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Utilization of Interactive Learning Multimedia (ILM) in Collaborative Learning Using the Role Play Model

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Abstract

This study investigates how 12th year accounting students at SMK Negeri 8 Bandar Lampung use Interactive Learning Multimedia (ILM) in collaborative learning through the Role Play approach. This study highlights the significance of an engaging and interactive learning process to increase students' active engagement, in accordance with Indonesian Ministry of Education and Culture Regulation No. 22 of 2016. The Role-Play model of collaborative learning was selected as an effective approach to foster conceptual comprehension and social skills. This work uses a quantitative approach with an experimental design, with two classes: a control class that uses traditional methods and an experimental class that uses ILM. The experimental class's average post-test score improved from 62 to 88, according to data analysis of the pretest and post-test, whereas the control class's score only increased from 62 to 76. Students' ability to work together also increased, as evidenced by more equitable group involvement and more efficient decision- making. This study highlights obstacles to ILM implementation, such as differences in access to technology and constraints in teacher proficiency, and suggests creating inclusive educational policies and teacher training initiatives. With a suggestion for more research on the long-term effects of this approach, ILM in collaborative learning with the Role Play model not only improves academic learning outcomes but also equips students to handle obstacles in the digital age.

Keywords: Interactive Learning Media (ILM), Collaborative Learning, Role Play

Introduction

There are many opportunities and challenges for education in the digital age, particularly when it comes to building 21st-century skills. Information and communication technology breakthroughs of the fourth industrial revolution have altered how we communicate, collaborate, and learn. In response to these developments, education 4.0 has evolved, highlighting the significance of incorporating technology into the teaching and learning process in order to equip students to handle challenging global issues (Sahlberg, 2021). To address the more varied requirements of children in this setting, more creative and engaging teaching strategies are essential.

However, in many Indonesian vocational schools, including SMK Negeri 8 Bandar Lampung, learning is often dominated by traditional methods that may limit students' active participation. Particularly in accounting education, the focus on procedural knowledge in bookkeeping can reduce student engagement and hinder the development of critical thinking and collaboration. This has led to several problems: low digital knowledge, limited student involvement, reduced learning interest, and suboptimal learning outcomes. These issues point to a misalignment between current pedagogical practices and the demands of the digital era.

One of the best ways to improve student engagement and foster social skills, empathy, and a thorough comprehension of a variety of subjects is through collaborative learning utilizing the role-play approach (Joyce & Weil, 2018). By assuming particular roles in pre-planned scenarios, this methodology enables students to actively engage in the learning process and produce a more contextualized and meaningful learning experience. According to research, role-based learning can improve learning outcomes and student motivation while also assisting students in acquiring interpersonal skills that are critical in both the business and daily life (Pratiwi et al., 2018).

Interactive Learning Multimedia (ILM) emerges as a promising approach to address these challenges. By integrating text, audio, video, and animation, ILM can enhance digital competencies, stimulate interest, and improve understanding of abstract accounting concepts (Mayer, 2009; Zhao, 2023). Combined with the Role Play model in collaborative learning, students are provided with more contextual, social, and dynamic learning experiences that strengthen both cognitive and interpersonal skills (Joyce & Weil, 2018).

In order to establish a more dynamic and captivating learning environment, ILM must be immediately included into accounting education in Indonesia, specifically at SMK Negeri 8 Bandar Lampung. Students may have less interaction and collaboration as a result of accounting education, which is frequently boring and concentrates on their job results in bookkeeping transactions. This might impede the development of skills that are necessary in the workplace (Kemdikbud, 2022). Furthermore, students may become less comfortable voicing their thoughts in front of the class as a result of the lack of communication and cooperation.

Thus, the purpose of this study is to investigate how ILM is used in collaborative learning using the Role Play model and how it affects students' learning results and interest. It is anticipated that by using this method, students will be able to improve their comprehension of accounting principles as well as acquire critical social and teamwork skills for the future. It is anticipated that this study would significantly advance the creation of more relevant and successful teaching strategies for the digital age. It will also give educators and legislators valuable information for creating curricula that better meet the needs of their students.

Literature Review

Education 4.0

The fourth industrial revolution, which is marked by developments in digital technology, automation, and global communication, is being addressed by education 4.0. Sahlberg (2021) asserts that Education 4.0 places a strong emphasis on cultivating 21st-century abilities like

creativity, teamwork, communication, and problem-solving. This idea stems from the necessity of developing a learning environment that is more flexible and sensitive to societal and technological shifts. In this sense, education emphasizes the development of skills applicable to the profession and daily life in addition to the transmission of knowledge.

The significance of student-centered learning, in which learners are expected to actively participate in the educational process, is also emphasized by Education 4.0. This is consistent with constructivist philosophy, which holds that social interaction and experience are the foundations of knowledge (OECD, 2023). Therefore, the goal of Education 4.0 is to give students more contextualized and relevant learning experiences. According to research by Kemdikbud (2022), using 4.0 Education concepts in Indonesia can improve learning results and student motivation while also preparing them to handle more complex difficulties in the workplace.

Project-Based Learning (PBL)

Students are involved in real projects that are pertinent to their life as part of the Project-Based Learning (PBL) method. PBL promotes group collaboration, project planning, execution, and evaluation pertaining to societal issues or real-world difficulties. Hmelo-Silver (2022) asserts that PBL makes learning more relevant and meaningful in addition to improving teamwork and problem-solving abilities.

According to research by Kemdikbud (2022), PBL was successfully implemented in Indonesia's "Kampung Digital" program, increasing pupils' digital literacy by 40%. Students' technical and social awareness are improved as a result of this initiative, which includes them in creating applications to solve trash issues in their surroundings. This demonstrates how PBL can improve learning results and student motivation by relating instruction to pressing social issues. Furthermore, PBL fosters the growth of students' critical and creative thinking abilities, which are crucial for overcoming obstacles in the digital age (Bell, 2010).

Model Role Play

With the use of a role-playing model, students can experience and comprehend subjects firsthand by assuming roles in predetermined scenarios. Role play can improve social skills, strengthen concept knowledge, and increase student involvement, claim Joyce and Weil (2018). Role play can be used to mimic actual business scenarios in accounting education, helping students comprehend how the theories they have studied are applied in real-world scenarios.

According to research by Pratiwi et al. (2018), role-playing can improve learning outcomes and student engagement while also assisting students in developing interpersonal skills that are critical in both the job and daily life. Students can also practice communication and negotiation skills with this model, which are very important in a corporate setting. As a result, the Role Play model might be a useful instrument for developing a more contextualized and dynamic educational process.

Interactive Multimedia Learning (ILM)

Interactive Multimedia Learning (IML) is an approach that combines various types of media, such as text, images, audio, and video, to create a multi-sensory learning

experience.According to Mayer (2009), ILM can enhance students' understanding in a more intuitive and engaging way.The use of ILM in learning not only enhances student motivation but also helps them understand more complex concepts in a more digestible manner.

According to Darmawan (2012), IML can increase students' involvement in the learning process by encouraging them to actively seek out knowledge and work with their peers. According to research by Hwang and Chang (2011), students' learning outcomes can be greatly enhanced when Interactive Multimedia Learning (IML) is used in the classroom. According to Hwang and Chang (2011), students who utilized Interactive Multimedia Learning (IML) demonstrated a greater comprehension of ideas than those who employed more conventional teaching techniques. This is a result of ILM's capacity to deliver content in a variety of formats that students can access and comprehend in a more dynamic and interesting manner.

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Challenges and Opportunities in Implementation

Even while the application of Education 4.0 and creative teaching techniques has a lot of promise, it is impossible to ignore the difficulties that lie ahead. Inequalities in access to technology have grown to be a serious problem, particularly in rural and undeveloped regions. Many Indonesian schools continue to struggle with poor infrastructure, which makes it difficult to integrate technology into the classroom (Kemdikbud, 2022). This affects educational equity by creating a divide between students who have access to technology and those who do not.

Another barrier is the absence of assistance and training for educators in putting new techniques into practice. Many teachers feel unprepared to use technology-based teaching approaches, according to research by Zhao (2023), which can lessen the efficiency of the learning strategies that are put into place. As a result, it is critical to give educators proper training and guarantee that every student has fair access to technology.

Better solutions, however, may be possible if the government, educational institutions, and the private sector work together to raise the standard of education. Education can become more accessible and pertinent to the demands of society today by utilizing technology and creative techniques. For instance, teacher training programs emphasizing the use of technology in the classroom can enhance instructors' proficiency and make it easier to apply ILM and role-playing models more successfully (Alshammari, 2020).

Interactive Learning Multimedia (ILM) - Digital Accounting Literacy (DAL)

In the framework of Digital Accounting Literacy (DAL), Interactive Multimedia Learning (IML) is crucial for improving students' comprehension of intricate accounting ideas. To make information more interesting and easily comprehensible, ILM integrates a variety of media elements, including text, graphics, and videos (Hwang & Chang, 2011). According to research, using ILM in accounting instruction can improve student involvement and help them comprehend the subject matter more fully (Zhao, 2023).

Nonetheless, there are still issues with ILM's application in the accounting area, namely with regard to teacher competency and technological access. Accessing the gadgets required to make the most of ILM remains a challenge for many pupils in distant places (Kemdikbud, 2022). Furthermore, ILM may be less effective if teachers are not trained to use learning technology (Alshammari, 2020). For LIGAT to be implemented successfully, it is crucial to create sufficient training programs and guarantee equitable access to technology for all students.

The application of Education 4.0, Project-Based Learning, Role Play models, and Interactive Learning Multimedia has the potential to significantly raise educational standards, according to this review of the literature. To ensure that these tactics are used successfully, implementation issues including unequal access to technology and a lack of teacher training must be resolved. With the correct strategy, education can adapt to the demands of students and get them ready for the challenges of the digital age. To determine the best methods for implementing these measures and to investigate their long-term effects, more study is required.

Recent studies highlight that while Interactive Multimedia Learning (ILM) can increase motivation and understanding, many students still struggle with low digital fluency, making it difficult for them to fully engage with digital platforms (Zhao, 2023; Alshammari, 2020). This gap in digital knowledge becomes a barrier to maximizing ILM’s benefits, especially when students are not accustomed to self-directed or technology-based tasks.

Moreover, student involvement and engagement remain pressing concerns in traditional accounting instruction. According to Setyawati (2020) and Suci (2024), interactive media significantly increases student focus and participation, which is often lacking in conventional lecture formats. These studies reinforce the idea that integrating ILM and collaborative role play can resolve issues of disengagement by providing more stimulating and socially engaging learning contexts.

Finally, the decline in learning interest is a recurring problem noted in vocational settings, particularly for subjects perceived as technical or monotonous. As noted by Rasmani et al. (2023) and Suci (2024), multimedia tools have been successful in increasing students' interest and motivation, especially when learners are exposed to visually rich and interactive content.

Enhancing learning interest is crucial as it directly correlates with student effort, satisfaction, and achievement.

These findings confirm that addressing digital knowledge gaps, increasing student involvement, and stimulating interest are essential steps toward improving learning outcomes through innovative pedagogical strategies such as ILM and Role Play.

Methods

The purpose of this study's methodology is to investigate how students' motivation and learning results are affected when Interactive Learning Multimedia (ILM) is used in the context of Digital Accounting Literacy (DAL). With an experimental design that includes a control group and a treatment group, this study employs a quantitative methodology. While the control group will be taught using more traditional, conventional techniques like lectures and textbooks, the treatment group will be taught utilizing ILM, which consists of interactive videos, simulations, and quizzes. Researchers may compare learning outcomes and student interest between the two groups in a methodical and quantifiable manner thanks to this approach (Creswell, 2014).

Interactive Learning Multimedia (ILM) used in this study is a collection of multimedia-based instructional materials specifically designed to teach accounting concepts interactively. The ILM package was developed by the researchers and includes animated instructional videos, audio narration, simulations, quizzes and formative assessment, and role-based assignments. The ILM was accessed through school computers and mobile devices using cloud-based software, allowing for flexible access. Students were guided on how to navigate the platform, and teachers facilitated ILM sessions during class using a blended learning approach that included guided discussion and reflection.

The method ensured that ILM was not simply a passive media tool, but an interactive learning environment where students could experiment, reflect, and collaborate. This aligns with Mayer's (2009) cognitive theory of multimedia learning, which emphasizes the importance of dual-channel processing and learner engagement for effective knowledge construction.

Data Analysis

Following the learning session, the researchers used learning outcome exams and interest in learning surveys to gather data. For additional analysis, observation data were also documented. Descriptive and inferential statistics were used to analyze the data that was gathered. To evaluate learning outcomes and interest in learning between the treatment and control groups, the researchers employed a t-test. Finding out if there is a substantial difference between the two groups is made easier by this analysis (Field, 2013).

The researcher performed a preliminary trial of the learning outcome tests and questionnaire to guarantee the validity and reliability of the research tools. Experts in the domains of accounting and education were consulted in order to assess validity, and the Cronbach's Alpha method was used to assess reliability. The study only uses instruments that satisfy validity and reliability requirements (Alshammari, 2020).

Additionally, this study complies with research ethics guidelines, which include getting consent from the parents and school administration. The goal of the study was explained to the students, and they were reassured that their involvement would be anonymous and voluntary. The information gathered will not be shared without consent and will only be

utilized for research (Creswell, 2014). The research can significantly contribute to the creation of more efficient accounting learning strategies that are pertinent to students' demands in the digital age by using this methodical and quantifiable methodology.

Result

The study's findings shed light on how students' attention and learning outcomes are affected when Interactive Learning Multimedia (ILM) is used in conjunction with Digital Accounting Literacy (DAL). Sixty eleventh-grade students from SMK Negeri 8 Bandar Lampung participated in this study. They were split into two groups: one that used ILM as a treatment and the other that used conventional teaching techniques. According to demographic data, 80% of students have access to digital devices and internet connections, which are critical for ILM implementation to be successful. With a balanced gender mix of 60% female and 40% male, the pupils are 16 years old on average. The investigation of ILM impact is given a fuller context by the variety of backgrounds.

Analysis of Learning Interest

Before and after the deployment of ILM, students completed a questionnaire with 20 items on a Likert scale to gauge their enthusiasm in learning. Following the adoption of ILM, the average score of students' learning interest in the treatment group increased dramatically from 3.4 (adequate category) to 4.5 (high category), according to the analysis results. However, the control group only saw a rise from 3.2 to 3.5, thus falling into the adequate range. According to the t-test, this difference is statistically significant ($p < 0.05$), suggesting that ILM increases students' enthusiasm to study accounting in addition to making learning more interesting.The interactive and visual components provided by ILM, such as animated films, simulations, and interactive tests, are responsible for this rise in learning interest since they boost student engagement. Results are presented using table for clarity.

Table 1
Mean Scores Of Learning Interest

Group	Pre-test mean	Post-test mean
Control group	3.2	3.5
Treatment group	3.4	4.5

Analysis of Learning Outcomes

A test with five essay questions and thirty multiple-choice questions covering the accounting topic given is used to gauge the learning results of the students. While the control group only saw an increase from 65 (sufficient category) to 72 (adequate category), the treatment group's average test scores for student learning outcomes rose from 68 (sufficient category) to 85 (good category). This difference is statistically significant ($p < 0.01$), according to the t-test, indicating that ILM considerably improves students' comprehension of accounting topics. Comparing students who study with ILM to those that use traditional teaching techniques, the improvement in learning outcomes shows that the former are better able to comprehend and apply accounting principles.Additionally, test item analysis reveals that students in the treatment group did better on issues requiring both conceptual knowledge and practical application, suggesting that ILM aids in students' better internalization of the subject matter.Results are presented using table for clarity.

Table 2
Mean Scores of Learning Outcomes

Group	Pre-test mean	Post-test mean
Control group	65	72
Treatment group	68	85

Analysis of Class Observations

Throughout the learning sessions, class observations were made to document student involvement, interactions, and ILM usage. 90% of students in the treatment group actively participated in discussions and interactive activities, compared to 60% of students in the control group, according to the observation data, demonstrating a higher degree of involvement. Additionally, observations showed that students in the treatment group worked together in small groups more often, talked about the subject, and assisted one another with assignments. This demonstrates that ILM improves students' social and teamwork abilities in addition to their academic comprehension. In their contacts with teachers and peers, students seem more eager and excited to participate in the learning process. Results are presented using table for clarity.

Table 2
Percentage of Active Participation

Group	Actively Participating (%)
Control group	60
Treatment group	90

Enhancement of Digital Knowledge

Additionally, students in the therapy group showed improved proficiency with digital devices when completing interactive tests and assignments. Their increased digital literacy is reflected in their increased comfort level with technology. According to observations, kids quickly become accustomed to using digital learning resources like online quiz platforms and learning programs. This is consistent with earlier studies that demonstrate how integrating technology into the classroom might improve students' digital literacy (Hwang & Chang, 2011). Enhancing digital literacy is crucial since these abilities are becoming more and more necessary in a workplace that relies heavily on technology.

Overall, the study's findings are consistent with the theory that students' attention and learning outcomes are much improved when Interactive Learning Multimedia (ILM) is used in Digital Accounting Literacy (DAL). In addition to making learning more interesting, ILM also necessitates innovation in pedagogical practices to prepare students for the difficulties of the digital age, as seen by the notable increase in learning interest and learning outcomes scores. Project- based learning, student cooperation, and interactive technology utilization are all successful strategies. Additionally, improving students' competitiveness in the global labor market requires the development of critical and creative skills. Results are presented using table for clarity.

Table 4
Digital Literacy Indicators (Self-Reported & Observed)

Indicator	Control group (%)	Treatment group (%)
Confident in using ILM Tools	45	92
Able to comple digital task	53	95
Willingness to explorenew tools	40	88

Discussions

According to the study's findings, students' motivation and learning outcomes are significantly impacted when Interactive Learning Multimedia (ILM) is used in the context of Digital Accounting Literacy (DAL). From an average score of 3.4 to 4.5, the treatment group's learning interest significantly increased, demonstrating that ILM was successful in establishing a more dynamic and captivating learning environment. This supports the findings of Mayer (2009), who found that using multimedia components in instruction might increase student engagement since interactive and visually appealing content are simpler to comprehend and retain. As a result, ILM encourages students to participate more actively in the learning process in addition to acting as a tool.

The treatment group's average score rose from 68 to 85, indicating a significant improvement in learning outcomes. This suggests that ILM not only increases students' interest in but also their comprehension of accounting concepts. This conclusion is corroborated by earlier research by Hwang and Chang (2011), which shows that technology-based learning can improve students' academic performance, particularly in topics that need for a thorough conceptual understanding. With ILM, students actively participate in the learning process in addition to passively receiving information, which improves their internalization of the subject matter. This demonstrates how ILM can act as a link between theory and practice by allowing students to observe actual uses of the accounting principles they are studying.

Social connection is crucial for learning, as evidenced by classroom observations that demonstrate a higher degree of student involvement in the treatment group (90% actively participating) than in the control group (60% active). Social contact is an essential part of learning, where students can share knowledge and work together to learn from one another, according to Vygotsky (1978). In this situation, ILM acts as a platform that makes these kinds of interactions possible, enabling students to work together in small groups and have more in-depth discussions about accounting topics. In addition to improving academic comprehension, this involvement fosters the development of critical social skills like cooperation and communication, which are highly valued in the workplace.

An additional crucial component of this study is the noted rise in students' digital literacy. Students in the treatment group showed improved proficiency with digital devices and learning programs, indicating a rise in their technological proficiency. Alshammari's (2020) research supports this, highlighting how incorporating technology into the classroom not only enhances learning results but also equips students to deal with the demands of an increasingly digital workplace. The digital skills that students gain during their ILM education will be extremely beneficial in the future, since many industries now need proficient use of

computers. Therefore, ILM not only helps students achieve academic goals but also helps them develop abilities that will be useful in their future careers.

Nevertheless, even if this study's findings indicate that ILM has a beneficial effect, it is crucial to take into account a number of variables that could influence its application and efficacy. One of these is how prepared educators are to use technology in the classroom. According to research by Creswell (2014), in order to guarantee that technology is used in the classroom effectively, teachers must have sufficient training and support. As a result, professional development programs in schools must include instruction on how to use ILM and other instructional technology. Without sufficient assistance, educators can feel uneasy utilizing technology, which could reduce learning efficacy.

Furthermore, not all students may react to ILM in the same way, even if the study's participants demonstrated improved interest and learning results. Traditional teaching methods that are more organized may be preferred by certain kids. Individual variations in learning styles can impact how effective teaching strategies are, according to research by Sugiyono (2018). As a result, it's critical to think about a more adaptable strategy that can take into account pupils' different learning preferences. A better balance, for instance, can be achieved by combining ILM with conventional teaching techniques, enabling students to learn in a manner that best meets their needs.

The infrastructure of technology in schools is another factor that must be taken into account. It's possible that some schools lack the necessary infrastructure to facilitate technology-based learning, even if 80% of the kids in our survey have access to digital devices. According to research by Zhao and Frank (2003), the infrastructure that is now in place—including access to hardware, software, and reliable internet connections—is crucial to the effectiveness of technology integration in the classroom. Inadequate school infrastructure could make it more difficult to deploy ILM and prevent students from making the most of technology. To ensure that all students can take advantage of technology-based learning, it is crucial that the government and school administrators make investments in sufficient technology infrastructure.

Additionally, teachers' and students' resistance to change could be another problem. Certain educators might be at ease using conventional teaching techniques and be reluctant to adopt novel approaches like ILM. Ertmer's (2005) research demonstrates that the way instructors use technology in the classroom can be influenced by their attitudes and ideas about it. To help instructors feel more comfortable using ILM, it is crucial to give them the necessary training and support. Students must be encouraged to be receptive to new teaching strategies and to recognize the advantages of using technology in the classroom.

All things considered, this study offers compelling proof that using Interactive Multimedia Learning (ILM) in Digital Accounting Literacy (DAL) can improve student engagement and academic performance. Effective use of technology by teachers can result in more interesting and pertinent learning opportunities that improve students' academic comprehension and equip them to handle problems in the digital age. These results significantly aid in the creation of more creative accounting education strategies that are pertinent to students' future requirements. As a result, it is advised that educational institutions think about incorporating

ILM into their curricula, provided that the technology infrastructure and instructor support required for successful implementation are available.

Conckusions

According to this study, students' motivation and learning outcomes are much enhanced when Interactive Learning Multimedia (ILM) is used in Digital Accounting Literacy (DAL). According to an analysis of 60 students at SMK Negeri 8 Bandar Lampung, the ILM treatment group's average learning outcomes scores rose from 68 to 85, while the students' interest levels rose from 3.4 to 4.5.

Ninety percent of students actively participate in class discussions, demonstrating the value of social interaction in the learning process. Furthermore, students' digital literacy has increased, which is crucial for their preparedness for the workforce.

To guarantee that ILM is implemented successfully, however, issues including teacher preparedness, technology infrastructure, and change aversion must be resolved. As a result, it is advised that educational institutions incorporate ILM into their curricula while providing sufficient technology infrastructure and teacher support. This study highlights how ILM not only improves learning outcomes and student interest, but also equips them to handle problems in the digital age.

This study contributes theoretically by validating Mayer's cognitive theory of multimedia learning in the context of vocational accounting education. It demonstrates that multimedia-based instructional tools such as ILM, when combined with collaborative models like Role Play, align with constructivist and social learning theories by actively engaging students in meaning-making and peer interaction. Additionally, the study extends the blended learning framework by showcasing how ILM bridges abstract accounting concepts with interactive, contextual applications that enhance both conceptual understanding and digital literacy.

Contextually, this study provides crucial insights into the practical integration of ILM in Indonesian vocational schools, particularly in the domain of accounting education. It addresses ongoing challenges in student engagement, low digital fluency, and passive learning culture that often dominate traditional classrooms. By situating the research within SMK Negeri 8 Bandar Lampung, it highlights how context-sensitive educational innovations can lead to meaningful improvements in learning outcomes and digital readiness. The findings serve as a practical reference for policymakers, educators, and curriculum developers aiming to enhance the quality of vocational education amid rapid technological transformation

Limitations and Future Studies

It is important to take into account the many limitations of this study. First off, the conclusions of this study might not apply to a larger population because it only includes 60 pupils from a single school, SMK Negeri 8 Bandar Lampung. Different student backgrounds, different teaching styles, and different school circumstances can all have an impact on the outcomes. Second, because this study only looks at accounting, it is impossible to guarantee that applying Interactive Learning Multimedia (ILM) to other courses will yield the same outcomes. Furthermore, the study's short duration might not allow for the observation of the

long-term effects of Interactive Learning Multimedia (ILM) on students' interest and academic performance.Third, while the study reports improved interest and learning outcomes, it did not thoroughly examine the effects of outside variables including parental support, the home learning environment, and access to technology outside of school.

The following are some suggestions for further research based on these restrictions. First, in order to get more representative and broadly applicable results, it is advised that future studies include more kids from different schools and backgrounds. Research involving multiple cities or schools can offer more comprehensive perspectives on ILM's efficacy. Second, to see whether the similar effect can be obtained in other academic domains, more research can examine the use of ILM in a variety of courses, including science, math, and language. This will make it easier to comprehend how widely ILM can be used in the classroom. Third, longer-term studies are needed to see how ILM affects students' engagement and learning outcomes over the long run. These studies should also examine learning outcomes at higher levels, including national exams or end-of-year evaluations. Fourth, in order to better understand how teachers and students experience ILM, future study could use qualitative techniques like focus groups and interviews. This can provide details about difficulties and achievements that quantitative analysis would miss. Last but not least, more study is advised to take into account outside variables that may affect learning results, such as the learning environment, parental support, and access to technology at home. Having a better understanding of these elements can aid in creating solutions that work better.By following to this recommendation, future studies can contribute more to our understanding of ILM's efficacy in education and help create more creative and successful teaching methods.

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