The Effect of Think Pair Share (TPS) Model Based on Flipped Learning on Students' Creative Thinking Skills

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Abstrak

Tujuan penelitian ini untuk mengetahui pengaruh model Think Pair Share (TPS) berbasis flipped learning terhadap keterampilan berpikir kreatif siswa. Jenis penelitian ini adalah penelitian kuantitatif dengan pendekatan meta-analysis. Kriteria eligibility dalam penelitian ini adalah penelitian berasal dari jurnal nasional atau internasional terbitan 2020-2024; penelitian harus terindeks SINTA dan Scopus, Penelitian harus berhubungan pengaruh model TPS berbasis flipped learning terhadap keterampilan berpikir kreatif siswa, penelitian diperoleh melalui database google scholar, ScienceDirect, Wiley, ERIC dan Hindawi, serta penelitian melampirkan data yang lengkap untuk menganalisis effect size. Teknik analisis data adalah analisis kuantatif dengan menghitung nilai effect size dengan bantuan aplikasi OpenMEE. Hasil penelitian ini menyimpulkan bahwa adanya pengaruh positif model TPS berbasis flipped learning terhadap keterampilan berpikir kreatif siswa dengan nilai ES = 0.826; P< 0.001 dengan kategori effect size tinggi. Temuan ini menginformasikan implementasi model TPS berbasis flipped learning memberikan pengaruh signifikan sisiwa bagi dibandingkan dengan mode konvensional.

Kata Kunci: *Think Pair Share (TPS); Flipped Learning; Creative Thinking*

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Abstract

The purpose of this study was to determine the effect of Think Pair Share (TPS) model based on flipped learning on students' creative thinking skills. This type of research is quantitative research with a meta-analysis approach. The eligibility criteria in this study are research from national or international journals published in 2020-2024; research must be indexed by SINTA and Scopus, research must relate to the effect of the TPS model based on flipped learning on students' creative thinking skills, research obtained through the google scholar database, ScienceDirect, Wiley, ERIC and Hindawi, and research attaching complete data to analyse effect size. The data analysis technique is quantitative analysis by calculating the effect size value with the help of the OpenMEE application. The results of this study concluded that there was a positive effect of the TPS model based on flipped learning on students' creative thinking skills with a value of ES = 0.826; P < 0.001 with a high effect size category. This finding informs that the implementation of TPS model based on flipped learning has a significant effect on students compared to conventional model

Keywords: Think Pair Share (TPS); Flipped Learning; Creative Thinking

Introduction

Creative thinking skills become an important foundation in student learning because they provide the ability to solve problems innovatively and adapt to a constantly changing environment (Syafrial et al., 2022; Rahman et al., 2023). Students who have creative thinking skills tend to be better able to explore various possible solutions to each challenge faced, thus opening up opportunities for innovation and new discoveries (Ichsan et al., 2023). In addition, creative thinking skills also help students in the development of communication and collaboration skills, as they learn to articulate their ideas clearly and work together in creating effective solutions (Hidayanti et al., 2018).

Creative thinking skills are essential for students to compete er this globalization (Simkova et al., 2021; Suryono et al., 2023). In an era where technology continues to develop rapidly and global challenges are increasingly complex, creativity is one of the keys to compete in various professional fields (Kristanto, 2023; Elfira et al., 2023; Oktarina et al., 2021). Students skilled in creative thinking tend to be more innovative in creating solutions to complex problems, which are highly sought after by companies and organizations in various sectors. The ability to think creatively also allows students to be more adaptive to change, allowing them to continue learning and growing amid a dynamic environment (Widiana & Jampel, 2016; Nurtamam et al., 2023). Thus, the development of creative thinking skills is not only relevant for students' academic success, but also essential for their success in the real world (Ghunu, 2022).

The problem of students' creative thinking skills is currently a serious concern in the world of education because of the increasing number of complex challenges faced in everyday life. Many students have difficulty developing creative thinking skills due to being too focused on factual learning and lack of opportunities to practice in-depth analysis and critical evaluation (Dhayanti et al., 2018; Nurwidodo et al., 2023). Curricula that are too focused on memorization and standardized exams also tend to hinder the development of creative thinking skills, as students are more encouraged to remember information than to understand and analyze the underlying concepts (Rahman et al., 2023).

The problem of students' creative thinking skills is currently a serious concern in the world of education because of the increasing number of complex challenges faced in everyday life. Many students have difficulty developing creative thinking skills due to being too focused on factual learning and lack of opportunities to practice in-depth analysis and creative evaluation of students (Suryandari et al., 2021). Curricula that are too focused on memorization and standardized exams also tend to hinder the development of creative thinking skills, as students are more encouraged to remember information than to understand and analyze the underlying concepts (Nasution et al., 2023).

In addition, the increasingly rampant use of technology and social media is also a factor that affects students' creative thinking skills. Too much time spent in front of screens and exposure to information that is not always verified can hinder students' ability to develop creative and analytical thinking (Ernawati et al., 2023). Further, the tendency to rely on quick internet searches for answers and information can also reduce students' motivation to hone their ability to critically analyze information. In the face of these challenges, educators need to design instructional strategies that promote deep reflection, discussion, and problem-solving to help students develop solid creative

thinking skills (Ibrahim et al., 2024). Therefore, there is a need for a learning model that can encourage students' creative thinking skills in learning.

The Think Pair Share (TPS) model is a learning approach that provides opportunities for students to think critically, collaborate, and share their thoughts with others (Samsudin et al., 2021). In this model, students are first asked to think of a question or problem given by the teacher. Then, they pair up with classmates to discuss the answers or solutions they think of individually (Tanujaya et al., 2019;Persaud, 2019). These discussions allow them to broaden their point of view, test their understanding, and build interpersonal communication skills. After that, the couple shares the results of their discussion with the group or class as a whole. The TPS model not only allows students to actively engage in learning, but also promotes critical thinking, collaboration, and effective communication among students.

The Think pair share model can be combined with flipped learning. Flipped learning is an approach to learning that flips classroom traditions, where students engage with learning materials outside the classroom through resources such as videos, reading materials, or online activities before class meetings (Jdaitawi et al., 2022); . As class progresses, time previously used to deliver content in class is used to support student understanding through discussion, collaboration, and application of concepts in real situations (Ozgur et al., 2022). This approach allows students to take control of their own learning process, while providing opportunities for teachers to provide more individualized and in-depth guidance to students (Dehham et al., 2022). By changing traditional classroom dynamics, flipped learning can increase student engagement, facilitate deeper understanding, and promote active and collaborative learning.

Research by Ardiyani et al (2019) about the effect of the Think Pair Share (TPS)-based reverse learning model on Creative Thinking Skills Students have limitations that need to be recognized. First, influences from students' background factors, such as their level of language fluency or level of initial knowledge, may not be fully controlled in such studies, which may affect the validity of the results. In addition, the measurement of creative thinking skills can be subjective and difficult to define consistently, resulting in challenges in evaluating the true impact of the learning models used (Imron, 2019). In addition, external factors such as home learning environment or parental support may also affect student learning outcomes and may not have been fully considered in the study. Therefore, more comprehensive follow-up research with tighter control and more in-depth evaluation is needed to strengthen conclusions about the effectiveness of this learning model in improving students' creative thinking skills. Therefore, it is necessary to conduct a meta-analysis to comprehensively understand the application of the flipped learning-based Think Pair Share model to students' critical thinking skills.

Methods

This type of research is quantitative research with a meta-analysis approach. Meta-analysis is a type of research that collects and analyzes primary data quantitatively to obtain a conclusion (Juandi et al., 2022; Utomo et al., 2023; Rahman et al., 2023; Razak et al., 2021; Tamur et al., 2020). The eligibility criteria in this study are research derived from national or international journals published in 2020-2024; Research must be indexed

by SINTA and Scopus, Research must relate the effect of TPS models based on flipped learning on students' creative thinking skills, research obtained through the database Google Scholar, ScienceDirect, Wiley, ERIC and Hindawi, and research attaches complete data to analyze effect size. The data analysis technique is quantative analysis by calculating the effect size value with the help of the OpenMEE application. Furthermore, the effect value criteria are guided by the criteria Cohen et al., (2007) namely the value of $0.0 \leq ES \leq 0.20$ Small criteria, the value of $0.20 \leq ES \leq 0.80$ Medium criteria, and the value of $0.0 \leq ES \leq 0.20$ Large Criteria.

Result and Discussion

Result

Based on literature search through google scholar, ScienceDirect, Wiley, ERIC and Hindawi obtained 242 journals related to the flipped learning-based Think Pair Share (TPS) model on students' creative thinking skills, but the journals were selected using the PRISMA method according to predetermined inclusion criteria, so 13 relevant journals were obtained. The results of data selection can be seen in Figure 1.
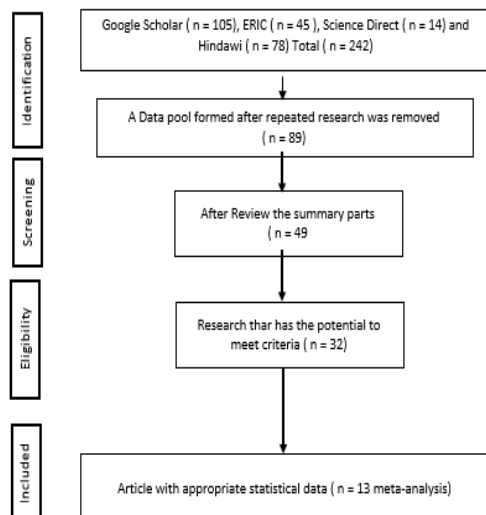

Figure 1. Data Selection Through PRISMA Method

Furthermore, analyzing the effect size value of 13 journals that have met the inclusion criteria can be seen in Table 1.

Table 1. Effect Size Value Analysis

Study Code	Year	Source	Effect Size
JN1	2024	Google Scholar	0.61
JN2	2023	Google Scholar	0.72
JN3	2023	Google Scholar	0.97
JN4	2022	Science Direct	1.15
JN5	2022	Science Direct	1.48
JN6	2024	Google Scholar	0.66
JN7	2023	ERIC	1.68
JN8	2024	Google Scholar	0.42
JN9	2022	Google Scholar	0.59
JN9	2020	Hindawi	1.08
JN10	2020	Google Scholar	0.36
JN11	2021	ERIC	0.94
JN12	2022	ERIC	1.19
JN13	2023	Google Scholar	0.63

Based on Table 1, the effect size analysis value of the 13 journals is the highest at 1.48 and the lowest is 0.36. According to the criteria of effect size value Cohen et al., (2007) There are seven journals with medium effect size criteria and six journals with high effect size criteria. Next, calculate the overall value of the effect size (summary effect) of the 13 journals analyzed. The results of the summary effect size analysis can be seen in Table 2.

Table 2. Summary Effect Size

	Estimate	SE	Z	P
Intercept	0.826	0.27	6.971	< 0.001

Table 2, summary effect size value is 0.826 and SE = 0.27. These results conclude that the application of the flipped learning-based Think Pair Share model has a positive influence on students' creative skills with large influence categories. Furthermore, the flipped learning-based Think Pair Share model had a significant effect on students' creative thinking skills with a value (z = 6.971; p< 0.001). So, the application of this model can encourage students' creative thinking skills when compared to conventional models.

Discussion

The implementation of the flipped learning-based Think Pair Share (TPS) model has a significant influence on students' creative thinking skills. The results in I can be seen from the summary effect size value of 0.829 and z = 6.971 with high effect size criteria. The results of this study are in line with Maria et al., (2023) The application of the Think Pair Share (TPS) model has a positive influence on improving students' creative thinking skills in learning. This flipped learning model can provide opportunities for students to develop creative thinking skills (Sunday et al., 2020). Through discussion, students are invited to consider various points of view and alternative solutions that stimulate critical and creative thinking processes. In the context of flipped learning, teachers can act as facilitators who encourage students to explore new ideas and face intellectual challenges more openly (Samaila et al., 2024).

In the Think Pair Share model students can discuss the material with classmates, allowing them to exchange ideas and deepen their understanding. This creates a collaborative, student-centered learning environment that has been shown to increase learning engagement and motivation (Sha'roni et al., 2020). odel TPS learning based on flipped learning on students' creative thinking skills. In addition, it is also necessary to evaluate the long-term effect of applying this model on students' academic achievement and skill development outside the classroom context (Dhayanti et al., 2018). Therefore, the successful implementation of this model can be greatly influenced by strong support from teachers, effective classroom management and adequate technology.

The flipped learning-based Thinks Pair Share model can provide valuable benefits for educators in designing learning experiences that promote creative thinking skills. In addition, this research can also open the door to the development of more innovative and effective learning models in the future, both in the context of formal and informal education (Fradila et al., 2021; Dirsa et al., 2022). As such, the study not only makes a significant academic contribution, but also has practical implications that can improve students' overall learning experience (Ishartono et al., 2022). So. The implementation of the flipped learning-based TPS model really needs to be applied in schools to encourage students' creative thinking skills.

Conclusion

From the results of this study, it can be concluded that there is a positive influence of the flipped learning-based TPS model on students' creative thinking skills with an ES value = 0.826; P< 0.001 with high effect size category. These findings inform that the implementation of the flipped learning-based TPS model has a significant effect compared to conventional modes. In addition, it uses TPS-based flipped learning to improve students' creative thinking skills, while providing valuable direction for the development of more innovative and effective education in the future.

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