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Flipped Classroom: A Pathway to Increase Self-Regulated Learning

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ABSTRACT

Self-directed learning has become increasingly important in education today, particularly with the support of digitalization. It helps students become lifelong learners, preparing them to face future opportunities and challenges. The flipped classroom model is one pedagogical approach that promotes student autonomy in learning. In this model, traditional in-class instruction is shifted outside the classroom, allowing students to manage their time effectively for reading and understanding the learning material before attending class. This study aims to investigate whether there is a significant difference in students' self-directed learning outcomes between the flipped classroom model and conventional teaching methods. The research employed a pretestposttest design with 68 students from grade XI of the Social Studies at SMA XYZ Surakarta. The research instrument used was a questionnaire consisting of 20 statements. To test the hypothesis, a t-test was conducted. The results showed a t-value of 2.062 (p = 0.043 < 0.05), indicating a significant difference in self-directed learning outcomes between students who used the flipped classroom model and those who experienced conventional learning. These findings suggest that teachers should consider using the flipped classroom model as an alternative approach to enhance students' self-directed learning

Kata Kunci: Learning, Self-Regulated Learning, Flipped Classroom

INTRODUCTION

Advancements in technology have enabled students to choose learning methods that align with their individual pace. Technology has made the teaching and learning process easier for both educators and students. It also allows for improvements in the quality of education (Namaziandost & Çakmak, 2020), making it essential for teachers to integrate technology into their instructional practices. As facilitators, teachers must create engaging and enjoyable learning experiences for students. They should employ innovative teaching methods and attractive media to enhance student involvement in the learning process. Student engagement can be seen as an indicator of their self-directed learning. The more actively students engage in learning, the higher their level of self-directed learning (Nerantzi, 2020).

Self-directed learning has become a crucial topic in education. In the context of current technological advancements, it is increasingly essential for students to be able to manage their own learning. Self-directed learning is necessary within the educational system to achieve learning objectives that emphasize student engagement in developing their potential. This is because students are able to independently control the various learning strategies required to achieve their desired academic outcomes (Nasution, et al., 2018). Optimal academic achievement in schools can be attained through students' self-directed learning. However, it is widely observed that students often spend more time on entertainment rather than academic activities (Aisah, Kurniasih, & Fitriani, 2018). Self-directed learning refers to students' behavior in learning, driven by their own initiative, characterized by the ability to plan, take responsibility, manage themselves, and demonstrate initiative (Ilmaknun & Ulfah, 2023).

The level of students' self-directed learning can be determined by the extent to which students take initiative and responsibility in actively participating in the learning process (Mirlanda, Nindiasari & Syamsuri, 2019). The more actively students participate in learning activities, the greater their ability to learn independently. In self-directed learning, students take full responsibility for their own learning process and strive for success to achieve excellent and commendable academic result (Thoken, Asrori & Purwanti, 2017). Self-directed learning is essential for students as it encourages them to take responsibility for their own education (Chikeme, et al., 2024).

An observation was conducted using a questionnaire distributed through Google Forms to students in grades XI IPS 1 and XI IPS 2 at SMA XYZ Surakarta. The observed indicators of self-directed learning included self-confidence, initiative, responsibility, and motivation. The results of the student observation showed the following: self-confidence at 59.88% (moderate self-direction), initiative at 59.41% (moderate self-direction), responsibility at 59.18% (moderate

self-direction), and motivation at 61.29% (moderate self-direction). Overall, students' self-directed learning was found to be 59.9%, which falls within the moderate self-direction category.

In general, students' self-directed learning is influenced by two factors: internal and external factors. Internal factors are those that are genetic in nature, meaning there are genetic traits (genotypic characteristics) that have the potential to be expressed through transcription and translation. External factors are those from the environment, including all external elements that interact with the student. These elements include family, peers, teachers, and lecturers (Nursaptini, et al., 2020). External factors include the school environment, family environment, learning resources, and teachers' professional competence. Therefore, teachers' skills and the availability of learning facilities, such as information technology, play a crucial role in supporting students' self-directed learning (Aisah, Kurniasih & Fitriani, 2018).

Al-Naabi, (2020) argues that it is increasingly difficult to ignore the role of technology in education and that a new learning culture must be created with the aid of information technology. Modern technology has provided students with opportunities to learn beyond the traditional temporal and spatial boundaries of the classroom; learning is no longer confined to what happens within the classroom (Abuhmaid, 2020). The variety of teaching models available requires teachers to be selective in choosing the most appropriate model based on the characteristics of the learning material. Among the various teaching models, one that incorporates technology to promote student self-directed learning is the flipped classroom model.

According to Fan (2018) and Musdi, Agustyani & Tasman (2019), the flipped classroom model reverses the traditional classroom teaching approach. Teachers provide learning resources, particularly in the form of instructional videos. Students watch these videos before class, and in-class time is primarily dedicated to collaborative learning activities, interactions, and other educational tasks between the teacher and students. The use of instructional video content provided by the teacher before class gives students the opportunity to learn in advance and form an initial understanding of the material. This allows students to learn at their own pace, ultimately fostering their self-directed learning (Nwosisi, et al., 2016).

The implementation of the flipped classroom model offers various benefits in the learning process. For example, students have the opportunity to prepare themselves before the lesson begins (Ayçiçek & Yelken, 2018; Musdi, Agustyani & Tasman, 2019), enhance their motivation by creating a competitive learning environment (Su & Chen, 2018) and support independent learning, as this model integrates technology into the process (Dong, 2016; Shyr & Chen, 2018).

Research conducted by Astuti, et al., (2019) found that the flipped classroom model can improve students' self-directed learning in physics. Similarly, it has

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been shown to enhance self-directed learning in courses such as Learning Theory (Kustandi, e al., 2020), mathematics (Lai & Hwang, 2016) and English language learning (Wang, 2023). A study by Zheng, Ward & Stanulis (2020) explored self-directed learning skills that affect academic performance among first- and second-year students at a medical school in the U.S. Midwest. The flipped classroom model fosters students' readiness for independent learning (Chikeme, et al., 2024). Lai & Hwang (2016) also stated that the flipped classroom model allows teachers to focus on individual students' needs and facilitates more peer interaction in the classroom. This model prioritizes student autonomy and independent learning. With the flipped classroom, students are encouraged to take ownership of their learning process, make decisions about the pace of their learning, and apply self-regulation strategies to improve their understanding (Wang, 2023).

Although much research has been conducted on the flipped classroom model, further studies are needed to explore how this model can impact students' self-directed learning, particularly in economics education. This study compares the flipped classroom model with the traditional model in terms of its effect on students' self-directed learning.

The aim of this research is to describe the extent to which the flipped classroom model can promote students' independent learning. While much of the existing research has focused on the benefits, challenges, and effectiveness of the flipped classroom model, there is limited investigation into its influence on self-directed learning within this pedagogical approach.

Research Methodology

The research conducted in this study is a quasi-experimental study with a pre-post test design. There are two groups in the study: the experimental group, which receives the treatment, and the control group. Prior to the intervention, both groups underwent a pretest to ensure that they were comparable in terms of ability. Following this, the experimental group was given the flipped classroom model, while the control group received the conventional model.

The subjects of this study consisted of 68 students from SMA XYZ Surakarta. Data was collected using a 20-item Likert scale questionnaire with four response options (Always, Often, Rarely, Never) to avoid a tendency for respondents to select neutral responses. To ensure the quality of the research instrument, validity testing was first conducted using Pearson Product Moment correlation, and reliability was assessed using Cronbach's Alpha on the statements related to self-directed learning, which were derived from several indicators: independence from others, responsibility, self-confidence, initiative, discipline, and motivation.

In this study, the steps were carried out as follows: 1) students were provided with instructional videos to study at home, along with practice questions to ensure they reviewed the material before coming to class; 2) in the classroom, the

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educator reviewed the material covered in the video, and students had the opportunity to ask questions about concepts they had not fully understood; 3) after addressing the students' questions, the educator facilitated further learning activities to reinforce students' understanding; 4) once student engagement in the learning process was ensured, a quiz was administered at the end of the session to evaluate the students' learning.

The data analysis technique used to test the hypothesis was the t-test. Before conducting the t-test, prerequisite tests were performed, including tests for normality and homogeneity. The normality test used was the Kolmogorov-Smirnov test, and the homogeneity test was conducted using the F-test.

FINDINGS AND DISCUSSION

The research data are presented in Table 3.1. These results were obtained from the pretest and posttest administered to both the experimental and control groups. Table 3.1 shows that the average score of the experimental group was higher than that of the control group.

Group	Co	ntrol	Experiment				
Statistic	Pretest	Posttest	Pretest	Posttest			
Average	57.29	57.47	59.79		61.29		
Min	45	43	47		49		
Max	72	72	75		76		
Std.	7.30	7.98	6.69		7.30		
Deviation							

Table 3.1 Results of the Pretest and Posttest on Self-Directed Learning

Based on the Kolmogorov-Smirnov normality test using SPSS, the pretest data on self-directed learning were found to be normally distributed. Next, the homogeneity test revealed an F value of 0.389 (sig. 0.535), indicating that the data come from populations with equal variances. After conducting the prerequisite tests, a t-test was performed to determine whether the two groups had similar abilities. According to Table 3, the result showed a significance value of 0.146, meaning that both groups have similar abilities.

Table 3. 2 Tests of Normality

		Kolmogorov-Smirnov(a)				
	Kemandirian	Statistic	df	Sig.		
Nilai	Flipped Classroom	.135	34	.117		
	Konvensional	.145	34	.069		

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Independent	Samples	Test

		Levene's Equality of	Test for Variances			t-test fo	r Equality of M	eans		
							Mean	Std. Error	95% Cor Interva Differ	nfidence I of the rence
		F	Sig.	t	df	Sig. (2-tailed)	Difference	Difference	Lower	Upper
Nilai	Equal variances assumed	.389	.535	1.472	66	.146	2.50000	1.69791	88999	5.88999
	Equal variances not assumed			1.472	65.511	.146	2.50000	1.69791	89046	5.89046

To test the hypothesis, the data used were the posttest results on self-directed learning after the experimental group was treated with the flipped classroom model and the control group with the conventional model. The test was conducted using an independent t-test, comparing the mean differences between the two groups. Prerequisite tests, including normality and homogeneity tests, were conducted prior to the hypothesis testing. The results of the prerequisite tests indicated that the data were normally distributed and came from populations with equal variances (as shown in Tables 3.3 and 3.4).

Table 3	.4: Test	of Not	rmality
			/

		Kolmogorov-Smirnov ^a					
	kemandirian	Statistic df Sig.					
nilai	Flipped	,145	34	,069			
	Konvensioanl	,106	34	,200*			

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

a. Lilliefors Significance Correction

Table 3.5 Independent Samples Test Result

Independent Samples Test

		Levene's Equality of	Test for Variances			t-test fo	r Equality of Me	ans		
							Mean	Std. Error	95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Difference	Difference	Lower	Upper
nilai	Equal variances assumed	,616	,435	2,062	66	,043	3,82353	1,85469	,12053	7,52653
	Equal variances not assumed			2,062	65,476	,043	3,82353	1,85469	,11997	7,52709

The results of the t-test presented in Table 3.5 show that the calculated t-value is 2.062 with a significance value of 0.043, indicating that there is a significant difference in self-directed learning outcomes between the experimental and control groups. The mean score for the experimental group was 61.29, while the mean score for the control group was 57.47. This suggests that students in the flipped classroom group demonstrated higher levels of self-directed learning compared to those in the traditional model.

These findings are consistent with research conducted by Astuti, et al., (2019); Erita, Pramesty & Putra, (2022); Kustandi, et al., (2020); Subagyo & Widodo (2024); Wang (2023); Zheng, et al., (2020), all of which indicate that the flipped classroom model can enhance self-directed learning. This model encourages students to

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become more independent learners and to take the initiative in the learning process. Students who learn through the Flipped Classroom model demonstrate better time management skills, optimize learning resources, and organize tasks more effectively compared to those using conventional models (Subagyo & Widodo, 2024). However, this study offers novelty by revealing that the flipped classroom model specifically enhances students' self-regulated learning in economics subjects. In the context of economics education, self-regulated learning is essential as students need to gather information from various sources and connect theoretical concepts with practical economic applications.

Self-directed learning has become a critical topic in education. Amid the rapid development of technology, it is essential for students to be able to manage their own learning. Self-directed learning refers to an individual's internal growth process and learning, influenced by both internal factors and external influences. Teachers, as instructors, play an important role in applying techniques that engage students and harness their abilities (Dahal & Bhat, 2023).

According to Yasdar & Muliyadi (2018), self-directed learning is an activity driven by one's own will, personal choices, and self-regulation to achieve optimal learning outcomes, along with the ability to be accountable for one's actions. Its characteristics can be seen in how students approach learning using methods and techniques suited to their own abilities, while also being aware of their weaknesses, as each student has a unique learning style and approach. Selfdirected learning can be driven both internally and externally. When students are able to take responsibility for their tasks, demonstrate discipline, show initiative, and possess motivation, they exhibit a good level of self-directed learning. However, there are times when external factors are necessary to stimulate students' self-directed learning. This is where the teacher's role becomes crucial in fostering self-directed learning attitudes among students (Aisah, Kurniasih & Fitriani, 2018).

The flipped classroom model is recognized as an innovative and effective approach, where the teacher acts as a facilitator and the students are actively involved in the learning process (Kozikoğlu, 2019). The flipped classroom model reverses the traditional teaching method, where the teacher provides instructional materials in the form of videos, texts, or exercises to be completed at home. Inclass time is then used to review and discuss the material previously assigned (Ding, Li & Chen, 2019). According to Elian & Hamaidi (2018), in implementing the flipped classroom model, the teacher prepares materials for explaining new information using modern audio-visual multimedia and reactive evaluations, which are made available to students before the lesson begins. In this strategy, the teacher's role is to act as a mediator and motivator, encouraging students to engage with the material before class. As a result, students can learn at their own

pace and have time to access learning resources, which ultimately enhances their understanding before attending class (Havwini & Wu, 2019).

The flipped classroom model is a teaching method that facilitates the roles of both the teacher and students in an effective way (Hwang, Yin, & Chu, 2019). The implementation of flipped classroom follows several stages, as outlined by Luo, O'Steen & Brown (2020): 1) Preparation: The educator must prepare learning materials, such as videos, online quizzes, reading materials, and worksheets; 2) Pre-Class Activities: The educator uploads the learning videos and instructs students to review them before attending class; 3) In-Class Activities: During class, the teacher can administer a quiz at the beginning of the session to activate students' prior knowledge, form groups, and assign tasks to each group. The teacher ensures that every group member is involved in the group activity; 4) Post-Class Reflection: After the class activities are completed, the teacher summarizes the learning outcomes.

According to Fauzan & Ngabut (2018), the flipped classroom model provides students with the opportunity to manage their learning independently outside of class, allowing them to enhance their self-directed learning without the direct presence of the teacher. This model also enables students to explore the material they have studied at home more deeply. Almodaires, et al., (2018) state that the flipped classroom prepares students before entering the classroom, as they have already gained knowledge online. Students can pause, stop, or replay the learning videos to improve their understanding.

The flipped classroom model offers several benefits for students, including: 1) enhancing their self-directed learning; 2) providing space for students to manage their own learning time; 3) allowing students to repeat lessons as needed; and 4) increasing student confidence. For teachers, the flipped classroom model offers advantages such as: 1) better classroom management; 2) more effective use of classroom time; 3) increased teaching efficiency; 4) improved student-teacher interaction; 5) utilizing technology to make materials reusable; and 6) enabling teachers to deliver lessons even when they are absent. Despite these benefits, the flipped classroom model also presents some challenges: 1) students may struggle if the videos are too long or the video quality is not engaging; 2) not all students may engage with the materials or complete tasks before class; and 3) students may become too dependent on the teacher, which requires time to change. To address these challenges, teachers should ensure that the videos are engaging (by adding images or animations) and not too long, ideally no longer than 5 minutes. Additionally, to increase student involvement, teachers can provide practice exercises or quizzes before the class session.

One of the general approaches to consider when implementing the flipped classroom model to enhance student initiative and provide learning support during home study is to create an online discussion forum and text messaging Jambura Economic Education Journal Selvita Eka Eviana Purba... Flipped Classroom: A Pathway to Increase...

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system. These tools can offer feedback and assist students with any questions they may have during their independent learning.

CONCLUSION

The results of the study indicate that the flipped classroom model is more effective than the conventional model in improving student self-directed learning, as evidenced by the independent t-test result with a significance value of 0.043 (< 5%). The flipped classroom model emphasizes student autonomy, active participation, and greater responsibility for managing their own learning. In this context, students need to develop strong skills in organizing their learning, taking initiative in the process, and ultimately fostering their self-directed learning. These skills will enable students to become lifelong learners, well-prepared to face future opportunities and challenges. The flipped classroom model provides a richer learning experience, especially in helping students manage and organize their study activities before coming to class.

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