FLIPPED-BASED LEARNING FOR EFL STUDENTS: ENHANCING CLASSROOM INTERACTION AND AUTONOMY IN THE PANCASILA STUDENT PROFILE STRENGTHENING PROJECT (P5)

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Abstract: This study investigates the impact of flipped learning on classroom interaction and student autonomy among secondary school EFL students involved in the Pancasila Student Profile Strengthening (P5) project. A mixed-methods design was used, integrating both quantitative and qualitative data to gain a deeper understanding of the research questions. Data were collected through a survey and interviews. The survey, completed by 536 students, assessed students' perceptions of flipped learning using the adapted Technology Acceptance Model (TAM). Data analysis was conducted using Rasch analysis, which helped identify outliers and assess the reliability of the survey instrument. Qualitative data, gathered from interviews with 10 students, were analyzed thematically to explore how flipped learning influenced students' classroom interaction and autonomy. The findings indicate that flipped learning improves both classroom interaction and student autonomy, although challenges related to technology access and adapting to independent learning were noted. These insights offer valuable guidance for educators and curriculum developers aiming to implement flipped learning effectively in secondary education.
Keywords: *Flipped learning; classroom interaction; student autonomy; Pancasila Student Profile Strengthening Project (P5); secondary EFL students.*

INTRODUCTION

In recent years, there has been a notable transformation in teaching strategies, with a shift away from traditional, teacher-centered approaches toward more student-focused methods. This evolution in pedagogy reflects the growing recognition of the need for active student engagement in the learning process. One approach that has garnered substantial attention is flipped learning, a method in which students engage with instructional materials—such as pre-recorded lectures, readings, or other content—outside of the classroom (Chen & Faichney, 2019; Wittmann & Wulf, 2023). The flipped model restructures the use of classroom time, dedicating it to applying the learned concepts through interactive activities, discussions, and problem-solving exercises (Goedhart et al., 2019). This shift creates opportunities for students to participate more actively, allowing them to take on a more prominent role in their learning (Aji & Khan, 2019). As a result, classroom time becomes more dynamic and engaging, with students having the chance to deepen their understanding through real-time application (Du & Su, 2021). However, despite the advantages of flipped learning, several challenges remain, particularly in fostering effective classroom interaction and enhancing student autonomy. These challenges underline the complexities of integrating this innovative

approach into diverse educational contexts.

Classroom interaction is a critical element in language learning, particularly in English as a Foreign Language (EFL) settings, where opportunities for students to practice the language in authentic contexts can be limited (Beshir & Yigzaw, 2022; Havik & Westergård, 2020; Vattøy & Gamlem, 2020). In flipped classrooms, students have more opportunities to engage in meaningful in-class activities, such as discussions and collaborative tasks, which are essential for developing language proficiency (Challob, 2021; Izadpanah, 2022). However, a major challenge in promoting consistent classroom interaction is the variability in students' preparation. Burkholder & Strain (2022) investigated the impact of student preparation on cooperative grouping in active learning environments. Their findings suggest that students who are better prepared contribute more effectively in heterogeneous groups, enhancing the overall performance of the group. This underscores the importance of ensuring that all students come prepared to class, as those who are less prepared can hinder group dynamics and learning outcomes. This uneven preparation can diminish the overall effectiveness of interactive learning, as those who are less prepared may struggle to contribute meaningfully, thereby disrupting the flow of classroom activities. In addition, flipped learning places significant responsibility on students to manage their learning outside the classroom (Afzali & Izadpanah, 2021). For students who are accustomed to more structured, teacher-directed instruction, this shift can be particularly challenging. The demand for greater independence in managing learning tasks requires students to adapt to a more self-directed approach, which can be difficult for some learners, especially those who have not developed the necessary skills for independent study (Wang et al., 2023).

The success of flipped learning heavily relies on students' ability to manage their time effectively and actively participate in their learning process (Haghighi et al., 2019; Lin et al., 2022). In a flipped classroom, students are expected to come to class having already engaged with the instructional material, prepared to apply what they have learned (Fan, 2022). However, many students face difficulties in managing their workload and staying focused, particularly in an environment where they must take more control over their learning (Mai & Liu, 2021). This struggle is often exacerbated by a reliance on traditional teaching methods, where students expect the teacher to guide them through each step of the learning process (Chi et al., 2022). Sufficient guidance, students may find it difficult to develop the autonomy required to thrive in a flipped learning environment. Studies, such as those by (Giannakos, 2013), emphasize that the success of flipped learning depends significantly on how well students are prepared and how actively they engage with the material during class. These findings suggest that student readiness is a crucial factor in ensuring the effectiveness of the flipped classroom model.

In the context of Indonesian education, the integration of flipped learning within the Pancasila Student Profile Strengthening (P5) Project offers a distinctive opportunity to enhance students' learning experiences. The P5 project is designed to cultivate important values in students, such as critical thinking, collaboration, and social responsibility (Asmahasanah, 2023; Suhardi, 2022). These values align well with the principles of flipped learning, which encourages students to engage with content at their own pace before class, allowing classroom time to be used for applying these concepts in collaborative and real-world scenarios (Ji, 2023). By merging flipped learning with the goals of the P5 project, students are not only exposed to essential academic content but also to critical life skills that can be practiced through discussions, role-playing, and team-based activities. This integrated approach has the potential to transform the classroom into a more student-centered environment, where learners are actively involved in their own educational process (Sofya et al., 2020). This method fosters a sense of ownership over their learning, promoting deeper engagement with both academic content and Pancasila values (Holilah et al., 2024).

Despite the promise of this integrated approach, there is limited research on the dual impact of flipped learning on classroom interaction and student autonomy in secondary school EFL settings in Indonesia. Much of the current literature tends to focus on these two aspects—classroom interaction and autonomy—independently, without exploring the potential connections between them (Jiang et al., 2022; Wang et al., 2023). Moreover, while there has been substantial research on the impact of flipped learning on academic performance (Afzali & Izadpanah, 2021; Fathi & Rahimi, 2022; Hsiao et al., 2023), relatively little attention has been paid to how this approach influences students' ability

to take control of their own learning, particularly in the context of the P5 framework (Hardiyanto et al., 2023). This gap in the literature highlights the need for further investigation into how flipped learning can simultaneously foster both effective classroom interaction and the development of student autonomy. Such research is crucial for understanding how these elements can be integrated to enhance overall learning outcomes in EFL settings.

This study seeks to fill these gaps by examining the effects of flipped learning on classroom interaction and student autonomy within the framework of the Pancasila Student Profile Strengthening Project. The study is guided by two key research questions: (1) How does flipped learning impact classroom interaction among secondary school EFL students during the P5 phase? and (2) To what extent does flipped learning promote autonomous learning among EFL students during the P5 phase? By addressing these questions, the research aims to provide valuable insights into the effective implementation of flipped learning in secondary school EFL settings, specifically within the Indonesian context. The findings of this study have the potential to offer important guidance for educators and curriculum developers who are looking to integrate flipped learning into the Merdeka Curriculum framework, ultimately contributing to the development of more interactive, autonomous, and student-centered learning environments.

METHOD
This study used a mixed-method design, integrating quantitative and qualitative approaches to provide a thorough analysis to answer the research questions. The mixed-method approach improves the validity of the findings by enabling triangulation across multiple data sources (Ertesvåg et al., 2021; Poth, 2018). Quantitative data were gathered through a survey to gauge students' general responses and acceptance of flipped learning. This was followed by qualitative data gathered through interviews, aimed at exploring how students' acceptance of flipped learning influenced classroom interactions and learning autonomy.

The participants included 626 students from grades 7, 8, and 9 at a secondary school, all of whom were involved in the Pancasila Student Profile Strengthening (P5) Project as can be seen in Table 1.

Table 1. *The current study's participants before the screening*

Demography		N=626
Gender		
	Male (M)	262
	Female (F)	364
Age		
	Under 15	527
	15-18	98
Grade Level		
	Seventh grade	25
	Eighth grade	309
	Ninth grade	291

Before the analysis, a data screening was conducted to identify missing values and responses from participants who did not take the survey seriously. It is recommended to treat these responses as outliers and excluding them from the analysis (John Michael Linacre, 2010). In the Rasch analysis, data with a mean-square (MNSQ) value greater than 2.0 logits were identified as coming from problematic participants and were classified as outliers. Out of 626 responses, 90 had an MNSQ higher than 2.0 and were excluded from further analysis. The remaining 536 responses were used to address the research questions, as detailed in Table 2.

Table 2. *The current study's participants after the screening*

Demography		N=536
Gender	Male (M)	212
	Female (F)	324
Age	Under 15	458
	15-18	78
Grade Level	Seventh grades	22
	Eight grades	267
	Ninth grades	247

A five-point Likert scale questionnaire adapted from the Technology Acceptance Model (TAM) (Davis, 1989). The questionnaire consisted of 22 items aimed at assessing three constructs of flipped learning. The survey was distributed electronically using Google Forms, allowing for efficient data collection and organization.

The scale was developed based on three main constructs: perceived usefulness, perceived ease of use, and attitude. The perceived usefulness construct, consisting of 12 items (Q1 to Q12), reflects students' views on whether flipped learning improves their performance. The perceived ease of use construct includes 6 items (Q13 to Q18) and assesses how much effort

students think is needed to use flipped learning for learning English. The third construct, attitude, consists of 4 items (Q19 to Q22) and measures students' opinions on whether flipped learning is beneficial to them.

Table 3. *The scales used for collecting the quantitative data of the current study*

Scale	N Item (22 Item)
Perceived Usefulness	Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q9, Q10, Q11, Q12
Perceived Ease of Use (PEU)	Q13, Q14, Q15, Q16, Q17, Q18
Attitude(ATU)	Q19, Q20, Q21, Q22

Quantitative data were analysed using the Rasch Rating Scale Model through Winsteps software (Linacre, 2021). Prior to analysis, survey responses were organized in Excel, and raw scores were converted into logit units via Winsteps. The Rasch analysis was employed to assess the reliability and validity of the survey instrument and to examine the patterns in participants' responses. WINSTEP software was used to analyse Person measures and the Rasch Wright map, exploring students' perceptions of flipped learning in improving their performance as suggested by (Zulaiha & Mulyono, 2020).

For the qualitative component, semi-structured interviews were conducted with 10 students who consented to participate after completing the survey. The interviews were conducted in Indonesian to allow participants to express their thoughts more freely (Zulaiha & Mulyono, 2020). This qualitative data provided deeper insights into the students' experiences with flipped learning. Informed consent was obtained from all participants, and confidentiality was maintained by anonymizing the data.

Qualitative data from the interviews were analyzed using thematic analysis. This process involved coding the interview transcripts and identifying recurring themes that reflected the

students' perspectives on interaction and autonomy within flipped learning.

Finally, the findings from the quantitative and qualitative analyses were integrated during the interpretation phase. This comparison allowed for a deeper understanding of how flipped learning influences classroom interaction and student autonomy, thus providing a more holistic view of the research questions.

RESULTS AND DISCUSSION
Findings from quantitative data
Descriptive statistics
The descriptive and the reliability analysis were performed by evaluating the Rasch-statistical analysis of person and item measures. Table 4 below describes the descriptive statistics focusing on the person and item separation, and the reliability of the survey questionnaire.

As shown in Table 4, the mean (M) and the standard deviation (SD) of the person measure were calculated as 0.68 and 0.15, respectively. Furthermore, the questionnaire exhibited a high level of internal consistency for the global scale and the three subscales ($\alpha > 0.90$). Subsequently, separation analyses were carried out on the person and item measures to assess the questionnaire's ability to distinguish the ability of the participants when responding to items, as well as the item difficulty levels (Boone et al., 2014; Mulyono et al., 2021). Person separation, which reflected the reproducibility of person categorisation in a new sample when the same items were administered, was found to be 3.62. This logit value was above the threshold of 2, thereby displaying a high level of reliability ($r > 0.86$) (Chang et al., 2014). Moreover, the item separation, which represented the item's ability to yield categorical differentiation when applied in a new sample, was deemed sufficient. The separation values remained higher than the threshold of 3, and had a very high level of item reliability ($r > 0.95$).

Table 4. *Descriptive statistics and the instrument reliability*

Scale	Global Scale	Perceived Usefulness	Perceived Ease of Use	Attitude
Person M (SD)	0.68	0.76	1.60	1.08
Item M (SD)	0.15	1.37	0.99	0.21
Cronbach Alpha	2.60	0.91	0.80	0.80
Person				
Reliability	0.93	0.88	0.77	0.77
Separation	3.62	2.75	1.84	1.84
Item				
Reliability	0.94	0.91	0.90	0.98
Separation	3.69	3.12	3.00	6.35

Maps of participants' responses

This study explored the perceived usefulness' level of reflects students' perception on whether the use of flipped learning improve their performance. To address the research questions, the person measure was stratified into three strata, reflecting a low level (where the logit values were below the mean), a medium level (the logit values between the mean and the mean plus one standard deviation) and a high level (the logit values above the mean plus one standard deviation). Moreover, the Rasch Wright map was employed to reflect the respondents' response item distribution for each domain. Table 5 below summarises the students' levels of each domain and Figure 1 presents the Rasch Wright map analysis.

Table 5. *Student's level of perceived usefulness, perceived of ease of use and attitude*

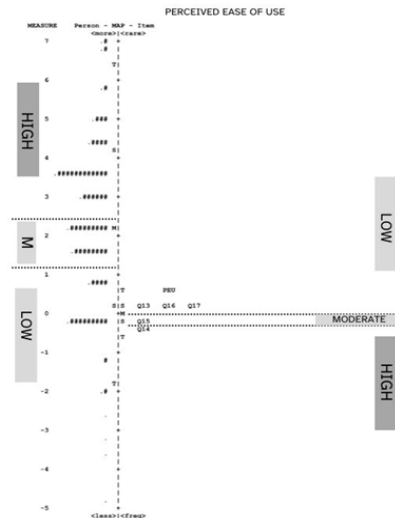| N=536	PU						PEU						AT					
	H		M		L		H		M		L		H		M		L	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
N=536	441	82%	66	12%	29	5%												
AGE																		
<15	203	37%	87	16%	57	11%	162	30%	122	23%	59	11%	168	31%	101	19%	71	13%
15-18	43	8%	18	3%	21	4%	34	6%	19	4%	19	4%	32	6%	15	3%	25	5%
GENDER																		
male (N=212)	122	23%	50	9%	64	12%	116	21%	74	14%	56	11%	83	15%	39	7%	44	8%
female (N=324)	145	27%	64	12%	34	6%	34	6%	19	4%	19	6%	99	18%	62	12%	35	7%
Grade Level																		
Seventh grades	4	0,7%	3	0,5%	1	0,1%	5	0,9%	3	0,5%	1	0,1%	6	1%	6	1%	5	1%
Eight grades	124	23%	44	8%	44	8%	96	18%	68	13%	68	13%	92	17%	70	13%	56	10%
Ninth grades	90	17%	46	9%	46	8%	73	14%	58	11%	45	8%	58	11%	47	9%	32	6%

Figure 1. *Perceived ease of use*

Table 5 shows that 15-year-old students have the highest perception of the usefulness of flipped learning, with 37% (N=203)rating it as highly useful and 16% (N=87)at a moderate level. They also reported the highest perceived ease of use, with 30% (N=162)rating it high and 23% (N=122)moderate. This age group also had a strong positive attitude toward flipped learning, with 31% (N=168) showing a high level of positive attitude.

In terms of gender, both male and female students showed similar perceptions of flipped learning. Among males, 23% (N=122) perceived flipped learning as highly useful, 21% (N=116) found it easy to use, and 19% (N=83) had a positive attitude. Females reported similar results, with 27% (N=145) perceiving it as highly useful, 6% (N=34) finding it easy to use, and 18% (N=99) holding a positive attitude.
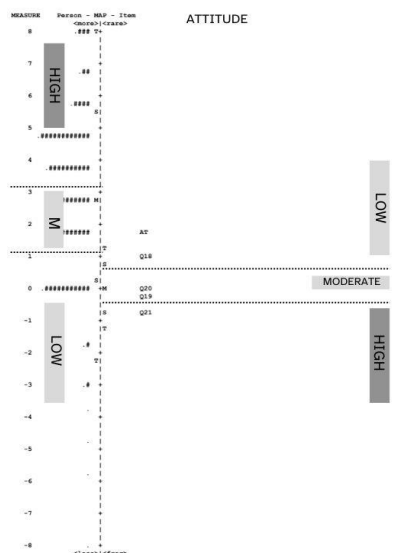
Figure 2. *Attitude*

Regarding grade levels, students in eighth grade showed higher perceived usefulness at 23% (N=124)and ease of use at 18% (N=96) with 11% (N=58) reporting a positive attitude. Seventh graders, despite being a smaller group, did not show significant differences compared to eighth and ninth graders, indicating consistent perceptions across grades.

Overall, the data suggests that students, regardless of age, gender, or grade, generally perceive flipped learning as useful, easy to use, and have a positive attitude toward it. There is no significant gap indicating issues with class interaction or independent learning in relation to flipped learning. The three key constructs—perceived usefulness, ease of use, and attitude—are aligned, showing a positive overall perception of flipped learning across different student groups.
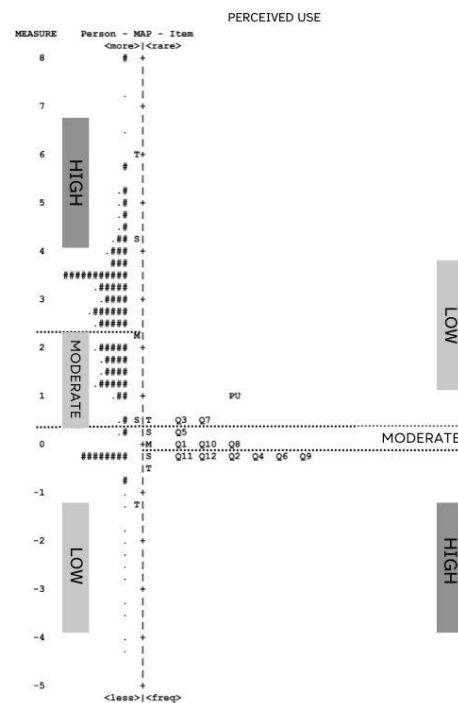

Figure 3. *Rasch Wright map*
Findings from qualitative data
The interview data reveal several key themes regarding the impact of flipped learning on classroom interaction and autonomous learning among secondary school EFL students during the P5 phase.

Improvement in classroom interaction
Many students indicated that flipped learning improved classroom interaction by allowing more time for discussions and collaborative activities during class. By studying the material in advance,

students were better prepared to engage in meaningful discussions and interactions during class activities. One student explained, "Flipped learning helps me understand the material before class, so I can focus on discussions during class." Another participant stated, "Classroom discussions are more active, and I feel more confident participating." Several students also noted that flipped learning enhanced peer collaboration, aligning with the P5 project's goal to foster critical thinking and teamwork.

Enhanced autonomy and responsibility
Flipped learning was found to promote autonomy as students were required to take responsibility for their own learning. The opportunity to study at their own pace and revisit material as needed was widely appreciated. One student reported, "I learned vocabulary and grammar on my own before class, which made me feel more confident." Another shared, "It made me more responsible for my learning since I had to prepare by myself before class." However, some students acknowledged that adjusting to independent learning was challenging, particularly for those unfamiliar with self-guided study without teacher support. One student stated, "It was difficult at first because I'm not used to studying without help from the teacher."

Increased understanding and confidence
Many students reported that flipped learning enhanced their understanding of English concepts, particularly grammar and speaking. Reviewing materials independently before class allowed them to come to class with a solid foundation, leading to more productive class time. One participant noted, "Watching videos before class helped me understand grammar better, and I could speak more confidently during class." Another added, "It made learning English easier because I could understand the material before class, and class time was used for practicing."

Challenges with technology and autonomous learning
Although students generally appreciated the flexibility of flipped learning, technological issues, such as unstable internet connections, were frequently mentioned as obstacles. One student shared, "I had problems accessing the material because of the internet connection." Another explained, "Sometimes it's hard to understand the material when I don't have strong internet access." Some students also highlighted the need for better guidance in using online resources effectively. One student expressed, "It was hard to learn by myself because I didn't know how to use the resources well."

Positive attitudes toward flipped learning
Most students expressed positive attitudes toward flipped learning, citing its flexibility and emphasis on understanding over rote memorization. The ability to review material multiple times, which is not typically possible in traditional classrooms, was particularly valued. One student commented, "I like flipped learning because it gives me more time to understand the material, and I can re-watch the videos if I don't understand something." Another shared, "It's more fun than traditional learning because it's more interactive, and I can learn at my own pace."

Alignment with P5 project goals
Students generally agreed that flipped learning aligns well with the objectives of the P5 project by promoting critical thinking, collaboration, and self-directed learning. The flexibility and interactive nature of flipped learning supported the integration of Pancasila values into everyday learning. One student explained, "Flipped learning helps me think critically and work together with my classmates, which matches the goals of the P5 project." Another shared, "It improves my ability to work independently and apply what I learn to real-life situations."

The interview data suggest that flipped learning positively impacts classroom interaction among secondary school EFL students during the P5 phase. By preparing in advance, students are more engaged and confident during class discussions, fostering a more interactive learning environment. In addition, flipped learning encourages autonomous learning by promoting self-responsibility for out-of-class preparation. However, challenges related to technological access and adjusting to autonomous learning persist. Overall, the findings indicate that flipped learning supports the goals of the P5 project by fostering critical thinking, collaboration, and student autonomy.

Quantitative and qualitative findings provide valuable insights into how flipped learning impacts classroom interaction and promotes autonomous learning among secondary school EFL students during the P5 phase. Both set of data point to several important outcomes regarding the implementation of flipped learning.

The results show that flipped learning has a positive influence on classroom interaction. Quantitative data reveal that students generally perceive flipped learning as useful and easy to use, with a strong positive attitude toward it. The highest levels of perceived usefulness and ease of use were reported among 15-year-old students, suggesting that this age group is particularly receptive to the flipped learning approach. This high level of perceived usefulness is consistent across genders and grade levels, indicating a broad acceptance of flipped learning's role in improving classroom interaction.

The qualitative data further support this finding. Many students reported that by engaging with learning materials before class, they felt more prepared for in-class discussions and collaborative activities (Kim, 2018). This preparedness enabled more meaningful interactions during classroom sessions, aligning with the P5 project's goals of fostering critical thinking and teamwork. This emphasizes the role of flipped learning in promoting active student participation, which is a key component of effective classroom interaction (Du & Su, 2021; Zainuddin & Halili, 2016).

Flipped learning was also found to play a significant role in enhancing student autonomy. Both the quantitative and qualitative findings highlight that students appreciate the opportunity to study at their own pace, allowing them to take greater responsibility for their learning (Hinojo Lucena et al., 2019; Mastmeyer, 2020; Torres-Martín et al., 2022). This study supports evidence from previous research (e.g., (Carrillo-Yalán, Vargas-Trujillo, García-Cuéllar, Cortez-Llanos, & Villarreal-Montenegro, 2024; Kausar, Maryono, & Aristyagama, 2021) that flipped learning improves students' self-regulation. The ability to review materials multiple times before attending class was particularly valued by students, as it enabled them to build a solid foundation for in-class activities. This finding was also reported by Jiang et al. (2022), indicating that the preparation time offered in flipped learning influences students' readiness to learn in class.

However, the qualitative data also revealed that some students faced challenges in adjusting to this independent learning model. Several students, particularly those accustomed to more structured teacher-led environments, expressed difficulty in managing self-guided study. These challenges suggest that while flipped learning fosters autonomy (Romanyshyn & Freiuk, 2024), additional support may be needed to help students

transition to a more self-directed approach (Carrillo-Yalán et al., 2024; Kausar et al., 2021).

Although the study yielded positive results, it also highlighted several challenges associated with implementing flipped learning. Technological issues, such as unstable internet connections, were commonly reported by students as obstacles to fully engaging with pre-class materials. This result is consistent with the claim that technological issues may hinder the effectiveness of flipped learning (Ferrer & Martínez, 2021; Hidayati, 2020; Muniandy & Ping, 2023; Subiyantoro, 2023).

Some students highlighted the need for better guidance in using online resources effectively (Birgili et al., 2021). This indicates that while flipped learning offers flexibility, ensuring equitable access to technology and providing proper instruction on using digital resources are critical for its success (Fathi & Rahimi, 2022; Fatimah Abd Rahman et al., 2019; Turan & Akdag-Cimen, 2020).

Our findings highlight that flipped learning was found to align well with the objectives of the P5 project, which aims to promote critical thinking, collaboration, and self-directed learning among students. Both the quantitative and qualitative data suggest that flipped learning supports these goals by encouraging students to engage more actively with the material and their peers, and by fostering greater responsibility for their own learning. This finding, thus implies that flipped learning not only enhances academic outcomes but also contributes to the development of essential life skills, which are core to the P5 framework. These results reflect those of (Lin et al., 2022; Zulaikah, Nurwahidin, & Yulianti, 2023) who also found that flipped learning also improves students' professional and life skills.

While this study offers significant insights into the benefits of flipped learning, there are areas that warrant further exploration (Pratiwi & Waluyo, 2023). Future research could focus on developing strategies to support students who struggle with the transition to autonomous learning. Investigating how teachers can better facilitate this shift through scaffolding or providing additional resources would be beneficial (Xu et al., 2022). Moreover, addressing the technological challenges reported by students, such as access to stable internet and understanding how to use digital tools effectively, is crucial for optimizing the flipped learning experience (Chiu et al., 2021). Thus, it would also be valuable to conduct longitudinal studies that

track the long-term effects of flipped learning on students' academic performance and personal development (Li et al., 2020). This could provide deeper insights into how consistent use of flipped learning influences both classroom interaction and autonomous learning over time (Al Mulhim, 2021).

CONCLUSION

The findings show that flipped learning enhances classroom interaction and autonomous learning among secondary school EFL students in the P5 phase. By accessing materials before class, students are better prepared for discussions and collaboration, creating a more interactive environment. Flipped learning also encourages students to take responsibility for their own learning, though challenges like technology access and adapting to independent learning remain. Overall, flipped learning supports the P5 project's goals by fostering critical thinking, collaboration, and self-directed learning, offering valuable insights for educators and curriculum designers

ACKNOWLEDGEMENT

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