A Proposed Microlearning-based Program for Enhancing   Pre-service EFL Teachers' Proficiency and their Attitudes toward Lifelong English Language Learning

Dr. Heba Mustafa
Assistant Professor, Curriculum &EFL Instruction
Faculty of Graduate Studies for Education

Abstract

*T**he current study investigated the effect of a proposed microlearning-based program on enhancing pre-service EFL teachers' proficiency and their attitudes toward lifelong English language learning. The study employed a quasi-experimental research design (one experimental group). This study's participants were forty (n =40) pre-service EFL teachers. The researcher designed the study instruments, namely, a pre-post EFL proficiency test and an attitude towards lifelong EL learning questionnaire. Data was statistically analyzed. Based on the study results, there is evidence that the proposed microlearning-based program proved effective in enhancing pre-service EFL teachers' proficiency and attitudes toward lifelong English language learning. The study recommends investigating the efficacy of incorporating advanced digital tools, including adaptive content personalization and collaborative platforms, into microlearning-based programs.*
Keywords : A Microlearning-based Program , Pre-Service EFL Teachers, EFL Proficiency ,   Attitudes Towards Lifelong English Language Learning

Introduction

English as a forgiven language (EFL) proficiency is crucial for pre-service teachers because it fosters their ability to develop successful communication in diverse educational settings. It involves mastering fundamental language skills, namely, reading, writing, speaking, and listening, and developing an advanced awareness of proper language usage in diverse cultural contexts. Moreover, it

fosters pre-service teachers' capability to manage worldwide pedagogical resources and opportunities. Lower EL proficiency levels can be associated with decreased self-esteem, inefficient engagement with diverse learners, and less interest in opportunities for professional growth.

Enhancing EL proficiency is a multifaceted process requiring effective teaching strategies, learner-centred practices, and technological advancement. Traditional pedagogical frameworks, such as direct grammar instruction, vocabulary memorization, and controlled language practice, become insufficient in fulfilling contemporary EFL learners' demands, particularly pre-service teachers undertaking academic and professional commitments (Ahmad & Rehman, 2023). Technology integration has become a profound educational trend, enabling innovative strategies to address EFL learning and teaching difficulties. In this context, the microlearning approach gained attention for providing learners with concentrated, accessible, and engaging learning experiences (Aydin et al., 2021; Ester et al., 2023; Schneegass et al., 2021).

The concept of microlearning was initially presented by Research Studios Austria in 2005, premised on "learning in small steps." (Laskaris & Lowenthal, 2023, p.1). This approach prioritizes the provision of concise and manageable instructional modules to maintain attention spans and improve learners' retention abilities. Unlike micro-teaching sessions that aim to equip pre-service teachers with compelling teaching performances within a typical classroom setting and schedule, the microlearning approach focuses on the learners' social-cognitive abilities, condensing the learning experience by eliminating

unnecessary content while prioritizing essential bites of knowledge and micro-abilities, allowing learners to decide where, how, and what to study (Yang &Liu, 2023).

Shedding light on the theoretical foundations of the microlearning approach is essential to understanding, designing, and implementing its instructional practices. The micro-learning approach, which has its foundation in the Cognitive Load Theory, addresses the learners' mental limitations in concurrent processing and remembering enormous quantities of information. This approach advocates segmenting content into smaller, manageable units, thus reducing cognitive overload (Meng, 2022; Sun et al., 2022). It facilitates the comprehension and retention of linguistic components, including grammar, vocabulary, and sentence structure, aligning with the EFL learners' main information-processing mental mechanisms.

Furthermore, the microlearning approach has its roots in the social-constructivism learning theory, which emphasizes the need for active, learner-centred activities and social classroom interaction. According to this theory, EFL learners improve their understanding of the English language by interacting with content and using it contextually (Zhang & Zuo, 2022). That is, instructional practices focus on learners' construction of linguistic knowledge and foster communicative usage simultaneously. Moreover, principles of the behaviourism learning theory, such as reinforcement, repetition, and immediate feedback, are integrated into microlearning-based practices to maintain motivation and boost retention of English language aspects, including pronunciation and vocabulary (Chicue & -Valcarcel, 2023). Additionally, based on the multimedia learning theory, the micro-

learning approach utilizes various media formats, such as videos, animations, and infographics, generating an immersive digital learning environment to suit diverse learning preferences and foster engaging EFL learning experiences (Feng & Chen, 2022).

Microlearning is a versatile pedagogical approach that integrates six fundamental aspects to enhance the learning experience. It is characterized by concise content delivery, adaptability, digital accessibility, goal-oriented design, interactivity, and integration into broader frameworks (Chicue &Valcarcel, 2023; Ester et al., 2023; Moorthy & Silvam, 2024; Mostrady et al., 2024; Zainuddin & Mokhtar, 2022).

- Concise content delivery is the hallmark of microlearning, emphasizing brief segments that enable learners to comprehend essential information easily and quickly. Studies indicate that microlearning-based practices, including micro-videos, enhance professional growth by preserving brevity while assuring clarity and learner retention.
- Microlearning's adaptability to individual needs facilitates personalized learning experiences. Adaptive mechanisms in microlearning digital modules have successfully offered learners distinctive alternatives, especially for language retention and skill development.
- Digital accessibility is an essential feature of the microlearning approach, which uses technology to distribute content on varied online platforms. This accessibility enables learners to access resources anytime, making microlearning-based practices suitable for ongoing.

- Concentrating on specific learning objectives ensures that microlearning modules accomplish tangible learning objectives. The organized design of microlearning modules ensures that the content is precisely goal-oriented, aligning with broader learning outcomes.
- Interactivity is one of the most important features of the microlearning approach. Integrating gamified digital elements boosts learner motivation and engagement, making the educational experience entertaining and successful.
- Microlearning can be easily integrated to support conventional teaching methods and broader frameworks, resulting in a holistic and flexible learning experience.

Instructional modules designed in the light of the microlearning approach have been described through three main concepts: microcontent, macromedia, and microknowledge. As Aydin et al. (2021) demonstrated, microcontent comprise short segments of a subject or material intended to sustain motivation and engagement, facilitating effective long-term or continuous language practice. Macromedia implies the use of several media formats, including movies, animations, and interactive infographics (limit of 5 minutes) concisely. The microknowledge concept denotes the accumulative consolidation of distinct knowledge segments understood through sequential microlearning modules(Fahim & Bahar; Feng & Chen, 2022).

In EFL instruction, the microlearning approach imposes specific design principles to maximize its efficacy (Ostroglazova, 2024; Jubran, 2024; Rizal et al., 2022). First and foremost, the content must be highly contextual, emphasizing everyday language use and providing valuable

linguistic items relating to the learners' experiences. Secondly, microlearning content must be straightforward and comprehensible, enabling learners to assimilate and process information in minutes. Thirdly, feedback is crucial since it allows EFL learners to evaluate their progress and promptly recognize areas needing enhancement. Finally, ensuring device compatibility is essential for inclusion, enabling EFL learners to access language-learning resources effortlessly across various devices. A variety of technologies facilitate the implementation of microlearning pedagogical principles to enhance English competence, for instance, E-learning platforms, such as EdApp, Coursera, and Udemy, and smartphone applications, like Duolingo and Babbel (Pang & Aziz, 2021).

Moreover, A vast range of digital tools and platforms has reshaped the implementation of the microlearning approach, enhancing its interactivity, accessibility, and adaptability to various educational demands (Kohnke, 2023; Peachey, 2024; Samuel, 2024; Schneegass et al., 2021; Preis et al., 2023). Social media platforms like Instagram and TikTok offer simple, engaging language-learning videos and infographics, promoting fast and efficient knowledge absorption. In addition, Learning Management Systems (LMS) like Moodle, Blackboard, and Microsoft Teams enable instructors to tailor classes to be integrated into broader EFL instructional programs. At the same time, gamified technologies such as Kahoot and Quizlet augment interactivity and enjoyment in the educational experience. Moreover, platforms such as YouTube provide complimentary, outstanding resources that promote autonomous language learning, allowing learners to interact with the material quickly.

In the current study, microlearning is described as a pedagogical approach that offers concise digital modules to achieve particular learning objectives. It is characterized by adaptability and accessibility, often using digital platforms to foster interactive learning and flexible engagement. Microlearning's grounds are related to cognitive load theory, social constructivism, behaviourism, and multimedia learning theory; hence, it sheds light on learners' cognitive abilities, social interactions, reinforcement and feedback, and immersive digital learning environments.

The pedagogical implications of the microlearning approach may be highly beneficial for the EFL learning and teaching processes. Microlearning's structured yet adaptive feature provides a solid foundation for immersive, dynamic EFL instruction, thereby likely achieving the overall goals of the EFL learning process, such as fostering proficiency.

EFL Proficiency

EFL proficiency refers to the learner's ability to use English fluently, accurately, and successfully in different situations and across the four fundamental language skills, namely, listening, speaking, reading, and writing, encompassing a range of domains and achievement levels. From essential ability, which is about basic understanding and communication, to advanced proficiency, where learners show they can handle complexities in language and everyday life, this development shows the growth of language proficiency.

Listening proficiency comprises the ability to perceive spoken English, from recognizing common expressions in

everyday situations to comprehending abstract and idiomatic language in more complex contexts (Hamid et al., 2023). Speaking proficiency varies from employing basic phrases for fundamental communication to expressing complex concepts smoothly and convincingly in professional or academic contexts (Mhasakar, 2024). Reading proficiency expands from reading simple texts and extracting specific information to interpreting complicated literary works, specialized articles, and abstract concepts (Meyer, 2023). Proficient writing goes from composing introductory notes or letters to producing complex, cogent texts that effectively communicate arguments and accommodate formal and informal styles (Huang , 2024).In order to effectively enhance language proficiency, learners need focused instruction, intentional practice, and immersive opportunities that let them apply English in various contexts, promoting fluency and adaptability.

Numerous theories have provided insight into the process for enhancing the EFL proficiency (An, 2024; Sweller et al.,2021). Vygotsky's Sociocultural Theory emphasizes the importance of social interaction and collaborative learning with due attention to the benefits of planned assistance and scaffolding to facilitate the advancement of EFL learners within their Zone of Proximal Development (Samadi et al., 2024). Similarly, The Communicative Language Teaching Theory prioritizes authentic interaction to improve language fluency, advocating for group discussions and role-playing activities (Li et al., 2023).

Moreover, numerous practices for improving EFL proficiency for pre-service teachers have been investigated, such as immersive language learning (Pacheco et al.,

2023), structured peer mentoring programs (Burns & Siegel, 2023), simulated real-world language digital tasks (Walker & White, 2023), bilingual intercultural instruction (Macaro, 2021), extended extracurricular immersive language learning (Ellis, 2022); AI-driven language learning applications (Kumar & Parveen, 2022).

In this current study, EFL proficiency refers to using English fluently, accurately, and effectively across the four fundamental language skills: listening, speaking, reading, and writing. EFL proficiency domains encompass various levels of language fundamental skills and the adequate incorporation of grammar and vocabulary within various contexts.

Developing EFL proficiency is essential for learners, equipping them with the linguistic and communicative abilities needed for participating in various academic, professional, and social contexts. Nevertheless, the capacity to acquire and maintain proficiency in English entails an attitude that values adaptability and continual growth rather than merely achievements of abilities of a certain proficiency level (Derakhshan et al., 2022; Hu et al., 2022). Positive attitudes towards lifelong language learning promote enthusiasm for an ongoing language learning process, allowing learners to adapt to ever-changing linguistic demands and cultural contexts.

Attitudes towards lifelong English language learning

In general, positive attitudes toward lifelong English language (EL) learning influence the learners' ability to sustain proficiency and fulfil long-term language goals in a globalised context. Lifelong learning includes ongoing, self-driven efforts to enhance and maintain language proficiency.

EFL Instruction is a dynamic field marked by innovative practices and diverse cultural movements and requires pre-service teachers to commit to lifelong English language learning (Zhang & Li,2022). Developing a positive attitude towards lifelong English language learning is crucial for pre-service teachers, as it facilitates the ongoing development of their linguistic skills (Smith & Brown,2021). On their part, Wang and Li (2024) emphasise that this commitment goes beyond only improving language skills. It entails actively seeking opportunities for improvement and assuming accountability for enhancing their overall EL proficiency and instructional skills. Ng and Tan (2023) assert that pre-service teachers' commitment to lifelong English learning is essential as it fosters their adaptability to fulfil the ever-changing EFL classroom demands.

One significant advantage of adopting a positive lifelong English language learning attitude is maintaining pre-service teachers' English mastery level, which enables them to establish a communicative EFL classroom environment, encouraging their learners to interact meaningfully (Khan & Singh, 2022). Moreover, pre-service teachers prioritising lifelong English language learning are more likely to adopt a more reflective and analytical perspective to their language learning process. They routinely investigate new ideas and modify their learning practices, as well as evaluate their language progress; such ongoing reflective practices are crucial for language learning and teaching (Liu & Wang, 2023). Hence, positive attitudes toward lifelong English language learning empower pre-service teachers to effectively address their and their learners' linguistic needs and cope with the evolving changes in language instruction.

Nevertheless, despite its significance, some challenges associated with teacher preparation programs might hinder EFL pre-service teachers from developing a positive attitude toward lifelong English language learning and participating in ongoing language development. A key challenge is relying on traditional teaching methods, prioritising rote memorisation over practical language use. Teacher preparation programs often implement teaching practices that prioritise grammatical rules, vocabulary lists, and translation tasks, frequently neglecting possibilities that allow pre-service teachers to interact in English in an authentic way (Rosanja et al., 2024; Pathomchaiwat & Thongrin, 2024).

In other words, pre-service EFL teachers receive preparation that embodies traditional instructional practices, reinforcing the idea that learning English is confined to the classroom and associated with assessments or transient academic objectives. Without learner-centred activities emphasising inquiry, investigation, and language use, pre-service teachers may struggle to maintain their language learning motivation and self-confidence in using English. Consequently, their low motivation or self-confidence may inhibit pre-service teachers' ability to continuously develop and improve language proficiency (Lijuan & He, 2024; Miller & Sun, 2022). That is to say, Pre-service teachers may experience instructional practices that do not promote self-directed learning or recognise English as a professional and personal development tool.

Moreover, Dawson and Riley (2022)and Lin and Chen (2023) claim that teacher preparation programs emphasising standardised evaluations over experiential learning may discourage pre-service teachers from using multimedia resources, getting involved in language-rich

communities, or setting long-term language goals. The lack of exposure to varied and flexible language learning practices may hinder the development of a positive attitude toward lifelong English language learning engagement with English.

Similarly, Al-Musallam (2022) and Fajrina (2023) assert that establishing a supportive and motivating learning environment is crucial for fostering pre-service teachers' lifelong English language learning attitudes. Integrating authentic resources, including news articles, films, and interviews in English, can promote an appreciation for the cultural and pragmatic implications of the language, thereby motivating pre-service teachers to explore more continuing learning opportunities. Moreover, Pre-service EFL teachers should be motivated to perceive errors as opportunities for continuing development and embrace a flexible self-learning perspective (Heng & Chu, 2023). By promoting a positive attitude towards exploration, teacher preparation programs assist pre-service teachers in adopting the premise that language learning is a continuous and progressive process rather than a single or discrete learning objective.

This study defines a lifelong EL learning attitude as pre-service EFL teachers' commitment to constantly improving their language proficiency for professional development. It emphasizes self-motivation, responsibility, and the importance of coping with current language varieties and language classroom evolving demands.

Context of the problem

Scholars have highlighted the significance of language proficiency (Burns & Siegel, 2023; Khan & Singh, 2022; Meng, 2022). In addition, other studies emphasized the importance of positive attitudes towards lifelong English

language learning for EFL learners in general and pre-service teachers in particular (Liu & Wang, 2023; Miller & Sun, 2022; Wang & Li, 2024; Yang & Liu, 2023). However, studies shed light on pre-service EFL teachers' need for more mastery of English proficiency (Abdallah, 2022; El-Dakhs & Nour Eldeen, 2022; Zahran, 2020) and more developed positive attitudes towards lifelong learning (Abdelhafez, 2023; Ibrahim, 2023; Salem, 2022).

To identify the study's problem, the researcher administered an EFL proficiency test to twenty pre-service EFL teachers enrolled in the General Diploma in Education, Faculty of Graduate Studies for Education, Cairo University. The pilot study's findings indicated that a substantial percentage (71%) of the participants showed insufficient mastery of EFL proficiency levels. Moreover, the researcher administered a lifelong EL learning attitude questionnaire to measure attitudes towards. The questionnaire results indicated that (79%) need to develop positive attitudes towards lifelog EL learning (see Appendix A for the pilot study).

Statement of the Problem

Pre-service EFL teachers need to improve their English proficiency and develop positive attitudes towards lifelong EL learning. The observed deficiency can be ascribed to instructional practices included in the teacher preparation program. Thus, this study examines the effect of a proposed microlearning-based program on enhancing pre-service EFL teachers' proficiency and attitudes towards lifelong EL learning.

Hence, this study attempts to find an answer to the fundamental question.

- *What is the effect of a proposed microlearning-based program for enhancing pre-service EFL teachers'*

proficiency and their attitudes towards lifelong EL learning?

Subsidiary questions arise from this main question as follows

- What is the effect of a proposed microlearning-based program on enhancing pre-service EFL teachers' proficiency?
- What is the effect of a proposed microlearning-based program on enhancing pre-service EFL teachers' attitudes towards lifelong EL learning?

Hypotheses

- There are statistically significant differences between the mean scores of the study's group students on the pre-and post-administration of the EFL proficiency test in favor of the post-administration
- 2.There are statistically significant differences between the mean scores of the study's group students on the pre and post-administration of the lifelong EL learning attitude questionnaire in favor of the post-administration.

Method

Design of the Study

The study deployed a quasi-experimental design, and the sample comprised one experimental group. The study group received treatment using a proposed microlearning-based program to enhance pre-service EFL teachers' proficiency and attitudes towards lifelong EL learning. It is noteworthy that the researcher taught the study group students herself. A pre-post EFL proficiency test and a lifelong EL learning attitude questionnaire were administered to the study group.

Participants

The study sample consisted of forty (n=40) pre-service EFL teachers enrolled in the General Diploma in Education, Faculty of Graduate Studies for Education, Cairo University, during the 2024–2025 academic year.

Instruments

The pre-post EFL proficiency test

The researcher designed a pre-post EFL proficiency test to measure pre-service English teachers' English language proficiency before and after the treatment. It emphasizes the four fundamental skills and comprises five sections: Listening (20 marks), Speaking (20 marks), Reading (20 marks), Writing (20 marks), and Grammar and Vocabulary (20 marks) with a total of 100 marks. The listening section includes multiple-choice and fill-in-the-blank questions based on two audio recordings. In the speaking section, participants are asked to respond to varied prompts, such as holidays, online education, and job interviews, orally for 10 minutes. The reading section includes four multiple-choice items based on two reading passages. In the writing task, participants must write an essay (150-200) based on a writing prompt. The grammar and vocabulary section encompasses five multiple-choice items question.

To verify the validity of the test, a panel of three TEFL experts was asked to judge the tasks' suitability for the subskills being measured, the content's appropriateness for the participants' level, and the number of test items overall and for each subskill. The English pre-post EFL proficiency test was administered to a randomly selected group of twenty students to establish its reliability. The whole experiment did not include those students. The same group was subjected to the test once more two weeks later.

The test-retest method was utilized. Afterwards, the Pearson correlation coefficient was computed for the test and re-test results, with the reliability coefficient measured at 0.81, indicating a relatively high level of consistency. As a result, the test might be regarded as reliable for the present study.

To estimate the time of the test, the researcher administered the test to twenty (20) pre-service EFL teachers enrolled in the General Diploma in Education at the Faculty of Graduate Studies for Education, Cairo University. Participants were excluded from the experiment. The test's time was calculated by the average time the fastest and slowest participants took to finish it. The duration of the test was ninety (90) minutes (For the test specification and final version of English proficiency test, see Appendix B)

Additionally, a holistic speaking and writing rubric has been developed. The rubric is based on CEFR Levels, providing a thorough framework for assessing language proficiency across six levels (A1–C2) with precise descriptors and marks for both skills. Speaking and writing proficiency increases from 0–6 at A1 to 19–20 at C2. This rubric aligns performance descriptions with CEFR standards, providing clear level criteria and emphasizing spoken and written proficiency (for the English proficiency descriptors based on the CEFR, the holistic speaking and writing rubric, see Appendix C).

Lifelong EL Learning Attitude Questionnaire

The questionnaire explores pre-service teachers' commitment to continuous English proficiency development. It employs a 5-point Likert scale and comprises 10 items that highlight the significance of lifelong EL learning concerning several aspects, such as professional development, intrinsic motivation,

participation in informal practices, personal improvement, and challenges, such as time restrictions. The questionnaire was administered to a panel of three TEFL experts to ensure validity in terms of its appropriateness in measuring EFL proficiency and suitability of content to participants' level (see Appendix D for the final version).

Procedures

Prior to the beginning of the treatment, the experimental group was administered the pre-post English pre-post EFL proficiency test and the lifelong EL learning attitude questionnaire. The implementation lasted nearly three months, beginning on October 9th and ending on December 10th, 2024. The experimental group undertook the proposed microlearning-based program via an online platform, Microsoft Teams.

The microlearning-based program extended for ten (10) weeks, with each week comprising five modules, each lasting (20) minutes, resulting in a cumulative duration of around sixteen (16) hours. Participants are invited to join a module daily via the Microsoft Teams platform (from Sunday to Thursday). The program relies on a micro-learning approach, subdividing each online module into four tasks: listening, reading, speaking, and writing. Every task has been carefully designed to focus on a specific skill, starting with a vodcast (from BBC Learning English) focusing on the week's theme to enhance listening comprehension. Participants then read a theme-related article and respond to leading questions.

Afterwards, participants are motivated to participate in a discussion via Microsoft Teams through the speaking task, enabling them to articulate their thoughts on challenging subjects easily. Finally, the writing task requires participants to write an essay related to their learning, enhancing their concise and coherent writing

skills. The program encompasses a variety of themes, such as the future of education, global educational challenges, personalized learning, and various education systems worldwide. The framework facilitates student engagement with current educational topics while continually improving their English proficiency through various tasks in listening, speaking, reading, and writing (see Appendix E for a complete description and contents of the microlearning-based program).

Furthermore, a retrospective questionnaire was administered to the participants after the program's implementation to explore participants' opinions on aspects of the program's impact, efficacy, or possibilities for improvement. It comprises twenty (20) items, categorized into three dimensions. The first dimension, Language Proficiency Development, comprises eight (8) items that evaluate enhancements in listening, speaking, reading, and writing abilities. The second dimension, Attitudes Towards Lifelong EL Learning, consists of nine (9) items to assess the program's impact on participants' views regarding EL lifelong learning. The third dimension, challenges and improvements, outlines the obstacles participants faced during the program and includes two (3) items. The questionnaire is designed in a multiple-choice format, facilitating easy completion and analysis (see Appendix F for the retrospective questionnaire).

Results

The Statistical Package for Social Science (SPSS) was employed to carry out statistical analysis of the data using the paired sample t-test and Eta square. The first research hypothesis was verified using a t-test to compare the scores of the experimental group participants on the EFL proficiency test in the pre-post administrations. The statistical analysis revealed significant differences in favor

of the post-administration at a significance level of 0.01, shown in Table 1.

Table (1): Results of the EFL proficiency test comparing the experiments group students' scores regarding the overall proficiency level.

Skill	Mean	N	SD	DF	T Value	Effect Size
Pre	32.12	40	2.332	39	21.22	0.859
Post	84.99		5.215			

According to the t-value (21.22) and effect size (0.859), which are displayed in Table 1, the experimental group's mean scores on the EFL proficiency test were statistically significant in the pre-and post-administrations of the EFL proficiency test, with the post-administration revealing an enhanced proficiency. Using a t-test, the language skills of the experimental group students' pre- and post-administration results on the EFL proficiency test were compared.

Table (2): Results of pre-post administrations of the EFL proficiency test comparing the experimental group students' scores in relation to language domains.

Domains	Pre		Post		T Value	Effect Size
	Mean	Std. Dev.	Mean	Std. Dev.		
Listening	5.32	0.235	17.63	1.022	10.62	0.892
Speaking	6.23	0.212	18.02	1.652	10.95	0.658
Reading	4.01	0.336	19.01	1.663	9.56	0.859
Writing	5.36	0.215	17.85	1.922	10.24	0.754
Grammar & Vocabulary	5.32	0.322	18.22	1.556	10.87	0.698

The second hypothesis was verified by comparing the experimental group participants' mean scores on the lifelong EL learning attitude Questionnaire in its pre-post administrations, as shown in Table 3.

Table (3) participants' mean scores on the lifelong EL learning attitude Questionnaire in its pre-post administrations

Survey Items	Pre-administration		Post-administration		T Value
	Mean	Std. Dev.	Mean	Std. Dev.	
Sentence 1	1.65	0.541	4.512	0.7	6.314
Sentence 2	1.01	0.865	4.265	0.7	5.685
Sentence 3	1.66	0.355	4.344	0.7	6.347
Sentence 4	1.74	0.764	3.987	0.7	4.987
Sentence 5	2.02	0.632	4.454	0.7	6.012
Sentence 6	1.96	0.451	4.885	0.7	7.052
Sentence 7	1.39	0.150	4.145	0.7	6.632
Sentence 8	1.74	0.625	4.845	0.7	6.001
Sentence 9	2.021	0.847	4.515	0.7	5.326
Sentence 10	1.699	0.632	4.324	0.7	6.847

Table 3 shows that there were statistically significant differences in the mean scores of the participants favouring the post-administration.

Discussion

The study's findings indicate that the usage of the proposed microlearning-based program significantly impacts enhancement (n2 =0.859). This value was suggested by comparing the scores of the experimental group students on the pre-and post-administrations of the EFL proficiency test. Moreover, students' attitudes towards lifelong EL learning have also increased. This value was shown by comparing the mean scores of the experimental group students on the pre-and post-administration of the student's attitudes towards the lifelong EL learning questionnaire.

The present study's results are consistent with those of previous studies that showed the positive effect of using the proposed microlearning-based program on EFL proficiency (Chicue & Valcarcel, 2023; Meng, 2022). Moreover, the students' attitudes towards lifelong EL learning have increased, consistent with other studies'

findings (Jubran, 2024; Zainuddin & Mokhtar, 2022).Participants' tangible progress can be discussed in relation to aspects of the proposed microlearning-based program, including the weekly thematic framework, the modules, and the tasks. With regard to the results obtained from the retrospective questionnaire, participants' progress can be interpreted as follows:

The microlearning-based program's structure followed an appropriate weekly thematic framework, with each week encompassing five modules, each lasting 20 minutes. The microlearning principle of brief and concise content was represented in this modular framework, ensuring that modules were short and focused on specific learning objectives. In addition, the program offered a balanced set of practices for skill development by implementing a routine, including listening, reading, speaking, and writing assignments in each module, consistent with the concept of microcontent. Consequently, participants were fostered and motivated to engage in more focused language practices.

The modules were developed to address real-world themes significant to current instructional practices. Through this contextualized approach to language learning, participants could associate the development of their proficiency in English with the ability to explore relevant, contemporary issues related to their prospective careers. Learning became relevant and engaging due to participants' interest in the educational themes, such as personalized learning and the future of education. Additionally, these topics promoted more profound participation and independent thinking, highlighting the importance of lifelong learning. Hence, the microlearning approach ensured that the program was skill-focused and centred around relevant themes, aligning language learning with contemporary topics, and allowing participants to understand fundamental ideas deeply.

The listening tasks were initiated at the beginning of each learning module via vodcasts from BBC Learning English. The authentic vidcasts resources exposed students to native speakers' accents and communication styles, improving their listening comprehension and understanding of culture. The listening tasks were short and focused, requiring learners to concentrate on particular elements of spoken language, including tone, context, and main themes. Afterwards, students were directed through reflective questions to assess their content comprehension. Due to the instant feedback provided, participants could reflect on their development and improve their listening abilities.

Participants interacted with precisely selected articles that aligned with the week's theme in the reading tasks. The program's emphasis on practicality was reflected in selecting these articles, which were selected for their relevance to contemporary global issues and their linguistic style. Reading tasks were structured with guiding questions that prompted participants to analyze essential concepts, assess arguments, and draw implications. This framework facilitated the enhancement of both literal and critical reading abilities. The article's briefness, representing the brevity aspect of the microlearning approach, allows learners to accomplish the task within 5 minutes while sustaining focus and engagement.

The speaking task, facilitated using Microsoft Teams chatrooms, allowed participants to express their thoughts effectively on challenging topics. Each discussion was organized around the weekly theme, encouraging participants to articulate their viewpoints, offer rationales, and address opposing viewpoints in pairs. Accessibility was ensured by providing the speaking task in an online digital format (chatrooms), which enabled participants to

take part from any location and fostered an environment that encouraged learning in pairs.

Each session ended with a concise writing task, requiring participants to consider what they had learnt. The tasks were crafted to be brief yet significant, assisting participants in structuring their thoughts and developing them coherently. Multimedia elements, including visual prompts and infographics, enhanced the writing tasks, allowing learners to refine their skills in constructing persuasive and coherent arguments. Feedback on vocabulary, grammar, and consistency ensured that writing skills improved gradually.

The microlearning-based program notably impacted participants' attitudes regarding lifelong learning, promoting an attitude of continuous personal and professional development. The program integrated themes relevant to global challenges and practical implications, effectively connecting academic learning with real-world challenges, making lifelong learning both necessary and beneficial. The program's clarity and brevity significantly help shape these attitudes. Because the modules were only 20 minutes long, participants could undertake them regularly without feeling overburdened. This program structure illustrates that even small, manageable time commitments can result in notable improvements, promoting an ongoing attitude toward learning. The program demonstrated that progress can occur gradually, clarifying the premise of lifelong learning and making it both achievable and accessible.

Moreover, focusing on specific learning objectives enabled participants to master one skill or concept progressively, enhancing their self-esteem and emphasizing the importance of focused, self-directed practice. In other words, participants were able to observe tangible improvements due to this commitment to learning, which

fostered a sense of achievement. In addition, it encouraged participants to view learners' challenges as opportunities for development rather than obstacles.

In addition, the program's flexibility and accessibility fostered participants to develop positive attitudes towards lifelong learning. Accessing modules through diverse devices, including smartphones, tablets, and laptops, lets learners assume control of their language learning experience. Moreover, through the smooth integration of learning into their everyday schedules, participants understood how continuous learning might cope with personal and professional responsibilities, decreasing obstacles against their lifelong learning practices.

Incorporating multimedia elements, including videos, infographics, and interactive discussions, fostered a dynamic and engaging learning environment. These tools addressed various learning styles and preferences, ensuring inclusivity and fostering sustained interest. The materials' captivating nature encouraged participants to pursue similar opportunities for self-improvement beyond the program, reducing the feeling of learning as a duty and more like an exploration.

Timely and constructive feedback enabled participants to recognize areas of improvement and offered straightforward instructions for accomplishing objectives. This process fostered self-regulation and reflective practices, critical aspects of lifelong language learning. Participants who experienced the benefits of regular feedback during the program were likely to adopt such routines in any subsequent educational pursuits.

In conclusion, the program fostered positive attitudes towards lifelong learning by establishing a supportive, practical, and challenging learning environment. It enabled

participants to assume control of their learning experience, emphasized the feasibility and advantages of continuous improvement, and established an appreciation and motivation that extended beyond the program. These results demonstrate the efficacy of the microlearning approach for skill development and fostering a positive attitude towards lifelong language learning for personal development and professional growth.

Conclusion

The study investigated using the proposed microlearning-based program to enhance the English proficiency of pre-service EFL teachers and foster their attitudes towards lifelong EL learning. The program was conducted with pre-service EFL teachers, focusing on developing EFL language skills and committing to lifelong EL learning. The study results indicated that the proposed microlearning-based program substantially enhanced the English proficiency of pre-service EFL teachers. Moreover, participants showed an observable increase in their attitudes towards lifelong EL learning, adopting a supportive perspective highlighting the importance of ongoing self-improvement.

Nonetheless, the present study was confined to applying principles of the microlearning approach, emphasizing conciseness, focused tasks, and thematic integration. Digital resources like interactive multimedia, discussion chatrooms, and reflective practices were included in the program to support language learning. Nevertheless, the study did not explore utilizing other supplementary features of the microlearning approach, such as highly adaptive content personalization or collaborative tools, which are beyond the structure of the proposed program.

Recommendations

Teachers should integrate the microlearning approach into their EFL instruction to make learning more focused, interactive, and accessible. EFL learners should be motivated to use microlearning resources actively within and beyond the classroom. Curriculum designers and developers should integrate microlearning-based modules into EFL teacher preparation and instruction. Further research should be conducted to investigate the long-term impacts of microlearning-based programs on EL competency and attitudes towards lifelong learning.

Moreover, studies may explore the efficacy of incorporating advanced digital tools, including adaptive content personalization and collaborative platforms, into microlearning-based programs. Furthermore, investigating how the microlearning approach can improve additional language-related abilities, including cultural competence and critical thinking, could provide a deeper understanding of its potential for learning and teaching.

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