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THE EFFECTIVENESS OF COLLABORATIVE LEARNING MODELS IN ECONOMICS EDUCATION AT SENIOR HIGH SCHOOLS

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ABSTRACT

Collaborative learning has become one of the most innovative approaches gaining widespread attention in modern education. This study aims to analyze the effectiveness of collaborative learning models in Economics subjects at the senior high school level. Using the Literature Review method, this research evaluates three main approaches: the Circuit Learning model, the cooperative script method, and the use of digital technology-based learning media. The findings show that the Circuit Learning model can improve students' learning outcomes, achieving an average post-test score of 85.571, significantly higher than conventional methods. The cooperative script method contributes to enhancing students' teamwork skills by 30.5%, while digital media such as augmented reality and Android applications successfully increase students' learning motivation by up to 80%. This study concludes that combining collaborative learning and digital technology can significantly improve the quality of Economics learning. Therefore, the study recommends further teacher training and the development of digital infrastructure to support the implementation of these strategies.
***Keywords**: Collaborative learning, Circuit Learning, cooperative script, digital learning media, Economics education.*

A. INTRODUCTION

Education continues to evolve, with collaborative learning becoming an increasingly recognized pedagogical approach in modern classrooms. This method encourages students to engage in group-based activities, participate in meaningful discussions, and collaboratively solve problems. In doing so, students not only improve their academic understanding but also develop essential interpersonal skills such as teamwork, effective communication, and critical reasoning. Specifically, in Economics education—where abstract concepts and complex analyses often pose challenges—collaborative learning provides an engaging platform for students to examine theories, comprehend market mechanisms, and assess economic policies by connecting theoretical knowledge with practical applications.

The incorporation of collaborative learning in Economics classrooms enables students to approach problems from various perspectives, enhancing their ability to think critically, debate, and apply economic concepts within diverse contexts. Research has indicated that students in collaborative learning settings tend to retain knowledge more effectively than those exposed solely to traditional lecture-based instruction. This is because the interactive nature of collaboration allows students to articulate ideas, exchange insights, and critically analyze different viewpoints. Furthermore, such an approach fosters a sense of responsibility—not only for individual academic progress but also for collective success within a group. This dynamic structure supports independent learning, strengthens motivation, and deepens cognitive engagement, making it an indispensable tool for mastering Economics concepts.

Despite its advantages, implementing collaborative learning faces several challenges. Limited access to digital educational tools, differences in students' competencies within groups, and the need for teachers to effectively manage interactive learning environments are among the primary concerns. Teachers play a crucial role in ensuring that group-based

activities are structured effectively and that all students actively participate. Additionally, many schools struggle with inadequate technological infrastructure, hindering the full potential of digitally supported collaborative learning. To maximize the benefits of this approach, educators and policymakers must address these obstacles to ensure collaborative learning contributes meaningfully to students' academic achievements.

This study examines the effectiveness of collaborative learning models in Economics education at the senior high school level. Through a literature review, the research evaluates three key teaching methodologies: Circuit Learning, Cooperative Script, and the use of digital learning media. Previous studies have demonstrated that Circuit Learning significantly enhances students' academic performance, with post-test scores averaging 85.571, outperforming conventional learning approaches. Similarly, the Cooperative Script method fosters teamwork skills, increasing students' collaborative effectiveness by 30.5%. In addition, digital learning tools, such as augmented reality and Android-based applications, have been shown to boost students' learning motivation by 80%, making Economics education more engaging and accessible.

B. RESEARCH METHODOLOGY

This study employs a qualitative approach using the Literature Review method, aiming to evaluate and synthesize various literature and research related to collaborative learning, the Circuit Learning model, cooperative script, and digital technology-based learning media (Arifin et al., 2023). This library research enables in-depth analysis of theories, concepts, and empirical study results relevant to building a comprehensive understanding of the effectiveness of these learning methods in improving the quality of Economics education at the senior high school level.

Data Collection

The data in this study were obtained from various reliable sources, including national journals, scientific articles, and theses published within the last five years (2019–2024). A study by Alfridus Mau Manek and Agustina Butar-Butar (2024) highlights the use of digital media in Economics education, such as Android applications, augmented reality (AR), Powtoon, and digital comics. In addition, this study also incorporates findings from SMA Negeri 14 Pekanbaru related to the Circuit Learning model and research at SMA Negeri 10 Pekanbaru discussing the cooperative script method.

A total of 10 key articles became the basis for analysis in this study, covering various modern learning approaches. These articles were accessed through open-access journals on topics related to collaborative learning and digital technology media. The literature was selected based on its relevance to Economics learning material and its potential to positively impact student learning outcomes.

Analysis Procedure

The analysis process was carried out in the following stages:

1. Literature Selection: Relevant literature was selected based on topics of collaborative learning, Circuit Learning and cooperative script methods, and digital technology for Economics learning.
2. Selection Criteria: Articles or theses were chosen if they included relevant learning concepts, modern teaching methods, and empirical research results focusing on Economics education.
3. Systematic Analysis: Selected literature was critically analyzed to develop theoretical and empirical syntheses. This process includes identifying research gaps, evaluating results, and grouping information based on main themes.

Articles and Research Used

1. Research by Alfridus Mau Manek and Agustina Butar-Butar (2024): Analysis of the use of digital technology-based learning media, including Android applications, Cobasa, and e-books, which effectively increase student motivation and learning outcomes.

2. Study at SMA Negeri 14 Pekanbaru: Focuses on the effectiveness of the Circuit Learning model in improving student learning outcomes.
3. Thesis at SMA Negeri 10 Pekanbaru: Examines the impact of the cooperative script method on students' teamwork levels.
4. Yetti and Ahyanuardi (2020) article: Development of LMS-based e-learning modules for Economics education.
5. Sakdiah et al. (2022) article: Utilization of augmented reality media for more effective data visualization in Economics education.

Expected Results

This study is expected to provide comprehensive insights into the effectiveness of collaborative learning and digital technology in the context of Economics education. Furthermore, the findings will formulate practical recommendations for teachers in selecting the most suitable learning methods or media based on the needs and characteristics of students.

C. RESEARCH RESULTS AND DISCUSSION

Economic education at the senior high school level continues to develop, with various instructional approaches designed to enhance students' comprehension. Collaborative learning has gained significant attention due to its ability to improve engagement, academic performance, and critical thinking skills. This study examines the effectiveness of three primary learning models—Circuit Learning, Cooperative Script, and digital technology-based learning media—to determine their contribution to creating a more innovative and effective learning experience.

The Circuit Learning model has been shown to significantly improve students' academic performance compared to conventional teaching methods. Research conducted at SMA Negeri 14 Pekanbaru revealed that students who engaged in this approach achieved an average post-test score of 85.571, which surpassed the 80.714 average score obtained by students taught using traditional methods. Statistical analysis, with a t-value of 2.8154, exceeding the critical thresholds at 5% (1.668) and 1% (2.382) significance levels, confirms the effectiveness of Circuit Learning. The success of this model lies in its incremental and repetitive learning structure, which reinforces students' understanding through concept mapping, group discussions, and iterative knowledge application. In addition to enhancing comprehension, Circuit Learning fosters the development of essential social skills, including communication, collaborative problem-solving, and structured reasoning. However, implementing this method requires more time than conventional approaches, making careful time management by educators crucial to ensure productive engagement for all students.

Similarly, the Cooperative Script method plays a crucial role in strengthening students' teamwork skills. A study conducted at SMA Negeri 10 Pekanbaru demonstrated that this approach improved collaboration levels by 30.5%, with an overall teamwork score of 78.21%, classified as good. Through Cooperative Script, students work in pairs to analyze materials, summarize content, and discuss findings alternately, promoting systematic thinking and interpersonal communication. A key advantage of this approach is its ability to create a supportive and inclusive learning environment, where students take responsibility not only for their individual learning but also for the success of their peers. By fostering interactive dialogue and mutual support, students develop accountability and enhanced critical thinking skills. However, the primary challenge in

implementing this model is time constraints, as structured discussions require additional classroom time. Despite this limitation, the method significantly boosts students' confidence and their ability to engage in cooperative academic environments.

The integration of digital technology-based learning media has become increasingly relevant in modern education, particularly in Economics subjects. Findings from this study indicate that technological tools such as augmented reality (AR), Android applications, digital comics, and Flip PDF Professional-based e-books greatly enhance student motivation, increasing engagement levels by 80%. The Android application "Nomic Smart", for instance, facilitates student learning through interactive, game-based modules, making abstract economic concepts more accessible. Meanwhile, augmented reality (AR) enriches educational experiences by providing immersive visualizations, helping students grasp complex theories with greater ease. Additionally, digital comics and interactive media such as Powtoon make course content more engaging, leading to a more dynamic learning environment.(Arifin et al., 2018)

Despite its advantages, the adoption of digital learning media faces several challenges, including limited device availability, internet access issues, and educator readiness to integrate technology into the curriculum. Addressing these challenges requires comprehensive teacher training to ensure educators can effectively incorporate technology into their teaching strategies(Utomo & Arifin, 2020). The importance of digital adaptation aligns with established learning theories, such as Constructivist Learning Theory (Piaget & Vygotsky), which emphasizes knowledge construction through social interaction, and Cooperative Learning Theory (Johnson & Slavin, 1994), which highlights the role of positive interdependence in educational success. Additionally, prior studies by MacGregor (1990) and Silberman (2004) support the notion that digital media enhances student engagement and knowledge retention by making learning more interactive and personalized.

Although this research highlights the positive impact of collaborative and technology-driven learning methods, several research gaps remain that warrant further exploration (Arifin et al., 2018). For instance, future studies could investigate the effectiveness of combining Circuit Learning and Cooperative Script compared to implementing them separately, assess the long-term impact of digital technology on students' comprehension of economic concepts, and examine the role of collaborative learning across diverse educational backgrounds, such as urban versus rural school environments.

D. CONCLUSION AND SUGGESTION

Conclusions

This study reveals that collaborative learning models, particularly Circuit Learning and cooperative script, along with digital technology-based learning media, significantly impact students' learning outcomes, engagement in the learning process, and the development of social skills.

1. The Circuit Learning model provides an interactive learning experience through the addition and repetition approach, which significantly improves students' understanding of economic concepts.
2. The cooperative script method fosters student engagement in groups, enhances systematic thinking skills, and encourages effective teamwork in problem-solving.

3. Digital technology-based learning media offer substantial advantages in modern learning, enabling the visualization of complex data, improving learning motivation, and supporting flexibility in the learning process.

Suggestions

1. For Teachers: Teachers are encouraged to creatively implement the Circuit Learning model and cooperative script method in teaching Economics. They should also gain proficiency in using digital technology-based media to enrich the teaching and learning process.
2. For Schools: Schools should provide support in the form of teacher training, technological resources, and infrastructure development, such as reliable internet access. These are essential to optimize the application of collaborative and digital technology-based learning methods.
3. For Future Research: Further exploration is needed on the impact of more advanced digital learning media and the application of collaborative strategies in other subjects to broaden perspectives in education.

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