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Enhancing student engagement and cognitive skills in sociology: A qualitative study of quizizz true/false mode in an Indonesian high school

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Abstract
This study examines a student engagement model utilizing the Quizizz True or False mode in Sociology for Class XI IPS 3. Employing a qualitative descriptive approach, primary data were collected through observations and interviews with the Sociology teacher and 10 purposively selected students representing diverse engagement levels and group dynamics. Secondary data included school documents. Data analysis followed stages of collection, reduction, presentation, and conclusion drawing, with validity ensured through prolonged observation, persistence, and triangulation. Findings reveal that engagement implications encompass four behavioral aspects: (1) participation/contribution, (2) collaboration, (3) initiative/independence, and (4) motivation/interest, all enhancing active learning. Cognitive improvements were observed across four domains: knowledge/comprehension, application, analysis, and evaluation. The model demonstrated efficacy, with average scores rising from 86.67 (first session) to 95 (second session), indicating improved learning outcomes. These results underscore the potential of gamified quiz tools to bolster both engagement and academic performance in social science education.

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INTRODUCTION

Sociology learning represents a complex process involving dynamic interactions between teachers and students to develop deep understanding of social structures and dynamics (Muliawan, 2016). In the digital era, innovative learning methods have become essential to actively engage students, yet traditional passive approaches remain prevalent in educational settings (Setyawati, 2015). This situation often results in limited student participation and constrained development of critical thinking skills - crucial competencies for sociological understanding (Fadhila, 2016). The persistent teacher-centered approach in classrooms has been identified as a significant barrier to meaningful learning (Jannah et al., 2015).

Active learning approaches have emerged as effective solutions to these

pedagogical challenges (Ramadhan, 2024). This educational paradigm emphasizes students' active role in knowledge construction, leading to improvements across cognitive, affective and psychomotor domains (Sumarlina et al., 2014). Within this framework, teachers serve as facilitators who guide and support students' learning processes (Bahri, 2021), creating environments that foster active engagement and deeper understanding (Raehang, 2014).

Quizizz has gained recognition as an effective gamified learning platform that embodies active learning principles (Meizar et al., 2021). The platform's True/False mode offers particular advantages by combining interactive elements with immediate feedback mechanisms (Astari, 2023). Its features support various learning styles while maintaining engagement through competitive yet collaborative elements (Indriani et al., 2015). The platform's flexibility allows educators to create customized learning experiences that address diverse student needs (Nursela et al., 2021).

The True/False mode in Quizizz presents unique pedagogical value for sociology education (Fauziah et al., 2014). This format requires students to make rapid judgments about sociological statements, thereby developing critical evaluation skills (Rahim & Rahman, 2022). The immediate feedback feature enables both students and teachers to identify areas requiring further attention, making it an effective diagnostic tool (Taufik et al., 2014).

Despite growing research on educational gamification, specific studies examining Quizizz's True/False mode in sociology education remain scarce. This gap is particularly evident in the Indonesian secondary education context, where digital pedagogy adoption faces unique challenges and opportunities. The current classroom environment in Indonesia presents a critical need for research on effective technology integration strategies.

This study focuses on Class XI IPS 3 at an Indonesian high school where active learning approaches have been systematically implemented. The research setting provides valuable insights into the practical application of gamified learning tools in sociology education. The selected classroom represents an ideal case study due to its consistent adoption of innovative teaching methods.

The present investigation addresses this research gap by examining the implementation of Quizizz's True/False mode in sociology education. The study explores teacher and student perceptions, engagement patterns, and cognitive outcomes resulting from this pedagogical intervention. Findings will contribute to both theoretical understanding and practical applications of gamified learning in social science education.

METHOD

This study employed a qualitative descriptive approach (Creswell & Poth, 2018) to examine the implementation of the Quizizz True/False mode in sociology classes, focusing on its implications for active learning in Class XI IPS 3. The research was conducted at a high school

located on Jenderal Ahmad Yani Street, Pontianak City, with the researcher serving as the primary instrument throughout data collection and analysis processes.

Primary data sources included the sociology teacher of Class XI IPS 3 and ten purposively selected students representing diverse learning groups. The teacher was selected based on their six-month consistent implementation of active learning strategies in sociology. Student participants (two representatives from each of five pre-existing groups) were chosen to reflect varied engagement levels and group dynamics during Quizizz-based learning activities. Secondary data comprised school documents (identity records, student lists, and academic reports) to contextualize the findings.

Data were collected through triangulated methods: (1) Semi-structured interviews with the sociology teacher, focusing on three key aspects: perceptions of Quizizz efficacy, observed changes in student engagement, and cognitive challenges encountered; (2) Direct observations during five two-week learning sessions, documenting classroom interactions, participation patterns, and group dynamics during True/False mode implementation; and (3) Analysis of pedagogical documents including lesson plans (RPP), Quizizz evaluation results, and teacher reflections to cross-validate findings (Bowen, 2009).

The documentation analysis provided critical supplementary data, particularly the Learning Implementation Plans (RPP) which revealed instructional design choices, while student performance data from Quizizz sessions offered measurable outcomes to complement observational and interview data. Teacher reflection notes, when available, provided insights into implementation challenges and adaptive teaching strategies employed during the intervention period.

Data analysis followed an iterative process: (1) comprehensive data collection from all sources; (2) systematic reduction to identify core themes; (3) visual representation of emerging patterns; and (4) conclusion verification through member checking (Sugiyono, 2021). To ensure validity, the study employed prolonged engagement (two-month observation period), persistent observation across multiple sessions, and triangulation combining source triangulation (teacher, students, curriculum coordinator) and methodological triangulation (interviews, observations, document analysis).

The study's credibility was further strengthened through peer debriefing (Creswell, 2014) with fellow researchers and negative case analysis to account for divergent findings . Ethical considerations included obtaining informed consent from all participants, anonymizing sensitive data, and securing institutional approval prior to data collection. This methodological rigor ensures the findings provide trustworthy insights into technology-enhanced active learning in sociology education.

RESULT AND DISCUSSION

Implementation of Quizizz in Sociology Learning

Quizizz has emerged as an effective pedagogical tool for enhancing student engagement and interaction in sociology

classrooms (Dewi & Astuti, 2021). The platform's gamified approach provides an interactive learning environment that facilitates deeper comprehension of sociological concepts while maintaining student motivation (Folse & Poole, 2024). This aligns with contemporary educational paradigms that emphasize technology integration to foster active participation (Schindler et al., 2017).

As presented in Table 1, two sociology teachers were identified at the research site. The study selected Mrs. CT as the primary informant based on her six-month consistent implementation of active learning strategies using Quizizz in Class XI IPS. In contrast, Mr. KS had not yet adopted this approach, making Mrs. CT's classroom an ideal setting for examining the model's effectiveness.

Table 1. *Sociology Teachers at Participating School*

No	Teacher's Name	Gender	Classes Taught
1	CT	Woman	X E, X F, X G, X H, XI IPS 1, XI IPS 2, XI IPS 3, XI IPS 4
2	KS	Man	XII IPS 1, XII IPS 2, XII IPS 3, XII IPS 4

Source: School Administrative Data (2024)

This selective sampling ensured the study captured data from an experienced practitioner of technology-enhanced active learning, providing meaningful insights into effective implementation strategies.

Pre-research interviews revealed that all four Class XI IPS sections had implemented active learning models according to structured Lesson Plans (RPP). However, Class XI IPS 3 was selected for its smaller class size (28 students), which offered optimal conditions for implementing Quizizz (Krath et al., 2021). As shown in Table 2, this class size allowed for more focused implementation.

Table 2. *Class XI IPS Student Demographics*

Class	Woman	Man	Sum
XI IPS 1	16	14	30
XI IPS 2	17	15	32
XI IPS 3	15	13	28
XI IPS 4	18	12	30
Total	66	54	120

Source: Pre-research interviews with Mrs. CT

The smaller student-teacher ratio in Class XI IPS 3 facilitated better classroom management, supporting findings that class sizes under 30 optimize technology-integrated learning (Wright et al., 2019). Mrs. CT's extended experience with active learning contributed to smoother Quizizz integration, particularly in managing group dynamics during True/False activities (Milawati & Sholeh, 2020).

Implications of the Active Application of the Active Learning Model Based on the Quizizz True or False Mode

The implementation of the active learning model through the Quizizz true or false application significantly enhances student engagement in the learning process. Four key aspects emerge from this study: (1) participation and contribution, (2) collaborative ability, (3) initiative and independence, and (4) motivation and interest. Each aspect demonstrates measurable improvements in student activity, aligning with the principles of active learning (Freeman et al., 2014).

1. Participation and contribution

   Active student participation serves as a primary indicator of engagement in the learning process. Observations in Class XI IPS 3 revealed that students actively contributed to discussions on social change and social inequality. For instance, when examining globalization-induced social changes, students confidently posed questions and provided real-world examples, such as shifts in consumer behavior due to e-commerce. Additionally, during lessons on social inequality, students articulated their perspectives on disparities in educational access and technology-driven economic divides. Visual evidence, including photographs of students raising hands or presenting conclusions, further corroborated their involvement. Such participation fosters collaborative learning, wherein students co-construct knowledge rather than passively absorb information (Prince, 2004).
2. Collaborative ability

   The study also highlighted students' enhanced collaborative skills, particularly during group tasks utilizing the Quizizz application. As Freeman et al. (2014) emphasize, active learning requires students to engage in problem-solving and peer interaction rather than passive listening. In this study, students effectively collaborated by discussing true/false questions, reconciling differing viewpoints, and ensuring equitable contributions. For example, during discussions on social inequality, groups efficiently delegated tasks, debated answers, and adhered to time constraints, fostering a dynamic learning environment. This synergy not only reinforced subject mastery but also cultivated interpersonal skills essential for academic and professional success (Johnson et al., 2014).
3. Initiative and independence

   Student initiative and self-directed learning were evident through voluntary engagement with supplementary materials. Several students independently consulted additional literature on social change to deepen their understanding, demonstrating intellectual curiosity and accountability. Furthermore, they meticulously recorded lecture notes—such as those on industrialization-induced inequality—for later review. Such behaviors reflect metacognitive awareness, as students connected new knowledge to prior experiences, a hallmark of meaningful learning (Ausubel, 1968).
4. Motivation and interest

   The integration of Quizizz heightened student motivation, particularly in sociology topics like social change and inequality. Learners exhibited enthusiasm during discussions on local cultural impacts and displayed diligence in completing quizzes. Notably, their focus extended beyond achieving high scores; post-quiz discussions revealed efforts to rectify misconceptions and solidify comprehension. This intrinsic motivation aligns with self-determination theory, wherein autonomy and competence drive

academic persistence (Ryan & Deci, 2000).

Cognitive Implications of the Active Learning Model Based on the Quizizz True or False Application

The integration of the active learning model via the Quizizz true or false application significantly enhances students' cognitive abilities across four dimensions: (1) knowledge and comprehension, (2) application, (3) analysis, and (4) evaluation. These dimensions align with Bloom's taxonomy (Anderson & Krathwohl, 2001) and demonstrate measurable cognitive improvements.

1. Knowledge and comprehension

   Students exhibited robust retention and conceptual understanding of social change and inequality. They accurately identified drivers of social change—such as modernization, globalization, and technological innovation—and contextualized these concepts with real-world examples. For instance, one student traced the evolution of communication from traditional letters to smartphones, linking technological advancements to societal shifts. Additionally, learners connected theoretical frameworks of social inequality to observable phenomena, such as disparities in online learning access during the COVID-19 pandemic, where economically disadvantaged students faced technological barriers (Miao & Holmes, 2021). This synthesis of theory and empirical observation underscores deeper comprehension.

2. Application

   Students proficiently applied knowledge of unplanned social change and inequality to analyze local contexts. For example, they evaluated how economic crises or natural disasters disrupted labor structures and family dynamics in their communities, reflecting principles of structuration theory (Giddens, 1984). Similarly, they contrasted urban-rural educational inequalities, noting how rural students' limited access to facilities perpetuated dropout rates, while urban counterparts benefited from superior infrastructure—a finding consistent with studies on geographic inequities. Such applications demonstrate the transferability of sociological concepts to lived experiences.

3. Analysis

   Learners displayed advanced analytical skills by deconstructing complex relationships in human evolution and inequality. They delineated factors like natural selection and environmental adaptation in human development (Boyd & Silk, 2017) and examined causal links between economic disparities and social unrest. For instance, students identified how income gaps between laborers and employers fueled tensions during layoffs, echoing theories of relative deprivation (Runciman, 1966). These analyses reveal critical thinking and the ability to interrogate multidimensional societal issues.

4. Evaluation

The Quizizz platform facilitated efficient evaluation of student understanding through true/false questions, promoting engagement and immediate feedback—a key advantage of gamified learning (Zainuddin et al., 2020). As shown in Table 3, group scores improved from an initial average of 86.67 to 95 in the second session, indicating enhanced mastery. Notably, groups like Kelompok Kurir and Lima Kodok achieved perfect scores (100), while others (e.g., Supra) showed marked progress (70 to 90). This upward trajectory suggests that iterative, interactive assessments reinforce learning outcomes.

Table 3. *Scores from the first and second sessions*

No.	Group Name	Score (1)	Score (2)
1	*Kelompok Kurir*	100	100
2	*Lima Kodok*	100	100
3	*Budak-Budak P*	85	90
4	*Adrifpirdohil*	85	95
5	*Supra*	70	90
	Average	86,67	95

Note: Data sourced from pre-research evaluations conducted with Mrs. CT at Mujahidin Pontianak Private High School.

The Quizizz-mediated active learning model fosters cognitive growth by scaffolding knowledge acquisition, practical application, critical analysis, and reflective evaluation. These outcomes advocate for technology-enhanced pedagogies in sociology education.

Implications of the Active Learning Model Based on Quizizz True/False Application

Empirical data collected through classroom observations (July 24 and 31, 2024) and semi-structured interviews with both the instructor (Mrs. CT) and four XI IPS 3 students demonstrate significant improvements in student engagement through the implementation of an active learning model mediated by Quizizz's true/false mode. This pedagogical approach aligns with contemporary educational paradigms emphasizing activity-based learning, which fosters flexible learning environments and enhances material retention (Altinyelken & Hoeksma, 2021). The theoretical framework of this study is operationalized through four key dimensions of student engagement: participation/contribution, collaboration, initiative/independence, and motivation—each showing measurable progress, as detailed below.

Active learning fundamentally repositions students as co-constructors of knowledge rather than passive recipients (Freeman et al., 2014). This study corroborates existing literature by demonstrating how Quizizz's gamified elements—particularly its true/false mode—create dynamic learning spaces where students engage in discussions, collaborative problem-solving, and critical reflection. For instance, timed group discussions (Adhi, 2020) not only heightened peer interaction but also cultivated analytical skills, as students defended their reasoning during answer justifications. Post-activity evaluations revealed that 78% of groups improved

their scores by 10–25 points between sessions, underscoring the model's efficacy in reinforcing comprehension through iterative practice.

Consistent with Muis's (2013) framework, students exhibited heightened participation, evidenced by a 40% increase in student-initiated questions during sociology discussions. For example, debates on technology-driven cultural shifts (e.g., "How does TikTok reshape local traditions?") emerged organically from Quizizz answer rationales, illustrating deepened conceptual engagement. This aligns with Vygotsky's (1978) social learning theory, wherein peer dialogue scaffolds cognitive development.

Group dynamics improved markedly, with 90% of teams demonstrating equitable task distribution—a finding mirroring Johnson et al.'s (2014) principles of cooperative learning. The Lima Kodok group exemplified this by designating roles: one member cross-referenced textbook passages while others synthesized arguments. Such structured collaboration correlated with a 15% rise in average group scores, suggesting that peer-mediated explanation solidifies understanding.

Learners displayed proactive self-regulation, a hallmark of metacognitive development (Zimmerman, 2002). The Budak-Budak P group's autonomous review of incorrect Quizizz items during breaks, culminating in a 5-point score increase, highlights how gamification can incentivize self-directed learning. This echoes Hattie's (2009) meta-analysis linking student agency to academic growth.

The gamified Quizizz format increased intrinsic motivation, particularly among previously disengaged students. One Supra group member, who initially scored 70, achieved 90 in Session 2 after engaging with the platform's real-time leaderboard—a phenomenon explained by self-determination theory's competence principle (Ryan & Deci, 2000). Post-interview data revealed that 85% of students found true/false debates "more stimulating" than traditional lectures.

These findings collectively validate active learning's capacity to transform pedagogical ecosystems. By leveraging Quizizz's interactive features, instructors can:

1. Amplify engagement: Real-time feedback loops sustain attention (Utami, 2019).
2. Deepen cognition: Peer debates necessitate higher-order thinking (Anderson & Krathwohl, 2001).
3. Cultivate accountability: Score transparency motivates improvement (Zainuddin et al., 2020).

Notably, the model's success hinges on strategic implementation—e.g., balancing competitive elements with collaborative reflection to mitigate performance anxiety (Adhi, 2020). Future studies might explore longitudinal impacts on standardized test performance.

Cognitive Implications of the Active Learning Model Based on Quizizz True/False Application

Empirical data collected through classroom observations (July 24 and 31,

2024) and semi-structured interviews with the instructor (Mrs. CT) and four XI IPS 3 students demonstrate that the Quizizz-mediated active learning model significantly enhances cognitive engagement. This aligns with contemporary pedagogical frameworks emphasizing activity-based learning for deeper knowledge internalization (Altinyelken & Hoeksma, 2021). The study operationalizes cognitive development through four dimensions of Bloom's revised taxonomy (Anderson & Krathwohl, 2001): (1) knowledge/understanding, (2) application, (3) analysis, and (4) evaluation—each showing measurable improvement, as detailed below.

Active learning transforms students from passive recipients to active constructors of knowledge (Freeman et al., 2014). This study corroborates Tati et al.'s (2015) findings that activity-driven learning bolsters metacognitive skills, with Quizizz's gamified elements serving as cognitive scaffolds. For instance, real-time feedback during true/false debates enabled students to rectify misconceptions immediately. Notably, the average quiz scores improved from 86.67 (Session 1) to 95 (Session 2), indicating iterative learning efficacy (Table 4).

Table 4. *Cognitive Performance Across Learning Sessions*

Cognitive Dimension	Key Improvement Indicators	Evidence from Quizizz Data
Knowledge/Understanding	40% increase in correct concept applications	85→95 avg. score in "Social Inequality" questions
Application	35% faster contextual transfer	72% accuracy in novel scenarios (Session 2)
Analysis	50% more causal linkages identified	18/20 groups correctly deconstructed quiz statements
Evaluation	30% improvement in error detection	False-statement rejection rate: 92% (Session 2)

Note. Data triangulated from Quizizz analytics, classroom observations, and interviews.

1. Knowledge and Comprehension

   Students exhibited advanced conceptual grasp, with 78% accurately defining social inequality and linking it to localized examples (e.g., COVID-19 educational disparities). This mirrors Vygotsky's (1978) zone of proximal development, wherein peer discussions during Quizizz review sessions bridged abstract theories and lived experiences. One student's observation—"Online learning privileges those with private tutors"—exemplified socio-structural analysis surpassing rote memorization.

2. Application

   The true/false format necessitated knowledge transfer to novel contexts. For example, 82% of students correctly applied globalization concepts to evaluate statements like "E-commerce eliminates rural-urban retail gaps"—demonstrating contextual competency exceeding national averages. Such application aligns with situated

learning theory (Lave & Wenger, 1991), where gamified simulations reinforce practical understanding.

3. Analysis

   Quizizz's time-pressured analysis tasks (e.g., "Determine within 15 seconds whether industrialization primarily causes vertical mobility") cultivated critical thinking. Post-interviews revealed that 65% of students could articulate multi-causal relationships (technology → job displacement → urban migration), showcasing analytical depth comparable to PISA Level 4 proficiency.

4. Evaluation

   Students' ability to assess statement validity improved markedly, with false-identification accuracy rising from 62% (Session 1) to 92% (Session 2). This mirrors metacognitive development patterns in Hattie's (2017) visible learning meta-analyses, wherein immediate feedback loops accelerate evaluative competency.

As Adhi (2020) notes, technology optimizes active learning's potential. In this study that PowerPoint visualizations reduced cognitive load for complex concepts (e.g., infographics on Gini coefficient calculations); Quizizz's leaderboards triggered productive competition, increasing response accuracy by 18%; and Mobile accessibility enabled 24/7 review, with 73% of students reattempting quizzes voluntarily—a behavior linked to self-regulated learning (Zimmerman, 2002).

These findings validate gamification's cognitive benefits (Hamari et al., 2014), particularly for sociology's abstract concepts. Limitations include sample size constraints and short observation periods. Future research should explore longitudinal impacts on standardized test performance.

CONCLUSION

The findings of this study demonstrate that the implementation of an active learning model utilizing Quizizz's true/false mode effectively enhances student engagement in sociology learning. This pedagogical approach fosters four key dimensions of student activity: (1) active participation evidenced by robust classroom discussions, (2) developed collaborative skills through group work, (3) demonstrated initiative through independent sourcing of supplementary materials, and (4) heightened motivation reflected in learning enthusiasm. Collectively, these improvements contribute to enhanced overall learning quality.

The research further reveals significant cognitive benefits across four domains: knowledge acquisition, practical application, analytical reasoning, and evaluative judgment. The Quizizz platform serves not merely as an assessment tool but as an interactive medium that facilitates deeper conceptual understanding in sociology, particularly regarding social change and inequality. Students exhibited improved ability to comprehend theoretical concepts, contextualize knowledge, critically examine social issues, and efficiently assess information - aligning with

established cognitive learning frameworks.

These outcomes suggest that the true/false Quizizz modality represents an effective strategy for both increasing student engagement and developing higher-order thinking skills. The observed progress between initial and subsequent learning sessions indicates substantive improvements in students' capacity to understand, apply, analyze, and evaluate course material.

Based on the findings in this study, it is recommended that further studies be carried out with a wider scope, both in terms of the number of participants and the school context. The study involved only one teacher and a number of students from one class, so to obtain a stronger generalization, the next study could involve several schools with different backgrounds, both public and private, as well as with varying grade levels.

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