Id: 1585755

Participatory Educational Research (PER)
Vol.12(3), pp. 72-87, May 2025
Available online at http://www.perjournal.com
ISSN: 2148-6123
http://dx.doi.org/10.17275/per.25.34.12.3

Supporting Diverse Learners in Flipped Classrooms: Prior Knowledge and Engagement for Pre-service EFL Teachers

Ika Wahyuni Lestari*
English Language Education Department, Faculty of Language Education, Universitas Muhammadiyah Yogyakarta, Yogyakarta, Indonesia
ORCID: 0000-0002-0067-4035

Article history
Received:
15.11.2024

Received in revised form:
19.01.2025

Accepted:
06.03.2025

Key words:
flipped classroom; motivation; pre-service EFL teachers; prior pedagogical knowledge; teacher education

This study explores the perceptions of pre-service EFL teachers regarding the flipped classroom model, focusing on its influence on their motivation and engagement and examining the role of prior pedagogical knowledge in their adaptation to the instructional approach. Employing a qualitative phenomenological design, data were collected from nine pre-service EFL teachers at an Indonesian teacher training institution through individual interviews and focus group discussions. The findings revealed that the flipped classroom model enhanced students' motivation and engagement by fostering autonomy, active participation, and practical relevance. However, students with limited pedagogical experience initially struggled with the self-directed nature of pre-class preparation, while those with prior pedagogical knowledge adapted more readily, leveraging the model to bridge theory and practice. Peer-led teaching demonstrations and feedback sessions emerged as essential scaffolds, particularly for students lacking prior pedagogical experience, as they facilitated collaborative learning and skill acquisition. The study highlights the importance of scaffolding and structured pre-class activities to support diverse learner needs in flipped classroom settings. Implications suggest that teacher education programs can enhance pre-service teacher training by adopting the flipped classroom model, with adjustments to accommodate students' varying levels of experience. Future research could explore the long-term impact of flipped classrooms on teaching efficacy and examine specific scaffolding strategies to optimize adaptation for novice learners.

Introduction

The flipped classroom model has received substantial attention as an innovative approach to fostering active learning in recent years, including in teacher education. By reversing the traditional instructional sequence, the flipped model shifts foundational content delivery outside the classroom and reserves in-class time for interactive, hands-on activities. This approach enables educators to engage students more deeply in collaborative problem-solving and application-based exercises (Ankora, 2021; Chang et al., 2022; Gu et al., 2022; Umar & Ko, 2022), which are critical for developing pedagogical skills. Despite a growing body of research on flipped classrooms in various disciplines, its implementation within English-as-a-Foreign-Language (EFL) teacher training, particularly in Indonesia, remained underexplored. This study sought to address this gap by examining the perceptions of pre-

* Correspondency: ikawahyuni_11@umy.ac.id

service EFL teachers in an Indonesian teacher training institution, focusing on how the flipped classroom model influenced their motivation and engagement, as well as the role of prior pedagogical knowledge in their adaptation to this model.

The flipped classroom model in education

The flipped classroom has emerged as an innovative instructional model that promotes active learning by shifting foundational content delivery outside the classroom, while in-class time focuses on collaborative and hands-on activities. Originally popularized in fields such as science and engineering, flipped learning has demonstrated significant benefits across disciplines, particularly in increasing student engagement and comprehension (Dori et al., 2020; Hava, 2021; Li & Li, 2022; Lo & Hew, 2021). Research has shown that the flipped classroom model encourages students to engage deeply with learning materials before class, thereby, maximizing interaction and practical application during in-person sessions (Dori et al., 2020; Shi et al., 2020). This approach provides opportunities for students to actively participate in constructing their knowledge, which is foundational to modern pedagogical theories emphasizing learner autonomy and active involvement.

The flipped model has also gained traction in language learning contexts, with studies showing its effectiveness in enhancing reading, writing, and speaking skills among EFL learners (Brown, 2018; Teng, 2018). For instance, flipped classrooms have been shown to improve EFL students' confidence and participation by providing additional opportunities for practice and feedback, which are essential in language acquisition (Hoang Oanh, 2020; Namaziandost & Çakmak, 2020; Namdaran & Akbari, 2021). However, while studies on flipped classrooms were increasingly common, relatively few focus on teacher training in EFL contexts, this study addressed this gap by examining how the flipped model influenced motivation and engagement among pre-service EFL teachers, who required both content mastery and pedagogical competence for future teaching roles.

Motivation and engagement in flipped classrooms

One of the critical benefits of flipped classrooms in educational settings is the potential for enhanced motivation and engagement. Motivation, a vital factor in learning, is often more pronounced in flipped settings because students are encouraged to take ownership of their learning by completing pre-class activities such as watching videos, reading, or completing online quizzes (Kwong et al., 2024). These preparatory activities help students gain a foundational understanding, allowing them to engage more confidently in in-class discussions and activities (Chen & Chuang, 2016). Research highlights that the flipped model could increase students' interest and engagement (Dori et al., 2020; Hava, 2021; Li & Li, 2022; Lo & Hew, 2021), as they experienced more interactive, varied, and student-centred learning environments.

In teacher education, where student motivation is pivotal, the flipped classroom can be particularly beneficial. Pre-service teachers benefit from opportunities to apply pedagogical theory in practice (Resch & Schrittesser, 2023; Sevimli-Celik, 2021), which in the case of flipped learning could be through teaching demonstrations and feedback sessions. This experiential approach can increase motivation by allowing future teachers to visualize how theoretical knowledge translates into teaching strategies (Tohei, 2018). The flipped model's focus on active learning aligns well with the needs of pre-service teachers, as they must be engaged and motivated not only to learn content but also to internalize effective instructional practices. This study builds on this body of literature by exploring how pre-service EFL

teachers perceive the flipped classroom's influence on their motivation, a critical factor for teacher preparation programs.

The role of prior pedagogical knowledge in adapting to flipped learning

A key area of inquiry in flipped classroom research is how students with varying backgrounds and experience levels adapt to this learning model. Discovery learning theory suggests that prior knowledge significantly impacts a learner's ability to make connections and engage meaningfully with new content (Bruner, 1960; Castronova, 2002). In a flipped classroom setting, students are often required to independently assimilate foundational material before class, a task that may be more challenging for those lacking prior pedagogical experience. The need for structured scaffolding becomes apparent as students must bridge gaps between their current knowledge and the new information encountered in flipped classroom activities. Studies on flipped learning underscore the importance of scaffolding and support, particularly for students who may be unfamiliar with self-directed learning (Jumaat & Lah, 2022; Witt et al., 2021).

In EFL teacher training, the discrepancies in pedagogical knowledge can be more pronounced, as students are at different stages in their understanding of teaching techniques and strategies. Tohei (2018) found that pre-service teachers with limited prior pedagogical knowledge benefited from flipped classrooms due to increased practice opportunities and feedback, which helped them build essential teaching skills. Similarly, Zainuddin and Halili (2016) highlight that flipped classrooms allow students to learn at their own pace before class, enabling those with less experience to acquire foundational knowledge that can later be reinforced through in-class activities. This study drew on these findings to examine how prior pedagogical knowledge influenced pre-service EFL teachers' adaptation to the flipped model. By exploring the experiences of students with varying levels of teaching knowledge, this research aimed to shed light on the role of the flipped classroom in accommodating diverse learner backgrounds in teacher education settings.

Purpose of the study

While the flipped classroom model has been widely investigated for its benefits in fostering engagement and active learning, there remained limited research on its implementation in EFL teacher training, particularly in contexts where students have varying levels of pedagogical experience. This study addressed these gaps by focusing on how the flipped classroom model influenced motivation and engagement, as well as how pre-service teachers with different levels of prior pedagogical knowledge adapt to this approach. By exploring these aspects, this research contributes to a deeper understanding of innovative instructional practices in teacher education, with implications for designing flipped learning experiences that support both content and pedagogical development in diverse educational settings. Therefore, this study was guided by two research questions:

(1) How do pre-service EFL teachers perceive the flipped classroom model's influence on their motivation and engagement in learning?
(2) What role does prior pedagogical knowledge play in pre-service EFL teachers' adaptation to the flipped classroom model?

Methods

Research design

This study employed a qualitative phenomenological approach to explore pre-service EFL teachers' experiences with the flipped classroom model. A phenomenological design is well-suited for capturing the lived experiences of participants and understanding their perceptions of specific educational phenomena (Creswell & Creswell, 2018). By focusing on motivation, engagement, and the role of prior pedagogical knowledge, this study aims to provide in-depth insights into how pre-service teachers interpreted and adapted to flipped learning. Using a transcendental phenomenological approach, the researchers set aside their own experiences to focus on participants' textual and structural descriptions, capturing both what they experienced and how they experienced it within the flipped classroom context (Creswell, 2007).

Participants

To ensure the reliability and depth of the data, a total of nine pre-service EFL teachers were purposefully selected as participants based on specific criteria. The primary criterion was a minimum attendance of at least 12 out of 16 class meetings (>75%) in the flipped classroom. This threshold was set to ensure that the participants had substantial exposure to the instructional approach and could provide detailed reflections on their experiences. The participants were further categorized into two distinct groups based on their prior pedagogical knowledge. Group A consists of five second-year students who had not yet taken any pedagogical courses, whereas Group B includes four third- and fourth-year students who had completed relevant coursework in pedagogy. This classification allows for a comparative analysis of how different levels of prior pedagogical knowledge influenced students' experiences with the flipped classroom model. The number of participants was deemed sufficient based on the principle of data saturation, where recurring patterns and themes emerged consistently across responses, indicating that additional interviews were unlikely to yield new insights. Furthermore, to enhance the validity of the findings, a follow-up focus group discussion was conducted with all nine students, allowing for further clarification and triangulation of data. The demographic information of the participants is presented in Table 1.

Table 1. Demographic Information of the Participants

Participants (Pseudonyms)	Age	Gender	Year of Study	Group	Prior Pedagogical Coursework
Rosa	19	Female	2nd Year	A	No
Melisa	18	Female	2nd Year	A	No
Jennie	19	Female	2nd Year	A	No
Aldi	19	Male	2nd Year	A	No
Rosie	19	Female	2nd Year	A	No
Taylor	20	Female	3rd Year	B	Yes
Aldo	21	Male	4th Year	B	Yes
Inggit	20	Female	3rd Year	B	Yes
Emilia	20	Female	3rd Year	B	Yes

The implemented flipped classroom model

The flipped classroom model was implemented in an English for Young Learners (EYL) course designed to expose students to both theoretical frameworks and practical approaches in teaching English to young learners. This elective course was offered to undergraduate students from their second to fourth year of study. As it did not

have any prerequisite requirements, enrollment was open to all students with an interest in the subject. The course was conducted once a week, with each session lasting 100 minutes, over the span of sixteen meetings. Throughout the course, 31 students enrolling to the course engaged in the study of theories related to teaching English to young learners, as well as explored various instructional techniques applicable in real classroom settings.

The flipped classroom approach in this course was operationalized through two primary phases: pre-class activities and in-class activities. In the pre-class phase, students were required to engage in self-directed learning through video lectures created by their peers, which were made accessible via the Learning Management System (LMS) employed in the course. In addition to watching these videos, the students were assigned specific reading materials corresponding to the topics scheduled for discussion. This phase concluded with an online quiz that students were required to complete before attending the in-class session.

The in-class phase was structured to facilitate the application of knowledge acquired during the pre-class activities. Each session featured a 20-minute teaching demonstration conducted by a designated student group, with their classmates assuming the role of young learners. Following the demonstration, a structured feedback session was conducted, during which both peers and the course instructor provided constructive critiques to enhance the presenting students' pedagogical competencies. The instructor also utilized this session to assess students' comprehension of the subject matter and, when necessary, provided clarifications and supplementary explanations to reinforce their understanding. Beyond the weekly instructional activities, students were required to complete a final project, which involved conducting an actual teaching session in an elementary school setting. This project was designed to bridge theoretical knowledge with practical experience, thereby fostering the development of students' professional teaching skills.

The structure of the flipped classroom model implemented in this course is illustrated in Figure 1.

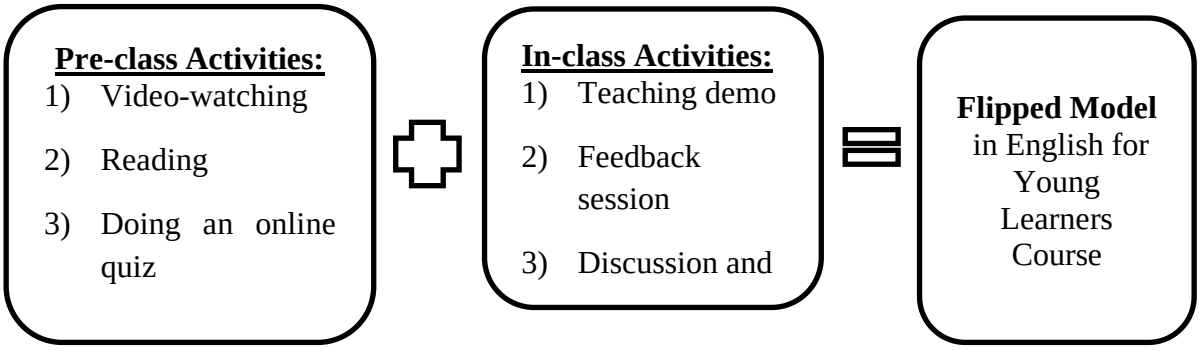

Figure 1. The Implemented Flipped Classroom Model

Data collection

To answer the research questions, data were collected through one-on-one interviews and focus group interviews. These multiple data collection tools enabled a comprehensive understanding of participants' perceptions and experiences.

One-on-one interviews

To address the research questions, the data were collected through individual, semi-structured interviews with nine participants. Each interview was conducted in a private setting immediately after the course had ended, to ensure that the participants' recollections of their experiences with the flipped classroom remained vivid. This timing was deliberately chosen to elicit detailed and accurate reflections on their engagement with the flipped classroom model. Additionally, the interviews were conducted only after final course grades had been issued to mitigate potential bias in the participants' responses. To ensure the reliability and consistency of the data collection process, a trained research assistant, who had undergone a comprehensive briefing on the interview procedures and was equipped with a structured interview protocol, facilitated the interviews. The interview protocol, developed by the researcher and validated by an expert practitionaire of flipped classroom, encompassed four key dimensions: (1) participants' overall experiences with the flipped classroom, (2) their emotional responses to this instructional approach, (3) their perceptions of how the flipped classroom differed from other pedagogical models they had encountered, and (4) their views on the role of the flipped classroom in shaping their learning process. In addition to these core aspects, follow-up and probing questions were incorporated to elicit more nuanced insights into participants' experiences. All interviews were audio-recorded to ensure the comprehensive capture of the participants' narratives. The recordings were subsequently transcribed to facilitate rigorous qualitative analysis.

Focus group interviews

The second phase of data collection involved conducting focus group interviews with two distinct groups of participants: Group A and Group B. Group A comprised five second-year students who lacked prior pedagogical background knowledge, whereas Group B consisted of four third- and fourth-year students who had prior exposure to pedagogical concepts. These focus group interviews were conducted following the initial coding of data obtained from the individual interviews. The coding process facilitated the identification of emerging patterns within and across the two participant groups. Once these patterns were established, the focus group interviews were employed to seek further clarification and elicit deeper insights into the participants' perspectives. This method allowed for a more comprehensive understanding of their experiences with the flipped classroom model. Each focus group interview was conducted separately to ensure that discussions remained specific to the respective cohort's background and experiences, each of which lasted for approximately an hour.

Data analysis

The qualitative data were analyzed following Braun and Clarke's (2006) six-phase thematic analysis procedure: (1) familiarizing with the data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the final report. Initially, each interview transcript was read multiple times to ensure deep familiarity with the data. In the second phase, a coding process was conducted by the author, where meaningful units were systematically assigned initial codes. These codes were then reviewed and refined into broader thematic categories, ensuring that both shared and distinct experiences across participant groups were captured. Through this rigorous process, key themes related to motivation, engagement, and adaptation to the flipped classroom model were identified, reviewed, and interpreted within the study's theoretical framework.

To enhance the trustworthiness of the study, member checking and triangulation were employed. Member checking was conducted by sharing preliminary findings with participants to confirm that the identified themes accurately represented their experiences (Creswell & Creswell, 2018). This process ensured that the interpretations remained grounded in participants' perspectives and minimized potential researcher bias. Additionally, triangulation was achieved by corroborating data from individual interviews, focus group discussions, and teaching logs, thereby strengthening the credibility of the findings (Creswell & Creswell, 2018). The integration of multiple data sources provided a more comprehensive understanding of participants' experiences and enhanced the reliability of the study.

Ethical considerations

All participants were informed of the study's purpose, procedures, and confidentiality measures. Consent was obtained from each participant before data collection, ensuring that they understood their voluntary participation and the right to withdraw at any time. To maintain anonymity, pseudonyms were used in all interview transcripts.

Findings and discussions

Pre-service EFL teachers' perceptions of the flipped classroom model's contribution to motivation and engagement

The study found that the flipped classroom model contributes to the pre-service EFL teachers' motivation and engagement in four key points presented in Table 2 and further discussed in the following sections.

Table 2. Summary of the Findings of the First Research Question

Key Points	Description of the Findings
Enhanced motivation through pre-class preparation and active engagement	Participants reported that preparing before class (e.g., watching videos, reading materials) made them feel more motivated and ready to engage actively in discussions and activities.
Increased motivation via peer learning and practical application	Learning from peers, engaging in discussions, and observing teaching demonstrations enhanced motivation by making learning more interactive and applicable to real teaching contexts.
Structured lesson format as a driver of engagement	The predictable sequence of pre-class study, in-class practice, and feedback provided clarity, reducing anxiety and fostering sustained engagement.
Autonomy and motivation in flipped classroom	While the participants valued the autonomy of flipped learning, they also found the self-directed nature challenging and demotivating, particularly when managing pre-class workloads.

Enhanced motivation through pre-class preparation and active engagement

The study's findings revealed that the pre-service EFL teachers perceived the flipped classroom model positively, particularly regarding its influence on their motivation and engagement in learning. The participants described the flipped model as "engaging," "exciting," and "empowering." They noted that pre-class preparation, including watching video lectures and reading materials, made them feel more prepared and enabled them to engage more actively in in-class activities. Rosie explained, "I felt happier and more ready because I had studied the materials beforehand, so I could participate in discussions and

explain concepts to my classmates." Similarly, Aldo found that prior exposure to content allowed him to engage meaningfully with in-class teaching demonstrations, which he described as highly motivating and instrumental for learning. Aldo stated "The understanding of the material is better, clearer, and deeper because we receive the teaching materials before class, both in terms of content and teaching techniques. So, we come to class feeling more motivated". This heightened motivation aligns with research indicating that flipped classrooms enhance student motivation by fostering active learning, promoting self-efficacy, and increasing engagement with the material (Dori et al., 2020; Hava, 2021; Li & Li, 2022). Prior studies have demonstrated that flipped learning environments contribute to higher intrinsic motivation because they provide students with greater control over their learning process, allowing them to engage with materials at their own pace and revisit concepts as needed (Lestari, 2021; Lo & Hew, 2021). Flipped classrooms allow students to engage with foundational content on their own terms, fostering a sense of ownership over their learning process. In language learning, where self-motivation is critical, this model can be particularly effective, as shown in prior studies (Dori et al., 2020; Hava, 2021; Li & Li, 2022; Lo & Hew, 2021) that flipped EFL classrooms significantly enhance student motivation and engagement.

Increased motivation via peer learning and practical application

The participants also cited peer interaction and the practical application of flipped classroom activities as key motivators. Jennie noted, "Seeing teaching demonstrations and learning strategies that I could apply in my future classroom was motivating. It felt real and useful." This sentiment was echoed by Melisa, who appreciated the opportunity to provide feedback to her peers, which she found to be both instructive and motivating. The peer-led discussions and feedback sessions facilitated in the flipped classroom encouraged collaborative learning, as they could learn new teaching strategies directly from their classmates. Peer learning is a recognized benefit of flipped classrooms, as such settings create opportunities for cooperative learning and knowledge exchange, particularly valuable in teacher education (Röhl et al., 2013). The literature emphasizes that active, peer-led interactions foster deeper learning and are linked to increased engagement and enthusiasm in educational contexts (Flores et al., 2016; Lo & Hew, 2021). By participating in peer teaching demonstrations, the pre-service EFL teachers were able to directly observe effective teaching practices and adapt them for their own use, highlighting the flipped classroom's role in fostering a collaborative, practice-oriented learning environment.

Structured lesson format as a driver of engagement

The structured nature of the flipped classroom also emerged as a significant factor influencing engagement. Students valued the predictability of the class format, which consistently followed a sequence of pre-class preparation, in-class demonstrations, and feedback sessions. Aldo mentioned, "I was more motivated because of the clear structure. Each week, we knew what to expect, and I could prepare myself for my teaching demonstration." Taylor similarly noted that the routine and structure allowed her to anticipate upcoming activities, which motivated her to prepare thoroughly for each session. Research underscores that a well-structured learning environment, such as that provided by the flipped classroom, helps students manage cognitive load, making learning more enjoyable and reducing anxiety (Hava, 2021; Li & Li, 2022; Lo & Hew, 2021; Xin & Zhang, 2024). By clearly organizing the learning activities, instructors help students focus on deeper engagement rather than worrying about unfamiliar formats or expectations. This study corroborates previous research indicating that the structure of the flipped classroom model—comprising pre-class preparation and in-class learning—enhances student engagement

(Arshad & Romatoski, 2021; Head et al., 2022). However, it extends prior findings by emphasizing that engagement is not solely driven by the activities embedded within this structure but also by the clarity and predictability of the model itself.

Autonomy and motivation in flipped classroom

Despite these positive reactions, some participants expressed challenges with the autonomy required in the flipped model, particularly in managing pre-class preparation. Rosie shared, "Sometimes I felt overwhelmed by the amount of reading and video-watching required before class." This reaction aligns with findings from Lo and Hew (2021), who noted that some students find flipped learning challenging due to the high degree of self-regulation required. For pre-service teachers, the demands of preparing independently before in-class activities may create a sense of pressure, particularly when the workload is heavy, or when students have less experience with self-directed learning. These findings highlight the importance of balancing autonomy with structured guidance in flipped classrooms, a principle also emphasized in Moore's (1993) Transactional Distance Theory. According to Moore, an optimal balance between an instructional structure and learner autonomy is pivotal to reduce transactional distance and create meaningful learning. In the context of flipped learning, it suggests that while fostering independence is beneficial, adequate scaffolding and instructional support are crucial to prevent cognitive overload and enhance engagement. As pre-service teachers develop time management and study skills, scaffolding can support their transition to more self-regulated learning (Jumaat & Lah, 2022; Witt et al., 2021). In line with Bruner's (1960) Theory of Discovery Learning, which supports gradual, scaffolded autonomy, teachers can provide supplementary guidance, such as time-management tips or structured discussion prompts, to ease the self-directed aspects of flipped learning. The findings suggest that flipped classrooms offer an opportunity for enhancing motivation and engagement among pre-service EFL teachers, largely due to increased autonomy, peer learning, and structured interactions. The model's emphasis on pre-class preparation fosters a deeper engagement with the material, allowing students to actively participate in class (Sun & Xie, 2020; White et al., 2022; Yang, 2020). Moreover, the structure and predictability of the flipped model help students to feel more in control of their learning, an aspect shown to increase intrinsic motivation.

To maximize these benefits, it is recommended that educators gradually introduce pre-service teachers to the autonomous demands of flipped learning, perhaps by initially providing more guidance during pre-class activities and transitioning to greater independence over time. Integrating tools such as digital forums or guided quizzes may also support students' independent learning (Pinto & Leite, 2020; Zhu et al., 2022), helping them manage the cognitive demands of self-study. Moreover, fostering collaborative learning environments through peer feedback and group activities can enhance engagement (Qureshi et al., 2023; Shin et al., 2020). The value of these interactions suggests that pre-service teacher programs might incorporate more peer-led activities within flipped classrooms to cultivate both pedagogical skills and a supportive learning community. This study sheds light on pre-service EFL teachers' perceptions of the flipped classroom model's influence on their motivation and engagement in learning. The findings revealed that while flipped classrooms can improve engagement by encouraging autonomy, practical application, and peer collaboration, they also present challenges that require careful structuring and support. Future research might further investigate scaffolding strategies that balance independence and structure to optimize engagement and learning outcomes in flipped classroom environments.

The role of prior pedagogical knowledge in adapting to the flipped classroom model

The study found that pre-service EFL teachers' adaptation to the flipped classroom model is shaped by their prior pedagogical knowledge. Table 3 presents the key points indicating the role of prior pedagogical knowledge perceived by the participants.

Table 3. Summary of the Findings of the Second Research Question

Key Points	Description of the Findings
Difficulties in adapting to the flipped classroom without prior pedagogical knowledge	Pre-service teachers without prior pedagogical coursework faced challenges in self-regulated learning and understanding teaching methodologies, making it harder to engage in flipped learning activities.
Peer-led teaching as a scaffolding for pedagogical development	Observing and critiquing peer teaching demonstrations provided an accessible form of pedagogical learning, particularly for those lacking prior formal training.
Pre-class preparation as a foundational support for learning	Structured pre-class activities (e.g., video lectures, readings) played a critical role in building foundational teaching knowledge, enabling more meaningful in-class participation.
Prior pedagogical knowledge as a facilitator of flipped classroom adaptation	Students with previous coursework in pedagogy were able to integrate theoretical knowledge with in-class practical applications, adapting more readily to the flipped model.
The flipped classroom model as a bridge between theoretical pedagogical knowledge and practical teaching skills	The hands-on teaching components of the flipped classroom reinforced theoretical concepts, allowing students—especially those with prior training—to refine their instructional strategies.

Challenges in adapting to the flipped classroom without prior pedagogical knowledge

For pre-service EFL teachers with limited or no prior pedagogical knowledge, adapting to the flipped classroom model initially presented notable challenges. Participants from Group A, comprising second-year students without prior teaching coursework, reported difficulties in adapting to the autonomous structure and understanding essential teaching methodologies. Rosa expressed that she "found it difficult because I knew nothing about teaching, particularly teaching children." This sentiment reflects the challenges faced by novice learners in flipped classrooms, where a degree of foundational knowledge is often presumed (Lo & Hew, 2021). Without prior pedagogical training, students in Group A felt less equipped to fully engage with in-class activities that required background knowledge of teaching practices. These findings align with prior research emphasizing the importance of preparatory activities to provide background knowledge (Cheng & Chuang, 2016), in this context is the need for prior pedagogical training. While the present study found that students without prior pedagogical training felt less equipped to engage in practical tasks, Tohei (2018) suggests that increased practice opportunities and feedback in flipped classrooms can help pre-service teachers develop essential teaching skills. It underscores the notion that while initial challenges may arise due to a lack of background knowledge, scaffolding and experiential learning opportunities can enhance pre-service teachers' pedagogical competence. Hence, educators should consider incorporating supplementary guidance and scaffolding students with limited pedagogical experience, particularly in flipped settings where self-regulation is essential.

Peer-led teaching as a scaffolding for pedagogical development

Despite these initial challenges, Group A participants noted that the flipped classroom model helped them build practical teaching knowledge, primarily through peer demonstrations and feedback. Melisa highlighted the role of peer learning, explaining, "I didn't understand everything when I read the materials, but after watching the teaching

demos, I learned the right way to teach children." Similarly, Aldi reported "before I teach, I already have background knowledge on how to teach children from my friends' teaching", indicating that his peers' teaching demo provided pedagogical insights for his own teaching. For students lacking prior pedagogical experience, observing and criticizing their peers' teaching provided an accessible form of scaffolding, bridging the gap between theoretical content and practical application. Recent research underscores the importance of peer learning in flipped classrooms, especially for students with diverse knowledge levels. By actively engaging in peer-led teaching demonstrations, students gain access to a collaborative learning environment where they can observe and emulate effective strategies, reinforcing their understanding (Lo & Hew, 2021; Chang et al., 2022). This model also supports the development of a learning community, which has been shown to increase student motivation and engagement in flipped classrooms (Dori et al., 2020; Hava, 2021; Li & Li, 2022; Lo & Hew, 2021). Peer learning within the flipped model, therefore, played a compensatory role for Group A, enabling them to acquire pedagogical skills organically through observation and guided feedback.

Pre-class preparation as a foundational support for learning

Group A participants also described how the structured pre-class activities, such as video lectures and assigned readings, helped them build foundational pedagogical knowledge that facilitated in-class engagement. While the initial adjustment was challenging, the participants ultimately found that pre-class activities helped them feel prepared for hands-on teaching exercises. Melisa remarked that reading the materials before class allowed her to grasp key concepts that she could then practice during in-class sessions. These pre-class activities, thus, served as a crucial element in scaffolding students' learning, especially for those with minimal background in teaching. This finding supports the literature on the flipped classroom's potential to scaffold learning through structured, pre-class activities. Pre-class preparation is particularly beneficial for learners to develop a basic understanding before engaging in more complex, applied tasks to prepare for in-class learning and ultimately improved the learning outcomes (Sun & Xie, 2020; White et al., 2022; Yang, 2020). For Group A, pre-class activities provided an essential foundation, making it easier for them to participate in and benefit from interactive, in-class sessions.

Prior pedagogical knowledge as a facilitator of flipped classroom adaptation

Conversely, students in Group B, comprising third- and fourth-year students with prior coursework in pedagogy, adapted more readily to the flipped classroom model. The participants from this group reported that their previous exposure to teaching concepts allowed them to better understand and apply the instructional techniques presented in pre-class materials and in-class activities. Taylor stated, "In previous classes, we learned theories without much practice. In this class, we got the chance to apply what we had learned, which made things much clearer." It suggests that students with prior pedagogical knowledge were able to connect theoretical concepts to practical experiences in a way that reinforced and deepened their understanding. The literature highlights the role of prior knowledge in enhancing students' ability to benefit from the flipped classroom model. Yang (2020) and Oudbier et al. (2021) found that students with a foundational understanding of a subject can better assimilate new information and adapt to the flipped model, as they are more equipped to independently engage with preparatory materials and actively participate in practical applications. For Group B, the flipped classroom's structure offered an opportunity to transition seamlessly from theory to practice, aligning with their existing knowledge base and reinforcing pedagogical skills.

The flipped classroom model as a bridge between theoretical pedagogical knowledge and practical teaching skills

For Group B participants, the flipped classroom offered a platform to translate theoretical knowledge into practical teaching skills. Unlike traditional lecture-based classes, which often emphasize theory over application, the flipped model in this EYL course provided consistent opportunities for hands-on practice. Inggit explained, "If we had just learned the theory without practicing, we wouldn't understand it as well." Taylor echoed this, noting that the regular teaching demonstrations gave her a clearer understanding of how to apply teaching techniques in real scenarios. This finding supports the flipped classroom's potential to facilitate a deeper understanding of pedagogy by bridging the gap between theory and practice (Resch & Schrittesser, 2023; Sevimli-Celik, 2021). Research indicates that active, applied learning experiences are particularly beneficial in teacher education, where the integration of theory and practice is essential for effective skill development (Tohei, 2018). For Group B, the flipped classroom's structure enabled them to reinforce their theoretical knowledge through repeated, practice-oriented activities, enhancing their readiness for future teaching roles.

The findings suggest that prior pedagogical knowledge plays a significant role in pre-service EFL teachers' adaptation to the flipped classroom model. For students without pedagogical experience, pre-class activities and peer-led demonstrations provide essential scaffolding, enabling them to acquire foundational teaching skills. Educators can support such students by offering structured guidance in the early stages of the course, such as through guided pre-class readings and additional in-class feedback to support comprehension. For students with prior pedagogical knowledge, the flipped classroom model serves as an effective bridge between theoretical and practical learning, allowing them to apply previously learned concepts in a real-world context. It highlights the value of integrating practical application into teacher education programs, as it provides students with an authentic learning experience that reinforces theoretical understanding. Institutions may consider adopting flipped classroom models in teacher training programs to facilitate this integration, with adjustments to accommodate diverse levels of prior knowledge. This study underscores the critical role of prior pedagogical knowledge in shaping pre-service EFL teachers' adaptation to the flipped classroom model. While students with prior knowledge adapted more readily, benefiting from the hands-on, application-focused approach, those without such knowledge initially faced challenges that were mitigated through peer learning and structured pre-class activities. These insights contribute to our understanding of how flipped classrooms can be optimized in teacher education, suggesting that a balance of autonomy, structured guidance, and peer interaction may best support diverse learner needs. Future research could further explore scaffolding strategies that enhance adaptation in flipped classrooms for students with varying levels of experience, particularly in pre-service teacher education.

Conclusion

This study explores pre-service EFL teachers' perceptions of the flipped classroom model, focusing on its influence on motivation and engagement and examining the role of prior pedagogical knowledge in adapting to this instructional model. The findings underscore the potential of the flipped classroom to foster engagement, motivation, and skill development in teacher training, while also revealing the importance of tailored support to accommodate diverse prior knowledge levels among learners. The first research question explored how the flipped classroom model influenced pre-service EFL teachers' motivation and engagement. The findings indicate that the model fostered an engaging and motivating learning

environment by promoting autonomy, active participation, and practical relevance. Pre-class activities prepared students for in-class practice, allowing them to engage more deeply with the content and contribute actively to peer discussions and teaching demonstrations. This hands-on approach, supported by structured class routines, increased motivation as students found the flipped classroom model to be both dynamic and relevant to their future teaching roles. However, the study also identified challenges for some students who felt overwhelmed by the autonomy and preparatory demands inherent in flipped learning. This finding points to a need for balanced scaffolding, especially in the early stages, to support learners in managing the demands of self-directed learning. By incorporating guided pre-class activities, such as structured reading prompts and time-management resources, educators can help reduce these challenges, thereby enhancing engagement and overall satisfaction in the flipped classroom.

The second research question examines the role of prior pedagogical knowledge in pre-service teachers' adaptation to the flipped classroom model. The findings revealed that prior pedagogical knowledge serves as a critical factor in how students adapted to and benefited from flipped learning. Students with prior pedagogical training adapted more readily to the model, leveraging pre-class preparation to reinforce their theoretical understanding and apply it in in-class activities. The flipped model bridged the gap between theory and practice, reinforcing their knowledge through practical teaching exercises that improved their confidence and teaching readiness. In contrast, students without prior pedagogical experience initially struggled with the demands of flipped learning but ultimately found peer interactions and feedback sessions to be valuable sources of learning. It underscores that peer-led teaching demonstrations and collaborative feedback serve as essential scaffolds, allowing them to observe effective teaching techniques and gradually build foundational pedagogical knowledge. It also suggests that structured peer learning can be a powerful tool for bridging gaps in prior knowledge, fostering an inclusive learning environment that accommodates diverse levels of pedagogical experience.

This study's findings have important implications for teacher education programs. To maximize the benefits of flipped classrooms, teacher educators should consider students' varying levels of prior knowledge when designing pre-class and in-class activities. For students with limited pedagogical backgrounds, structured pre-class guidance and supportive scaffolding—such as guided readings, digital quizzes, and peer-assisted learning opportunities—can help build a foundational understanding that enables them to participate meaningfully in class. For more experienced students, flipped classrooms offer valuable opportunities to apply theoretical knowledge in practical settings, suggesting that flipped learning may be particularly beneficial in advanced teacher education courses where practical application is paramount. While this study offers valuable insights, further research could expand on these findings by investigating specific scaffolding techniques that optimize flipped classroom experiences for students with diverse prior knowledge. Longitudinal studies tracking the long-term impact of flipped classrooms on teaching efficacy and professional identity development among pre-service teachers would provide a deeper understanding of its effectiveness in teacher education. Additionally, exploring flipped classroom implementations across different cultural and educational contexts could enhance the generalizability of these findings, while comparative studies with other active learning models may yield insights into best practices for fostering engagement and skill development.

References

Ankora, C. (2021, April). Implementing flipped classroom with digital students. In *AIP Conference Proceedings* (Vol. 2331, No. 1). AIP Publishing.

Arshad, M., & Romatoski, R. R. (2021, July). Effective learning strategies: Design of course structure for engineering courses aimed for hybrid classes. In *2021 ASEE Virtual Annual Conference Content Access*.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Brown, C.J. (2018). Flipping the ESL/EFL Academic Reading Classroom: A Group Leader Discussion Activity. In: Mehring, J., Leis, A. (eds) *Innovations in Flipping the Language Classroom.* Springer, Singapore. https://doi.org/10.1007/978-981-10-6968-0_11

Bruner, J. S. (1960). *The process of education.* Harvard University Press

Castronova, J. A. (2002). Discovery learning for the 21st century: What is it and how does it compare to traditional learning in effectiveness in the 21st century. *Action Research Exchange*, *1*(1), 1-12

Chang, Y. H., Yan, Y. C., & Lu, Y. T. (2022). Effects of combining different collaborative learning strategies with problem-based learning in a flipped classroom on program language learning. *Sustainability, 14*(9), 5282. https://doi.org/10.3390/su14095282

Chen, K.C & Chuang, K.W. (2016). Building a cooperative learning environment in a flipped classroom. *Academy of Educational Leadership Journal, 20*(2), 8-15

Creswell, J.W. (2007). *Qualitative inquiry and research design: Choosing among five approaches*. Sage Publication, Inc.

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage Publications, Inc.

Dori, Y. J., Kohen, Z., & Rizowy, B. (2020). Mathematics for computer science: A flipped classroom with an optional project. *Eurasia Journal of Mathematics, Science and Technology Education, 16*(12). https://doi.org/10.29333/ejmste/9149

Flores, Ò., del-Arco, I., & Silva, P. (2016). The flipped classroom model at the university: Analysis based on professors' and students' assessment in the educational field. *International Journal of Educational Technology in Higher Education*, *13*(1), 1–13. https://doi.org/10.1186/s41239-016-0022-1

Gu, J., Tang, L., Liu, X., & Xu, J. (2022). Promoting pre-service teacher students' learning Engagement: Design-based research in a flipped Classroom. *Frontiers in Psychology, 13,* 810275. https://doi.org/10.3389/fpsyg.2022.810275

Hava, K. (2021). The effects of the flipped classroom on deep learning strategies and engagement at the undergraduate level. *Participatory Educational Research, 8*(1), 379-394. https://doi.org/10.17275/per.21.22.8.1

Head, M., Aloupis, C., Hanson, J., & Jayne, A. (2022, August). Promoting student learning and teaching in the virtual environment and in-person. In *2022 ASEE Annual Conference & Exposition*.

Hoang Oanh, T. T. (2020). The impact of a flipped classroom on student learning achievements in EFL classrooms. *Education, Language and Sociology Research, 1*(2), 13-22. https://doi.org/10.22158/elsr.v1n2p13

Jumaat, N. F., & Lah, N. H. C. (2022). A framework for scaffolding learners' self-regulation in a flipped classroom learning environment. *KnE Social Sciences,* 759-766. https://doi.org/10.18502/kss.v7i19.12495

Kwong, R., Kwok, M. L. J., & Wong, H. (2024). Autonomous and controlled motivation in a flipped-classroom approach. *Asia Pacific Education Review*, 1-13. https://doi.org/10.1007/s12564-024-09983-0

Lestari, I. W. (2021). Flipped classroom in Indonesian higher education: A mixed-method study on students' attitudes and experiences. *Studies in English Language and Education, 8*(1), 243-257. https://doi.org/10.24815/siele.v8i1.17636

Li, Z., & Li, J. (2022). Using the flipped classroom to promote learner engagement for the sustainable development of language skills: A mixed-methods study. *Sustainability, 14*(10), 5983.https://doi.org/10.3390/su14105983

Lo, C., & Hew, K. (2021). Student engagement in mathematics flipped classrooms: Implications of journal publications from 2011 to 2020. *Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.672610

Moore, M. G. (1993). Theory of transactional distance. In D. Keegan (Ed.), *Theoretical principles of distance education* (pp. 22–38). Routledge.

Namaziandost, E., & Çakmak, F. (2020). An account of EFL learners' self-efficacy and gender in the Flipped Classroom Model. *Education and Information Technologies, 25*(5), 4041-4055. https://doi.org/10.1007/s10639-020-10167-7

Namdaran, H., & Akbari, O. (2021). The effect of flipped learning model on EFL learners' academic achievement, self-esteem and self-confidence. *IJET (Indonesian Journal of English Teaching), 10*(2), 158-168. https://doi.org/10.15642/ijet2.2021.10.2.158-168

Oudbier, J., Spaai, G., Timmermans, K., & Boerboom, T. (2022). Enhancing the effectiveness of flipped classroom in health science education: A state-of-the-art review. *BMC Medical Education, 22*(1), 34.https://doi.org/10.1186/s12909-021-03052-5

Pinto, M., & Leite, C. (2020). Digital technologies in support of students learning in Higher Education: literature review. *Digital education review, 37*, 343-360.

Qureshi, M. A., Khaskheli, A., Qureshi, J. A., Raza, S. A., & Yousufi, S. Q. (2023). Factors affecting students' learning performance through collaborative learning and engagement. *Interactive Learning Environments, 31*(4), 2371-2391. https://doi.org/10.1080/10494820.2021.1884886

Resch, K., & Schrittesser, I. (2023). Using the service-learning approach to bridge the gap between theory and practice in teacher education. *International Journal of Inclusive Education, 27*(10), 1118-1132. https://doi.org/10.1080/13603116.2021.1882053

Röhl, A., Reddy, S., & Shannon, G. J. (2013). The flipped classroom: An opportunity to engage millennial students through active learning strategies. *Journal of Family and Consumer Sciences, 105*, 44–49. https://doi.org/10.14307/JFCS105.2.12

Sevimli-Celik, S. (2021). Moving between theory and practice: Preparing early childhood pre-service teachers for teaching physical education. *Journal of Early Childhood Teacher Education, 42*(3), 281-298. https://doi.org/10.1080/10901027.2020.1735588

Shi, Y., Ma, Y., MacLeod, J., & Yang, H. (2020). College students' cognitive learning outcomes in flipped classroom instruction: a meta-analysis of the empirical literature. *Journal of Computers in Education, 7*, 79–103. https://doi.org/10.1007/S40692-019-00142-8

Shin, Y., Kim, D., & Song, D. (2020). Types and timing of scaffolding to promote meaningful peer interaction and increase learning performance in computer-supported collaborative learning environments. *Journal of Educational Computing Research, 58*(3), 640-661. https://doi.org/10.1177/0735633119877134

Sun, Z., & Xie, K. (2020). How do students prepare in the pre-class setting of a flipped undergraduate math course? A latent profile analysis of learning behavior and the impact of achievement goals. *The Internet and Higher Education, 46*, 100731. https://doi.org/10.1016/j.iheduc.2020.100731

Teng, F. (2018). Flip your classroom to improve efl students' speaking skills. In: *Mehring J., Leis A. (eds) Innovations in Flipping the Language Classroom*. Springer, Singapore. Retrieved from https://link.springer.com/chapter/10.1007/978-981-10-6968-0_9

Tohei A.A. (2018). Flipping EFL classes for future teachers. In: *Mehring J., Leis A. (eds) Innovations in Flipping the Language Classroom.* Springer, Singapore. Retrieved from https://link.springer.com/chapter/10.1007/978-981-10-6968-0_8

Umar, M., & Ko, I. (2022). E-learning: Direct effect of student learning effectiveness and engagement through project-based learning, team cohesion, and flipped learning during the COVID-19 pandemic. *Sustainability, 14*(3), 1724. https://doi.org/10.3390/su14031724

White, H. A., Highfill, L., Johnston, L. C., & Kalimi, A. (2024). Cognitive calisthenics: Pre-lecture cognitive exercise boosts learning. *Teaching of Psychology, 51*(2), 180-187. https://doi.org/10.1177/00986283221084907

Witt, C. M., Trivedi, C., & Aminalroayae, F. (2021). Using flipped instruction in a technology-enhanced learning environment: The case for scaffolding. *Issues in Information Systems, 22*(2). https://doi.org/10.48009/2_iis_2021_52-62

Xin, X., & Zhang, M. (2024). Effects of flipped English learning designs on learning outcomes and cognitive load: Workload of out-of-class activities versus during-class activities. *Journal of Computer Assisted Learning, 40*(4), 1745-1765. https://doi.org/10.1111/jcal.12978

Yang, J. S. M. (2020). Promoting student engagement and preparation in flipped learning's pre-class activities: A systematic review. In S. Gregory, S. Warburton, & M. Parkes (Eds.), *ASCILITE's First Virtual Conference. Proceedings ASCILITE 2020 in Armidale* (pp. 125–133). https://doi.org/10.14742/ascilite2020.0106.

Zainuddin, Z., & Halili, S. H. (2016). Flipped classroom research and trends from different fields of study. *International Review of Research in Open and Distance Learning, 17*(3), 313–340. https://doi.org/10.19173/irrodl.v17i3.2274

Zhu, M., Bonk, C. J., & Berri, S. (2022). Fostering self-directed learning in MOOCs: Motivation, learning strategies, and instruction. *Online Learning, 26*(1), 153-173.

Declaration

Acknowledgments: This publication was supported by Universitas Muhammadiyah Yogyakarta, Indonesia.

Ethics statements: Ethical research conduct has been met through voluntary basis of participation and anonymity of the participants.

Conflict of interest: The author declares that there are no competing interests upon the publication of this research.

Informed consent: The subject of the study has signed an informed consent form prior to the study which indicates their willingness to participate in the study.

Data availability: Data are available upon requests.