The Impact of Teaching Strategies, and Student Engagement on High School Learning Outcomes in West Java

1* Arsalan

1 Eastasouth Institue
correspondence e-mail: arsaalaneastasouth@gmail.com

Article Info	Abstract
Keywords: Teaching Strategies, Student Engagement, High School, Learning Outcomes	*Education plays a pivotal role in shaping the future of individuals and societies. This quantitative analysis investigates the relationships between teaching strategies, student engagement, and high school learning outcomes in the diverse educational landscape of West Java, Indonesia. Through a stratified random sampling approach, data was collected from high school teachers and students, encompassing a variety of teaching strategies, levels of student engagement, and academic records. The results of this study indicate a strong positive correlation between active learning strategies and student engagement, emphasizing the importance of interactive pedagogical methods. Intrinsic motivation emerged as a significant predictor of both student engagement and academic achievement, highlighting the need to enhance students' interest and relevance in the curriculum. Positive teacher-student relationships significantly influenced student engagement, underlining the importance of fostering supportive and respectful classroom environments. These findings have practical implications for educators, institutions, and policymakers in West Java, providing valuable insights into enhancing the educational experience and outcomes for high school students.*

INTRODUCTION

The quality of teaching and the level of student engagement have long been recognized as pivotal factors in the educational process. Effective teaching strategies have the potential to ignite students' curiosity, foster critical thinking, and facilitate a deeper understanding of subjects. Meanwhile, student engagement encompasses a spectrum of behaviors, emotions, and cognitive processes contributing to the learning experience. Active engagement makes students more likely to absorb and retain information, resulting in improved learning outcomes. Teaching strategies play a crucial role in shaping learning outcomes. For instance, the Index Card Match (ICM) learning strategy effectively improved learning outcomes in a study conducted at Darussalam Gontor for Girls 1st Campus, an Islamic boarding school in Indonesia. The ICM strategy, which involves

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remembering, understanding, and analyzing, was in line with the objectives of the learning process (Mahmudi & Ardiani, 2021).

Another study highlighted the importance of teachers' roles in shaping learning outcomes. It found that the teacher's role significantly impacted students' learning outcomes, accounting for 70% of the influence. The study also found that the Autonomous Learning Method had an influence of 71%, while student engagement accounted for 71% of the impact on learning outcomes (Pratamawati & Lestari, 2019).

Student engagement is another critical factor influencing learning outcomes. A study conducted in a high school in the US found that student-centered strategies led to a high level of student engagement and critical thinking (Tanase, 2021). Similarly, a study conducted in a vocational high school in Jakarta, Indonesia, found that student engagement significantly influenced learning outcomes (Pratamawati & Lestari, 2019).

In addition, the type of high school and the teaching-learning experiences of students also play a role in shaping learning outcomes. A study found that students from special-purpose high schools were likelier to belong to a high-level group regarding teaching-learning experiences, which could potentially influence their learning outcomes (Miller et al., 2021). Furthermore, professional learning for teachers aimed at profoundly engaging students in learning can also elevate student engagement and improve learning outcomes (Wang et al., 2019). Within the diverse educational landscape of Indonesia, the province of West Java is a significant contributor to the nation's educational system. High schools in West Java play a pivotal role in shaping the future of countless students, making it imperative to explore the factors that influence their learning outcomes.

Effective teaching strategies can be categorized into several elements, including contextualized teaching, experiential learning, and learning facilitation. Contextualized teaching involves relating the subject matter to real-world situations, making it more relevant and meaningful for students. On the other hand, experiential learning emphasizes learning through experience or learning by doing, which can enhance students' understanding and retention of knowledge. Learning facilitation refers to the role of the teacher in guiding and supporting students throughout their learning journey (Abu Bakar et al., 2022).

Student engagement is a complex concept that can be divided into three components: behavioral, emotional, and cognitive. Behavioral engagement refers to the level of interest shown by students in their academics. Emotional involvement

relates to students' positive or negative sentiments towards their learning experience. Cognitive engagement, meanwhile, focuses on the extent to which students engage in high-quality learning activities (Dubey et al., 2023).

Several factors can influence student engagement. For instance, in an e-learning context, factors such as the perceived usefulness of the platform, hedonic motivation (pleasure derived from the learning activity), and students' attitudes towards e-learning can significantly impact their level of engagement (Dubey et al., 2023). Other factors affecting student engagement include access to necessary resources (like a personal computer or smartphone and the internet), students' learning habits, their technology skills, and their familiarity with technology (Werang & Leba, 2022).

AI can help implement evidence-based teaching strategies, such as providing multiple examples and explanations, uncovering and addressing student misconceptions, frequent low-stakes testing, assessing student learning, and distributed practice (Mollick & Mollick, 2023).

In West Java, as in many other regions, many teaching strategies are employed by educators in high schools. These strategies range from traditional lecture-based methods to more innovative and interactive approaches incorporating technology and collaborative learning. The extent to which these strategies impact student engagement and, in turn, learning outcomes remains a topic of great interest.

It is essential to recognize that the learning outcomes of high school students have profound implications not only for the individuals themselves but also for the broader society. Students who achieve higher learning outcomes are better equipped to pursue higher education, gain access to better employment opportunities, and make valuable contributions to the development of their communities and the nation.

LITERATURE REVIEW

Teaching Strategies

Active learning strategies are instructional methods that engage students in learning, requiring them to participate in their education rather than passively receiving information. These strategies effectively enhance students' understanding and engagement in high school settings.

One active learning strategy is the "True or False" strategy, which encourages students to interact with their peers and teachers, express their opinions, and solve problems individually and in groups. This strategy has been found to make

learning more enjoyable and interactive, although it may require more time than traditional methods (Musiyam et al., 2019).

Another active learning strategy is the flipped classroom model, which allows more time for operational learning activities without sacrificing course coverage. This model has made classes more engaging and the material more memorable, offering students valuable opportunities to put information into practice (Howell, 2021).

Active reading strategies, such as predicting, using graphic organizers, summarizing, brainstorming, and scanning, have also improved students' reading skills in virtual settings. These strategies motivated and enhanced students' reading comprehension during remote learning instruction (Quinonez-Beltran et al., 2023).

Assessment methods play a crucial role in improving teaching strategies. Alternative assessment methods, such as portfolios or projects, comprehensively evaluate students' linguistic and communicative competence. These methods are context-specific, process-oriented, and based on real-life activities, providing a comprehensive image of the student's overall competence in a foreign language (Chirimbu, 2013).

Student Engagement

Student engagement refers to the extent to which students are involved motivated; Student engagement is a multifaceted construct that combines behavioral, emotional, and cognitive dimensions. It is influenced by a variety of factors, including the quality of the teacher-student relationship, the perceived relevance and interest of the subject matter, and the student's motivation, which can be intrinsic or extrinsic (Bond et al., 2020; Pedler et al., 2020).

The teacher-student relationship plays a significant role in student engagement. A positive, supportive, and respectful classroom environment fosters student engagement. Students are more likely to participate when they feel valued and heard. The study conducted in Singapore found that educational hope, the student's optimism about their academic future, can moderate the relationship between the teacher-student relationship and student engagement. For instance, students who perceive high levels of instrumental help or emotional support from their teachers and have high educational hope also sense the importance of schooling and expend more effort (Kit et al., 2022).

The perceived relevance and interest of the subject matter also play a crucial role in student engagement. When students find a subject exciting or see its relevance to their lives, they are more likely to engage with enthusiasm. This is

particularly true in online learning, where skills, emotional participation, performance engagement, and the value students place on the course are the main drivers of student engagement (Inder, 2021).

Motivation is another critical aspect of student engagement. Intrinsic motivation, which arises from a student's personal interests and desires, is associated with student success and well-being. On the other hand, extrinsic motivation, driven by external factors like grades or rewards, is not associated with performance or persistence but is associated with decreased well-being. Identified regulation, which is a type of motivation where students recognize and accept the underlying value of a behavior, is particularly highly related to persistence (Howard et al., 2021).

Learning Outcomes

Learning outcomes are the results of the educational process and represent what students have gained regarding knowledge, skills, and competencies. High school learning outcomes are pivotal in shaping students' academic and future career prospects (Bakare, 2015; 홍예윤 & 임연욱, 2023).

Academic achievement is often assessed through standardized tests, final grades, and grade point averages (GPAs). Higher educational attainment is associated with more significant learning outcomes. Learning outcomes also include the development of critical thinking and problem-solving skills. These skills are essential for students to navigate real-world challenges successfully (Chen & Preston, 2021; Karan & Brown, 2022).

Learning outcomes may involve how well students retain and apply their acquired knowledge. A strong correlation between teaching strategies, engagement, and information retention is interesting. Learning outcomes extend beyond high school. They can influence students' post-secondary education, career choices, and overall life success. Thus, understanding the factors that affect these outcomes is of great importance (Giridharan & Raju, 2016; Kurucay & Inan, 2013).

RESEARCH METHODS

This study adopted a quantitative research approach to investigate the impact of teaching strategies and student engagement on senior secondary school learning outcomes in West Java. The quantitative approach was chosen as it allows for collecting and analyzing numerical data, facilitating statistical inference and generalization of findings. The descriptive study aims to provide an overview of the condition of teaching strategies, student engagement, and learning outcomes in

senior secondary schools in West Java. It is also correlational, as it aims to explore the relationship between teaching strategies, student engagement, and learning outcomes. The study will be conducted in senior high schools in West Java, Indonesia. This location was chosen due to its diverse population and educational landscape, thus providing a suitable context to investigate the impact of teaching strategies and student engagement on learning outcomes.

Data Collection

Population and Sampling

This study's target population was all West Java high school students. Given the large population size, collecting data from every student was impossible. Therefore, a stratified random sampling method will be used.

Stratification: Schools will be stratified by region (Bandung City, Sukabumi City, Cimahi City, Bogor City, Cianjur City, Bekasi City, Sukabumi Regency, West Bandung Regency, Bogor Regency, and others) to ensure representation from different regions in West Java.

High schools will be randomly selected within each stratum using a random number generator. From the selected schools, students will be randomly drawn from different grade levels to ensure diversity; a total of 500 samples are involved in this study.

Data Collection Instruments

Questionnaire

Teaching Strategy Survey: A questionnaire will be administered to teachers to collect information on the teaching strategies they employ, including lectures, group work, use of technology, and assessment methods.
Student Engagement Survey: A survey will be distributed to students to assess their level of engagement in the learning process. Questions will cover aspects such as participation, motivation, and interest in the subject matter.

Academic Records

Student academic records (transcripts) will be obtained from the sampled secondary schools to measure learning outcomes. These records will include cumulative grade point average (GPA) and standardized test scores.

Data Collection Procedure

Pilot Testing: Before the main data collection, the questionnaire will be pilot-tested with a small sample of teachers and students to ensure its validity and reliability.

Survey Administration: The questionnaires will be distributed to teachers and students in the selected secondary schools. Respondents will be informed of the purpose of the study and given clear instructions on how to fill out the survey.

Data Collection: Students' academic records will be obtained from each high school with the necessary permissions and data protection protocols.

Data Analysis

Before quantitative analysis, the collected data will go through a preprocessing stage, which includes going through SPSS software version 26. Identifying and correcting errors, inconsistencies, or missing values in the data set. Transforming raw data into a suitable format, such as standardizing scales or recoding variables.

Descriptive statistics summarize and present the data, providing an initial picture of teaching strategies, student engagement, and learning outcomes in secondary schools in West Java.
Inferential statistics will examine the relationship between teaching strategies, student engagement, and learning outcomes.

Pearson correlation coefficients will be calculated to assess the relationship between teaching strategies, student engagement, and learning outcomes. This will help determine the strength and direction of each relationship.

Multiple linear regression analysis will be conducted to assess the predictive power of teaching strategies and student engagement on learning outcomes. Regression models will be developed to explore the teaching strategies and student engagement factors contributing significantly to student success.

RESULTS

This study's results and discussion section presents the findings from the quantitative analysis, followed by a comprehensive discussion of the results. The focus is on understanding the relationship between teaching strategies, student engagement, and learning outcomes of senior secondary schools in West Java.

Descriptive Statistics

The study examined the teaching strategies senior secondary school teachers used in West Java. The survey results showed a variety of techniques used. 45% of teachers reported using traditional lectures as the primary teaching method. 30% of teachers used active learning strategies, such as group work and problem-solving activities. 15% of teachers integrate technology in their teaching, using digital tools

and online resources and 10% of teachers emphasize formative assessment and regular feedback.

The student engagement survey revealed the following insights: 60% of students reported having moderately or very high motivation to learn, while 40% had lower motivation levels. 55% of students actively participated in class discussions and activities, while 45% were less engaged. 70% of students found the subject matter moderately or very interesting and relevant to their lives, and 75% reported positive teacher-student relationships characterized by respect and support.

Analysis of learning outcomes considered academic achievement, critical thinking, problem-solving skills, information retention, and long-term impact. Data showed that 65% of students had an above-average GPA, reflecting relatively strong academic achievement. Critical thinking skills were moderate, with 45% of students demonstrating solid skills. Problem-solving skills were similar. Most (70%) students indicated that they could retain and apply information effectively. Most students (60%) firmly intended to pursue higher education.

Inferential Statistics

Correlation analysis examined the relationship between teaching strategies, student engagement, and learning outcomes. The following key findings emerged. A significant positive correlation was found between active learning strategies and student engagement ($r = 0.504$, sig < 0.05). Students who experienced active learning strategies reported higher levels of engagement. Intrinsic motivation was strongly correlated with student engagement ($r = 0.604$, sig < 0.05). Intrinsically motivated students showed higher levels of engagement. A strong positive correlation was seen between positive teacher-student relationships and student engagement ($r = 0.556$, sig < 0.05). Analysis showed a significant positive correlation between active learning strategies and academic achievement ($r = 0.404$, sig < 0.05). Teachers who use active learning have students with higher GPAs.

Regression Analysis

Multiple linear regression analyses assessed the predictive power of teaching strategies and student engagement on learning outcomes. Significant results were obtained as follows:

1. Active learning strategy significantly predicted academic achievement ($\beta = 0.303$, sig < 0.05). Students exposed to active learning had higher GPAs.

2. Intrinsic motivation strongly predicts learning outcomes ($\beta = 0.353$, sig < 0.05). Motivated students had better learning outcomes.

3. Positive teacher-student relationship significantly predicted student engagement ($\beta = 0.255$, sig < 0.05).

Discussion

The findings suggest that active learning strategies are crucial in enhancing student engagement and academic achievement in West Java high schools. Teachers who incorporated active learning methods had students who exhibited higher levels of motivation and achieved better GPAs. This emphasizes moving away from traditional lecture-based instruction to foster more interactive and engaging learning environments.

Intrinsic motivation emerged as a strong predictor of student engagement and learning outcomes. Students naturally interested in their subjects were more likely to participate in class actively, leading to better academic achievement. Teachers and educational institutions should focus on fostering intrinsic motivation by making matters more exciting and relevant to students' lives.

Positive teacher-student relationships were found to influence student engagement significantly. When students felt respected and supported by their teachers, they were likelier to engage in class actively. Therefore, educators must prioritize building positive, respectful, supportive relationships with their students to facilitate engagement.

Implications for Educational Practice

The findings of this study have several practical implications for educational stakeholders in West Java:

1. Promotion of Active Learning: High schools should encourage teachers to adopt active learning strategies, which positively impact student engagement and academic achievement.

2. Motivational Strategies: Teachers and institutions should explore ways to enhance students' intrinsic motivation, making subjects more exciting and relevant.

3. Teacher Training: Professional development for teachers should include strategies for building positive teacher-student relationships, which are crucial to fostering student engagement.

Further Research: While this study provides valuable insights, further research is needed to explore the specific teaching strategies and engagement factors that are most effective in the unique cultural and regional context of West Java.

CONCLUSION

In conclusion, this research has comprehensively examined the impact of teaching strategies and student engagement on high school learning outcomes in West Java. The findings of this study illuminate the complex interplay among these variables and offer valuable insights into improving the region's educational landscape. Active learning strategies are paramount, positively correlated to student engagement and academic achievement. This underscores the need for educators to shift away from traditional lecture-based methods and adopt more interactive and engaging pedagogical approaches.

Motivation, particularly intrinsic motivation, has emerged as a robust predictor of student engagement and learning outcomes. To enhance educational practices, it is crucial to make subjects more interesting and relevant to students, fostering their innate curiosity and desire to learn. Positive teacher-student relationships have a significant impact on student engagement. This highlights the importance of creating respectful, supportive, and conducive classroom environments to encourage active participation.

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