Using Flipped Classroom Strategy to Improve EFL Student Teachers' Acquisition of CALL Technological Terms

By

Dr Mahmoud M. S. Abdallah

Associate Professor of Curriculum & English Language Instruction (TESOL/TEFL)
Faculty of Education, Assiut University, Egypt
Email: mahmoud.abdallah@aun.edu.eg
Mobile: (+2) 01011953743

Dr Rasha A. A. Alshaye

Assistant Professor at English Language & Translation Dept., College of Science and Theoretical Studies,
Saudi Electronic University (Dammam Branch), KSA
Email: r.alshaye@seu.edu.sa
Mobile: (+966) 550747414

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Abstract

This study investigates the effectiveness of implementing a flipped classroom strategy/model in teaching a Computer-Assisted Language Learning (CALL) course to senior EFL student teachers. Characterized by pre-class online content delivery and in-person interactive activities, the flipped classroom strategy was explored in terms of its impact on students' acquisition and application of technological terms in language teaching/learning contexts. Using a quasi-experimental design, two randomly selected groups of senior EFL student teachers studying a CALL course at Assiut University underwent pre and post-tests to assess the influence of the flipped classroom on technological terms proficiency. The 100 participants were randomly assigned to an experimental group (n = 50) exposed to the flipped classroom model and a control group (n = 50) following traditional methods. Post-test results indicated superior performance in the experimental group, highlighting the positive influence of the flipped classroom. A questionnaire revealed favourable perceptions in the experimental group, emphasising its efficacy in enhancing engagement, motivation, autonomy, collaboration, and content comprehension within the CALL course. Additionally, semi-structured interviews with a subset of the experimental group (n = 15) identified specific benefits, including deeper engagement with CALL content, facilitated collaborative learning, and increased motivation and confidence in using technological terms. This study

concludes that the flipped classroom is a promising strategy for senior EFL student teachers in the CALL course, offering practical implications and recommendations for its successful integration.

Keywords: Computer-Assisted Language Learning (CALL), Computer Literacy, EFL Teacher Education, English Language Learning, Flipped Classroom, Senior EFL Student Teachers, Technological Terms.

1. INTRODUCTION & LITERATURE REVIEW

The advent of technology has revolutionized language learning, with Computer-Assisted Language Learning (CALL) gaining prominence in EFL classrooms and language teacher education. This study explores the application of a flipped classroom model to instruct senior EFL student teachers about CALL and its associated technological terms. The primary objective is to evaluate the efficacy of this approach in improving students' understanding and practical application of CALL-related terminology in language learning/teaching contexts.

CALL as a global field leverages computers and other digital technologies to aid language learning. It signifies the integration of technology into language learning and teaching practices. CALL courses aim to furnish language educators with the proficiency to utilize various digital tools, media, and resources effectively in language classrooms (Levy & Stockwell, 2013). As technology becomes increasingly integral to language education, it is vital for EFL student teachers to master technological terms and comprehend their applications in language learning contexts.

In language education, CALL represents a methodology where computers serve as both presenters of educational content and assistants to learners, supporting their language acquisition journey. Computer technology acts as a helpful aid, delivering, reinforcing, and evaluating the learning materials, often incorporating extensive interactive components (Bax, 2003; Abdallah, 2011; Stockwell, 2014). Research indicates that CALL can enhance language learning outcomes, particularly in vocabulary acquisition, grammar, and reading comprehension. It aims to improve language learners' linguistic competence, communicative skills, and intercultural awareness through various technological tools and resources (Chapelle & Sauro, 2017).

CALL encompasses a wide range of Information and Communication Technology (ICT) applications and methodologies for foreign language instruction. Its evolution traces back to the conventional drill-and-practice programmes of the 1960s and 1970s, evolving into contemporary forms like virtual learning environments and web-based distance learning. It also includes the use of corpora, interactive whiteboards, and computer-mediated communication (CMC) to enhance language education (Levy, 1997; Beatty, 2003; Davies, 2016).

Teaching CALL to senior EFL student teachers presents a unique challenge; they must acquire theoretical knowledge of CALL, practical skills in using technology for language learning, and develop pedagogical approaches for integrating technology into their future language classrooms (Hubbard & Romeo, 2012). The challenge is clearly represented in the fact that EFL student teachers must not only grasp the theoretical knowledge of CALL but also acquire the practical skills of using technology for language learning. Furthermore, they need to formulate their own pedagogical strategies for integrating technology into their future language classrooms (Hubbard & Romeo, 2012).

At Faculty of Education, Assiut University, the CALL course for senior EFL Student Teachers is taught based on the 2017-18 bylaws/regulations. As a complementary language teaching methodology course, CALL focuses on computer-assisted language learning approaches, methods, techniques, and procedures, as well as the computer-based tools, devices, applications, and facilities that facilitate language learning (Abdallah, 2021). Given the prevalent use of computer and Internet technologies, our teaching methodology courses must be updated to include guidance on teaching English as a foreign language (EFL) with the aid of computers and the web, including all available technologies that support language teaching and learning: laptops, tablets, and smartphones (Abdallah, 2011; Davies, 2016).

The integration of technology in language learning has become a critical aspect of EFL education. CALL courses provide language teachers with opportunities to effectively incorporate technology into their classrooms. This literature review examines research related to the use of a flipped classroom approach in teaching CALL to senior EFL student teachers, focusing on its impact on the acquisition of technological terms and their applications in language learning.

The potential to enhance English learning through technology, particularly computer-based apps, devices, tools, and facilities, is a hot topic today (Abdallah, 2021). The ability to integrate and merge technology, including computer and web-based tools, into the classroom is a core skill required for EFL teachers in the 21st century. English language teachers need to adapt to learners' new literacy practices (e.g., social networking, composing messages on mobile phones, using WhatsApp in daily communication, sharing resources online, etc.) to reach them effectively. If these modern technologies and new literacy practices are not considered in teaching, a literacy gap will emerge (Warschauer, Shetzer & Meloni, 2000; Bax, 2003; Abdallah, 2011; Stockwell, 2014).

Numerous studies have demonstrated that CALL can help learners to develop their English language skills in various ways, such as by providing interactive feedback (e.g., Hubbard & Romeo, 2012), individualised instruction (e.g., Reinders & Darasawang, 2012), authentic materials (e.g., Johnson & Brine, 2012), and multimodal input and output (e.g., Lamy, 2012). Specifically, one of the benefits of CALL is that it can provide learners with immediate and adaptive feedback, enhancing their learning outcomes and motivation. For instance, Hubbard and Romeo (2012) reported a study that used a computer programme to provide feedback on learners' pronunciation errors. The programme analysed the learners' speech samples and provided them with visual and auditory feedback

on their accuracy and fluency. The results showed significant improvement in the learners' pronunciation after using the programme, and they also expressed positive attitudes towards the feedback system.

Another advantage of CALL is its ability to provide learners with individualised instruction tailored to their needs, preferences, and learning styles. For instance, Reinders and Darasawang (2012) described a project that utilized a mobile application to deliver personalised English lessons to learners in Thailand. The application tracked learners' progress, preferences, and goals, generating customized lessons based on their profiles. The learners could access the lessons anytime, anywhere, and communicate with their teachers and peers through the application. The project reported positive effects on learners' engagement, autonomy, and achievement.

CALL also exposes learners to authentic materials reflecting real-world language use. In this regard, Johnson and Brine (2012) conducted a study using a web-based platform to provide learners with access to online newspapers from various English-speaking countries. The platform enabled learners to select articles based on their interests and levels, offering glossaries, annotations, quizzes, and summaries. The study found that learners improved their reading comprehension, vocabulary, and intercultural awareness after using the platform.

Furthermore, CALL allows learners to use multiple modes of communication, such as text, audio, video, and images. In this vein, Lamy (2012) reported a study that used a videoconferencing tool to connect learners of French in different countries. The tool facilitated interaction through voice, chat, webcam, and whiteboard. The study found that learners developed their oral proficiency, listening comprehension, and pragmatic competence after participating in the videoconferencing sessions.

In essence, the flipped classroom is a pedagogical approach where students learn new content outside of the classroom and use class time for activities such as practice, discussion, and application. In this context, students watch pre-recorded lectures or videos at home before class and then use class time for activities that involve higher-order thinking, such as problem-solving, discussion, and collaboration (Bishop & Verleger, 2013; Reidsema, et al. 2017; Lee & Martin 2020).

Moreover, the flipped classroom model is a unique learning approach that requires students to engage in preliminary online learning before participating in structured, in-person learning activities with their instructors and peers. It is important to note that the flipped classroom is not merely about uploading lecture recordings. Instead, students encounter the subject matter for the first time through concise and focused online videos. This shift to "reverse teaching" can be challenging for students accustomed to the traditional lecture-based format. However, the flipped classroom can also provide an intriguing and interactive learning experience, pushing the boundaries of traditional teaching.

One of the main benefits of the flipped classroom is that it fosters learner autonomy, allowing students to control the pace and place of their learning (Bishop & Verleger 2013; Lee & Martin 2020). Students can watch the videos as many times as they need, pause, rewind, or fast-forward them, and choose a suitable environment for their learning. Furthermore, the flipped classroom promotes learning by doing with support, providing students with opportunities to apply their knowledge and skills in class, with guidance and feedback from the instructor and peers (Lee & Martin 2020; Setren et al. 2021). This can also prevent

cognitive overload by reducing the amount of new information that students have to process at once (Lee & Martin 2020).

The flipped classroom offers several benefits for teaching and learning CALL, such as: (1) providing students with more exposure to authentic and diverse technological resources for language learning; (2) allowing students to learn at their own pace and according to their own preferences and needs; encouraging students to take more responsibility and ownership of their own learning; (3) fostering students' critical thinking, creativity, and problem-solving skills; (4) enhancing students' interaction and collaboration with peers and instructors; and (5) creating more opportunities for feedback and assessment.

There are six different models of flipped learning: basic flip, discussion-oriented flip, demonstration-oriented flip, group work-oriented flip, problem-solving-oriented flip, and inquiry-oriented flip. Each model has its own advantages and disadvantages depending on the subject matter and learning objectives (Reidsema, et al., 2017). Marshall (2019) proposes six models of flipped learning instruction: basic flip, interactive flip, experiential flip, project-based flip, case-based flip, and language-focused flip. For example, in a problem-oriented flip, students begin by examining a problem in class, and then the instructor provides missing pieces they need for out-of-class work. When they return to class, students and teachers work together on the problem armed with new knowledge (Marshall, 2019). In the discussion-oriented flip, educators allocate instructional videos, along with additional videos and readings relevant to the day's topic, which might include TED Talks, YouTube presentations, and supplementary materials. Classroom hours are subsequently dedicated to deliberation and in-depth examination of the subject matter. This strategy proves particularly valuable in disciplines where a comprehensive understanding of context is

paramount, such as history, art, or English (Reidsema, et al. 2017; Panopto Team, 2018; Setren et al. 2021).

Flipped learning has been shown to be effective in a variety of subject areas, including English language teaching. In this regard, a number of studies (e.g. Han, 2015; Chen Hsieh, Wu, & Marek, 2017; Carhill-Poza, 2019) have examined the effects of a flipped classroom on English language learning. For example, in a systematic review that examined the effectiveness of the flipped classroom method in English language teaching, Turan and Akdag-Cimen (2020) concluded that the majority of the studies included in the review reported positive outcomes, indicating that the flipped classroom is an effective teaching method in English language education.

Also, a study by Chen Hsieh, Wu, and Marek (2017) found that the flipped classroom was effective in improving students' grammar knowledge and their ability to use English in communicative tasks. Another study by Han (2015) found that the flipped classroom helped students to become more autonomous learners. More specifically, this study introduced a flipped classroom model for an adult community English language programme in the United States in 2013. A new course structure was designed by combining Nation's (2007) "four strands" approach and Strayer's (2007) theoretical framework of flipped learning. As the semester came to an end, a positive impact on learner autonomy among ESL students was witnessed. Based on this experience, this study presented a theoretical model of flipped learning in second language acquisition by exploring how the model provides a platform for successful language learning and results in the significant development of learner autonomy.

In addition to these studies, several other studies have described the use of flipped classrooms in English language teaching. For example, in a case study by

Carhill-Poza (2019), Delphi interviews were used to better understand flipped learning in ESL and sheltered classrooms in an urban secondary school. Findings show that this community of practice understood flipped learning as a dynamic student-centred approach to teaching diverse students that may draw on technology to support student learning, participation, and assessment. Classroom practices were analysed with the school community to understand how they embodied the affordances and limitations of flipped learning for English language learners at that school.

Moreover, the flipped classroom approach provides students with more hands-on practice in using technological tools for language learning. In this regard, Haghighi et al. (2018) found that students benefited from learning English in a flipped learning environment. Also, Lee and Wallace (2017) found that EFL learners in the flipped classroom achieved higher regular scores and were more engaged in the learning process than their peers in the traditional classroom. Similarly, Nguyen (2018) found that learners developed their English skills and appreciated the implementation of the flipped approach in every class. In addition, Fauzan and Ngabut (2018) proved that flipped learning was effectively executed in the class and that learners agreed that shifting the classroom environment could give new taste and colours to learning activities. They could adjust their learning time based on their convenience. Moreover, they could explore the materials efficiently as they had various learning methods such as individual work, group work, text analysis, and project presentation.

In the context of pre-service TEFL teacher training, a study by Altas and Mede (2020) investigated the impact of the flipped classroom approach on the writing achievement and self-regulated learning of pre-service English teachers. The study found that the flipped classroom approach had a positive impact on the participants' advanced writing achievement and self-regulated learning. This

suggests that the flipped classroom approach can be beneficial in training English language teachers.

Moreover, English teachers' perceptions of the benefits and challenges of implementing the flipped classroom approach in English teaching were explored in a study by Ansori and Nafi' (2022). The study involved 10 English language teachers who had implemented the flipped classroom in their teaching. The findings revealed that the teachers had positive responses toward the flipped classroom methodology and identified benefits such as increased student engagement and active learning. However, they also highlighted challenges such as the need for technological resources and time for content preparation.

Evidence from research suggests that the flipped classroom can be an effective approach to English language teaching. In particular, this approach has been shown to be effective in improving student learning outcomes in English language teaching/learning in general, and in CALL in particular. However, more research is needed to determine the optimal way to implement the flipped classroom in this context.

The literature review (e.g. Kuo & Wu, 2017; Ghufron & Nurdianingsih, 2020; Lee & Martin, 2020; Akayoğlu, 2021) reveals that the implementation of the flipped classroom model in teaching a CALL course to senior EFL student teachers positively influences their learning and motivation. In particular, the flipped classroom approach fosters active learning, enhances student engagement, and provides opportunities for practical application and exploration of technology in language education.

More specifically, some studies have explored the effectiveness of the flipped classroom approach in CALL courses and its impact on student learning

outcomes. For instance, a study by Webb and Doman (2020) found that students appreciated the opportunity to access instructional materials online before class and engage in meaningful discussions and activities. The students in the study also developed positive self-reported attitudes toward using technology for language learning over time. Additionally, statistical analyses found that students in flipped classrooms experienced a statistically significant positive change in their attitudes toward technology, including its instrumentality, digital literacy, and anxiety. Overall, the flipped classroom approach may be a promising way to reduce students' anxiety about using technology for language learning and improve their attitudes toward technology.

Similarly, Ghufron and Nurdianingsih (2020) investigated the impact of the flipped classroom on student engagement and learning outcomes in a CALL course. The study reported a significant improvement in student engagement and a higher level of understanding of CALL concepts after implementing the flipped learning model.

Previous research on the use of flipped classrooms in language learning in general and CALL in particular (e.g. Kuo & Wu, 2017; Lee & Martin, 2020; Divjak, et al., 2022) reached some key findings, which include:

- Flipped classrooms can be an effective way to improve student learning outcomes in CALL (e.g. Lee & Martin, 2020).
- Flipped classrooms can help students better understand technological terms and how to use them in language learning contexts (e.g. Kuo & Wu, 2017).
- Flipped classrooms can help students to develop problem-solving and critical thinking skills (e.g. Divjak, et al., 2022).

- Flipped classrooms can help students to become more self-directed learners (e.g. Khodaei, et al., 2022).
- Flipped classrooms meet the principles of personalized learning, constructivism, and student-centred instruction which has brought many benefits for both teachers and students and clearly shows teachers' and students' roles have been significantly changed compared with traditional methods of teaching and learning (Haghi, 2020).
- Flipped classroom has a positive effect on learning outcomes, reducing cognitive load, increasing involvement, accuracy, motivation, attitude, and satisfaction with the course, and improving self-efficacy in higher education (Han, 2022).

Thus, prior research on the flipped classroom approach has indicated its benefits in promoting active learning, self-directed learning, and enhanced student engagement. However, limited research focuses specifically on applying the flipped classroom to CALL courses and its impact on senior EFL student teachers' acquisition of technological terms.

The acquisition of technological terms is a crucial aspect of a CALL course for EFL student teachers. In this regard, Kukulska-Hulme and Shield (2008) conducted a review of publications on mobile-assisted language learning (MALL) to explore the use of mobile devices in supporting social contact and collaborative learning. The study highlighted the potential of mobile devices for language learning, including the acquisition of vocabulary and terms related to technology. The authors suggested that mobile learning can provide opportunities for both synchronous and asynchronous interaction, which can enhance the learning of technological terms in CALL courses. Also, Akayoğlu (2021) examined the effectiveness of the flipped classroom through Google Classroom in enhancing senior EFL student teachers' learning of CALL and its relevant terminology. The

findings revealed that the pre-service teachers' perceptions of the Flipped Classroom Model were quite positive in terms of motivation, effectiveness, engagement and overall student satisfaction.

In addition to acquiring technological terms, it is essential for EFL student teachers to understand the practical applications of technology in language learning contexts. Flipped classroom models can create opportunities for student teachers to engage in hands-on activities and explore various technological tools during class time (Hinojo-Lucena et al., 2016). Such practical applications can enhance their confidence in integrating technology effectively into language teaching.

Definitions of Research Terms

1-Computer-Assisted Language Learning (CALL):

Levy (1997: p1) defines CALL as 'the search for and study of applications of the computer in language teaching and learning'. Beatty (2003, p. 7) offers a broader definition, describing CALL as 'any process in which a learner uses a computer and, as a result, improves his or her language'. From a language learning perspective, CALL encompasses diverse procedures that leverage computers to facilitate foreign language acquisition.

2-Flipped Classroom:

A flipped classroom, also known as the inverted classroom and reversed teaching, is a pedagogical approach that reverses the traditional learning process. With the shift to online teaching due to the COVID-19 pandemic, the flipped classroom has emerged as an effective technique to address the challenges of remote teaching and learning. It is defined as 'everything that was traditionally done in the classroom is now done outside the classroom and vice versa' (Asiksoy & Özdamli, 2016). In a flipped classroom, instructional content is delivered online before class sessions, allowing in-class time to be dedicated to

interactive and collaborative activities (Bishop & Verleger, 2013). This approach encourages active learning, fosters critical thinking, and allows students to engage more deeply with the course material.

3-Technological Terms:

For the specific purposes of the study, *technological terms* are operationally defined as all those commonly used technical words and phrases that are widely used in the global community of technology and education, which EFL student teachers need to understand, acquire and use in language learning/teaching contexts while studying the CALL course.

2. RESEARCH PROBLEM & OBJECTIVES

The Computer-Assisted Language Learning (CALL) course was introduced within the academic curriculum of the Faculty of Education at Assiut University, in adherence to the newly implemented bylaws and regulations initiated during the academic year 2017/18. It introduces pre-service English teachers to CALL with the aim of focusing on the 'how to' aspect of integrating computer-based technologies into English language teaching and learning contexts (Abdallah, 2021). It takes into consideration the dialogic relationship and the complex interaction between language learning content (i.e., reading, writing, speaking, listening, vocabulary and grammar), pedagogy and language instruction (e.g., communicative language teaching and task-based approaches), and technology (i.e., affordances and constraints of different technological tools) with an awareness of the social and linguistic implications.

The course aims to foster a hybrid profile of CALL practitioners, developers, researchers, and trainers among pre-service English language teachers. To achieve this aim, the course covers essential TESOL/TEFL concepts, knowledge, skills, and attitudes that enable pre-service teachers to use computer and internet

technologies effectively and appropriately in their future English language teaching contexts and curricula. The specific objectives of the course are:

1. to equip pre-service English language teachers with the foundational knowledge, competencies and skills in technology in general and computers and the Web in particular, for professional purposes;
2. to enhance pre-service EFL student teachers' theoretical understanding of the interplay between computers and the Web and English language teaching/learning;
3. to broaden pre-service EFL student teachers' knowledge base in TESOL/TEFL by incorporating new CALL theories, approaches, strategies, methods and techniques;
4. to cultivate pre-service EFL student teachers' computer-based and language-related literacy practices;
5. to examine the potential application of computers and Web-based technologies in English language learning;
6. to support pre-service EFL student teachers in using computer-based technologies and facilities in the classroom for various language learning purposes;
7. to integrate pedagogical knowledge and skills with technology to enhance language teaching and learning; and
8. to apply technology and computer-based practices into instruction (e.g. record keeping, feedback, and assessment).

Despite the potential advantages, a gap exists in empirical research regarding the impact of using flipped classrooms to teach the CALL course for senior EFL student teachers. The focus here is on how this approach affects their grasp of technological terms and their practical use in language learning. The field of CALL is rapidly expanding, introducing numerous technological terms relevant to

effective teaching. To succeed as CALL educators, EFL student teachers must comprehend these terms and their application in language learning. This task can be daunting for senior EFL student teachers who lack prior exposure to CALL. They must become well-versed in these terms to proficiently use CALL in their own learning and future teaching.

While technology, especially CALL, holds promise for enhancing EFL education, senior student teachers often struggle to grasp necessary technological terms and their practical implications for language learning. Senior EFL student teachers at Faculty of Education, Assiut University, often face difficulties in comprehending crucial technological terms and translating this understanding into effective language teaching practices. The challenge lies in their limited exposure to technology-related concepts, the rapid evolution of technological terminology, the technical complexity of jargon, and the barriers they encounter when attempting to integrate technology into language learning. Addressing these struggles is essential to equip senior student teachers with the skills and confidence necessary to navigate the intersection of language teaching and technology seamlessly.

Conventional lecture-based instruction might not adequately equip them to integrate technology into language teaching. This was confirmed by a test administered to senior EFL student teachers (n = 50), which highlighted gaps in understanding certain technological terms and challenges in integrating new technologies into language teaching. Besides, the teacher training programmes provided at Assiut University do not allocate sufficient time to train senior student teachers in navigating and understanding technological terms relevant to language teaching and learning. The focus on pedagogical methods and classroom management might overshadow the importance of integrating technology without creating the required connection between theory and

practice. That is to say, even if senior student teachers manage to learn the necessary technological terms, they might struggle with the practical application of these terms in language teaching contexts. Understanding how to effectively incorporate technology into language lessons and adapt it to different learning styles can be a daunting task.

One solution to this issue is adopting a flipped classroom approach for teaching the CALL course. In this model, students access prerecorded lectures and materials outside class, reserving class time for interactive activities like problem-solving and collaboration. This approach has been proven effective for learning new material, and it is particularly helpful for technological terms as it allows students to learn at their own pace. By utilizing this approach, senior student teachers can engage with complex technological concepts at their own pace outside the classroom, enabling in-depth comprehension. Classroom time can then be dedicated to collaborative activities, discussions, and practical application exercises.

While the Flipped Classroom approach has shown promise in various educational contexts, its application specifically within senior EFL student teachers' acquisition of technological terms and their practical implications remains understudied. This study seeks to fill this gap by examining the impact of this approach on the learning outcomes and confidence levels of senior student teachers in utilizing technological terms effectively.

Thus, the present research study aims to investigate the efficacy of the flipped classroom approach in teaching CALL to senior EFL student teachers. The research problem is: *How does implementing a flipped classroom model in a CALL course impact senior EFL student teachers' understanding of technological terms and their practical use in language learning?*

Therefore, this study delves into whether the flipped classroom approach, where content is delivered online before class and in-class time is devoted to interactive activities, better equips senior EFL student teachers to use technology in language teaching. It examines the flipped classroom's effect on student teachers' outcomes, including their knowledge of technological terms related to CALL and their ability to use technology effectively in language learning. Addressing this research problem offers insights into innovative teaching techniques for CALL courses, benefiting the development of future language educators and enhancing technology integration in EFL classrooms.

To sum up, the present study aims at accomplishing the following research objectives:

1. assessing the effectiveness of the flipped classroom approach in a Computer-Assisted Language Learning (CALL) course among senior English as a Foreign Language (EFL) student teachers, by comparing their learning outcomes with those taught using the traditional classroom approach.
2. investigating the impact of the flipped classroom model on senior EFL student teachers' understanding and application of technological terms in language teaching and learning contexts, with a focus on their proficiency in utilizing CALL tools.
3. exploring the perceptions and attitudes of senior EFL student teachers towards the flipped classroom approach in the context of a CALL course, and identifying potential benefits, challenges, and pedagogical implications associated with this instructional method.

Therefore, this study aims to fill this gap by addressing the following research questions:

1. What is the effectiveness of the flipped classroom model in senior EFL student teachers' understanding and application of technological terms in language teaching and learning contexts?
2. What are the attitudes of senior EFL student teachers towards flipped classrooms as a way of learning CALL?
3. What are the specific benefits of the flipped classroom approach for senior EFL student teachers in terms of engagement, motivation, autonomy, collaboration, and comprehension of the course content?

3. RESEARCH METHODOLOGY & PROCEDURES

The study adopts a quasi-experimental comparative design to test the effectiveness of the suggested flipped classroom model on senior EFL student teachers' acquisition of technological terms and their applications in language learning. The participants in this study were senior EFL student teachers enrolled in the CALL course delivered at Faculty of Education, Assiut University during the academic year 2022/23. Participants (n = 100) were chosen based on their voluntary participation and their willingness to be involved in the study throughout their academic study. Participants were divided into two matched groups: experimental and control, each of which included 50 participants. The attitudes questionnaire was administered to the experimental group (n = 50), from which only 15 participants were selected for a further semi-structured interview to know more about the benefits they got from the flipped learning experience.

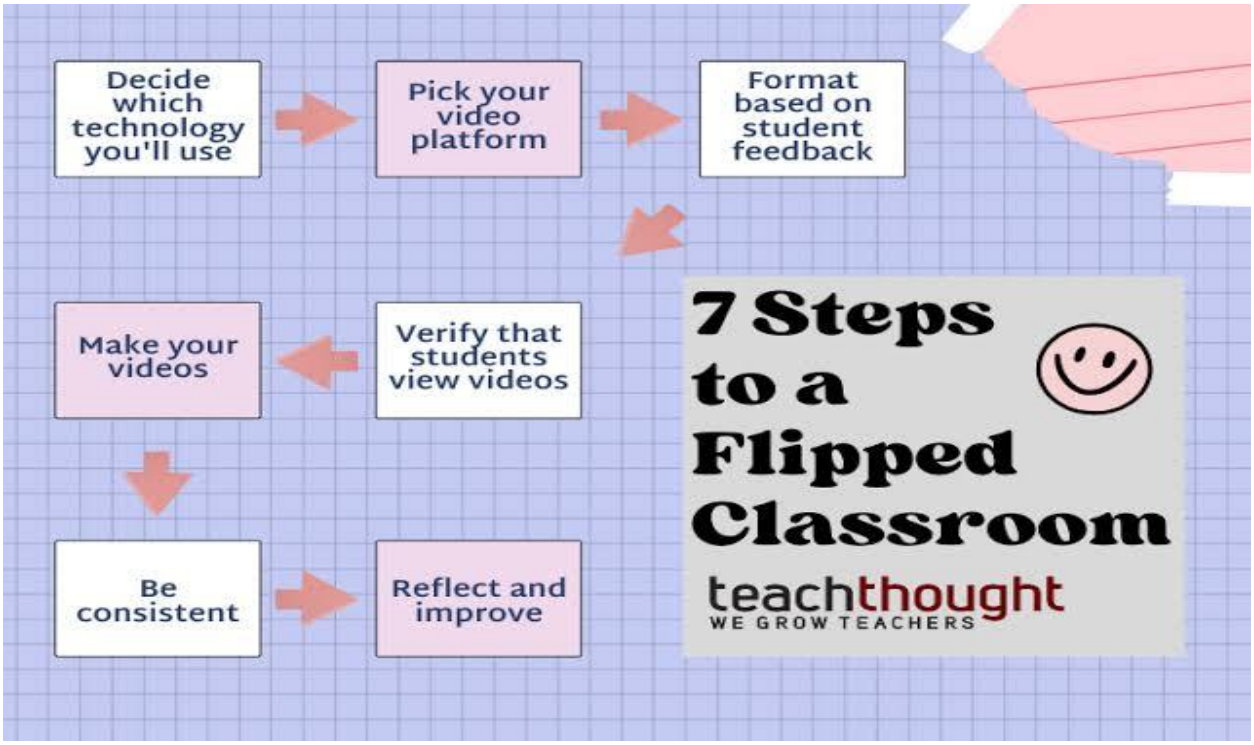
To reach the goals of the study and answer the research questions, the following research tools and interventional instruments were used: (1) a flipped classroom model (see Figures 1 & 2 and Table 1 below); (2) a post test to measure students' acquisition of technological terms and their applications in language learning; (3) an attitude questionnaire to measure EFL student teachers' (experimental group) attitudes towards flipped classroom; and (4) a semi-structured interview to be

conducted with some EFL student teachers (n = 15) in the experimental group in order to identify the specific benefits of the flipped classroom approach for senior EFL student teachers.

Here is an illustration of the specific methods and procedures followed in the study based on each research question. First, to answer the *1st research question*, EFL student teachers in the experimental group studied the 1st three chapters of the CALL course for six weeks using the flipped classroom model, while their counterparts in the control group studied the same chapters in the traditional lecture-based style. Figure 1 below shows the flipped classroom model:

Figure 1

Steps and procedures of a flipped classroom model



Both groups were pre-tested before the intervention and then post-tested following it (see the test script below). The test was administered online using Microsoft Forms.

The students were randomly assigned to either a flipped classroom (experimental) group or a traditional lecture (control) group. The flipped classroom group watched pre-recorded lectures on CALL before class. In class, they participated in activities that involved problem-solving, discussion, and collaboration.

The traditional lecture group (control group) attended traditional lectures on CALL. In class, they participated in activities that involved note-taking and listening to the teacher's lecture. The lectures included explanations, examples, and demonstrations of the technological terms and resources for language learning. The students were required to take notes and ask questions during the lectures. After each lecture, the instructor assigned homework tasks that involved reviewing the content and completing exercises or assignments (e.g. quizzes, worksheets, rubrics forums, and e-portfolios). The instructor also provided feedback and assessment to the students throughout the course (see Table 1 below).

Table 1

Traditional Classroom vs. Flipped Classroom

Traditional Classroom	**Flipped Classroom**
Lectures are delivered in class by the teacher	Lectures are recorded and watched by students outside of class
Students take notes and listen passively	Students take notes and answer questions or quizzes
Homework assignments are done at home by students	Homework assignments are done in class with teacher guidance
Class time is mainly teacher-centered	Class time is mainly student-centered

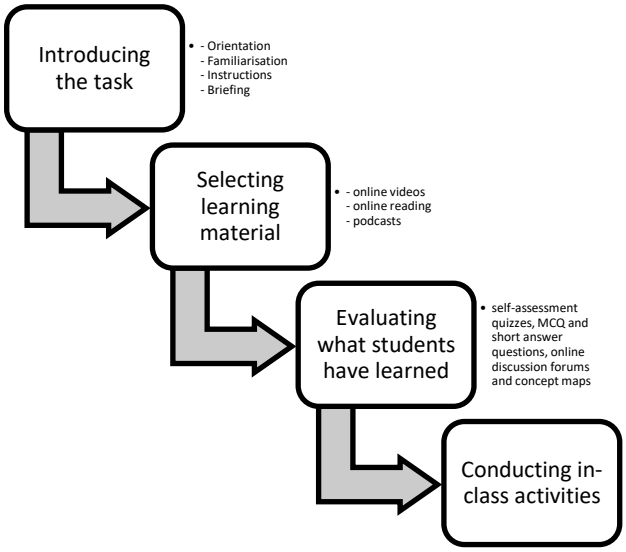
Traditional Classroom	Flipped Classroom
Students have limited opportunities for interaction and feedback	Students have more opportunities for interaction and feedback
Students may struggle with the pace and level of difficulty	Students can learn at their own pace and level of difficulty

For the experimental group, the instructor created online materials for each topic and uploaded them to some online platforms (e.g. Google Classroom, YouTube and Facebook). The online materials included videos, podcasts, readings, quizzes, and links to relevant websites. The students were required to access the online materials and complete the quizzes before each class session. During the class sessions, the instructor facilitated various interactive and collaborative activities that involved the application of some technological terms and resources for language learning. The activities included discussions, presentations, demonstrations, simulations, games, and projects. The instructor also provided feedback and assessment to the students throughout the course.

Generally, the flipped classroom included the following steps: (1) introducing the task; (2) selecting learning material (e.g. online videos, online reading, presentations, podcasts and screencasts); (3) evaluating what students have learned (e.g. self-assessment quizzes, MCQ and short answer questions, online discussion forums and concept maps); (4) conducting in-class activities (e.g. individual activities, group activities and debates) (Lin & Chang, 2018) (see also Figure 2 below).

Figure 2

Steps & procedures of the flipped classroom model



At the beginning of the course, both groups took the pre-test to measure their prior knowledge of technological terms and their applications in language learning. At the end of the course, both groups took the post-test to measure their learning outcomes (see post-test script below). They also completed the questionnaire to express their attitudes towards flipped classrooms as a way of learning CALL (see Table 2 below).

Post Test: Measurement of Technological Terms Acquisition and Their Applications in Language Learning

Participant Information:

Name: _____

Age: _____

Gender: _____

Instructions:

This test aims to measure your acquisition of technological terms and their applications in language learning in the context of Computer-Assisted Language Learning (CALL). Please provide answers below to the best of your knowledge. The test consists of 80 marks, with each section scoring system outlined below.

Section I: Comprehension of Technological Terms and Their Applications in ELL Contexts - True or False? (40 marks: 2 marks for each item)

For all the items below, please indicate which one is TRUE (T), and which one is FALSE (F):

1. CALL includes methods, processes & techniques of ELL, but doesn't include assessment.

2. Design & development of computer-based materials is part of CALL.

3. CALL is limited only to desktop computers, and so doesn't include tablets or smartphones.

4. CALL refers to a learner-centred approach, while CALI refers to a teacher-centred one.

5. Both Behaviouristic CALL and Structural CALL refer to the same thing.

6. Communicative CALL is associated with the Grammar-Translation method.

7. Open CALL – in Bax's terms – is equivalent to Communicative CALL.

8. CALL appeared many years before the emergence of CALI.

9. In Communicative CALL, the focus is on what students do with each other while using PC.

10. Integrative CALL doesn't aim at integrating various language skills in the learning process.

11. Multimedia and hypermedia computers are consistent with Integrative CALL.

12. SEARCH is a framework of essential skills for reading and locating info on the web.

13. Word processors were introduced in the early 80's and influenced written assignments.

14. Today CALL can be easily used inside the classroom as all students carry handy devices.

15. Technology itself is the main contributor to language learning, regardless of how we use it.

16. CALL is in a constant state of change due to its great dependence on technology.

17. CALL theory is a set of perspectives, models, frameworks and specific theories that offer generalisations to account for phenomena related to computer use in language learning.

18. Asynchronous communication refers to communication that takes place in real time.

19. Distributed cognition theory is the role technology can play in sharing the cognitive load.

20. In the computer as a tutor scenario, the program can keep a record of students' progress.

<u>Section 2: Technological Terms and Definitions (30 marks: 3 marks for each item)</u>

1. *Define in your own words CALL (Computer-Assisted Language Learning):*
   _____
   _____

2. *Explain the history of CALL, including its 3 main stages: structural/behaviourist CALL, communicative CALL, and integrative CALL:*
   _____
   _____

3. *Describe the relationship between CALL and language learning theory:*
   _____
   _____

4. *Explain the difference between CALL in theory and CALL in practice:*

_____

_____

5. *Define Web-based learning and its significance in CALL:*

_____

_____

6. *Describe Web-based tools used in the context of CALL:*

_____

_____

_____

7. *Explain Bax's normalization concept in CALL:*

_____

_____

8. *Define multimedia CALL and its application in language learning:*

_____

_____

9. *Discuss the difference between synchronous communication and asynchronous communication*

_____

_____

10. *How the PLATO project was a great landmark in CALL development?*

_____

_____

Section 3: CALL and Teaching Language Skills (10 marks: 2 marks each)

1. *Describe how CALL is applied in teaching listening skills:*
   _____
   _____

2. *Explain the use of CALL in teaching speaking skills:*
   _____
   _____

3. *Describe CALL's role in teaching reading skills:*
   _____
   _____

4. *Explain the application of CALL in teaching writing skills:*
   _____
   _____

5. *Suggest some applications of CALL in teaching vocabulary and grammar:*
   _____
   _____

Scoring:
Each correct answer will be awarded the marks assigned for each section, resulting in a total score of 80 marks for the entire test.

Note: This test is designed to assess your acquisition of technological terms and their applications in language learning, particularly in the context of CALL. The research study will analyse the scores to determine the effectiveness of the flipped classroom model on senior EFL student teachers' understanding and application of these technological terms in language teaching and learning contexts.

To answer the *2nd question*, it was necessary to assess participants' attitudes. To measure EFL student teachers' (experimental group) attitudes towards flipped classrooms, a questionnaire was administered to them (n = 50) as shown in Table 2 below. The questionnaire was administered through Google Forms so as to be easily accessible and flexible. This also facilitated the data analysis process.

Table 2

Questionnaire to measure senior EFL student teachers' attitudes towards Flipped Classroom

Please read the statements below to indicate to what extent you **agree** or **disagree** with each by ticking ONE of the 5 boxes that best expresses your real attitude (Please tick **Undecided** if you cannot decide):

Statements	**Strongly Agree**	**Agree**	**Undecided**	**Disagree**	**Strongly Disagree**
1. Flipped Classroom helps me improve my engagement in the language learning process while studying CALL.	❒	❒	❒	❒	❒
2. I find the Flipped Classroom approach effective in facilitating my self-directed learning.	❒	❒	❒	❒	❒
3. Flipped Classroom enhances my interaction with the CALL instructor during the language learning process.	❒	❒	❒	❒	❒
4. I believe that Flipped Classroom fosters collaborative learning among us as senior EFL student teachers.	❒	❒	❒	❒	❒
5. Flipped Classroom complements the use of technology in language education, including my learning experience.	❒	❒	❒	❒	❒

Statements	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
6. I feel confident that I can implement the Flipped Classroom approach in my future EFL classes.	❒	❒	❒	❒	❒
7. Flipped Classroom helps me to take responsibility for my learning progress.	❒	❒	❒	❒	❒
8. I think Flipped Classroom improves my overall learning outcomes in English and CALL.	❒	❒	❒	❒	❒
9. Flipped Classroom helps me with understanding many technological terms in the CALL context.	❒	❒	❒	❒	❒
10. Flipped Classroom encourages me to actively participate and involve myself in the learning process.	❒	❒	❒	❒	❒
11. Flipped Classroom is an effective method to address my individual learning needs as an EFL student teacher.	❒	❒	❒	❒	❒
12. Flipped Classroom increases my motivation to learn English and computer terms.	❒	❒	❒	❒	❒
13. Flipped Classroom allows for more in-depth discussions and activities during class time, benefiting me.	❒	❒	❒	❒	❒
14. Flipped Classroom provides me with opportunities to review and revisit the learning materials at my own pace.	❒	❒	❒	❒	❒
15. Flipped Classroom improves my computer knowledge and digital literacy skills.	❒	❒	❒	❒	❒
16. Flipped Classroom helps me become a more autonomous language learner.	❒	❒	❒	❒	❒
17. Flipped classroom helps me with managing my time and reducing cognitive load.	❒	❒	❒	❒	❒

Statements	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
18. Flipped classroom helps me with overcoming many learning difficulties.	❒	❒	❒	❒	❒
19. Flipped Classroom makes me feel competent both as a language learner and a future EFL teacher.	❒	❒	❒	❒	❒
20. Overall, I believe the Flipped Classroom approach enhances my language learning experience.	❒	❒	❒	❒	❒

The data were coded and analysed quantitatively using SPSS. Descriptive statistics, including means, were used to assess the extent to which each statement was endorsed by participants on a 5-point Likert scale. Prior to analysis, data preprocessing was conducted to check for missing values, outliers, and data normality. Any anomalies identified were appropriately addressed to ensure the validity and reliability of the analysis. The central component of the analysis was the calculation of means for each of the 20 statements. These means provided a numerical representation of the participants' collective endorsement of each statement. In the context of the 5-point Likert scale, a higher mean score indicates a stronger endorsement of the statement by the participants.

To answer the *3rd question*, a semi-structured interview was conducted with some EFL student teachers (n = 15) in the experimental group to identify the specific benefits of the flipped classroom approach for senior EFL student teachers in terms of engagement, motivation, autonomy, collaboration, and comprehension of the course content. The interview was composed of some main questions to be directed flexibly to students (e.g. some questions were rephrased during oral interactions to help participants understand them). For more information, see the script below:

Script (Interview Schedule): Using Flipped Classroom in Teaching CALL Course for Senior EFL Student Teachers

A-Introduction and Warm-Up Questions:

- *Can you briefly introduce yourself? (Name, age, educational background)*
- *How long have you been an EFL student teacher?*
- *Have you ever experienced or heard of the flipped classroom teaching approach before participating in this CALL course?*

B-Flipped Classroom Experience:

- *In this CALL course, the instructor utilized a flipped classroom approach. Could you describe your understanding of what a flipped classroom is?*
- *How did you feel when you first learned that the course would be taught using the flipped classroom method?*
- *Can you share your initial expectations and thoughts about how this approach might affect your learning experience?*

C-Engagement and Motivation:

- *How did the flipped classroom approach influence your level of engagement with the course material?*
- *Did the pre-recorded video lectures and online resources facilitate your learning motivation? If so, how?*
- *Were there any specific elements in the flipped classroom that you found particularly engaging or motivating? (e.g., interactive activities, discussions)*

D-Autonomy and Self-Directed Learning:

- *In what ways did the flipped classroom approach promote autonomy in your learning process?*
- *Were you able to manage your time effectively while engaging with the course content outside of class?*

- *Can you describe any instances where you took the initiative to explore additional resources or topics related to the course on your own?*

E-Collaboration and Peer Interaction:

- *How did the flipped classroom approach encourage collaboration and interaction among you and your peers?*
- *Were there any group activities or discussions that you found particularly valuable in enhancing your understanding of the course content?*
- *Did the flipped classroom method provide you with opportunities to share ideas and exchange knowledge with other student teachers?*

F-Comprehension of Course Content:

- *How would you evaluate your comprehension of the course content as a result of the flipped classroom approach?*
- *Were there any specific topics or technological terms that you found easier to grasp or understand better due to the flipped classroom method?*
- *Can you provide examples of how the flipped classroom helped you to apply the acquired technological terms in language learning contexts?*

G-Comparison with Traditional Classroom:

- *In your opinion, what are the main differences between learning through the flipped classroom approach and the traditional classroom approach?*
- *Do you believe the benefits you experienced in the flipped classroom approach would have been similar or different in a traditional classroom setting? Why?*

H-General Evaluation:

- *Based on your experience in this CALL course with the flipped classroom approach, would you recommend this method to other senior EFL student teachers? Why or why not?*

- *If you were to suggest improvements to the flipped classroom implementation, what would they be?*

I-Closing:

- *Is there anything else you would like to add or any additional insights you would like to share about your experience with the flipped classroom approach?*
- *Thank you for participating in this interview. Your input is valuable in understanding the benefits of the flipped classroom approach for senior EFL student teachers in the context of a CALL course.*

The interviews were qualitatively analysed using thematic analysis to identify recurring themes and patterns related to student teachers' experiences with the flipped classroom model. The analysis process began with familiarization, where interview transcripts were reviewed and coded for key themes related to the participants' perceptions and experiences. Initial codes were generated from the data, and these codes were then organized into broader themes, capturing recurring patterns and responses across participants. Subsequently, these themes were reviewed and refined through an iterative process of data revisitation and further coding. The final set of themes encompassed various aspects of the Flipped Classroom approach, including perceptions, engagement, motivation, autonomy, collaboration, comprehension of course content, comparisons with traditional classrooms, recommendations, and suggestions for improvement. This thematic analysis allowed for a comprehensive exploration of the participants' perspectives and provided valuable insights into the effectiveness and implications of the Flipped Classroom approach in the context of senior EFL student teachers' education.

4. RESULTS & DISCUSSION

4.1 Effectiveness of the Flipped Classroom Model

The findings suggest that the flipped classroom model effectively enhanced senior EFL student teachers' acquisition of technological terms and their applications in language learning. The pre and post-test results showed a statistically significant improvement in students' knowledge of technological terms related to CALL after the implementation of the flipped classroom approach ($p < 0.05$). The results of the study showed that the flipped classroom group had significantly higher scores on a post-test than the traditional lecture group. The flipped classroom group also showed greater improvement in their ability to use technological terms in language learning contexts. The results showed that the flipped classroom group outperformed the traditional lecture group on a test of technological terms and their applications in language learning (see Tables 3 & 4 below). The flipped classroom group also reported being more motivated and engaged in CALL than the traditional lecture group.

Table 3

Independent-Sample T-Test of the post-test

Group Statistics					
	Group	N	Mean	Std. Deviation	Std. Error Mean
Post-Test score	Control group	50	53.5800	6.08809	.86099
	Experimental group	50	71.3400	2.30004	.32528

Table 4

Independent Sample Means, T values and Standard Deviations

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Post-Test score	Equal variances assumed	43.266	.000	-19.296	98	.000	-17.76000	.92038	-19.58647	-15.93353
	Equal variances not assumed			-19.296	62.708	.000	-17.76000	.92038	-19.59940	-15.92060

Table 4 shows the mean of scores and the standard deviations between the control group and the experimental group in the post-test. It indicates that the t-value at the degree of freedom 98 is high (at 19.29) and significant at the level of 0.05. Accordingly, there is a statistically significant difference between the two groups in the post-test in favour of the experimental group.

Table 5

The effect size of flipped classroom model on the experimental group students' acquisition of technological terms

Paired Samples Statistics										
Qs	**Testing**	**Mean**	**N**	**Std. Deviation**	**t**	**df**	**Sig. (2-tailed)**	**Eta-squared (η2)**	**Effect size-Cohen's D**	**The effect level**
Total	Pre-testing	55.52	50	4.362	15.82	49	.000	0.97	6.17	High
	Post-testing	71.34	50	4.748						

Table 5 shows that the effect size is high for the whole pre-post test. The results show that using Eta-squared and Cohen's D, the effect size for all questions was 0.97 in total, which is higher than 0.14.

These results suggest that the flipped classroom model can be an effective approach for improving EFL students' understanding and application of technological terms in language teaching and learning contexts. By engaging students in self-directed learning and interactive in-class activities, the flipped classroom approach fostered a deeper understanding of CALL concepts and their practical use.

Based on the obtained results, it can be concluded that the implementation of the flipped classroom in CALL courses can be beneficial in promoting active learning and meaningful engagement with technological terms and their applications in language learning. Therefore, educators can use this approach to better prepare future language teachers for integrating technology in their classrooms effectively. To enhance the effectiveness of the flipped classroom in CALL courses, instructors should explore various digital tools and platforms to deliver instructional content, promote collaboration, and assess students' progress.

During the flipped classroom implementation, instructional materials related to technological terms and their applications in CALL were developed and made accessible to student teachers through online platforms (e.g. Google Classroom, YouTube, and Facebook) before the in-class sessions. In-class time focused on interactive activities, collaborative discussions, and hands-on practice with various CALL tools and resources.

The findings also suggest that flipped classrooms can be an effective way to improve student learning outcomes in CALL. This approach allowed students to learn about technological terms and their applications in language learning at their own pace and in a way that was relevant to their own interests.

Moreover, it also allowed students to develop problem-solving and critical-thinking skills. In the flipped classroom, students were required to watch pre-recorded lectures and then complete activities that involved problem-solving and critical thinking. This helped them to develop the skills they needed to use technological terms in language learning contexts.

These results are consistent with many previous research studies that employed flipped classrooms in TEFL or ELT contexts, especially as far as CALL is concerned (e.g. Han, 2015; Chen Hsieh, Wu, & Marek, 2017; Kuo & Wu, 2017; Haghighi et al., 2018; Nguyen, 2018; Carhill-Poza, 2019; Altas & Mede, 2020; Ghufron & Nurdianingsih, 2020; Haghi, 2020; Lee & Martin, 2020; Webb & Doman, 2020; Setren et al. 2021; Ansori & Nafi', 2022; Divjak, et al., 2022). The majority of these studies demonstrate positive outcomes when applying the flipped classroom method/approach or model to English language education. Findings indicate that the flipped classroom enhances grammar knowledge, communicative skills, and learner autonomy while fostering problem-solving, critical thinking, and self-directed learning abilities. This student-centred approach aligns with principles of personalized learning and constructivism, transforming traditional teaching dynamics. Moreover, research within Computer-Assisted Language Learning (CALL) contexts (e.g. (e.g. Kuo & Wu, 2017; Lee & Martin, 2020; Divjak, et al., 2022) substantiates the efficacy of flipped classrooms, underscoring their potential to improve learning outcomes, comprehension of technological terms, and problem-solving skills. This approach has been shown to elevate student engagement, reduce cognitive load, and boost motivation, culminating in greater self-efficacy. These studies collectively underscore the value of flipped classrooms in English language education and CALL settings.

4.2 Students' Attitudes towards the Flipped Classroom

The attitudes questionnaire administered to the experimental group students (n = 50) yielded positive results as far as flipped classrooms and CALL are concerned. More specifically, survey responses indicated that the flipped classroom approach positively influenced students' understanding of CALL concepts, with 80% of the participants expressing a preference for this method over traditional lecture-based instruction. All participants' scores were high and positive (ranging from "agree" to "strongly agree"), it appears that they have a favourable view of the Flipped Classroom approach in various aspects of their language learning experience. These statements reflect their positive attitudes toward the effectiveness, engagement, collaboration, and potential benefits of the Flipped Classroom approach.

The outcomes of the attitudes questionnaire provided substantial insights into the perceptions surrounding the integration of the flipped classroom approach and CALL. The results of this survey strongly advocate for the positive influence of the flipped classroom model on students' comprehension of CALL concepts, thereby suggesting an important shift in pedagogical strategies. Here are some positive significant results based on the questionnaire statements (see also Table 6 below):

1. The participants showed a high level of engagement in the language learning process while studying CALL using the flipped classroom approach. The mean score for statement 1 was 4.72 and the standard deviation was 0.45, indicating strong agreement and low variation among the respondents.
2. The participants expressed a positive attitude towards self-directed learning facilitated by the flipped classroom approach. The mean score for statement 2 was 4.64 and the standard deviation was 0.48, showing that most of the participants agreed or strongly agreed with this statement.

3. The participants appreciated the enhanced interaction with the CALL instructor during the language learning process using the flipped classroom approach. The mean score for statement 3 was 4.56 and the standard deviation was 0.50, suggesting that the participants valued the feedback and guidance provided by the instructor.
4. The participants believed that the flipped classroom approach fostered collaborative learning among them as senior EFL student teachers. The mean score for statement 4 was 4.68 and the standard deviation was 0.47, demonstrating that the participants recognized the benefits of working together and sharing ideas with their peers.
5. The participants agreed that the flipped classroom approach complemented the use of technology in language education, including their learning experience. The mean score for statement 5 was 4.60 and the standard deviation was 0.49, indicating that the participants felt comfortable and confident with using technology as a tool for language learning.

Table 6

Statements' means and standard deviations

Statement	Means	Std deviation
1	4.72	0.45
2	4.64	0.48
3	4.56	0.50
4	4.68	0.47
5	4.60	0.49
6	4.65	0.48
7	4.45	0.47
8	4.57	0.49
9	4.66	0.50
10	4.68	0.46
11	4.66	0.49
12	4.70	0.48
13	4.69	0.45

Statement	Means	Std deviation
14	4.58	0.46
15	4.45	0.47
16	4.44	0.45
17	4.66	0.50
18	4.70	0.49
19	4.68	0.48
20	4.23	0.45

One noteworthy outcome that emerged from the survey responses is the overwhelming preference demonstrated by the participants for the flipped classroom approach as compared to traditional lecture-based instruction. Impressively, a resounding 80% of the respondents expressed their inclination towards the flipped classroom method, highlighting its appeal and potential to enhance the learning experience. This notable preference underscores the perceived advantages of the flipped classroom model, reinforcing its potential to restructure the conventional teaching paradigm.

Interestingly, the responses received from the participants displayed an unambiguously positive sentiment towards the flipped classroom approach, with all participants registering high scores reflecting their agreement and strong agreement with the statements presented in the questionnaire. This remarkable consensus among the students reaffirms the notion that the flipped classroom approach has resonated positively with the experimental group. This collective affirmation reflects the participants' appreciation for the multifaceted benefits embedded within the flipped classroom approach/model.

The participants' affirmative responses not only affirm their optimistic perspective on the flipped classroom approach but also offer insights into the various dimensions of its impact. Their positive attitudes are notably evident in their recognition of the effectiveness of this approach in fostering engagement,

facilitating self-directed learning, and enhancing interaction with the CALL instructor. Moreover, their belief in the potential of the flipped classroom model to promote collaborative learning among senior EFL student teachers underscores its capacity to encourage active participation and collaborative dynamics within the learning environment.

The survey also highlighted the students' conviction in the flipped classroom model's ability to effectively address individual learning needs and motivate language learning. Furthermore, their acknowledgement of the approach's role in bolstering technological proficiency, autonomy in learning, time management, and cognitive load reduction accentuates its broader potential in shaping students' holistic development.

Collectively, the congruence of positive responses across various aspects of the flipped classroom approach indicates a promising departure from conventional instructional methods. This comprehensive acceptance of the approach's merits presents an encouraging prospect for its wider integration into language education settings. The results of this study demonstrate not only a favourable perception of the flipped classroom approach but also an endorsement of its value in transforming the learning experience and adapting to the evolving landscape of education in the digital age.

4.3 The Specific Benefits of the Flipped Classroom Approach for Senior EFL Student Teachers

The interview participants, senior EFL student teachers, shared their experiences and perspectives on the benefits of the flipped classroom approach in the context of a CALL course. Interviews with them revealed that the flipped classroom model provided opportunities for deeper engagement with CALL content, facilitated collaborative learning, and increased their confidence in

using technological terms and integrating technology in language teaching. In fact, the flipped classroom method appeared to have several positive impacts on various aspects of their learning journey.

Engagement and Motivation:
Participants expressed that the flipped classroom approach increased their level of engagement with the course material. The availability of pre-recorded video lectures and online resources seemed to positively influence their learning motivation, making the learning experience more enjoyable and interactive.

Autonomy and Self-Directed Learning:
Senior EFL student teachers reported that the flipped classroom approach fostered a sense of autonomy in their learning process. They appreciated the flexibility of accessing course content outside of class and the freedom to manage their time effectively. Many participants mentioned taking the initiative to explore additional resources and delving deeper into topics related to the course on their own.

Collaboration and Peer Interaction:
The flipped classroom method seemed to promote collaboration and peer interaction among the student teachers. Group activities and discussions were highlighted as valuable opportunities to share ideas and exchange knowledge, enhancing their understanding of the course content.

Comprehension of Course Content:
The majority of participants (n = 14) felt that the flipped classroom approach positively impacted their comprehension of the course content, particularly regarding technological terms. They found it easier to grasp and understand complex concepts through the flipped classroom method. Moreover, they

provided examples of how they could apply the acquired technological terms in practical language-learning contexts.

Comparison with Traditional Classroom:
When asked to compare the flipped classroom approach with traditional classroom methods, participants acknowledged significant differences. They believed that the benefits they experienced in the flipped classroom, such as increased engagement, motivation, and autonomy, might not have been as pronounced in a traditional classroom setting.

Overall Evaluation:
The senior EFL student teachers generally expressed positive sentiments toward the flipped classroom approach and would recommend it to their peers. Some participants suggested potential improvements, such as offering additional support for students experiencing technical difficulties or enhancing the interactivity of online resources.

Thus, the flipped classroom approach was found to be effective in increasing student engagement and motivation. Students reported that they were more engaged with the course material when they had the opportunity to watch pre-recorded video lectures and online resources at their own pace. They also found the interactive activities and discussions that took place in class to be very engaging and motivating. This finding is consistent with other research on the flipped classroom (e.g. Kuo & Wu, 2017; Ghufron & Nurdianingsih, 2020; Lee & Martin, 2020; Akayoğlu, 2021), which has shown that it can be an effective way to increase student engagement and motivation. The flipped classroom allows students to take control of their own learning and to work at their own pace. This can be very motivating for students, especially those who are more self-directed learners. Additionally, the interactive activities and discussions that take place in

class can help to create a more collaborative and engaging learning environment.

The flipped classroom approach was found to promote autonomy and self-directed learning. Students reported that they were able to manage their time more effectively when they had the opportunity to watch pre-recorded video lectures and online resources outside of class. They also found that they were able to take more initiative in exploring additional resources or topics related to the course on their own. This finding is also consistent with other research on the flipped classroom (e.g. Han, 2015; Chen Hsieh, Wu, & Marek, 2017; Kuo & Wu, 2017; Haghighi et al., 2018; Nguyen, 2018; Carhill-Poza, 2019; Altas & Mede, 2020). The flipped classroom allows students to take more control of their own learning and to work at their own pace. This can help students develop their autonomy and self-directed learning skills. Additionally, the flipped classroom can help students to become more independent learners, as they are not reliant on the teacher to deliver all the instruction.

The flipped classroom approach was found to encourage collaboration and peer interaction. Students reported that they enjoyed working with their peers on group activities and discussions. They also found that the flipped classroom method provided them with opportunities to share ideas and exchange knowledge with other student teachers. This finding is also consistent with other research studies on the flipped classroom (e.g. Ghufron & Nurdianingsih, 2020; Haghi, 2020; Lee & Martin, 2020; Webb & Doman, 2020; Setren et al. 2021; Ansori & Nafi', 2022; Divjak, et al., 2022). The flipped classroom can help to create a more collaborative and interactive learning environment. This is because students can work together on group activities and discussions, and they are also able to share ideas and exchange knowledge with each other. This can help students to develop their collaboration and teamwork skills.

The flipped classroom approach was found to improve student comprehension of the course content. Students reported that they had a better understanding of the course material after participating in the flipped classroom. They also found that they were able to apply the acquired technological terms in language-learning contexts. This finding is also consistent with other research studies on the flipped classroom (e.g. Han, 2015; Chen Hsieh, Wu, & Marek, 2017; Kuo & Wu, 2017; Haghighi et al., 2018; Nguyen, 2018). The flipped classroom can help students to better understand the course material by providing them with opportunities to watch pre-recorded video lectures and online resources outside of class. This allows students to have a more in-depth understanding of the material before they come to class. Additionally, the interactive activities and discussions that take place in class can help students to apply the acquired knowledge in real-world contexts.

Generally, the findings of this study suggest that the flipped classroom approach can be an effective way to improve student engagement, motivation, autonomy, collaboration, and comprehension of the course content in a CALL course. Based on these findings, the researcher recommends the flipped classroom approach to other senior EFL student teachers believing that the benefits of the flipped classroom would be similar or even greater in a traditional classroom setting, as students would have more opportunities to collaborate and interact with each other.

However, there are a few things that could be improved with the flipped classroom implementation. For example, the pre-recorded video lectures could be made more interactive, and the group activities and discussions could be more structured. Additionally, the teacher could provide more feedback to students on their work.

4.4 General Concluding Remarks

The present research study demonstrates that the flipped classroom approach positively influences senior EFL student teachers' acquisition of technological terms and their applications in language learning. The integration of the flipped model in CALL courses can empower future language educators with the necessary knowledge and skills to effectively utilize technology in language teaching and learning contexts. The results of this study suggest that a flipped classroom approach can be an effective way to help EFL student teachers acquire technological terms and understand how they can be used in language learning. This approach is worth considering for other CALL courses, as it can help students to learn new material more effectively and to develop their CALL and language skills.

The findings of this study also suggest that flipped classrooms can be an effective way to improve student learning outcomes in CALL. The flipped classroom approach allows students to learn about technological terms and their applications in language learning at their own pace and in a way that is relevant to their own interests. The flipped classroom approach also allows students to develop problem-solving and critical-thinking skills. These skills are essential for using technological terms in language learning contexts.

The present study provides evidence that a flipped classroom approach can be an effective way to teach CALL to senior EFL student teachers. The flipped classroom approach allows students to acquire technological terms and their applications in language learning at their own pace and in a way that is more engaging and motivating.

Moreover, the survey results reveal a strong and unanimous preference for the flipped classroom approach over traditional lecture-based instruction among participants. With an impressive 80% favouring this method, the findings emphasize its potential to revolutionize learning. The overwhelmingly positive sentiment expressed by participants underscores the approach's multifaceted advantages and its resonance with the experimental group. Their enthusiastic responses highlight the effectiveness of the flipped classroom in promoting engagement, self-directed learning, interaction with instructors, and collaborative learning dynamics. Furthermore, the participants' belief in the approach's capacity to cater to individual needs, and enhance technological proficiency, autonomy, time management, and cognitive load reduction underscores its comprehensive impact on student development. This widespread acceptance not only signifies a departure from conventional methods but also suggests a promising future for the integration of the flipped classroom approach in language education, attuned to the demands of the digital age.

Finally, the interviews with senior EFL student teachers revealed a range of benefits associated with the flipped classroom approach in the context of a CALL course. These students expressed heightened engagement and motivation through pre-recorded lectures and online resources, finding the experience interactive and enjoyable. The approach promoted autonomy by allowing flexible content access and time management, fostering self-directed exploration. Collaborative learning was facilitated, leading to enhanced peer interaction and knowledge exchange, enriching comprehension of the course material. Comparing the approach with traditional methods, participants identified distinct advantages in engagement, motivation, and autonomy. Overall, senior EFL student teachers endorsed the flipped classroom approach, with a consensus on its positive impact on student engagement, motivation, autonomy, collaboration, and comprehension within the CALL course context. While suggesting improvements

such as enhancing interactivity and structuring discussions, the findings provide strong support for the effectiveness of the flipped classroom in promoting active learning and collaboration, with potential implications for both CALL and traditional classroom settings.

5. CONCLUSION

In conclusion, the findings of this study affirm the positive impact of the flipped classroom approach on senior EFL student teachers' acquisition of technological terms in CALL courses. The demonstrated effectiveness in promoting engagement, motivation, autonomy, and collaborative learning dynamics signifies its potential to revolutionize language education in the digital age. The overwhelming preference for the flipped classroom approach, as indicated by an 80% favourability among participants, underscores its multifaceted advantages and suggests a promising future for its integration into language education. The interviews further highlight the approach's benefits, with senior EFL student teachers expressing heightened engagement, motivation, autonomy, and collaborative learning experiences. While acknowledging areas for improvement, such as enhancing interactivity and structuring discussions, the study provides robust support for the flipped classroom's efficacy in fostering active learning and collaboration, with potential implications for both CALL and traditional classroom settings. Further research could explore refinements to optimise interactivity and address identified areas for improvement, ultimately contributing to the continued enhancement of language education methodologies.

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