu & Liu, 2016).

Intervention Application Process

To evaluate the comparative effectiveness of FCI and ERI on trainees' RCP, a 12-week intervention was implemented. In designing the study, both the EG and CG were provided with identical course content from the CELS II module to ensure curricular consistency. However, the groups differed in instructional delivery, with the EG receiving FCI and the CG receiving ERI.

Pre-Intervention Phase

To prepare EG participants for flipped learning, a brief orientation introduced them to digital platforms (e.g., Telegram, YouTube), navigation of e-learning resources, and collaborative participation strategies. This preparatory stage was informed by constructivist learning theory, which emphasizes learner autonomy and active knowledge construction (Israel & Duffy, 2009).

Intervention Phase

The intervention spanned 12 weeks and compared two instructional approaches FCI for the EG and ERI for the CG. Both groups studied identical content from the CELS II module and received equal instructional hours.

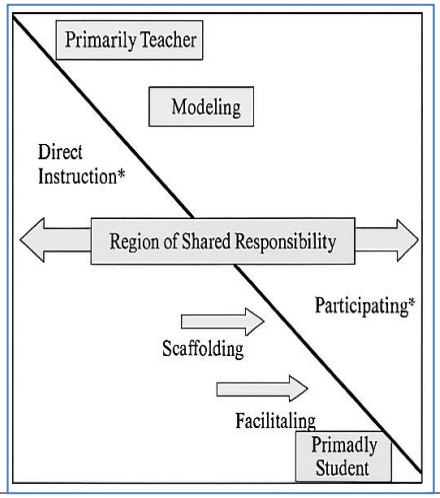
Within the FCI model, EG trainees completed structured pre-class activities, including watching short video lectures, completing guided readings, and responding to comprehension exercises. For instance, before the "Concept of Life Skills" lesson, students accessed digital materials on reading strategies and vocabulary via Telegram and YouTube. Engagement was monitored through short quizzes and reflection tasks to ensure accountability.

In class, students applied prior learning through collaborative discussions, group-based text analysis, and problem-solving tasks. The instructor acted primarily as a facilitator, providing scaffolding, eliciting reflection, and offering targeted feedback. This design encouraged active participation and deeper comprehension by leveraging knowledge built during pre-class preparation.

Conversely, the CG received ERI, a conventional teacher-centered approach. Instruction consisted of classroom lectures, guided reading exercises, and individual homework tasks, with no pre-class learning component. For the same lesson, the teacher introduced vocabulary, modelled reading comprehension strategies, and led students through textbook-based exercises. Additional practice was provided only when time permitted and home work was given on a regular basis.

Although pedagogical methods differed, both groups followed the same curriculum and learning objectives, enabling a reliable comparison of the instructional models. Table 4 summarizes and contrasts the instructional components distinguishing the FCI and CRI models, as adapted from previous research (Israel & Duffy, 2009; Liu & Liu, 2016)

Table 4. Comparison of FCI and CRI Models

Flipped Classroom	Reading Compensation Instruction	Conventional Classroom
Before -Class	Explicit Reading Instruction	*Before -Class*
– Video lectures – Guided readings – Comprehension exercises – Independent practice		No Before-Class Task
In class – Revising the lesson – Group discussion – Problem-solving – Feedback		*In class* · Instructor-led lecture · Guided reading · Modelling
No Post-Class Task		*Homework* – Comprehension exercises – Independent Reading

Note: Table adapted from Liu & Liu (2016) and Israel & Duffy (2009).

Data Collection Procedure

Data collection was carried out over a sixteen-week period, from February 20 to June 9, 2023, in alignment with the 2023 Regular Program Calendar to maintain pedagogical consistency. The procedure encompassed three distinct phases: pre-intervention, intervention, and post-intervention.

The *pre-intervention phase* (February 20–24) commenced with a two-hour orientation session for both the EG and CG, during which the study objectives, ethical protocols, and participant responsibilities were thoroughly explained. Additionally, the EG received targeted training on the FCI model, which included guidance on navigating digital pre-class resources and strategies to enhance collaborative engagement during in-class sessions. To establish baseline equivalence, a one-hour RCP pre-test was administered to both groups on March 1, 2023.

The *intervention phase* spanned twelve weeks, from March 6 to May 26, 2023, comprising twelve weekly instructional sessions, each standardized to 50 minutes in duration. Throughout this phase , the EG engaged independently with pre-class materials, including video lectures and guided readings, and participated actively in interactive classroom activities such as group discussions and problem-solving exercises. Conversely, the CG received conventional

lecture-based instruction, employing explicit reading strategies but without any pre-class preparation. To monitor progress, the EG completed two mid-intervention RCP assessments of one-hour duration each, conducted on March 29 and May 10, 2023, respectively. Both groups followed an identical syllabus to ensure comparability across instructional modalities.

The *post-intervention phase* took place from May 29 to June 9, 2023. A one-hour standardized RCP post-test was administered to both groups on May 30, 2023, to evaluate cumulative learning outcomes. Additionally, qualitative data were collected exclusively from the EG through a structured Likert-scale questionnaire and semi-structured interviews conducted between June 5 and June 9, 2023. These qualitative measures aimed to capture a comprehensive understanding of the cognitive, emotional, and behavioural dimensions of participants' responses to the FCI model.

Data Analysis

This study employed a sequential mixed-methods design to comprehensively examine the effects of FCI on EFL trainees' RCP, learner perceptions, and engagement. Quantitative and qualitative data were analyzed separately and subsequently integrated to enhance the validity and richness of interpretations through triangulation.

Quantitative data analysis was conducted using IBM SPSS Statistics Version 23. Normality assumptions were examined with Kolmogorov–Smirnov and Shapiro–Wilk tests, confirming the appropriateness of parametric tests. Between-group differences in RCP were assessed using independent samples t-tests, while Analysis of Covariance (ANCOVA) controlled for any pre-test score disparities. A mixed-design ANOVA was conducted to investigate within-group changes over time and between-group differences across pre-test, mid-tests, and post-test phases, enabling an assessment of longitudinal effects.

Descriptive statistics (means) summarized participants' responses to the 5-point Likert-scale questionnaire measuring perceptions and engagement. Mean scores were interpreted according to the classification system adapted from (DeVellis & Thorpe, 2022), providing a systematic framework for evaluating the strength and direction of attitudes (see Table 5).

Table 5. Interpretation of Mean Scores on a 5-Point Likert Scale

Mean Score Range	Interpretation	Description
4.20 – 5.00	Strongly Positive	Majority strongly agree
3.40 – 4.19	Positive	Majority agree
2.60 – 3.39	Neutral/Moderate	Responses tend toward neutral
1.80 – 2.59	Negative	Majority disagree
1.00 – 1.79	Strongly Negative	Majority strongly disagree

Note. Scale ranges adapted from DeVellis and Thorpe (2022)

Qualitative data from semi-structured interviews were analyzed using a thematic framework combining the General Inductive Approach (Braun & Clarke, 2006) six-phase thematic analysis. This process involved iterative reading, coding, theme development, and refinement. Transcripts, initially in Amharic, were translated and cross-checked for accuracy. Confidentiality was maintained via pseudonyms, and credibility was strengthened through member checking and peer debriefing.

Finally, quantitative and qualitative findings were triangulated to provide a holistic understanding of FCI's impact, contextualizing statistical outcomes with learners' cognitive, emotional, and behavioural experiences (Creswell & Creswell, 2018).

Ethical Considerations

This study followed strict ethical standards to protect participants' rights and data privacy. Written informed consent was obtained after clearly explaining the study's purpose, procedures, and the voluntary nature of data use. Although classroom attendance was part of the regular program, participants could exclude their data from the research without any academic penalty. Anonymity was preserved using alphanumeric codes, and all data were securely stored in password-protected files and locked cabinets accessible only to the researcher. Ethical approval was granted by the institutional review board, including the dean's office and department leadership, ensuring compliance with institutional and international research ethics.

Results

This section presents statistical analyses for Research Questions 1 and 2: (a) whether there is a significant difference in reading comprehension proficiency (RCP) between trainees taught using Flipped Classroom Instruction (FCI) and those taught using Explicit Reading Instruction (ERI), and (b) the longitudinal effects of sustained FCI on RCP.

Descriptive Statistics

Descriptive statistics for RCP scores across all testing phases are presented in Table 6. The experimental group (EG) showed progressive mean score increases from pre-test (M = 10.82, SD = 1.74) to mid-test 1 (M = 12.25, SD = 1.48), mid-test 2 (M = 15.43, SD = 1.50), and post-test (M = 18.71, SD = 2.31). By contrast, the control group (CG) exhibited smaller gains from pre-test (M = 11.16, SD = 1.63) to post-test (M = 16.16, SD = 1.52).

Table 6. Descriptive Statistics for RCP Scores

Group	Test	N	Mean	Median	SE	Min	Max	SD	Kurtosis	Skewness
EG	Pre-test	28	10.82	11.00	0.33	8	14	1.74	-0.77	0.07
	Mid-test 1	28	12.25	12.00	0.28	10	15	1.48	-0.78	0.12
	Mid-test 2	28	15.43	15.00	0.28	13	18	1.50	-0.80	0.11
	Post-test	28	18.71	19.00	0.44	12	23	2.31	1.36	-0.62
CG	Pre-test	25	11.16	11.00	0.33	8	14	1.63	-0.71	0.04
	Post-test	25	16.16	16.00	0.30	14	19	1.52	-0.77	0.25

Note. SE = standard error; SD = standard deviation. Values are rounded to two decimal places.

Assumption Testing

Normality was assessed using Kolmogorov–Smirnov and Shapiro–Wilk tests (Table 7). No significant departures from normality were detected (p> .05), confirming that parametric analyses were appropriate.

Table 7. Tests of Normality for RCP Scores

Group	Test	Kolmogorov–Smirnov	df	Sig.	Shapiro–Wilk	df	Sig.
EG	Pre-test	.112	28	.200*	.952	28	.225
	Mid-test 1	.138	28	.181	.938	28	.100
	Mid-test 2	.148	28	.119	.939	28	.103
	Post-test	.121	28	.200*	.956	28	.274
CG	Pre-test	.139	25	.200*	.957	25	.355
	Post-test	.135	25	.200*	.939	25	.140

Note. Asterisk (*) indicates non-significance (p> .05); Lilliefors correction applied.

Baseline Equivalence

An independent-samples *t* test indicated no significant difference in pre-test scores between EG (M = 10.82, SD = 1.74) and CG (M = 11.16, SD = 1.63), $t(51) = –0.73$, $p = .47$, $d = 0.20$, confirming baseline equivalence (Table 8).

Table 8. Independent Samples t-Test for Pre-Test RCP Scores

Assumption	Levene's F	Sig.	t	df	P	Mean Diff.	SE Diff.	95% CI Lower	Upper
Equal variances assumed	0.165	.686	-0.729	51	.470	-0.339	0.465	-1.272	0.594
Equal variances not assumed	—	—	-0.732	50.90	.468	-0.339	0.463	-1.268	0.591

Note. CI = confidence interval; no significant difference at $p > .05$.

Post-Test Comparisons

At post-test, EG scores (M = 18.71, SD = 2.31) were significantly higher than CG scores (M = 16.16, SD = 1.52), $t(51) = 4.70$, $p < .001$, $d = 1.27$ (Table 9). This large effect supports the conclusion that FCI yields superior RCP outcomes compared with ERI.

Table 9. Independent Samples t-Test for Post-Test RCP Scores

Assumption	Levene's F	Sig.	t	df	P	Mean Diff.	SE Diff.	95% CI Lower	Upper
Equal variances assumed	2.462	.123	4.698	51	.000**	2.554	0.544	1.463	3.646
Equal variances not assumed	—	—	4.807	47.09	.000**	2.554	0.531	1.485	3.623

Note. $p < .001$ indicated by double asterisks (**); CI = confidence interval.

ANCOVA (Controlling for Pre-Test Scores)

An ANCOVA controlling for pre-test scores confirmed that EG outperformed CG at post-test, $F(1, 50) = 21.94$, $p < .001$, partial $\eta^2 = .305$ (large effect). Pre-test scores were not a significant covariate, $F(1, 50) = 0.21$, $p = .65$ (Table 10).

Table 10. ANCOVA Results for RCP Post-Test Scores (Controlling for Pre-Test)

Source	SS	df	MS	*F*	*p*	η^2_p
Corrected Model	86.99	2	43.50	10.97	.000	—
Intercept	324.88	1	324.88	81.94	.000	—
Pre-test	0.82	1	0.82	0.21	.651	.004
Group	86.99	1	86.99	21.94	.000	.305
Error	198.25	50	3.97			
Total	16534.00	53				
Corrected Total	285.25	52				

Note. SS = sum of squares; MS = mean square; η^2_p = partial eta squared. $p < .05$ indicates statistical significance; $\eta^2_p = .305$ reflects a large effect (Cohen, 1988).

Longitudinal Effects of FCI

A mixed-design ANOVA assessed within-group changes over time and between-group differences across four testing points. Mauchly's test indicated a violation of sphericity, $\chi^2(5) = 25.87$, $p < .001$; therefore, Greenhouse–Geisser and Huynh–Feldt corrections were applied (Table 11).

Table 11. Sphericity and Repeated Measures ANOVA Assumptions

Effect	W	χ^2	df	*p*	G–G ε	H–F ε	SS	*F*	*p*	η^2_p
Time	.42	25.87	5	<.001	.75	.82	1037.75	145.37	<.001	.843
Time × Group	—	—	—	—	—	—	—	—	—	—

Note. *W* = Mauchly's test statistic for sphericity; G–G ε = Greenhouse–Geisser epsilon; H–F ε = Huynh–Feldt epsilon; SS = sum of squares; η^2_p = partial eta squared.

Results revealed significant main effects for time, $F(3, 48) = 20.12$, $p < .001$, partial $\eta^2 = .843$, and group, $F(1, 48) = 15.34$, $p = .001$, as well as a significant time × group interaction, $F(3, 48) = 3.67$, $p = .015$ (Table 12). The EG demonstrated greater and more sustained improvements over time than the CG (Figure 1).

Table 12. Mixed-Design ANOVA Results

Source	SS	df	MS	*F*	*p*
Group	35.67	1	35.67	15.34	.001
Time	140.25	3	46.75	20.12	.000
Group × Time	25.50	3	8.50	3.67	.015
Error	69.50	48	1.45		
Total	300.00	75			

Note. SS = Sum of Squares; MS = Mean Square. All results are statistically significant at $p < .05$.

Estimated marginal means (see Figure 1) illustrate the EG's consistent upward trajectory from pre-test to post-test, while the CG exhibited more modest gains.

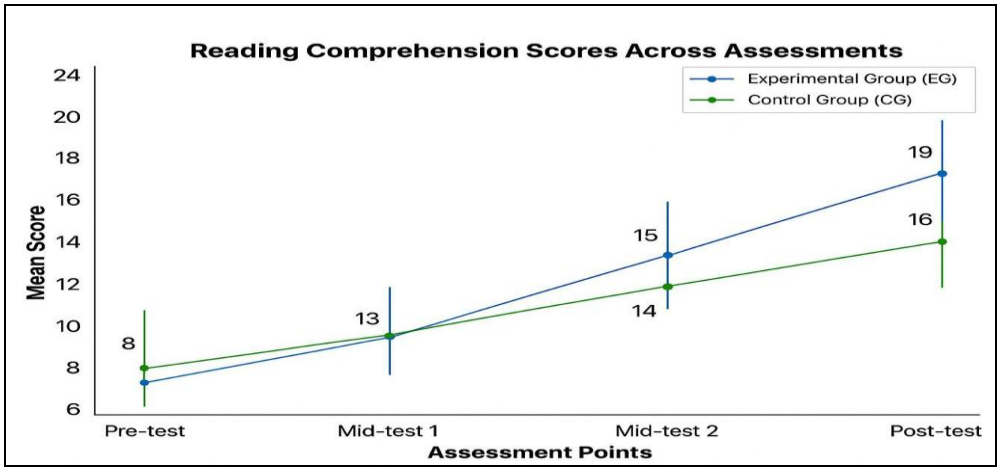


Figure 1: Estimated Marginal Means of RCP over Time

Findings

This section addresses Research Questions 3 and 4, reporting EFL trainees' perceptions of FCI and their engagement in reading tasks. Quantitative survey findings are presented first, followed by qualitative themes, and then integrated to provide a comprehensive interpretation.

Reliability of Instruments

Prior to presenting core findings, the internal consistency of the adapted perception and engagement questionnaires was examined using Cronbach's alpha coefficients. Cronbach's alpha coefficients indicated excellent internal consistency for perceptions (α =

.91) and engagement (α = .83) scales, with subscales ranging from acceptable to excellent reliability (α = .71–.85) (Tables 13–14).

Table 13. Reliability of Perception and Engagement Scales

Variable	Cronbach's Alpha	Std. Alpha	No. of Items
Perceptions	.909	.909	13
Engagement	.833	.835	16

Table 14. Reliability of Subcategories of Perception and Engagement

Variable	Subcategory	Cronbach's Alpha	Std. Alpha	N
Perceptions	Autonomy & Satisfaction	.816	.815	5
	Usefulness	.730	.728	4
	Preference	.852	.850	4
Engagement	Behavioural	.740	.765	5
	Emotional (Affective)	.742	.744	6
	Cognitive	.707	.773	5

Note. Perception and Engagement are researcher-developed questionnaires, not previously validated psychometric scales. N = number of items in each construct.

Quantitative Findings: Perceptions of FCI

Mean perception scores ranged from 3.29 to 4.43 on a 5-point Likert scale (Table 15). The highest rating was for "FCI helps develop critical thinking skills" (*M* = 4.43, *SD* = 0.63), while the lowest was for "I would recommend FCI to others" (*M* = 3.29, *SD* = 0.66). Overall, ratings indicated strong to positive perceptions.

Table 15. Descriptive Statistics for Perception Items of Flipped Classroom Instruction

No	Perception Items	Mean	SD
1	FCI allows me to take control of my learning	3.93	.75
2	FCI gives flexibility to learn at own pace	4.04	.74
3	FCI helps retain information better	4.21	.64
4	FCI enhances learning experience	4.11	.72
5	Overall satisfaction with FCI	4.11	.74
6	FCI meets expectations for effective learning	4.21	.69
7	Satisfied with balance of pre- and in-class activities	4.18	.67
8	I Would recommend FCI to others	3.29	.66
9	Prefer FCI over conventional lecture-based teaching	4.07	.77
10	FCI is well-suited for language learning	4.11	.79
11	Feel less anxious participating with FCI	4.11	.74
12	Believe FCI prepares better for assessments	4.04	.69
13	FCI helps develop critical thinking skills	4.43	.63

Note. M = mean; SD = standard deviation. Sample size (*N* = 28).

Quantitative Findings: Engagement in Reading Tasks

Participants reported high levels of active engagement, with mean scores ranging from 2.39 to 4.46 (Table 16). The highest engagement was found for items such as "I try to connect the reading materials to my own experiences" (*M* = 4.46, *SD* = 0.58) and "I ask questions when I do not understand something related to reading" (*M* = 4.39, *SD* = 0.57). Items reflecting disengagement or negative feelings, including "I find it hard to pay attention when we are discussing readings" (*M* = 2.39, *SD* = 0.92) and "I often feel bored during reading activities in this class" (*M* = 2.43, *SD* = 0.74), received the lowest mean scores.

Table 16. Descriptive Statistics for Participants' Engagement in FCI

No	Engagement Items	M	SD
1	I can decide how and when to engage with the course materials.	4.21	0.686
2	The FCI encourages me to engage more deeply with the subject matter.	4.11	0.737
3	I feel less anxious about participating in class when using the FCM.	4.11	0.786
4	I feel excited about participating in reading activities in this class.	4.04	0.744
5	I feel carefree when I have to complete reading assignments in class.	2.50	0.694
6	I complete all assigned readings before class.	3.50	0.670
7	I ask questions when I do not understand something related to reading.	4.39	0.567
8	I try to connect the reading materials to my own experiences.	4.46	0.576
9	I think critically about the content of the readings.	4.36	0.621
10	I reflect on what I have learned after completing a reading assignment.	3.57	0.621
11	I often feel bored during reading activities in this class.	2.43	0.742
12	I find it hard to pay attention when we are discussing readings.	2.39	0.916
13	I do not feel motivated to engage with the reading materials.	2.46	0.693
14	I follow the instructions given for reading assignments.	4.29	0.713
15	I submit my reading assignments on time.	4.29	0.460
16	I participate in group activities related to reading tasks.	4.32	0.612

Note. M = mean; SD = standard deviation. Sample size (N = 28).

Qualitative Findings

To complement the quantitative results, semi-structured interviews were conducted with six purposively selected EFL trainees who experienced FCI . These interviews explored learners' perceptions related to preparation and comprehension, responsibility and autonomy, challenges faced, and peer support. Using Braun and Clarke's (2006) thematic analysis, five key themes emerged: enhanced preparation, increased learner autonomy, initial workload challenges, technological difficulties, and a supportive peer environment. The following sections present these themes with illustrative quotations from participants pseudonymized as T1–T6.

Enhanced Preparation and Comprehension

First, participants consistently highlighted that pre-class materials, particularly instructional videos, significantly improved their understanding and readiness for in-class activities. For example, T1 stated, "Watching videos before class helped me understand the topic better. In the traditional classroom, I used to get confused, but with this, I already had an idea of what we were going to discuss in class" (T1). Similarly, T2 noted, "I felt more prepared when we used the flipped classroom. In the traditional class, everything was new, and sometimes I didn't understand right away. With FCI, I already knew something about the lesson before coming to class" (T2). These accounts suggest that the flipped approach scaffolded learners' comprehension, thereby facilitating deeper engagement during face-to-face sessions.

Increased Learner Responsibility and Autonomy

Moreover, trainees described a heightened sense of ownership over their learning process. T4 reflected, "It was a new experience for me, but I liked how I could learn at my own pace" (T4). Likewise, T6 emphasized, "I liked it because it gave me a chance to prepare

in advance. In a traditional classroom, I was often confused, but with the flipped classroom, I had more time to process things and come to class ready to participate" (T6). This increased autonomy not only encouraged active participation but also fostered self-directed learning habits beyond the classroom context.

Initial Workload Challenges

Despite these benefits, participants reported challenges related to the increased preparatory workload. "At first, it was difficult because we had to do a lot of preparation before class" (T3). This additional demand required students to develop new time management strategies to keep pace with the learning activities.

Technological Difficulties

Furthermore, technological barriers were identified as another significant challenge. T6 admitted, "I wasn't comfortable with technology at first, but after getting used to the videos and the platform, it became much easier" (T6). Limited internet access and unfamiliarity with digital tools initially hindered some participants' adaptation to the FCI model. However, persistence and gradual familiarity helped overcome these obstacles.

Supportive Peer Environment

Finally, peer interactions emerged as a crucial factor in easing the transition to the flipped classroom. T2 observed, "Some of my classmates had a hard time adjusting to the new model, especially those who weren't used to using technology. But after a while, most of them started to enjoy it" (T2). Participants described a collaborative learning atmosphere in which they exchanged technical assistance, shared study strategies, and supported each other's academic progress, thereby creating a more cohesive and encouraging environment.

Integrated Findings

The integration of quantitative and qualitative data provides a comprehensive understanding of the Flipped Classroom Instruction's (FCI) impact on EFL trainees' reading comprehension proficiency (RCP), perceptions, and engagement. The findings from both strands converge to suggest that FCI significantly enhances cognitive, affective, and behavioural aspects of learning.

Quantitatively, the EG demonstrated statistically significant and sustained improvements in RCP compared to the CG, as evidenced by higher post-test scores and a significant time × group interaction in the mixed-design ANOVA. These results indicate that sustained exposure to FCI produces meaningful gains in reading comprehension over time, with a large effect size (partial $\eta^2 = .305$) underscoring the pedagogical strength of the model.

Moreover, participants' perceptions and engagement scores further corroborate these proficiency gains. Survey responses revealed predominantly positive attitudes toward FCI, particularly highlighting its facilitation of critical thinking, flexibility in pacing, and enhanced retention of information. Engagement measures reflected high behavioural, emotional, and cognitive involvement, with low ratings on items associated with boredom or disengagement.

Qualitative findings enrich this picture by elucidating the underlying learner experiences that contribute to these outcomes. Trainees consistently reported that pre-class instructional videos enhanced their preparation and comprehension, enabling more meaningful participation

during face-to-face sessions. They also described increased autonomy and responsibility for managing their own learning, which appeared to foster active engagement and motivation.

While initial workload and technological challenges were acknowledged, participants emphasized that peer support and persistence were instrumental in overcoming these barriers. This supportive classroom environment not only facilitated adaptation but also strengthened collaborative learning dynamics, further enhancing motivation and confidence.

Together, these integrated findings demonstrate that FCI functions as a sustainable and effective pedagogical approach for EFL reading instruction. It promotes self-directed learning, critical engagement, and a positive classroom culture that jointly contribute to improved reading proficiency. Importantly, despite early adaptation demands, the model's benefits appear to outweigh its challenges, making it a viable alternative to conventional explicit reading instruction.

Discussion

This study examined the effects of Flipped Classroom Instruction (FCI) on Ethiopian college-level English as a Foreign Language (EFL) trainees' reading comprehension proficiency (RCP), perceptions of instructional effectiveness, and engagement in reading tasks. Guided by four research questions, the findings consistently demonstrate the pedagogical efficacy of FCI compared to Explicit Reading Instruction (ERI).

Addressing the first research question, the experimental group (EG) significantly outperformed the control group (CG) on post-test RCP scores, even after controlling for baseline equivalence (η^2_p = .305). The large effect size and consistent score improvements across pre-test, mid-tests, and post-test indicate that FCI facilitates meaningful gains in reading proficiency. These results corroborate prior empirical work documenting flipped learning's capacity to foster active learner engagement and promote higher-order cognitive processing essential for comprehension Addressing the first research question, the experimental group (EG) significantly outperformed the control group (CG) on post-test RCP scores, even after controlling for baseline equivalence (η^2_p = .305). The large effect size and consistent improvements observed across the pre-test, mid-tests, and post-test indicate that FCI facilitates meaningful gains in reading proficiency. These results corroborate prior empirical work documenting flipped learning's capacity to foster active learner engagement and promote higher-order cognitive processing essential for comprehension (Hashemifardnia et al., 2018; Tran et al., 2025) . From a theoretical perspective, these outcomes align with Vygotsky's (1978) socio-constructivist framework, in which scaffolded learning environments and peer interactions enhance cognitive development. The use of pre-class videos and structured reading materials in FCI likely scaffolded learners' schemata, reducing cognitive load and supporting strategic reading skills such as skimming and scanning during in-class activities (Tena & Motuma , 2024).

Regarding the second research question, longitudinal analyses indicated that sustained application of FCI resulted in incremental and durable improvements in RCP. This pattern supports cognitive load theory (Sweller , 2020) and Mayer's (2024) cognitive theory of multimedia learning, which emphasize the benefits of paced and segmented instructional design to optimize cognitive resources and facilitate long-term retention. By distributing learning across pre-class multimedia preparation and scaffolded classroom activities, FCI encourages self-regulated learning strategies that underpin both immediate proficiency gains and sustained mastery.

Concerning the third research question, trainees reported predominantly positive perceptions of FCI, highlighting its role in enhancing critical thinking, autonomy, and knowledge retention. These factors are recognized contributors to motivation and persistence in language learning (Afrilyasanti et al., 2017; Aljaraideh, 2019; Çiftci Aksoy & Takkaç Tulgar, 2024).Nonetheless, moderate hesitation to recommend FCI to others emerged, reflecting challenges associated with increased preparatory workload and initial technological barriers (Amare et al., 2024) . This underscores the need for carefully designed support systems and phased implementation strategies to facilitate learner acceptance, especially in resource-constrained higher education contexts like Ethiopia (Tena & Motuma . 2024).

In response to the fourth research question, FCI was found to significantly enhance behavioural, cognitive, and affective engagement in reading tasks. Participants described greater confidence, reduced anxiety, and the use of metacognitive strategies such as linking new information to prior knowledge and actively seeking clarification—behaviours critical for effective comprehension (Tena & Motuma , 2024). Qualitative data reinforced that pre-class video preparation motivated learners and prepared them for more dynamic and interactive classroom participation. Although early difficulties related to technology access and time management were reported, peer support and growing familiarity with digital tools mitigated these challenges, facilitating increased autonomy and digital literacy—key competencies in contemporary EFL education (Afzali & Izadpanah , 2021; Çiftci Aksoy & Takkaç Tulgar , 2024). Nevertheless, moderate engagement with completing pre-class readings highlights an area for further intervention aimed at strengthening self-regulatory skills and effective time management (Mekonen et al., 2024) .

Taken together, these findings demonstrate that FCI constitutes a robust, learner-centered instructional approach that significantly improves reading comprehension proficiency, promotes positive learner perceptions, and fosters multifaceted engagement among Ethiopian EFL trainees. The results reinforce established theoretical frameworks emphasizing scaffolding, cognitive load management, and learner autonomy as fundamental to language acquisition. For effective and sustainable implementation, coordinated efforts to enhance technological infrastructure, provide ongoing learner support, and design manageable preparatory workloads are critical. Such strategies will help overcome initial barriers and maximize the transformative potential of flipped learning within the Ethiopian higher education context.

Implications and Recommendations

This study highlights the transformative potential of the FCI model in enhancing EFL trainees' RCP, engagement, and perceptions, offering critical implications for pedagogy research, educational practice and future inquiry. Firstly, the notable improvement in RCP within the EG highlights the efficacy of FCI's learner-centered framework. By integrating pre-class multimedia resources, such as video lectures and guided readings, with interactive in-class tasks like discussions and problem-solving, FCI fosters deeper understanding and critical thinking. Consequently, educators are encouraged to adopt structured pre-class activities to activate prior knowledge, complemented by collaborative in-class exercises to maximize cognitive and social learning outcomes.

Moreover, the heightened engagement observed in the FCI group underscores its ability to transform passive classrooms into dynamic, participatory environments. This approach cultivates behavioural, emotional, and cognitive involvement, effectively addressing

motivational challenges prevalent in EFL settings. To sustain such engagement, instructors should design in-class activities that build on pre-class preparation, promoting peer collaboration and accountability. Furthermore, professional development programs are essential to equip educators with skills for crafting high-quality digital content and facilitating interactive learning, ensuring alignment with FCI's pedagogical objectives.

Additionally, the positive trainee perceptions of FCI emphasize its role in nurturing autonomy and confidence, which are pivotal for language acquisition. To support equitable implementation, institutions must prioritize technological infrastructure, particularly in resource-constrained contexts, to ensure access to digital resources. Simultaneously, teacher training should focus on strategies to scaffold higher-order thinking, leveraging students' pre-class content familiarity to foster meaningful interactions.

Looking ahead, longitudinal research is warranted to assess FCI's sustained impact on RC and its potential application to other language skills, such as writing or speaking. Similarly, studies with larger, diverse samples across varied proficiency levels and cultural contexts will strengthen the model's generalizability. Exploring teacher facilitation styles and student preferences could further refine FCI's effectiveness.

In conclusion, FCI emerges as a versatile pedagogical strategy, enhancing EFL reading proficiency, engagement, and learner attitudes. Its success hinges on intentional curricular integration, institutional support for technology and training, and adaptive refinement to address contextual challenges. By bridging theory and practice, FCI offers a transformative framework for 21st-century language education. Furthermore, this study contributes to the growing body of literature supporting the flipped model in the context of language education, particularly in non-native English-speaking environments. While most prior studies have focused on general education or STEM disciplines, this study provides empirical evidence from an EFL context, highlighting the transferability and adaptability of FCI across disciplines.

Declarations

Conflicts of Interest: *The author declare that he have no conflicts of interest.*
Funding: *This research received no funding.*
Availability of data and material *The data that support the findings of this study are available from the corresponding author upon reasonable request.*
Ethics Statements: *Ethical approval for this study was provided by the Social Sciences Ethics Committee within the researcher's university*

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