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The impact of teacher educators' mediation on developing cognitive and meta-cognitive strategies for learning reading skills

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Abstract

This study investigated the impact of teacher educators' mediation on the development of cognitive and meta-cognitive strategies essential for autonomous learning in EFL reading skills and its effect on reading performance. A quasi-experimental design with mixed methods was employed at Kotebe University of Education in Addis Ababa, Ethiopia, involving two intact sections of first-year social science students ($N=80$). Participants were randomly assigned to experimental ($n=40$) and control ($n=40$) groups. An experienced English instructor mediated the experimental group using mediation strategies (MLE), while the control group received traditional instruction. Data were collected through reading proficiency standardized tests, questionnaires, and classroom observations, then analyzed using percentages, mean, standard deviation, t-tests, and thematic analysis. The results of the research indicated that mediation significantly enhanced the experimental group's cognitive and meta-cognitive strategy use, leading to greater autonomy in EFL reading. The experimental group also achieved higher scores on reading skills tests compared to the control group, with Cohen's d indicating a large effect size. The study concludes that mediated teaching strategies substantially improve trainees' cognitive and meta-cognitive abilities, fostering autonomy and academic success. The study recommends that English instructors integrate mediation techniques into their teaching practices to enhance students' learning strategies and overall reading performance.

Keywords: Mediation, Learner autonomy, Reading proficiency test, Cognitive strategies, and Meta-cognitive strategies.

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Introduction

The English language has become the dominant medium for international communication, essential in fields like education, business, and science (Chang, 2011; Crystal, 2003). In Ethiopia, English plays a crucial role in education, being the medium of instruction from primary to higher education (Ministry of Education, MoE, 2023). The Ethiopian Education and Training Policy emphasizes teaching English from grade one and using it as a medium in secondary schools and universities to equip learners with the necessary language skills for academic and professional pursuits (MoE, 2002).

Ethiopia's English language instruction follows a student-centered approach, moving away from traditional teacher-dominated classrooms (MoE, 2023). In the traditional teaching-learning approach, teachers played the dominant role in a teacher-centered manner, in which the teacher's role is to instruct, regulate, and assess, and the learners' role is to seek, display understanding, achieve standards, and receive and absorb knowledge, limiting the participation of learners within the range of their way of teaching (Cotteral & Crabbe, 1999; Nunan, 1999). Similarly, Mascolo (2009) also stated that in teacher-centered pedagogy, teachers assumed themselves as primary active providers of knowledge through lecturing to learners, as passive recipients of knowledge. In contrast, in learner-centered approach, teachers have become less likely to dominate classroom events, and students have started to be more involved and actively participate in classroom actions, rather than passive objects to be manipulated (Mascolo, 2009; Voller, 1997). This approach promotes active participation from learners and positions teachers as facilitators of knowledge rather than mere transmitters (Mascolo, 2009; Nunan, 2015). In learner-centered environments, teachers and learners collaborate to achieve educational goals, fostering decision-making skills and empowering students to take control of their learning (Tudor, 1993). This shift is integral to the concept of learner autonomy, which emphasizes learners' ability to take charge of their own educational processes (Holec, 1981).

Despite the emphasis on learner-centered education in Ethiopia, many English language teachers still rely on traditional, teacher-centered methodologies, which hinder student engagement and autonomy (Eshetie, 2010; Simegn, 2016). Besides, the learner-centered approach which enhances learners' active participation and promotes autonomous learning was not much applied in the classroom. However, pre-service teacher education in Ethiopia stipulates that teaching and learning have to be

exploited in a learner-centered fashion to enable learners' (trainees) active participation and encourage them to develop self-regulated or autonomous learning (MoE, 2022). Moreover, observations at Kotebe University of Education reveal that pre-service trainees often depend heavily on their teachers for instruction, limiting their opportunities for independent learning. Teacher educators have expressed concerns about this reliance, indicating a need for greater awareness of their mediational role in fostering learner autonomy.

Achieving autonomy involves integrating cognitive and metacognitive strategies, enabling learners to develop skills in reasoning, analyzing, resourcing, note-taking, summarizing, synthesizing, outlining, planning, monitoring, and evaluating their learning (Thanasoulas, 2000). Teachers play a vital mediating role, guiding students in self-regulation and the use of effective learning strategies (Hattie et al., 1996; Williams & Burden, 1997). In the context of English as foreign language (EFL) learning, particularly reading skills, the teacher's mediation is crucial in fostering learner autonomy and enhancing language performance.

Previous research in Ethiopia has highlighted a general lack of implementation of strategies that foster learner autonomy. While learners may demonstrate some awareness of cognitive strategies, their understanding and application of metacognitive strategies remain limited (Eyobe, 2008; Maru, 2006). Moreover, there is a notable absence of research specifically examining the impact of teachers' mediation on developing these strategies to enhance learner autonomy in EFL reading skill in the Ethiopian context. Although some local studies have explored aspects of Feuerstein's Mediated Learning Experiences (MLE) in EFL contexts, none has directly examined its role in developing cognitive and metacognitive strategies in fostering learner autonomy, particularly in reading skills. For example, Yigzaw (2005) investigated MLE's effect on students' reading conceptions, while Wossenie (2008) applied Instrumental Enrichment to enhance cognitive development and vocabulary acquisition among hearing-impaired students. Moreover, Negari (2010) focused on mediation's influence on locus of control, self-efficacy, and oral performance, and Melese (2024) examined mediation in writing instruction and its impact on performance and self-efficacy. However, these studies did not address how mediated learning strategies cultivate cognitive and metacognitive strategies to promote learner autonomy in EFL reading.

Therefore, this study aims to fill the research gap by investigating the effects of EFL teacher educators' mediation on promoting mediated

learning strategies that foster the development of cognitive and metacognitive strategies, ultimately enhancing learner autonomy and improving reading skills achievement. To address these gaps, this study formulated the following research questions:

1. Does EFL teacher educator's intervention (mediation) bring significant changes to teacher trainees' use of cognitive and meta-cognitive strategies to develop their autonomy in learning reading skills compared to the control group?
2. Is teacher educator's mediation reflected in trainees' reading skills achievement as a result of their improvement in using autonomous learning strategies (cognitive and meta-cognitive strategies)?

Empirical Review

Learner Autonomy in Language Learning

Learner autonomy is a crucial aspect of language learning, as it empowers students to take control of their own learning process (Little, 2003). This entails learners being responsible for setting objectives, defining content and progression, and employing reflective and analytical skills to plan, monitor, and evaluate their learning effectively. Scholars like Little (1991) and Dam, (1995) state that learner autonomy encourages learners to develop their critical reflection and decision-making skills, in choosing learning goals, planning and organizing tasks, and evaluating their progress independently. In the context of EFL reading, autonomous learners can set their own learning goals, select appropriate strategies, monitor their progress, and evaluate their learning outcomes (Grabe & Stoller, 2011). The development of cognitive and meta-cognitive strategies is central to fostering learner autonomy, as these strategies enable students to actively engage, take control, and regulate their own learning (Benson, 2011).

Cognitive and Metacognitive Strategies

The key to fostering learner autonomy lies in the teacher's ability to help students develop both cognitive and metacognitive strategies. Cognitive strategies such as reasoning, analyzing, resourcing, note-taking, summarizing, synthesizing, and outlining enable learners to engage deeply with tasks, promoting more efficient learning (Hedge, 2000; O'Malley & Chamot, 1990). These strategies help learners manipulate and process information in ways that improve comprehension and retention. Teachers play a crucial role in guiding learners to use these strategies effectively by

modeling their application and encouraging their use in naturalistic settings (Oxford, 1990). Additionally, metacognitive strategies such as planning, monitoring, and evaluating progress allow learners to regulate and take control of their learning (Dickinson, 1988; O'Malley & Chamot, 1990). By guiding students to self-assess and adjust their approaches, teachers equip them with the tools necessary for self-directed learning, a fundamental aspect of learner autonomy (Nunan, 2015; Wenden, 1991).

Traditionally, teachers often serve as the primary source of knowledge, controlling both the content and delivery of teaching-learning (Tudor, 1993). However, to promote learner autonomy, the teacher's role shifts towards facilitating and guiding students to take ownership of their learning (Benson, 2011; Voller, 1997). Teachers support students by encouraging them to set learning objectives, monitor their progress, select appropriate materials, and evaluate their outcomes (Asmari, 2013; Voller, 1997). This facilitate role does not diminish the teacher's importance; rather, it emphasizes the teacher as a mediator who fosters independence by gradually transferring responsibility to learners. By providing appropriate guidance, inspiration, feedback, and other forms of support, skillful mediators enable learners to employ cognitive and meta-cognitive strategies to self-regulate their learning and become self-directed learners (Feuerstein & Feuerstein, 1991). Moreover, developing and employing these autonomous learning strategies (cognitive and meta-cognitive strategies) is also crucial in enhancing language performance and achieving better academic outcomes (Flavell et al., 2002; Goswami, 2008).

Teachers, therefore, act as mediators who facilitate learners' cognitive and meta-cognitive development through mediation (Hattie et al., 1996). In this study, the term "mediation" is used synonymously with "intervention" to describe the appropriate roles teachers play in the development of learner autonomy in the context of English as a foreign language (EFL) learning of reading skills.

Mediated learning experience (MLE)

The concept of Mediated Learning Experiences (MLE) has been a cornerstone of educational theory, particularly in the context of cognitive development and learner autonomy. Rooted in Vygotsky's (1978) sociocultural theory, MLE emphasizes the importance of social interaction and guidance from more knowledgeable individuals such as teachers or more capable peers, in fostering cognitive growth. The Zone of Proximal Development (ZPD), a key element of this theory, represents the growth potential that learners can achieve with appropriate support (Williams &

Burden, 1997). Building on Vygotsky's work, Feuerstein et al. (2010) expanded the concept of mediation, demonstrating its practical applications in educational settings and developing a comprehensive framework for MLE.

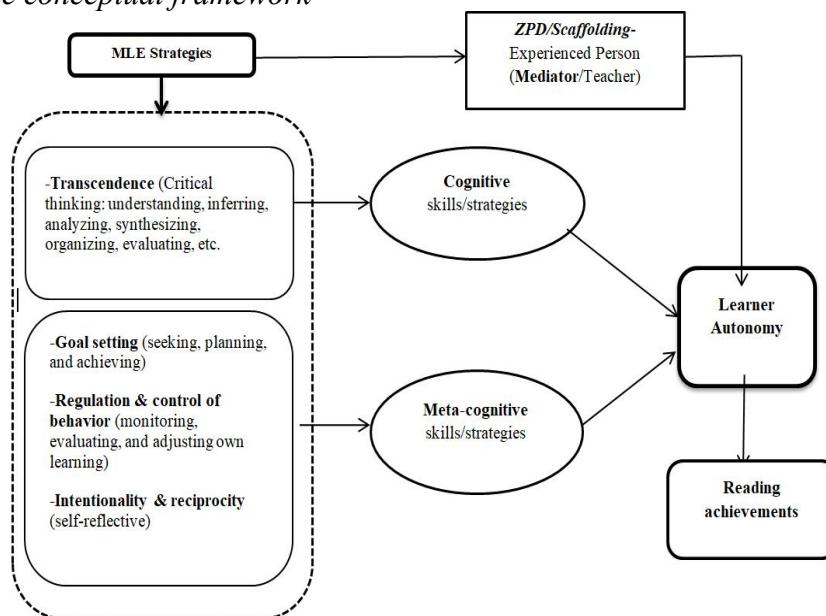
MLE emphasizes the role of a mediator who facilitates learning by making the environment more accessible and meaningful for the learner (Feuerstein et al., 2010). In the context of language learning, the teacher acts as the mediator, guiding students through the complexities of language acquisition and helping them develop cognitive and metacognitive strategies (Brown, 2001). Feuerstein et al. (1988) identify several key parameters of MLE, such as intentionality and reciprocity, transcendence, meaning, regulation and control of behavior, goal-seeking and setting, and fostering a sense of competence, all of which work together to enhance cognitive functioning and enable Structural Cognitive Modification (SCM).

Research has shown that effective mediation not only facilitates immediate learning but also equips learners with strategies for future independent problem solving (Lantolf & Poehner, 2014). This aligns with Feuerstein's emphasis on the role of mediators in selecting and shaping learning experiences to promote cognitive modifiability (Feuerstein et al., 2010). Moreover, Tzuriel (2013) has demonstrated that intentional and reciprocal interactions between mediators and learners significantly enhance cognitive functions, particularly when combined with transcendence: the application of learning beyond immediate contexts. The practical implementation of mediation theory in educational settings has been the subject of numerous studies, with findings suggesting that mediation strategies, such as promoting intentionality and reciprocity, fostering transcendence, and emphasizing meaning, contribute to improved student engagement and academic performance (Haywood, 2004; Winter, 2020). Similarly, Winter (2020) noted that mediating behaviors related to self-regulation and goal-setting fostered greater learner autonomy and self-directed learning. These findings highlight the transformative potential of mediated learning experiences to transform educational practices, moving beyond traditional information dissemination to fostering critical thinking, problem-solving skills, and learner independence (Feuerstein et al., 2010; Williams & Burden, 1997).

Conceptual Framework

This framework in Figure 1 below shows, the selected strategies of the Mediated Learning Experience (MLE) (such as intentionality and reciprocity, transcendence, regulation and control of behavior, and goal setting) fit into the framework of two large categories of autonomous learning strategies, such as cognitive, and meta-cognitive, on which the data analysis in this study is based. *Cognitive strategies* are promoted through the mediation of transcendence (such as critical thinking like understanding, inferring, analyzing, synthesizing, organizing, evaluating, etc.). *Meta-cognitive strategies* also encompass mediation of intentionality and reciprocity (self-reflective), regulation and control of behavior (monitoring, evaluating and adjusting own learning), and goal setting (seeking, planning, and achieving). Besides, an experienced person (a mediator or teacher) scaffolds students to move from their actual level of development to their potential level of learner autonomy by mediating the learning strategies pertinent to autonomous learning with the appropriate assistance of the teacher's mediation/intervention. The trainees' autonomous engagement is expected to result in their high-level of reading achievement.

Figure 1
The conceptual framework



Methods

This study utilized a quasi-experimental design within a mixed-methods approach to examine the impact of teacher educators' mediation on the development of cognitive and meta-cognitive strategies aimed at enhancing autonomous learning of EFL reading skills at Kotebe University of Education in Addis Ababa, Ethiopia. The design featured a quantitative component, where numeric data were collected through reading proficiency tests, questionnaires and observation. Additionally, qualitative data were gathered through field notes, which captured detailed insights into the overall circumstances during classroom observations. This approach was selected as it allows for manipulation of the independent variable (mediation strategies) and observation of its effects on dependent variables (trainees' perceived use of cognitive and meta-cognitive strategies and reading test achievements) without necessitating random assignment of participants to different groups. The quasi-experimental design was particularly advantageous for investigating the effectiveness of mediation strategies in existing intact classroom settings, thus minimizing disruption to the normal teaching and learning processes, a consideration crucial in Ethiopian higher education, where students are pre-assigned to groups (Creswell, 2012; Mujis, 2004).

Research setting and sampling

The study took place at Kotebe University of Education (KUE) in Addis Ababa, Ethiopia, during the first semester of the 2023/24 academic year, utilizing purposive sampling to select participants and research sites. This method, recommended by Alvi (2016) and Creswell (2012) enabled the intentional selection of individuals and settings highly relevant to the research context, ensuring a comprehensive understanding of the phenomenon under investigation. The focus on teacher education aligns with the Ministry of Education's goal of producing qualified educators (MoE, 2022). The research was conducted over 13 weeks, from December 5, 2023, to March 22, 2024, incorporating one week for pre-testing and questionnaires, one week for post-testing and questionnaires, and one week for training the teacher-mediator.

All freshman trainees at KUE during the 2023/24 academic year represented the total population of the study. The total population was found to be 598 of which 318 were males and 280 were females enrolled in the regular pre-service degree program for teacher training. These trainees were admitted based on standardized national criteria, including high school transcripts and Ethiopian General Secondary Education

Certificate Examination (EGSECE). It was assumed that participants had a relatively similar level of English language proficiency, as all had completed the same national high school English curriculum, used uniform textbooks, and sat for the same national examination prior to university admission. Furthermore, since they were all newly enrolled first-year trainees, their exposure to higher-level English instruction was equivalent and limited to the national secondary school system, reducing discrepancies in language proficiency. Two intact classes were selected as sample participants from social science stream trainees; ages ranged from 18 to 21. The sample size was 80 (Section 1=40 (19 Female and 21 Male) and section 3=40 (18 Female and 22 Male) trainees. The two intact sections (classes) were assigned into experimental group/EG/ (Section 1=40), and control group/CG/ (Section 3=40) randomly using a lottery system. Additionally, one of their instructors and a reserve, at KUE, were also selected as participants of the study using the snowball sampling technique (Alvi, 2016).

Instrumentation

To draw out necessary data from the participants, various instruments were used. The main data collection instruments that were used for this study are reading proficiency tests, questionnaire, and observation. These instruments were used to complement each other and to triangulate the data.

Reading proficiency tests

To gauge the proficiency of trainees' reading skills(ability) and knowledge before and after the intervention, two parallel versions of tests were adapted from the 'Ereading' website (Morton, 2015). These tests are recognized as standardized tools specifically designed to evaluate individuals' abilities in reading comprehension (Morton, 2015). Based on the aim of the reading section of the course module items were identified, added, and adopted by the researcher. The tests were also modified with tasks by the researcher to suit trainees' English proficiency as outlined by Oakland and Lane (2004). Each test consisted of 25 multiple-choice, true/false, and matching items that assessed various aspects of reading comprehension as outlined by the course material. These aspects included making predictions, inferring word meaning from context, skimming for gist, scanning for specific information, making inferences, and drawing conclusions beyond the text's explicit information. One version of the test served as the pre-intervention assessment, administered simultaneously to

both the Experimental Group (EG) and Control Group (CG) in separate locations. The other version functioned as the post-intervention assessment, administered to both groups at the semester's end. Each test had a 45-minute time limit.

Questionnaires

This study employed a questionnaire as the primary data collection instrument to quantitatively assess the impact of teacher educators' mediation on the development of cognitive and metacognitive strategies for autonomous learning of EFL reading skills. The questionnaire comprised two sections: the first gathered trainees' personal information, while the second included three parts. The first two parts evaluated trainees' perceptions of the importance of mediation parameters and the mediator's use of these strategies, using a five-point Likert scale. The third part focused on the perceived use of autonomous language learning strategies, with a total of 36 items assessing cognitive (12 items) and metacognitive strategies (24 items), three of which were reverse-coded to minimize random responses. Items were adapted from previous studies (Melese, 2024; Negari, 2010; O'Malley & Chamot, 1990; Oxford, 1990; Yigzaw, 2005) and reviewed by experts.

The questionnaire was initially developed in English and translated into Amharic, ensuring clarity through bilingual instructions during administration. A pilot study involving 26 teacher trainees helped identify item issues, confirming reliability via SPSS version 25, with Cronbach's alpha values exceeding 0.70 for all sections, indicating strong reliability (Pallant, 2016). The validity of the questionnaire was also enhanced through expert review and revisions.

Classroom observation

This study employed classroom observation to gain insights into participants' interactions during reading task performances in the treatment group and the role of the teacher mediator. As noted by Bell (1999), observation reveals actual practices during interventions that may not be accurately reported in other data collection instruments. This method allowed the researcher to assess the implementation of selected mediation strategies aimed at fostering students' autonomous learning (Williams & Burden, 1997). An observation checklist, adapted from Williams and Burden (1997) and O'Malley and Chamot (1990), was utilized to focus on the mediation strategies employed by the teacher mediator.

The researcher conducted thirteen classroom observations across thirteen-week reading skills sessions, with a co-observer evaluating the

effectiveness of the mediation strategies used. Additionally, field notes were taken to document the overall classroom environment and dynamics.

Validity and reliability

Validity

The study employed multiple strategies to ensure the validity of research instruments. For the reading proficiency tests, content and construct validity were established through rigorous expert review. A panel comprising a language assessment specialist, two TEFL experts, and a measurement and evaluation specialist examined the test items, leading to the revision and deletion of certain questions to better align with the study's objectives. The questionnaires underwent similar scrutiny by two supervisors and two PhD candidates in TEFL, resulting in modifications to item wording and structure.

The questionnaire items were carefully adapted from established instruments (Melese, 2024; Negari, 2010; O'Malley & Chamot, 1990; Oxford, 1990; Yigzaw, 2005) and specifically tailored to assess EFL reading skills. To enhance comprehension, all items were translated into Amharic by a qualified translator and further refined with input from TEFL experts. The instruments were pilot-tested with 26 teacher trainees participating in a summer program at Kotebe University of Education prior to the main study. This process identified and eliminated various issues including double-barreled questions, ambiguous wording, unclear instructions, and inadequate response scales.

Reliability

The reliability of research instruments was assessed through internal consistency measures. Pilot testing yielded strong Cronbach's alpha coefficients for all instruments: the parallel 25-item reading pre/post-tests tests demonstrated excellent reliability ($\alpha = 0.872$ and 0.823), while the 36-item language learning strategies questionnaire showed high consistency ($\alpha = 0.839$). The 10-item scales measuring trainees' perceptions of mediation principles also achieved acceptable reliability ($\alpha = 0.837$ for importance ratings and $\alpha = 0.743$ for mediator's use). Following Pallant (2016) threshold, all instruments were deemed reliable as their alpha values exceeded 0.70. These results confirm that the research tools consistently measured their intended constructs, supporting the credibility of the study's findings.

Materials and procedures

For both the experimental and control groups, the reading skills teaching materials were sourced from the “Communicative English Language Skills – I” (FLEn 1011) course module, tailored for Ethiopian university students (MoSHE, 2019). This module emphasizes developing listening and reading skills while integrating speaking and writing activities. It comprises five reading texts with pre-reading, while-reading, and post-reading activities, representing about 31% of the entire module. The reading section was allocated 13 class sessions of 50 minutes each, equating to one-third of the total course duration.

This study utilized a multi-phased approach to collect data relevant to address the research questions (Williams & Burden, 1997; Winter, 2020). The pre-intervention phase involved preparing by adopting and modifying instructional reading materials with Mediated Learning Experience (MLE) strategies, adapting assessment instruments, and creating a guiding manual for teacher mediators to enhance trainees' cognitive and meta-cognitive strategy use (Dickinson, 1988; Feuerstein & Feuerstein, 1991). The modified teaching material incorporated modifications included new questions and guided activities to scaffold the development of cognitive and meta-cognitive strategies in learning reading skills.

During the pre-reading phase, activities were designed to activate learners' prior knowledge and help them to set learning objectives/goals through brainstorming exercises and visual aids. During the while-reading stage, trainees engaged with activities such as inferring, analyzing, organizing, synthesizing, etc. to guide and monitor comprehension while reading texts. The post-reading activities facilitated reflection, summarization, and real-life application of learning, encouraging self-assessment and goal setting. Overall, the experimental materials aimed to align with constructivist principles and promote learner autonomy within a sociocultural framework (Israel & Duffy, 2014).

Prior to the study's implementation, consent was obtained from key stakeholders, including the college dean and department head at Kotebe University of Education (KUE), as well as from participating trainers and trainees. In relation to securing consent, the researcher obtained verbal/oral consent from relevant individuals at Kotebe University, including the college dean and the head of the English Language and Literature department. Additionally, oral consent was sought from the participants such as, a veteran teacher educator, reserve trainer, and trainees who were take part in the study. During the consent process, the researcher clearly communicated the study's objectives and its significance

to the participants. The participants were also informed of their right to refuse participation or withdraw from the study at any time, without fear of repercussions or loss of benefits. Following this briefing, the researcher received oral consent from all selected participants, confirming their agreement to partake in the study.

Subsequently, training was provided for the mediators to familiarize them with the MLE strategies and the modified instructional materials. These training sessions, lasting eight hours per week, were designed to adequately prepare both the mediator and the reserve trainer for the intervention phase.

After the training, a pre-intervention test and questionnaire were administered from December 5–9, 2023. These instruments aimed to ensure baseline group homogeneity and gather preliminary data on the trainees' perceptions regarding the use of autonomous learning strategies and MLE strategies in reading skills instruction.

The intervention phase was carried out from December 11, 2023, to March 15, 2024. During this period, the experimental group (EG) participated in thirteen reading sessions taught using the modified instructional materials with integrated mediation strategies, while the control group (CG) followed conventional instructional approach based on the standard, unmodified course module, without the inclusion of MLE strategies.

Finally, the post-intervention data collection occurred from March 18–22, 2024, using similar instruments employed in the pre-intervention phase, except providing a parallel posttest proficiency reading skills. This phase was designed to assess any changes in the trainees' reading skills performance and their perceptions of mediation strategies, with particular attention to the development of cognitive and meta-cognitive strategies for fostering learner autonomy.

Data analysis

Data from pre- and post-intervention reading tests and questionnaires were analyzed using SPSS version 25, applying both descriptive and inferential statistics. The Kolmogorov-Smirnov (K-S) test assessed the normality of reading test scores, while skewness and kurtosis evaluated questionnaire data. All values for both the experimental group (EG) and control group (CG) fell between -1 and 1, indicating approximate normality (Hatem et al., 2022).

Descriptive statistics, including Mean (M) and Standard Deviation (SD), summarized reading achievements and perceived use of cognitive

and metacognitive strategies. Independent sample t-tests examined group homogeneity before the intervention and compared post-intervention scores between the EG and CG. Paired sample t-tests evaluated pre- and post-intervention changes within each group to assess the effectiveness of the educator's mediation on perceived use of autonomous learning strategies, and its impact on reading performance. Cohen's d test also used to assess the effect size of teacher mediation on the target variables. Additionally, percentage data and field notes analyzed observations from checklists.

Results and Discussion

The impact of teacher educators' mediation on freshman pre-service trainees' development of cognitive and meta-cognitive strategies in learning EFL reading skills was examined to answer two research questions. In order to seek answers for these research questions, necessary data were collected from all the subjects using three instruments: tests, questionnaire, and classroom observation. The collected data were analyzed statistically using independent and paired sample t-tests, cohen'd, percentage and qualitative description. Moreover, this section presented a discussion of the main findings that were derived from the statistical analyses tailored to answer the two research questions.

Results

Test of normality

Before conducting the statistical test, the Shapiro-Wilk test and the Kolmogorov-Smirnov test were run to check the normality of the data from both the Experimental Group (EG) and the Control Group (CG). The results of these tests are presented in Table 1.

Table 1
Tests of Normality

Tests and Groups	Kolmogorov-Smirnov ^a			Shapiro-Wilk			
	Statistic	df	Sig.	Statistic	df	Sig.	
Trainees' reading skills score	Pre-test(EG)	.091	40	.200*	.976	40	.558
	Pre-test(CG)	.119	40	.158	.966	40	.264
	Post-test(EG)	.101	40	.200*	.987	40	.924
	Post-test(CG)	.085	40	.200*	.976	40	.531

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The table presents the results of the Kolmogorov-Smirnov and Shapiro-Wilk normality tests for the trainees' reading skills scores. The significance (Sig.) values for all groups and tests are above the 0.05 threshold, indicating that the data are normally distributed. This supports the use of parametric statistical analyses to determine the analytical results.

Descriptive statistical results of trainees' reading skills tests scores

The detailed assessment of Kotebe Education University freshman trainees' EFL reading skills results encompassed a comprehensive review of the data, revealing salient insights into participants' performance. As depicted in Table 2, the descriptive statistics revealed pre-test and post-test reading skills scores, analyzing the degrees of trainee participants' responses within both the EG and the CG.

Table 2

Descriptive Statistics

Reading Skills Tests Scores	N	EG		CG	
		M	SD	M	SD
Pre-test	40	10.93	2.98	10.88	2.88
Post-test	40	15.68	3.53	11.20	3.51

Key: N=numbers of Participants, EG=Experimental Group, CG=Control Group, M= Mean, SD= Standard Deviation

The presented statistics clarify the diverse performance progressions observed in both groups. In the EG, the pre-intervention reading skills scores underscored a mean of 10.93 and a standard deviation of 2.98. Similarly, for the CG, the pre-intervention scores reflected a mean of 10.88 and a standard deviation of 2.88. On the other hand, the post-intervention scores in the EG revealed a mean of 15.68 and a standard deviation of 3.53. Correspondingly, in the CG, the post-intervention scores demonstrated a mean of 11.20 and a standard deviation of 3.51. These detailed statistics not only disclosed the succeeded performance variations across the EG and CG but also laid the foundation for a profound understanding of the impact of the teachers' mediation on reading skills achievement.

Pre-intervention independent sample T-test results in the pre-test of reading skills performance

The pre-test served as a foundational assessment to ascertain the homogeneity of the participants within the two intact groups concerning their reading skills scores before the commencement of the intervention.

As delineated in 'Table 2', a comparative analysis of student reading skills pre-test scores showcased nearly equivalent means across both EG and CG. The EG displayed a mean score of 10.93, while the CG exhibited a mean score of 10.88, indicating a notable resemblance and homogeneity prevailing before the intervention. To rigorously assure the homogeneity of the groups in terms of reading skills test scores, an independent-sample t-test was suitably employed.

Table 3

Independent Samples t-test Results of the Pre-intervention Reading Skills Scores

Trainees'	Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference		
	Reading Skills Score	F	Sig.	T	Df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	.027	.869	.076	78	.939	.050	.050	.656	-1.256	1.356
Equal variances not assumed				.076	77.91	.939	.050	.656	-1.256	1.356

The results presented in Table 3 revealed a non-significant discrepancy in reading skills performance between the EG ($M = 10.93$, $SD = 2.98$) and CG ($M = 10.88$, $SD = 2.88$; $t(78) = .076$, $p > .05$, 2-tailed) at the outset of the mediation. The small magnitude of the mean difference (.05, 95% CI: -1.26 to 1.36) and the low effect size (Cohen's $d = .02$) further supported this foundational observation. This unequivocally confirmed the two groups had comparable reading skills performance before the intervention began. This comprehensive demonstration of data homogeneity fulfilled a critical requirement, laying a robust and methodically structured foundation for the subsequent execution of paired sample t-tests and the ensuing analyses.

Paired sample T-test results of reading skills performance

In Table 4, a paired-sample-test and Cohen's d tests were computed to investigate trainees' performance during the pre-test and post-test and between the control and experimental groups and the strength of the effect of teacher mediation.

Table 4*The Results of the Paired Samples Test on EFL Trainees' Reading Skills Post-test Score*

Group	N	Tests	Paired Differences						95% Confidence		
			Reading Skills		SD	Std. Error	Interval of the Difference		T	df	Sig. (2-tailed)
			Mean	Mean			Lower	Upper			
EG	40	Pre-test	10.93								
		Post-test	15.68	4.750	1.997	.316	-5.389	-4.111	15.05	39	.000
CG	40	Pre-test	10.88								
		Post-test	11.20	-.325	1.328	.210	-.750	.100	1.548	39	.130

A paired-sample t-test unveiled no statistically significant differences in the Control Group's (CG) reading skills test scores between the Pre-Test ($M = 10.88$, $SD = 2.88$) and the Post-Test ($M = 11.20$, $SD = 3.51$), demonstrating a significance value ($t (39) = -1.548$, $p > .05$, two-tailed). The minimal mean difference of 0.32 and very small effect size (Cohen's $d = .10$) further corroborated this finding. Conversely, the EG demonstrated a statistically significant improvement from the pre-test ($M = 10.93$, $SD = 2.98$) to the post-test ($M = 15.69$, $SD = 3.53$; $t (39) = -15.045$, $p = .000$). This substantial change is further supported by a large effect size (Cohen's $d = 1.45$), suggesting the teacher's mediation had a strong positive impact on EG participants' EFL reading skills performance.

Results of trainees' views on the importance and mediator's use of mediation parameters

In Table 5, a paired-sample-test and Cohen's d tests were computed to investigate trainees' reflections on the importance and mediator's use of mediation parameters before and after the intervention within the experimental group.

Table 5

Paired Sample t-test Results of Participants' (EG) Views on the Importance and Mediator's Use of Mediation Parameters

Group	Pair No.	Variables	N	M	SD	T	df	Sig(2-tailed)	Cohen's d
EG	Pair1	Pre-importance	40	2.63	.382	-11.988	39	.000	2.53
		Post-importance	40	3.88	.586				
	Pair2	Pre-use	40	2.71	.409	-13.648	39	.000	2.94
		Post-use	40	3.91	.406				

A paired sample t-test was computed to investigate teacher trainees' reflections on the importance and the mediator's use of mediation parameters. The results indicated a significant difference between pre-mediation and post-mediation scores for trainees' view on the importance of mediation parameters (pre-test: $M = 2.63$, $SD = .382$; post-test: $M = 3.88$, $SD = .586$; $t(39) = -11.988$, $p < .001$; Cohen's $d = 2.53$), indicating a large effect. Similarly, a significant difference was found in their perception of the mediator's use of mediation principles (pre-test: $M = 2.71$, $SD = .409$; post-test: $M = 3.91$, $SD = .406$; $t(39) = -13.648$, $p < .001$; Cohen's $d = 2.94$), indicating a strong effect.

Pre-intervention results of freshman pre-service trainees' perceived use of CS and MCS

The pre-intervention questionnaire served as a foundational evaluation to ascertain the homogeneity of the participants within the two intact groups (EG and CG) concerning their perceived use of cognitive and meta-cognitive strategies before the commencement of the intervention.

Table 6

Pre-intervention Descriptive Statistics

	Variables	N	EG		CG	
			M	SD	M	SD
Pre-intervention	CS	40	2.43	.772	2.26	.603
	MCS	40	2.09	.307	2.01	.458

Key: CS=Cognitive Strategies, MCS=Meta-Cognitive Strategies,

As depicted in Table 6, the average mean scores of the two groups (EG and CG) on the constructs (CS and MCS) seem to be closer, the difference being 0.17 and 0.08 respectively before the intervention. However, it was worth computing an independent samples t-test to check whether or not this difference was statistically significant. This is shown in Table 6 below.

Table 7

Pre-intervention Independent Sample t-test

CS/MC S	Equal varianc e	Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig	T	Df	Sig(2- tailed)	Mean Differenc e	Std. Error Difference
CS	Assume d	2.16 2	.14 5	1.04 3	7 8	.300	.170	.163
		6.76 7	.01 1	0.84 6	7 8	.400	.075	.08 7

Results, in Table 7, proved that there was no statistically significant difference in CS mean scores for EG ($M = 2.43$, $SD = .772$) and the CG ($M = 2.26$, $SD = .603$; $t (78) = 1.043$, $p > .05$, 2-tailed); and in MCS mean scores for EG ($M = 2.09$, $SD = .307$) and the CG ($M = 2.01$, $SD = .458$; $t (78) = .846$, $p > .05$, 2-tailed). Besides, Cohen's d statistic for CS (0.23) and MCS (0.19) indicated a small effect size. The sig. (two-tailed) values of the constructs are greater than the cut-off alpha level, .05. Therefore, it was assumed that the trainees were homogenous before the intervention.

Post-intervention results of freshman pre-service trainees' perceived use of CS and MCS

The analysis of the trainees' perceived use of CS and MCS post-intervention mean scores revealed that the EG obtained higher mean scores than the CG. There was also higher post-intervention mean scores on CS and MCS than on the pre-intervention in both groups. The analysis of the means and standard deviations for pre- and post-intervention mean scores of the two groups is presented in Table 8 below.

Table 8*Descriptive Statistics of Pre- and Post-intervention*

	Variables	N	EG		CG	
			M	SD	M	SD
Pre-intervention	CS	40	2.43	.772	2.26	.603
	MCS	40	2.09	.307	2.01	.458
Post-intervention	CS	40	3.54	.772	2.41	.619
	MCS	40	3.33	.468	2.06	.418

The EG trainees' perceived use of CS and MCS mean scores ($M=2.43$, $SD=.772$) and ($M=2.09$, $SD=.307$) before the intervention increased to ($M= 3.54$, $SD= 0.772$) and ($M=3.33$, $SD=0.468$) after the intervention respectively. Similarly, the CG trainees' perceived use of CS and MCS mean scores ($M=2.26$, $SD=.603$) and ($M=1.96$, $SD=.476$) before the intervention increased to ($M=2.41$, $SD=.619$) and ($M=2.06$, $SD=0.418$) after the intervention correspondingly. However, a paired sample t-test and Cohen's d were computed to check whether there were statistically significant differences in participants' perceived use of CS and MCS between the pre-intervention and post-intervention mean scores. The results of the analysis are summarized in Table 9 below.

Table 9*Paired Sample t-test Results of Participants' (EG and CG) Rating of Perceived Use of CS and MCS*

Groups	Pair No.	Variables	N	M	SD	T	df	Sig(2-tailed)	Cohen's d
EG	Pair1	Pre-CS	40	2.43	.772	-4.799	39	.000	1.44
		Post-CS	40	3.54	.772				
	Pair2	Pre-MCS	40	2.09	.307	12.383	39	.000	3.15
		Post-MCS	40	3.33	.468				
CG	Pair3	Pre-CS	40	2.26	.603	-1.563	39	.126	0.23
		Post-CS	40	2.41	.619				
	Pair4	Pre-MCS	40	2.01	.459	-1.115	39	.272	0.11
		Post-MCS	40	2.06	.418				

The table above displays the outcomes of a paired sample t-test investigation into the effect of mediator intervention on the perceived usage of teacher trainees' CS and MCS in the EG and CG before and after mediation. For the EG, significant differences were found in CS (pre: $M = 2.43$, $SD = .772$; post: $M = 3.54$, $SD = .772$; $t (78) = -4.799$, $p = .000$;

Cohen's $d = 1.44$) and MCS (pre: $M = 2.09$, $SD = .307$; post: $M = 3.33$, $SD = .468$; $t (78) = -12.383$, $p = .000$; Cohen's $d = 3.15$). However, the CG showed no significant differences in CS (pre: $M = 2.26$, $SD = .603$; post: $M = 2.41$, $SD = .619$; $t (78) = -1.563$, $p = .126$; Cohen's $d = 0.23$) or MCS (pre: $M = 2.01$, $SD = .459$; post: $M = 2.06$, $SD = .418$; $t (78) = -1.115$, $p = .272$; Cohen's $d = 0.11$). The results indicate significant improvement in the EG's perceived use of both CS and MCS strategies, with a large effect size following the intervention. Conversely, the CG did not show statistically significant changes in their perceived use of either strategy. Thus, these findings suggested that teacher mediation significantly improved EG participants' perceived use of CS and MCS.

The post-intervention comparison between the EG ($N = 40$) and the CG ($N = 40$) in the above descriptive statistics table indicates that the former group registered mathematically better results than the latter in all of the two dependent variables. However, independent sample t-test and Cohen's d tests were used to check whether these mathematical disparities of scores between the two groups mean whether there were statistically significant differences or not as follows:

Table 10

Post-intervention Independent Sample t-test

CS/MSC	Groups	M	SD	N	t	Df	Sig(2-tailed)	Cohen's d
CS	EG	3.54	.772	40	7.058	78	.000	1.58
	CG	2.41	.619	40				
MCS	EG	3.33	.468	40	12.817	78	.000	2.87
	CG	2.06	.418	40				

Table 10 above shows post-mediation/intervention independent sample t-test results of teacher-trainees' perceived use of CS and MCS in the EG and CG. The CS mean scores of the EG ($M = 3.54$, $SD = .772$) and the CG ($M = 2.41$, $SD = .619$), $t (78) = 7.058$, $p < .05$, 2-tailed). Similarly, the MCS mean scores of EG ($M = 3.33$, $SD = .468$) and the CG ($M = 2.06$, $SD = .418$; $t (78) = 12.817$, $p < .05$, 2-tailed). Besides, Cohen's d statistic for CS (1.58) and MCS (2.87) indicated a large effect size. Thus, the results revealed that there was a statistically significant difference between the EG and CG in the post-mediation perceived use of CS and MCS, favoring the EG's mean scores increment in both constructs. This substantial change was further supported by a large effect size (Cohen's d

= 1.58 and 2.87), suggesting the teacher's mediation had a strong positive impact on EG participants' perceived use of CS and MCS.

Lesson observation results

The researcher observed 13 reading skills lessons together with his co-observer. During the observation, it was checked how often teacher-trainees are facilitated/mediated through the mediation of transcendence to develop cognitive strategies. Moreover, Goal setting; regulation & control of behavior; and shared intention which facilitate trainees' planning, monitoring, and evaluating of their learning of reading skills lessons to develop meta-cognitive strategies were checked during classroom observations. To that end, the data regarding teacher educators' mediation/intervention in developing cognitive and meta-cognitive strategies were gathered by using the classroom observation checklists which contained different items having various sub-points under them with categories of 'Yes' or 'No'. The mediation of transcendence strategy in developing cognitive strategies contained seven items under. On the other hand, the data regarding the mediation of goal setting, regulation and control of behavior, and shared intention in developing meta-cognitive strategies were gathered by items organized into three categories and analyzed using these categories which incorporate planning, monitoring, and evaluating of learning activities. For this analysis, the researcher calculated the average percentages resulting from the frequencies output from the researcher and co-observer to the visible behavior of teacher trainees' and teacher educator's classroom activities, fully delivered through the mediation/intervention strategies to develop trainees' cognitive and meta-cognitive strategies which are important to enhance trainees' autonomous learning. The results of lesson observation are presented in Figures 1 and 2.

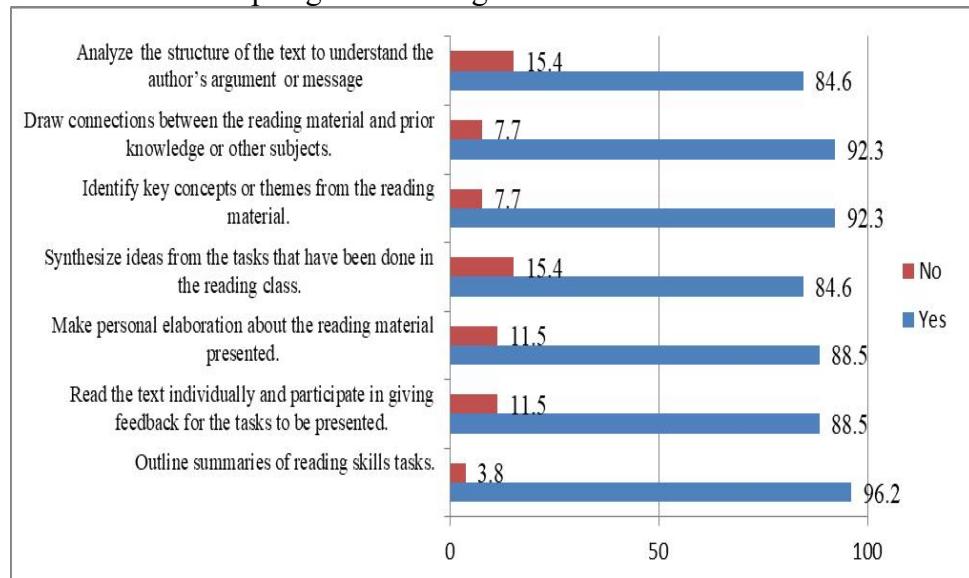
Trainees' classroom practices through teacher educator's mediation

To find out trainees' actual practices of cognitive strategies in promoting learner autonomy with the help of teacher educator's mediation of transcendence, a semi-structured observation, comprising field notes, was conducted using a checklist that consisted of seven sub-items. The teacher trainees' practices of classroom activities with the help of the teacher educator's mediation were observed and rated with categories of 'Yes' or 'No', and lastly changed into percentages using their frequency.

Figure 2

Trainees Classroom Practices of Activities via Teacher Educator's Mediation of Transcendence to Develop Cognitive Strategies in Learning Reading Skills

In the teaching-learning of reading skills classes, it was observed that teacher-trainees were facilitated/ mediated to practice the following classroom activities to develop cognitive strategies:



The above figure illustrates the trainees' actual classroom practices of reading skills activities to enable them to develop cognitive strategies in reading skills classes with the help of teacher educator's mediation. It disclosed that the teacher educator encouraged trainees to draw connections between the reading material and prior knowledge or other subjects (92.3%). The field notes from classroom observation also displayed that the teacher introduced the title and posed various pre-reading questions to the students at the beginning of all the reading lessons. Similarly, 92.3% of the observed lessons also showed teacher educators mediated trainees to identify key concepts or themes from the reading materials in the while and post-reading stages.

The chart indicated that the teacher's educator highly encouraged trainees to outline summaries of reading skills tasks (96.2%). Moreover, the teacher educator was seen to facilitate trainees to make personal elaboration about the reading text, read the text individually, and

participate in giving feedback for the tasks to be presented (88.5% each) while reading passages. Conversely, the lower percentages were observed in encouraging trainees' use of strategies such as "Synthesize ideas from the tasks done in the reading class" (84.6%) and "Analyze the structure of the text to understand the author's argument" (84.6%).

From the above results, one can infer that the teacher trainees were regularly observed to practice most of the activities that help them to develop cognitive strategies through teacher educator's mediation of transcendence strategies. However, the result showed that teacher trainees were observed to be encouraged mostly practice activities with the highest rate to outline summaries of reading skills tasks (96.2%), and the lowest rate of analyzing and synthesizing ideas from reading materials (84.6%) for each respectively among the activities.

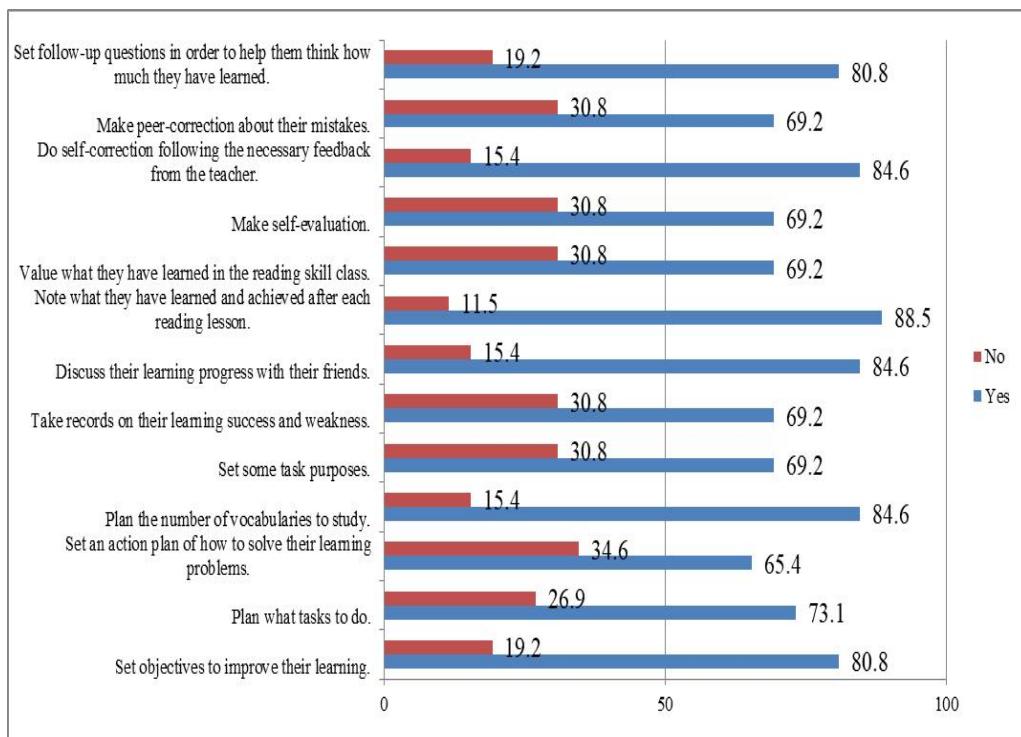
Trainees' classroom practices via teacher educator's mediation

To find out teacher trainees' actual classroom practices of reading skills lessons with the help of teacher's mediation in developing trainees' use of meta-cognitive strategies in promoting learner autonomy, a semi-structured observation, comprising field notes, was conducted using a checklist. The observation checklists consisted of thirteen sub-items under the three major categories such as planning, monitoring, and evaluating. The teacher trainees' practice of reading skills activities was observed and rated with categories of 'Yes' or 'No' through teacher educator's mediation to develop meta-cognitive strategies. The results of the 'yes' and 'no' frequencies were lastly changed into average percentages of the frequency (percentages) obtained from the two observers.

Figure 3

Trainees Classroom Practices of Activities via Teacher Educator's Mediation of Goal Setting, Regulation and Control of Behavior and Meaning to Develop Meta-Cognitive Strategies in Learning Reading Skills

In the teaching-learning of reading skills classes, it was observed that teacher-trainees were facilitated/mediated to practice the following classroom activities to develop meta-cognitive strategies:



The above figure illustrates the mediation strategies of goal setting(planning), regulation, and control of behavior (monitoring and evaluation) employed to encourage trainees to practice activities to develop the use of meta-cognitive strategies in reading skills classes. It disclosed that the teacher educator encouraged trainees to note what they had learned and achieved after the reading class (88.5%). Moreover, 84.6% of the observed lessons facilitate trainees' self-correction following the necessary feedback, discussing their learning progress with friends, and planning the number of vocabulary to study for each.

The data also indicated that the teacher educator encouraged trainees to set objectives to improve their learning, and set follow-up questions to help them think how much they have learned (80.8%). Moreover, teacher educator was seen to facilitate trainees to plan what tasks to do (73.1%), and set some task purposes (69.2%), in pre- and while reading passages. Similarly, 69.2% of the observed lessons also encouraged trainees to make self-evaluations and peer-correction about their mistakes, take records of their learning successes and weaknesses, and value what they have learned in the reading skill class. Lastly, 65.4% of the classroom lessons were observed to set an action plan for how to solve their learning problems.

From the above results, one can infer that the teacher trainees were observed to participate in practicing different reading skills activities regularly to develop meta-cognitive strategies during the teaching-learning of reading skills lessons with the help of the teacher educator's mediation. However, the result showed that the frequencies of the practiced activities varied from activity to activity. As a result, the highest was observed when trainees were mediated to practice activity such as; noting what they have learned and achieved after the reading class (88.5%); in contrast, the least practiced activity was setting an action plan of how to solve their learning problems (65.4%).

Discussion

This study sought to investigate the effects of teacher educators' mediation on freshman pre-service trainees' development of cognitive and meta-cognitive strategies in learning EFL reading skills. The research also intended to examine whether the mediation brought a significant change in trainees' reading skills achievement. The results of the study provided valuable insights into the various aspects that were investigated.

The first research question intended to examine whether teachers' educators' mediation/intervention has any statistically significant effect on freshman trainees' perceived use of CS and MCS in learning reading skills autonomously compared to the CG. The result of the EG mean score of the paired sample t-test revealed a statistically significant difference between the pre-intervention and post-intervention questionnaires on the perceived use of CS and MCS in learning reading skills. In other words, the finding indicated that teacher educator's utilization of mediation strategies led to a statistically significant increase in the EG trainees' use of CS and MCS mean scores than CG. On the contrary, the CG did not show statistically significant changes in their perceived use of either strategy. Besides, the analysis of the independent t-test showed that there was a statistically significant difference between the experimental and control groups in terms of using CS and MCS after mediation. Besides, Cohen's d test showed that there were strong effects of teacher mediation on developing CS and MCS of EG.

In other words, the study indicated that teacher educator's mediation had a significant positive effect on the development of trainees' perceived use of CS and MCS in learning reading skills classes. This finding was also confirmed by the result of the paired sample t-test and Cohn's d test which showed a significant change in the results of the EG participants'

views of the importance and the mediator's use of mediation parameters after mediation. The lesson observation results also supported that the teacher educator's mediated instruction revealed significant progress in promoting trainees' practice of different reading lesson activities that develop their use of cognitive and meta-cognitive strategies in learning EFL reading skills. For example, the highest levels of engagement in using cognitive strategies were seen in outlining summaries of reading, connecting the reading materials with their background knowledge, and identifying key concepts or themes from the reading materials, while the teacher educator conducted the lessons by employing mediated instruction (mediation of transcendence). Moreover, trainees were also committed to employing reading texts individually and giving feedback for the given tasks highly though analyzing and synthesizing ideas from the reading materials were areas being treated least in engaging trainees. Similarly, trainees demonstrate positive engagement with most activities that promote meta-cognitive strategies in the mediated instruction lessons by promoting goal setting (planning), regulation and control of behavior (monitoring and evaluation), and shared intention (set task purposes).

As a result, this finding aligns with existing research emphasizing the teachers' mediating effect of using learning strategies can help learners become autonomous by facilitating their control over the learning process and cultivating independence and critical skills (Asmari, 2013; Dickenson, 1988; Little, 2003; Williams & Burden, 1997). Similarly, the practical implementation of mediation strategies of intentionality and reciprocity in combination with transcendence fosters learners' critical thinking and problem-solving skills and enables them to be independent learners (Feuerstein et al., 2010; Lantolf & Poehner, 2014; Tzuriel, 2013; Williams & Burden, 1997). In addition, teachers' facilitation of students' uses of meta-cognitive strategies, including planning, monitoring, and evaluating can lead to achieving learner autonomy (Benson, 2011; Little, 1991; Oxford, 1990; Wenden, 1991; Winter, 2020).

The second research question intended to check whether the trainees who have taught through teacher mediation have a statistically significance effect on the reading skills achievement/performance because of their enhancement in using CS and MCS in learning reading skills. The results of independent and paired samples t-tests demonstrated that applying mediation principles and instructional scaffolding significantly improved trainees' EFL reading skills performance. Particularly, the results showed that the trainees who received teacher meditation significantly improved their reading skills achievement than those who did

not. The findings agree with prior studies conducted by different researchers. For example, Flavell et al., (2002) and Goswami, (2008) confirmed that developing students' cognitive and meta-cognitive strategies could enable learners to enhance their language performance and achieve better academic outcomes. The findings are also consistent with Williams and Burden (1997) said that students who set their own learning objectives (meta-cognitive strategies) generally perform better than those whose goals are determined by others. Moreover, the findings of using mediation strategies, such as promoting intentionality and reciprocity, fostering transcendence, and emphasizing meaning, contribute to improved student engagement and academic performance (Haywood, 2004; Winter, 2020).

The study could infer that teacher educators teaching reading skills using mediation strategies improved trainees' use of CS and MCS in learning EFL reading skills autonomously. Moreover, the trainees' improvement in using autonomous learning strategies (CS and MCS) could enhance learner autonomy and this is also reflected in their improvement of classroom performance.

Conclusions

The development of teacher trainees' cognitive and meta-cognitive strategies in learning EFL reading skills is essential for enhancing learner autonomy. This requires careful consideration of their perceived use of cognitive strategies (CS) and meta-cognitive strategies (MCS). The findings of this study indicate that teacher interventions, specifically through mediation strategies, provide substantial support for trainees. The application of Mediated Learning Experience (MLE) revealed positive effects on enhancing students' perceived use of both cognitive and meta-cognitive strategies, ultimately promoting their autonomy in learning EFL reading skills.

Teacher educators' mediation through MLE significantly contributed to improvements in trainees' cognitive strategies, such as critical thinking, inferring, analyzing, synthesizing, organizing, and evaluating. Additionally, it fostered meta-cognitive strategies related to self-regulation, behavior control, and goal setting, which includes planning, monitoring, and evaluating their learning processes.

Recommendations

Based on the findings, it is necessary to note that applying MLE/mediated-based instruction is beneficial to facilitate students' autonomous learning through the development of cognitive and meta-

cognitive strategies. Freshman students at Kotebe University in particular and students at other Ethiopian universities who have difficulty in learning reading skills autonomously benefit from utilizing the MLE/mediated-based instruction. Thus, it is recommended that English language instructors incorporate mediation strategies into their daily classes to help trainees effectively utilize cognitive and meta-cognitive strategies. This integration can enhance learner autonomy and improve language learning outcomes.

For future research, it would be beneficial to conduct studies on MLE and mediation strategies across various grade levels to evaluate their effectiveness in developing learner autonomy in different EFL skills. This could provide deeper insights into how these strategies can be adapted and applied in diverse educational contexts.

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Conflict of interests

There is no financial and conceptual conflict of interest in this article.

Data Availability

The raw data for this study is available in the author's hand and other statistical data were presented in this article.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

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