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INSTRUCTIONAL LANGUAGE IN KAHOOT!-BASED EFL LEARNING: A QUASI-EXPERIMENTAL STUDY IN INDONESIAN SECONDARY SCHOOLS

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Abstract: This mixed-methods study with a quasi-experimental design examined students' engagement, motivation, perceived learning benefits, and instructional language experiences in Kahoot!-based EFL learning, comparing English-only (n=36) and mixed English–Indonesian (n=36) conditions in an Indonesian secondary school. Quantitative data from a 58-item questionnaire and pretest-posttest assessments were analyzed using ANCOVA and regression; qualitative data from 12 semi-structured interviews were thematically analyzed. Descriptive results showed high engagement (M=4.38), motivation (M=4.25), and perceived benefits (M=4.12). The mixed English–Indonesian group demonstrated significant improvement ($t(35)=-9.057$, $p<.001$, $d=-1.510$). ANCOVA confirmed instructional language effects on posttest achievement ($F(1,69)=83.201$, $p<.001$, Partial $\eta^2=.547$). Engagement was the strongest predictor of perceived benefits ($R^2=.809$). Qualitative findings indicated bilingual support improved comprehension, reduced anxiety, and increased response speed, particularly for lower-proficiency learners. Findings suggest pedagogical translanguaging can support participation and achievement in gamified EFL learning, though generalizability is limited by single-site sampling.
Keywords: Kahoot!; gamified learning; instructional language; translanguaging; student engagement

INTRODUCTION

English as a Foreign Language (EFL) instruction in Indonesian secondary schools continues to face challenges related to student participation, learning motivation, and classroom engagement (Burhan et al., 2026). Although English is a compulsory subject in the national curriculum, many Indonesian learners still experience limited opportunities to use English meaningfully outside the classroom (Khalisa, 2025). Consequently, English learning often remains confined to formal instructional settings dominated by teacher explanation, textbook exercises, and examination-oriented activities (Brown & Lee, 2025). Such teacher-centered instructional practices may reduce students' confidence, willingness to participate, and classroom interaction, particularly among learners with lower English proficiency levels (Sato & Storch, 2022).

These challenges become increasingly visible in secondary EFL classrooms where students are expected to process English input quickly while simultaneously demonstrating academic performance(Godwin & Jones, 2023). Many learners experience difficulties understanding vocabulary, interpreting instructions, and responding confidently during classroom interaction (Alharthi, 2020). Students frequently hesitate to answer questions because they fear making mistakes or misunderstanding teacher explanations. As a result, maintaining students' attention, participation, and motivation remains a major pedagogical concern in Indonesian EFL contexts(Elsa & Anwar, 2021).

To address these issues, many teachers have integrated digital technologies and game-based learning platforms into classroom instruction (Chen & Hwang, 2024;Permana, ,2024). One of

the most widely used platforms in contemporary EFL classrooms is Kahoot!, a game-based student response system that allows teachers to design quizzes, discussions, and formative assessment activities using smartphones or computers (Adelia & Dewi, 2026; Alawadhi & Abu-Ayyash, 2021; Kıyançiçek & Uzun, 2022). Kahoot! incorporates gamification features such as points, competition, rankings, time pressure, music, and immediate feedback to create more interactive and engaging classroom environments (Tao & Zou, 2023).

The increasing popularity of Kahoot! in EFL education is associated with its potential to transform conventional classroom review activities into interactive learning experiences(Anwar et al., 2020). Unlike traditional paper-based exercises, Kahoot! encourages students to participate actively by answering questions in real time while competing with peers through leaderboard rankings (Licorish & Lötter, 2022). The platform additionally provides immediate corrective feedback after each question, enabling students to identify errors and monitor their understanding directly during classroom activities. Such features may create a more enjoyable learning atmosphere and reduce the monotony commonly associated with conventional English instruction (Ahmed et al., 2022).

Previous studies have reported that Kahoot! positively contributes to students' behavioral, emotional, and cognitive engagement in language learning contexts (Wang & Tahir, 2020; Licorish & Lötter, 2022; Tao & Zou, 2023). Students frequently demonstrate higher participation, stronger classroom interaction(Anwar et al., 2020), and greater enthusiasm when Kahoot! is integrated into EFL lessons Kahoot! has also been associated with increased learning motivation because its competitive and game-like environment encourages students to focus more carefully on classroom tasks while maintaining enjoyment during learning activities (Prihatini et al., 2024). (Zhang & Zou, 2023), through a systematic review of Kahoot! studies published between 2013 and 2022, concluded that most previous research reported positive effects on engagement and motivation but showed inconsistent findings regarding learning achievement outcomes. Furthermore, the platform enables teachers to conduct formative assessment in less threatening ways, allowing students to review learning materials without experiencing the pressure commonly associated with traditional testing. Existing gamification studies have also been criticized for insufficient theoretical grounding. (Krath, et al., 2023) noted that many gamification studies focus primarily on practical outcomes while lacking integration with established educational and psychological theories.

Zhang and Zou (2023) additionally noted that Kahoot! research has predominantly focused on higher education contexts and short-term perception-based designs, while secondary school mixed-methods investigations remain limited.

Despite these benefits, Kahoot!'s fast-paced structure may also create instructional challenges for EFL learners, particularly those with limited English proficiency. During Kahoot!-based activities, students must read instructions, process vocabulary, understand questions, and select answers within limited time constraints. These demands require learners to process linguistic information rapidly while simultaneously responding to competitive classroom conditions. For learners who struggle with English comprehension, time pressure may increase anxiety and reduce classroom confidence.

The effectiveness of Kahoot!-based learning may therefore depend not only on the technological platform itself but also on how instructional language is used during classroom interaction. One important pedagogical issue concerns whether teachers should employ English-only instruction or provide mixed English–Indonesian instructional support during Kahoot!-based activities. English-only instruction is frequently promoted in EFL classrooms because it increases learners' exposure to the target language and encourages students to process English directly during classroom communication (Alrabai, 2024). However, English-only instruction may also create comprehension barriers for learners with limited vocabulary knowledge or slower reading comprehension skills, particularly during time-pressured gamified activities.

To address these difficulties, some EFL teachers employ bilingual instructional support through strategic use of English and Bahasa Indonesia during classroom interaction. (Sukmawati, 2024)argues that translanguaging is not simply "mixing languages," but a pedagogical strategy that helps multilingual learners understand English lessons better, especially in Indonesian EFL contexts. Such practices align with translanguaging perspectives(Rahmadani, & Aditiawarman, 2024), which emphasize the flexible use of learners' linguistic resources to support meaning-making and communication (Cenoz & Gorter, 2022). Through translanguaging practices, teachers may clarify instructions, explain

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difficult vocabulary, and reduce comprehension barriers without completely removing English exposure(Rizal, F., 2023;Sahan, K., & Rose, 2021). In multilingual Indonesian classrooms, bilingual instructional support may help learners participate more confidently and reduce anxiety during fast-paced classroom activities (Nurhayati, & Sulistyani, 2024)

The relationship between instructional language and classroom engagement can also be explained through Self-Determination Theory (Deci & Ryan, 2024). According to this theory, learning motivation is influenced by learners' psychological needs for competence, autonomy, and relatedness. Kahoot!'s interactive environment may support autonomy through independent participation and relatedness through classroom competition and peer interaction. However, students' sense of competence depends heavily on whether they understand classroom instructions and feel capable of completing tasks successfully. When learners experience confusion due to language barriers, their motivation and classroom participation may decrease.

In addition, instructional language may influence students' cognitive processing during fast-paced learning activities. Kahoot!-based learning requires students to process linguistic information while simultaneously responding to gameplay mechanics such as timing, scoring, and competition. Cognitive Load Theory suggests that excessive linguistic difficulty may increase extraneous cognitive load and reduce learners' ability to allocate attention effectively during classroom tasks (Sweller, 2023). Consequently, mixed English–Indonesian instructional support may help students process instructions more efficiently and focus more effectively on task completion and classroom participation.

Previous research on Kahoot! in EFL contexts has consistently reported positive findings regarding student engagement and motivation. Wang and Tahir (2020) synthesized 93 studies and concluded that Kahoot! positively influenced classroom participation across educational levels. Similarly, Tao and Zou (2023) found that Kahoot! significantly enhanced behavioral engagement in Chinese EFL classrooms, although cognitive engagement effects were comparatively weaker. In Indonesian contexts, (Syahri et al., 2026) and (Marinda et al, 2025) reported positive student perceptions of Kahoot!-based learning, particularly regarding enjoyment, participation, and reduced classroom anxiety.

However, findings regarding learning outcomes remain inconsistent. (Pham et al., 2025) demonstrated significant vocabulary improvement among Vietnamese EFL learners using Kahoot!, whereas Burhan et al. (2026) found no significant difference between Kahoot! and traditional quiz formats in Indonesian secondary schools. These inconsistent findings suggest that additional mediating variables, such as instructional language, may influence the effectiveness of Kahoot!-based learning.

Research concerning instructional language in gamified learning environments remains limited. (Alrabai, 2024) examined teacher language use in Saudi EFL classrooms but did not focus specifically on gamified platforms. (Waluyo & Rouaghe, 2025) investigated translanguaging practices involving AI-assisted learning tools, yet Kahoot!-specific research remains absent. Meanwhile, (Rahmadanirwati & Aditiawarman, 2023) documented code-switching practices in Indonesian bilingual classrooms; however, their study preceded the widespread implementation of gamified learning technologies in secondary EFL instruction.

Critique of the existing literature reveals four major limitations(Hanafiah et al., 2021). First, many studies rely heavily on self-report perception data without integrating objective achievement measures. Second, comparative studies examining instructional language conditions in gamified EFL learning environments remain scarce. Third, limited attention has been given to cognitive load mechanisms during time-pressured classroom interaction. Fourth, translanguaging theory has rarely been integrated with gamification research in multilingual secondary EFL classrooms.

Despite extensive research on Kahoot! in EFL contexts, four important gaps remain unaddressed. Responding to recommendations by Zhang and Zou (2023), the present study combines quasi-experimental achievement analysis with qualitative exploration of instructional language experiences in secondary EFL classrooms.

First, no published study has directly compared English-only and bilingual instructional conditions during Kahoot!-based activities in Indonesian secondary EFL classrooms.

Second, existing studies have not integrated translanguaging theory (Cenoz & Gorter, 2022) with Cognitive Load Theory (Sweller, 2023) to explain how instructional language influences learning during time-pressured gamified activities.

Third, previous Kahoot! studies have predominantly employed single-method designs, while mixed-methods investigations examining

both achievement outcomes and experiential factors remain limited.

Fourth, research concerning instructional language in gamified EFL learning has focused primarily on university settings, whereas secondary school multilingual classrooms in Southeast Asia remain underexplored.

Accordingly, this study investigates students' perceptions and experiences of Kahoot!-based EFL learning under English-only and mixed English–Indonesian instructional conditions in Indonesian secondary schools. RQ1: How do secondary EFL students perceive Kahoot!-based learning in terms of engagement, motivation, and perceived learning benefits? RQ2: How do students experience English-only versus mixed English–Indonesian instructional support during Kahoot!-based EFL activities?

This study offers three novel contributions.

First, methodologically, it represents one of the first quasi-experimental mixed-methods investigations comparing English-only and bilingual instructional conditions during Kahoot!-based EFL learning in Indonesian secondary education.

Second, theoretically, the study integrates translanguaging pedagogy (Wei & García, 2022; Cenoz & Gorter, 2022) with Cognitive Load Theory (Sweller, 2023) to explain how bilingual instructional support may reduce extraneous cognitive load during fast-paced gamified activities.

Third, empirically, the study combines comparative achievement data through pretest–posttest analyses with qualitative experiential findings, enabling examination of both whether and how instructional language influences engagement and learning outcomes during Kahoot!-based EFL learning. This study is significant for three major constituencies.

For EFL teachers, the findings provide evidence-based guidance regarding the use of bilingual instructional support during gamified classroom activities, particularly for learners with intermediate English proficiency levels(Sukmawati, R., 2024).

For curriculum developers and policymakers, the results contribute to discussions concerning instructional language policies in technology-enhanced EFL classrooms, suggesting that flexible bilingual scaffolding may support participation and achievement more effectively than strict English-only practices(Rizal, 2023).

For researchers, the study establishes a methodological framework for investigating instructional language in gamified EFL learning and highlights cognitive load as a potentially important mediating mechanism requiring further exploration(Ishaq et al., 2021).

METHOD

This study employed a quasi-experimental mixed-methods design to investigate students' engagement, motivation, perceived learning benefits, and instructional language experiences during Kahoot!-based English as a Foreign Language (EFL) learning. A mixed-methods approach was selected because it enables comprehensive examination of both measurable learning outcomes and students' experiential perspectives regarding instructional language use during gamified classroom activities (Creswell, & Creswell, 2023;Lincoln, Y. S., & Guba, 2021)

Quantitatively, the study utilized a non-equivalent pretest–posttest intact-group design involving two instructional conditions: an English-only group and a mixed English–Indonesian instructional group. Because participants were assigned based on existing classroom arrangements rather than random assignment, the study was categorized as quasi-experimental rather than fully experimental(Saldaña, 2021). The quantitative component examined differences in students' English achievement, engagement, motivation, and perceived learning benefits following the implementation of Kahoot!-based learning activities.

Qualitatively, semi-structured interviews were conducted to provide deeper insight into students' classroom experiences(Dörnyei, 2022), particularly regarding comprehension, confidence, participation, response speed, and perceptions of instructional language during Kahoot!-based EFL activities. The qualitative findings were used to complement and explain the quantitative results, especially concerning how English-only and mixed English–Indonesian instructional support influenced students' learning experiences in fast-paced gamified classroom environments.

Sample size (n = 36 per group) was determined based on an a priori power analysis using G*Power 3.1 (Faul et al., 2023). For a two-group ANCOVA with one covariate, assuming a medium effect size ($f^2 = .25$), $\alpha = .05$, and statistical power = .80, the minimum required sample size was 34 participants per group. The obtained sample (n = 36 per group) exceeded this minimum requirement and was therefore

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considered sufficient for statistical analysis.

A total of 114 Grade XII students from SMA Negeri 1 Kebomas, Gresik, East Java, Indonesia participated in the study. Among these participants, 72 students were involved in the quasi-experimental intervention phase and were divided equally into two intact classroom groups: an English-only instructional group (n = 36) and a mixed English–Indonesian instructional group (n = 36). The remaining participants were involved in the broader questionnaire-based perception phase of the study.

The use of both quantitative and qualitative data enabled a more comprehensive understanding of students' engagement, motivation, instructional language experiences, and learning outcomes during Kahoot!-based EFL learning activities.

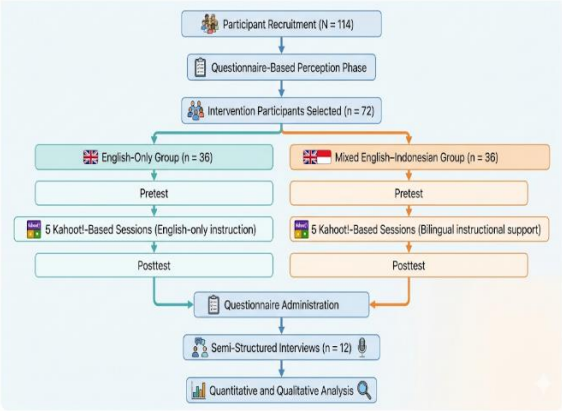


Figure 1. *Quasi-experimental research design flowchart*

This study was conducted at SMA Negeri 1 Kebomas, Gresik, East Java, Indonesia and involved Grade XII students aged between 16 and 18 years old. A total of 114 students participated in the study. Among these participants, 72 students were involved in the quasi-experimental intervention phase, while the remaining participants were involved in the broader questionnaire-based perception phase only.

The 72 participants included in the intervention phase were divided equally into two intact classroom groups: an English-only instructional group (n = 36) and a mixed English–Indonesian instructional group (n = 36). The grouping was based on existing classroom arrangements rather than random assignment; therefore, the study employed a non-randomized intact-group quasi-experimental design. Both groups were taught by the same English teacher to maintain instructional consistency throughout the intervention period.

The participants represented mixed socioeconomic backgrounds typical of public secondary schools in Gresik, East Java. Most students came from lower-middle to middle socioeconomic households whose parents worked in private-sector employment, small businesses, industrial labor, or local government services.

Based on pretest achievement scores and classroom teacher evaluation, participants' English proficiency levels were estimated to fall within the A2–B1 range of the Common European Framework of Reference for Languages (CEFR). Students generally demonstrated basic to intermediate abilities in vocabulary comprehension, grammar usage, and reading comprehension, although substantial variation in proficiency remained evident across participants.

All participants had prior experience using Kahoot! in classroom activities before the intervention. Most students reported using Kahoot!-based learning approximately two to four times per semester in English and other subject classrooms. Consequently, participants were already familiar with Kahoot! gameplay mechanics, including answering quizzes, leaderboard rankings, timed responses, and immediate feedback features.

Regarding language background, Bahasa Indonesia was the dominant language used during formal classroom instruction, while Javanese and Indonesian were commonly used for daily communication at home and among peers. Most participants regularly engaged in bilingual or multilingual communication practices outside the classroom. This linguistic context was considered relevant because the study examined translanguaging and bilingual instructional support during Kahoot!-based EFL learning activities.

Table 1. presents the demographic characteristics of participants involved in the intervention phase.

Table 1. *The demographic characteristics of participants*

Variable	English-only Group	Mixed English-Indonesian Group
N	36	36
Age Range	16–18 years	16–18 years
Gender	Male = 15; Female = 21	Male = 14; Female = 22
Pretest Mean (SD)	M=66.55 SD=12.27	M=63.29 SD=9.62
Prior Kahoot! Experience	36	36

Device Access	36	36

All participants had access to smartphones or other digital devices required for Kahoot!-based classroom participation. The use of intact classroom groups helped preserve natural classroom conditions and minimized disruption to the school's instructional schedule.

Before data collection, institutional permission was obtained from the school administration. Because several participants were under 18 years old, written parental consent and student assent were collected prior to participation. Students were informed that participation was voluntary and that withdrawal from the study would not influence their academic evaluation or classroom grades. To maintain confidentiality, all participant identities were anonymized during data analysis and reporting.

The intervention was conducted over eight weeks to examine students' experiences and learning outcomes during Kahoot!-based EFL instruction under two different instructional language conditions. During the intervention period, students participated in five Kahoot!-based learning sessions, with each session lasting approximately 90 minutes. The sessions focused on English learning materials related to vocabulary, grammar, reading comprehension, and lesson review activities aligned with the Grade XII curriculum.

Each Kahoot! session consisted of approximately 15 quiz questions designed according to the instructional objectives of the lesson. To ensure comparability between groups, both the English-only and mixed English–Indonesian groups received identical learning materials, quiz questions, classroom activities, and response-time allocations during gameplay. The same English teacher taught both groups throughout the intervention period to minimize instructional variability and maintain consistency in classroom management and lesson delivery.

The primary difference between the two groups concerned the teacher's instructional language during classroom explanations, instructions, and interaction. In the English-only group, all classroom instructions, explanations, feedback, and discussion were delivered entirely in English. In contrast, the mixed English–Indonesian group received bilingual instructional support in which Bahasa Indonesia was strategically used to clarify instructions, explain difficult vocabulary, and assist comprehension when necessary.

To maintain treatment fidelity, structured lesson plans and standardized Kahoot! materials were prepared before the intervention. Classroom observations were conducted during each session to monitor the implementation of instructional language practices and ensure that both groups consistently received the intended treatment conditions. In addition, Kahoot! performance scores and participation records were automatically recorded after every session and used as supporting descriptive learning data alongside the pretest and posttest results.

The intervention activities are summarized in Table 2.

Table 2. The intervention activities

Week	Topic	Kahoot! Task	English-only Condition	Mixed English-Indonesian Condition	Output
1	Vocabulary	15-item quiz	English instructions and feedback	English plus Indonesian clarification	Kahoot score
2	Grammar	Sentence quiz	English-only explanation	Indonesian scaffolding for difficult items	Accuracy
3	Reading	Comprehension quiz	English-only prompts	Indonesian clarification for key vocabulary	Score and response speed
4	Review	Mixed quiz	English discussion	English-Indonesian discussion	Reflection
5	Final Review	Comprehensive quiz	English-only feedback	Mixed feedback	Posttest preparation

The intervention design aimed to preserve natural classroom conditions while allowing comparison between instructional language approaches during Kahoot!-based learning activities. The use of identical materials, equal timing, the same teacher, and consistent classroom

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procedures helped reduce potential instructional bias between the two groups.

A perception-based questionnaire served as the primary instrument for measuring students' engagement, motivation, perceived learning benefits, and instructional language experiences during Kahoot!-based EFL learning. All items employed a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire was presented in Indonesian with English translations to support comprehension among intermediate-level EFL learners.

The questionnaire consisted of 58 items covering four major dimensions: engagement (16 items), motivation (14 items), perceived learning benefits (12 items), and instructional language experience (16 items). The items were adapted from previously validated instruments related to Kahoot!-based learning, gamified learning engagement, and EFL motivation. To ensure linguistic and contextual appropriateness for Indonesian senior high school students, the adaptation process involved cross-cultural modification procedures.

A forward and backward translation procedure was employed to maintain conceptual equivalence between the original and adapted versions. First, the English questionnaire items were translated into Indonesian by the researcher. Subsequently, an independent bilingual translator translated the Indonesian version back into English to verify semantic consistency and translation accuracy.

To strengthen content validity, the adapted questionnaire underwent expert review involving two EFL specialists and one educational technology expert. The experts evaluated item clarity, wording, relevance, and cultural appropriateness for the Indonesian EFL classroom context. Item-level Content Validity Index (I-CVI) values ranged from .83 to 1.00 across questionnaire items, while the Scale-level Content Validity Index (S-CVI) reached .92, indicating satisfactory content validity for educational research purposes.

Prior to the main study, the questionnaire was pilot tested with students who shared characteristics similar to the target participants(Patton, 2021). The pilot testing aimed to evaluate item clarity, response consistency, and instrument reliability. Statistical analyses using SPSS demonstrated satisfactory psychometric properties across all questionnaire dimensions. The engagement scale showed excellent reliability (Cronbach's $\alpha = .946$), the motivation scale demonstrated good reliability ($\alpha = .888$), and the perceived learning benefits scale showed acceptable reliability ($\alpha = .731$).

The relatively lower alpha for perceived learning benefits ($\alpha = .731$) may reflect the multidimensional nature of perceived learning, including vocabulary improvement, grammar comprehension, reading skills, and overall English learning perceptions. Post-hoc reliability analysis indicated that no individual item deletion would increase the alpha coefficient beyond .745; therefore, the original 12-item structure was retained to preserve conceptual coverage of the construct.

Corrected item-total correlation values ranged from .642 to .853 for engagement items, .500 to .744 for motivation items, and .415 to .669 for perceived learning benefits items, indicating satisfactory construct validity and internal consistency across questionnaire dimensions.

Although exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were not conducted because of sample size limitations, the questionnaire dimensions were theoretically derived from established constructs in gamified learning, engagement, motivation, and translanguaging literature. Future research involving larger samples is recommended to further examine factorial validity using CFA procedures.

Several questionnaire items are presented below as examples:

Example items of engagement

"Saya aktif menjawab pertanyaan saat menggunakan Kahoot!."
(I actively answer questions when using Kahoot!.)
"Using Kahoot! helped me understand English materials more easily."

Example items of motivation

"Saya ingin terus belajar Bahasa Inggris dengan metode seperti ini."
(I want to continue learning English using this method.)
"Kahoot! mendorong saya untuk bersaing secara sehat dengan teman sekelas."
(Kahoot! encourages me to compete healthily with my classmates.)

Example items of perceived learning benefits

"Saya merasa kemampuan Bahasa Inggris saya meningkat."
(I feel that my English skills have improved.)
"Saya merasa pembelajaran Bahasa Inggris bermanfaat bagi masa depan saya."
(I feel that learning English is beneficial for my future.)

Example items of instructional language experiences

> "Ketika guru menggunakan campuran Bahasa Indonesia dan Bahasa Inggris, saya lebih mudah memahami pertanyaan di Kahoot!." (When the teacher uses a mix of Indonesian and English, I find it easier to understand the questions in Kahoot!.)
>
> "Penggunaan bahasa oleh guru membantu saya tetap fokus pada isi pertanyaan, bukan hanya pada bahasanya." (The teacher's language use helps me stay focused on the content of the questions, not only on the language itself.)

Following the pilot study, item refinement procedures were conducted by revising unclear wording, removing ambiguous expressions, and improving item organization to enhance questionnaire clarity and comprehensibility.

To measure students' English achievement before and after the intervention, pretest and posttest instruments were administered. Both tests consisted of 20 multiple-choice questions designed to assess vocabulary, grammar, and reading comprehension skills aligned with the instructional materials used during the Kahoot!-based sessions. The test composition included 5 vocabulary items, 5 grammar items, and 10 reading comprehension items. Each test was completed within 45 minutes.

The scoring procedure used objective marking, in which each correct answer received 5 points and incorrect answers received 0 points, resulting in a maximum score of 100. The pretest was administered before the intervention to determine baseline equivalence between the two instructional groups, while the posttest was conducted after the intervention to examine students' learning achievement following the Kahoot!-based activities.

To ensure instrument quality, the test items underwent content validation through expert judgment and statistical validation procedures using SPSS. Reliability analysis demonstrated satisfactory internal consistency for the achievement test, with a KR-20/Cronbach's alpha coefficient of .821, indicating good reliability for classroom assessment purposes.

Item analysis procedures were also conducted to examine item difficulty and discrimination indices. The item difficulty index ranged from .32 to .78, indicating moderate levels of difficulty across most test items. In addition, the discrimination index values ranged from .31 to .67, suggesting that the test items were generally effective in distinguishing between higher-performing and lower-performing students.

Several sample test items are presented below:

Vocabulary Item Example:

Evidence has shown vaccination reduces the risk of severe disease (Paragraph 2)

The best word to replace the bold word is

A. mild
B. serious
C. strict
D. unfriendly
E. temperate

Grammar Item Example:

Natural emissions…an important role in our climate.

A. play
B. played
C. plays
D. is playing
E. has played

Reading Comprehension Item Example: Based on the text, how does a pregnant mother get benefits for her baby from being vaccinated?

A. She has a strong protection against serious illness
B. She transmits antibodies for the virus through placenta
C. She has lower risk of having a premature death during pregnancy
D. The vaccine helps protect the baby against diphtheria
E. She is more up to date with recommended COVID-19 vaccination

The acceptable reliability coefficient, moderate difficulty level, and satisfactory discrimination indices indicate that the pretest and posttest instruments were appropriate for measuring students' English achievement during the quasi-experimental intervention.

Semi-structured interviews were conducted with selected participants to obtain deeper insights into students' experiences during Kahoot!-based activities. The interview protocol explored students' perceptions of instructional language, classroom interaction, comprehension difficulties, confidence, and preferences regarding English-only versus mixed English–Indonesian support. Interviews were audio-recorded with consent and transcribed for analysis.

The study was conducted in several stages:

First, the researcher obtained permission from the school and coordinated with the English teacher regarding class schedules, grouping, and implementation procedures. The researcher prepared Kahoot!-based instructional materials,

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pretest and posttest items, questionnaires, and interview guides in alignment with the Grade XII curriculum.

Second, both instructional language groups completed the pretest to measure initial English proficiency. Pretest scores were used to examine whether the groups were equivalent at baseline before the treatment.

Third, the treatment phase consisted of several Kahoot!-based EFL learning sessions. In the English-only group, all instructions, quiz questions, and feedback appeared in English. In the mixed English–Indonesian group, the teacher supplemented English instructions with Bahasa Indonesia explanations to support comprehension and reduce cognitive load. In both groups, Kahoot! features such as immediate feedback, competition, points, rankings, and fast-paced interaction were integrated into classroom activities to review and reinforce lesson content.

After the treatment, all students completed the posttest and the perception questionnaire. A subset of students from each group was then invited to participate in semi-structured interviews to provide qualitative elaboration on their experiences of, engagement, motivation, perceived learning benefits, and instructional experiences during Kahoot!-based lessons.

Quantitative data were analyzed using SPSS. Pretest and posttest scores were entered alongside questionnaire responses and screened for completeness, input errors, and duplicate submissions. Only complete and valid responses were retained for analysis. Composite scores for engagement, motivation, perceived learning benefits, and instructional language experience were calculated by averaging the relevant Likert-scale items. Internal consistency for each questionnaire dimension was examined using Cronbach's alpha.

Several statistical procedures were conducted in line with the research objectives. First, an independent-samples t-test was performed on pretest scores to determine baseline equivalence between the English-only and mixed English–Indonesian groups before the intervention.

Second, paired-samples t-tests were conducted separately for each group to compare pretest and posttest scores and examine within-group learning improvement following the implementation of Kahoot!-based learning activities.

Third, an Analysis of Covariance (ANCOVA) was conducted with posttest scores as the dependent variable and pretest scores as the covariate. This analysis was used to compare posttest achievement between the two instructional language groups while controlling for differences in initial English proficiency.

Fourth, gain scores were calculated by subtracting pretest scores from posttest scores. An independent-samples t-test on gain scores was subsequently conducted to compare the magnitude of learning improvement between the English-only and mixed English–Indonesian groups.

Fifth, multiple regression analysis was carried out to examine the contribution of engagement, motivation, and instructional language experience to students' perceived learning benefits. In addition, instructional language group was entered as a dummy-coded variable (0 = English-only; 1 = mixed English–Indonesian) to examine whether instructional language significantly predicted posttest achievement after controlling for pretest scores.

Before conducting the analyses, assumptions for parametric statistical testing, including normality, linearity, homoscedasticity, and absence of multicollinearity, were evaluated using diagnostic statistics and graphical inspection. Statistical significance was determined using an alpha level of .05 (two-tailed).

Qualitative interview data were analyzed using thematic analysis to explore students' perceptions of engagement, motivation, comprehension, confidence, and instructional language experiences during Kahoot!-based EFL learning. The analysis process involved transcription, coding, categorization, and theme development. Interview transcripts and classroom observation notes were read repeatedly to identify recurring patterns and meaningful statements related to students' learning experiences.

The coding process was conducted manually by organizing meaningful segments into initial codes derived from both interview transcripts and classroom observations. Twelve students participated in the interview phase and were anonymized using participant codes such as S1, S2, and S12 to maintain confidentiality. Initial codes were subsequently grouped into broader categories and refined into major themes representing students' perceptions and classroom experiences during the intervention.

To enhance trustworthiness, inter-coder agreement procedures were employed. Two independent coders analyzed portions of the qualitative data separately and compared their coding results to ensure consistency in interpretation and theme identification. Any coding discrepancies were discussed until

consensus was achieved. In addition, member checking was conducted by sharing summarized findings with selected participants to confirm the accuracy of the interpretations.

Several themes emerged from the qualitative analysis, including increased learning motivation, active classroom engagement, improved comprehension through bilingual instructional support, and reduced anxiety during English learning activities. These qualitative findings were integrated with the quantitative results to provide deeper explanatory insights into students' experiences during the intervention.

RESULTS AND DISCUSSION

This section presents the findings obtained from questionnaire responses, reliability and validity analyses, pretest–posttest comparisons, ANCOVA, gain score analysis, multiple regression analysis, and qualitative thematic analysis following the implementation of Kahoot!-based EFL learning activities. The findings are organized into four major areas: (1) students' engagement during Kahoot!-based learning, (2) students' motivation toward English learning, (3) students' perceived learning benefits, and (4) the role of instructional language in Kahoot!-based EFL activities.

RQ1: How do secondary EFL students perceive Kahoot!-based learning in terms of engagement, motivation, and perceived learning benefits?

To answer the first research question, quantitative analyses were conducted using descriptive statistics, reliability testing, t-test baseline, paired t-test, ANCOVA, gain score, multiple regression, dummy-coded group. These analyses examined extent to which engagement, motivation, and perceived learning benefits were perceived among secondary EFL students through Kahoot!-based learning.

Reliability and validity of the questionnaire

This section presents the findings obtained from questionnaire responses, reliability and validity analyses, pretest–posttest comparisons, ANCOVA, gain score analysis, multiple regression analysis, and qualitative thematic analysis following the implementation of Kahoot!-based EFL learning activities. The findings are organized into four major areas: (1) students' engagement during Kahoot!-based learning, (2) students' motivation toward English learning, (3) students' perceived learning benefits, and (4) the role of instructional language in Kahoot!-based EFL activities.

Reliability and validity of the questionnaire

The questionnaire scales demonstrated satisfactory psychometric properties across all measured dimensions. Reliability analysis showed excellent internal consistency for the engagement scale (Cronbach's $\alpha = .946$), good reliability for the motivation scale ($\alpha = .888$), and acceptable reliability for the perceived learning benefits scale ($\alpha = .731$).

To avoid inconsistency, only the corrected item-total correlation ranges derived from the final validated questionnaire were retained in the analysis. The engagement items showed corrected item-total correlations ranging from .642 to .853, motivation items ranged from .500 to .744, and perceived learning benefits items ranged from .415 to .669. These values indicate satisfactory construct validity and internal consistency across questionnaire dimensions.

Table 3: *Reliability and validity results*

Scale	Number of Items	Cronbach's Alpha	Corrected Item–Total Correlation Range
Engagement	16	.946	.642–.853
Motivation	14	.888	.500–.744
Perceived Learning Benefits	12	.731	.415–.669

The findings indicate that the questionnaire instruments were sufficiently reliable and appropriate for measuring students' engagement, motivation, perceived learning benefits, and instructional language experiences during Kahoot!-based EFL learning.

Reliability analysis

Students' engagement during kahoot!-based learning

The engagement questionnaire revealed generally high levels of classroom engagement among participants. Students reported actively participating during Kahoot!-based activities, paying attention to teacher explanations, responding enthusiastically to quiz questions, and

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remaining involved throughout classroom interaction.

Descriptive analysis showed that the overall engagement mean score reached 4.38 on a five-point Likert scale, indicating high engagement during Kahoot!-based learning sessions. Behavioral engagement was reflected through active participation and attentiveness, while emotional engagement appeared through enjoyment and excitement during gameplay activities.

Several students also reported increased competitiveness and concentration during classroom quizzes. The game-based features of Kahoot!, such as rankings, scores, and immediate feedback, appeared to encourage students to remain actively involved throughout the lessons.

Students' motivation toward english learning

Students also demonstrated high levels of motivation during Kahoot!-based English learning activities. The overall mean motivation score reached 4.25, indicating positive motivational responses toward the use of Kahoot! in the EFL classroom.

Students reported that Kahoot! made English learning more enjoyable, less monotonous, and more interactive compared to conventional classroom activities. Many participants also indicated that leaderboard rankings, classroom competition, and teacher feedback motivated them to participate more actively and perform better during English lessons.

The motivational findings suggest that Kahoot!'s gamification features contributed to both intrinsic and extrinsic motivational processes. Students appeared motivated not only by enjoyment and interest but also by competition, achievement, and classroom recognition.

Students' perceived learning benefits

The findings further revealed positive perceptions regarding the educational benefits of Kahoot!-based learning. The overall mean score for perceived learning benefits was 4.12, suggesting that students generally viewed Kahoot! as beneficial for English learning.

Students reported that Kahoot! helped them improve vocabulary understanding, grammar comprehension, reading skills, and classroom participation. Immediate feedback provided after each quiz question also appeared to support students' awareness of mistakes and reinforce lesson comprehension.

Many students additionally perceived Kahoot! as a useful review tool because it allowed them to revisit lesson content in a more interactive and enjoyable manner.

Prior to conducting inferential statistical analyses, assumption testing procedures were performed to examine normality, homogeneity of variance, linearity, and homogeneity of regression slopes.

Normality was evaluated using skewness and kurtosis statistics for pretest scores, posttest scores, engagement, motivation, and perceived learning benefits variables. All skewness values ranged from −0.721 to 0.684, while kurtosis values ranged from −0.811 to 0.743, indicating acceptable normal distribution assumptions because all values fell within the recommended range of ±1.0 for parametric analysis.

Table 4. Normality testing results

Variable	Skewness	Kurtosis
Pretest Scores	0.284	−0.611
Posttest Scores	−0.438	0.412
Engagement	−0.721	0.743
Motivation	−0.504	−0.288
Perceived Learning Benefits	−0.367	−0.811

The findings indicate that all variables satisfied normality assumptions for subsequent parametric statistical analyses.

Homogeneity of variance was examined using Levene's test prior to the independent-samples t-test analysis. The results showed no statistically significant variance differences between the English-only and mixed English–Indonesian groups for pretest scores, $F(1,70) = 1.842$, $p = .179$. Therefore, the assumption of equal variances was considered satisfied.

Before conducting ANCOVA, the homogeneity of regression slopes assumption was evaluated by examining the interaction between pretest scores and instructional language group. The interaction effect was non-significant, $F(1,68) = 1.127$, $p = .292$, indicating that the relationship between pretest and posttest scores was statistically similar across groups. Accordingly, the homogeneity of regression slopes assumption for ANCOVA was satisfied.

Baseline equivalence between groups

An independent-samples t-test was conducted to examine baseline equivalence between the English-only and mixed English–Indonesian groups before the intervention. The analysis showed no statistically significant difference between groups on pretest scores, $t(70) = 1.253$, p

= .214, indicating relatively similar English proficiency levels prior to treatment.

Table 5. Independent samples t-test of pretest scores

Variable	Group	N	Mean	SD	t	df	p	Cohen's d
Pretest Scores	English-only (Control)	36	66.55	12.27	1.253	70	.214	0.295
	Mixed English–Indonesian (Experimental)	36	63.29	9.62				

The non-significant baseline difference suggests that both groups were relatively comparable before the intervention began.

However, paired samples t-test results demonstrated substantial improvement in the experimental group receiving mixed English–Indonesian instruction. The experimental group's mean score increased from 63.29 (SD = 9.62) on the pretest to 74.82 (SD = 10.68) on the posttest, with a statistically significant difference, $t(35) = -9.057$, $p < .001$, and a large effect size (Cohen's $d = -1.510$). In contrast, the control group showed only minimal improvement.

Table 6. Paired samples t-test results

Group	Test	Mean	SD	Mean Difference	t	df	p
Control	Pretest	66.55	12.27	0.514	2.874	35	.007
	Posttest	66.03	12.20				
Experimental	Pretest	63.29	9.62	-11.531	-9.057	35	< .001
Control	Pretest	66.55	12.27	0.514	2.874	35	.007

The findings indicate that the mixed English–Indonesian group demonstrated substantially greater improvement than the English-only group following the intervention.

Prior to ANCOVA analysis, assumptions regarding linearity, homogeneity of variance, and homogeneity of regression slopes were examined. Scatterplot inspection demonstrated linear relationships between pretest and posttest scores across both instructional groups. Levene's test indicated equal variances for posttest scores, $F(1,70) = 2.011$, $p = .160$. Furthermore, the interaction between pretest scores and instructional language group was non-significant, $F(1,68) = 1.127$, $p = .292$, confirming that the homogeneity of regression slopes assumption was met. Therefore, ANCOVA analysis was considered appropriate for comparing posttest achievement between groups while controlling for pretest differences.

Further analysis using ANCOVA revealed that instructional language significantly influenced posttest achievement after controlling for pretest scores, $F(1, 69) = 83.201$, $p < .001$, Partial $\eta^2 = .547$. This finding indicates a large effect size, suggesting that instructional language accounted for a substantial proportion of variance in students' posttest performance.

Table 7. ANCOVA results for posttest scores

Source	F	df	p	Partial Eta Squared
Pretest	244.394	1, 69	< .001	.780
Instructional Language	83.201	1, 69	< .001	.547
Overall Model	145.881	2, 69	< .001	.809

The ANCOVA results indicate that instructional language was significantly associated with posttest achievement after controlling for pretest scores. The large effect size (Partial $\eta^2 = .547$) suggests that instructional language explained a substantial proportion of variance in students' posttest performance.The descriptive findings indicate higher posttest performance among students receiving mixed English–Indonesian instructional support.

The regression analysis further confirmed the importance of instructional language. After

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controlling for pretest scores, the dummy-coded instructional language variable significantly predicted posttest achievement (B = 11.778, p < .001). Students in the mixed English–Indonesian group scored significantly higher than students in the English-only group, indicating that bilingual instructional support facilitated better comprehension and learning performance during Kahoot!-based activities.

Table 8. Descriptive statistics

Group	N	Mean	SD
Control	36	66.03	12.20
Experimental	36	74.82	10.68

The regression model explained 80.9% of the variance in perceived learning benefits (R^2 = .809), indicating strong predictive capacity for the combined predictors.

Table 9. Multiple Regression Analysis

R	R^2	Adjusted R^2	Std. Error
.899	.809	.803	5.418

The findings indicate that engagement was the strongest predictor of perceived learning benefits, followed by instructional language experience. Motivation did not significantly predict perceived learning benefits after controlling for the other predictors.

Table 10. Regression coefficients

Predictor	B	SE	β	t	p
Constant	5.214	2.138	—	2.438	.017
Engagement	0.832	0.071	.832	11.742	< .001
Motivation	0.114	0.066	.109	1.727	.087
Instructional Language Experience	0.291	0.083	.247	3.506	.001

The findings indicate that engagement was the strongest predictor of perceived learning benefits, followed by instructional language experience. Motivation did not significantly predict perceived learning benefits after controlling for the other predictors.

The non-significant contribution of motivation (β = .109, p = .087) should be interpreted cautiously given the achieved statistical power of .54 for this predictor. A larger sample size might detect smaller motivational effects that were not statistically observable in the current study.

The N-Gain analysis also demonstrated considerably higher learning gains in the experimental group (M = 32.59, SD = 21.01) compared to the control group (M = -1.89, SD = 4.04), further supporting the effectiveness of mixed instructional language in enhancing students' English achievement.

Table 11. N-Gain score analysis

Group	N	Mean N-Gain	SD	Minimum	Maximum
Control	36	-1.89	4.04	-12.90	4.04
Experimental	36	32.59	21.01	2.17	67.86

The gain score findings demonstrate substantially greater learning improvement among students in the mixed English–Indonesian group compared to the English-only group.

Qualitative findings

Thematic analysis of interview data revealed five major themes related to students' experiences during Kahoot!-based EFL learning.

Table 12. Themes from qualitative analysis

Theme	Example Quote	Participant	Interpretation
Increased engagement through competition	"Kahoot! made the class more exciting because we could compete with friends."	S9	Competition increased classroom participation and enthusiasm.
Greater motivation during gameplay	"I wanted my name to appear on the leaderboard."	S3	Rankings and rewards strengthened motivation.
Improved comprehension through bilingual support	"When the teacher explained difficult words in Indonesian, I understood the questions more easily."	S4	Translanguaging support reduced comprehension barriers.

Reduced anxiety during quizzes	"I became less nervous because I understood the instructions faster."	S10	Mixed instructional language reduced pressure during time-limited activities.
Increased confidence in answering questions	"I felt more confident pressing the answer button after the teacher explained again."	S12	Language clarification strengthened classroom confidence.

Overall, the qualitative findings supported the quantitative results by demonstrating how instructional language support and gamified classroom interaction shaped students' engagement, motivation, comprehension, and participation during Kahoot!-based EFL learning activities.

This study examined students' engagement, motivation, perceived learning benefits, and instructional language experiences during Kahoot!-based EFL learning in Indonesian secondary classrooms. The findings indicate that students generally reported positive learning experiences during Kahoot!-based activities, particularly in relation to classroom participation, enjoyment, and interaction. In addition, students receiving mixed English–Indonesian instructional support demonstrated higher posttest achievement and greater learning gains than students in the English-only group. The integration of quantitative and qualitative findings suggests that both gamified learning features and instructional language practices contributed to students' classroom experiences and learning processes.

Engagement in Kahoot!-based learning

The quantitative findings revealed high levels of behavioral, emotional, and cognitive engagement during Kahoot!-based learning activities. Students reported actively participating in classroom interaction, paying closer attention to lesson materials, and demonstrating greater enthusiasm during English learning sessions. These findings are consistent with previous studies indicating that Kahoot! promotes active classroom participation through competition, immediate feedback, and game-based interaction (Licorish & Lötter, 2022; Wang & Tahir, 2020).

The qualitative findings further support the quantitative results. Many students described Kahoot! activities as enjoyable, interactive, and less monotonous than traditional classroom exercises. One participant explained:

> "Kahoot! made the class more exciting because we could compete with friends while learning English" (S9).

Another participant stated:

> "I became more active because I wanted to answer faster and get a higher score" (S6).

These findings suggest that the competitive features of Kahoot!, including points, rankings, and time-limited quizzes, may encourage students to remain attentive and actively involved during classroom activities. From the perspective of Self-Determination Theory (SDT), Kahoot!'s game-based environment appears to support students' needs for autonomy and relatedness. Students were able to participate independently during quizzes while simultaneously interacting and competing with peers in a socially engaging classroom environment. Such experiences may strengthen students' willingness to participate and sustain engagement during English learning activities.

The findings also suggest that gamified learning may increase emotional engagement by reducing classroom boredom and creating a more relaxed learning atmosphere. In many conventional EFL classrooms, students often remain passive because instructional activities rely heavily on textbook exercises and teacher explanation. In contrast, Kahoot! transformed classroom review sessions into interactive learning experiences where students became more actively involved in lesson activities.

Motivation toward English learning

Students also reported positive motivational experiences during Kahoot!-based learning. The findings showed that students felt more enthusiastic, interested, and willing to participate in English lessons when Kahoot! was integrated into classroom activities. Leaderboards, scores, rewards, and classroom competition appeared to function as motivational drivers that encouraged students to participate more actively and pay closer attention to instructional content.

The qualitative findings demonstrated that Kahoot! created a sense of challenge and achievement that motivated students to improve their classroom performance. One participant commented:

> "I wanted to answer correctly because I wanted my name to appear on the leaderboard" (S3).

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Another student explained:

> "The game made me want to study harder because the class became more competitive" (S11).

These findings may be interpreted through Self-Determination Theory. Kahoot!'s game mechanics appear to strengthen students' sense of competence by allowing them to receive immediate feedback and observe their classroom performance directly through scores and rankings. When students answered correctly and gained points, they experienced a sense of achievement that reinforced motivation to continue participating.

At the same time, the findings suggest that both intrinsic and extrinsic motivational processes were present during Kahoot!-based activities. Intrinsic motivation emerged through enjoyment, excitement, and interest in gameplay, while extrinsic motivation appeared through competition, rewards, and teacher recognition. The coexistence of these motivational dimensions may explain why students reported sustained enthusiasm during the intervention sessions.

However, the findings also indicate that motivation was influenced by students' comprehension of instructional language. Some students in the English-only group reported feeling pressured during fast-paced quizzes because they needed additional time to process English instructions. This suggests that motivation in gamified EFL learning may depend not only on game elements themselves but also on learners' ability to understand classroom instructions efficiently.

Perceived learning benefits

Students generally perceived Kahoot!-based learning as beneficial for improving vocabulary mastery, grammar understanding, reading comprehension, and overall English learning experiences. Students reported that immediate feedback helped them recognize mistakes more quickly and reinforced understanding of classroom materials.

One participant explained:

> "When I answered incorrectly, I could immediately see the correct answer, so I remembered it better" (S1).

Another student stated:

> "The quizzes helped me learn vocabulary faster because I saw the words repeatedly during the game" (S7).

These findings support previous studies suggesting that gamified formative assessment can facilitate learning reinforcement and improve students' awareness of their own learning progress. The immediate feedback provided by Kahoot! may help students identify misunderstandings while maintaining engagement during learning activities.

The regression analysis also demonstrated that engagement was the strongest predictor of perceived learning benefits. This finding suggests that students who participated more actively and attentively during Kahoot!-based activities were also more likely to perceive meaningful learning gains. In other words, engagement appears to function as an important mechanism connecting gamified classroom interaction with students' perceptions of learning improvement.

The findings further indicate that students did not perceive Kahoot! merely as entertainment. Instead, many students viewed the platform as a meaningful learning tool that supported classroom comprehension and review activities. This is important because criticism of gamified learning often focuses on concerns that games may prioritize enjoyment over meaningful learning. In this study, however, students reported that enjoyment and learning reinforcement occurred simultaneously.

Instructional language and translanguaging support

One of the most significant findings of this study concerns the role of instructional language during Kahoot!-based EFL activities. Students in the mixed English–Indonesian group demonstrated higher posttest scores and greater learning gains than students in the English-only group. Qualitative findings also revealed that bilingual instructional support helped students understand quiz instructions more clearly, respond more confidently, and participate more actively during classroom activities(Waluyo & Rouaghe, 2025).

Several participants emphasized the importance of Indonesian clarification during fast-paced Kahoot! sessions. One student explained:

> "When the teacher explained difficult words in Indonesian, I understood the Kahoot! questions more easily and felt more confident answering them" (S4).

Another participant stated:

> "I became less nervous because I could understand the instructions faster" (S10).

These findings support translanguaging perspectives suggesting that learners benefit from flexible use of multiple linguistic resources during classroom learning (García & Wei, 2023; (Cenoz & Gorter, 2022). Rather than interfering with English acquisition, strategic bilingual instructional support appeared to facilitate comprehension and reduce participation barriers during game-based learning activities.

The findings may also be interpreted through Cognitive Load Theory. Kahoot!-based learning requires students to process quiz content, classroom instructions, timing constraints, and competitive gameplay simultaneously. For learners with limited English proficiency, processing all instructions exclusively in English may increase extraneous cognitive load, reducing the cognitive resources available for answering questions accurately(Van Merriënboer & Sweller, 2005). Mixed English–Indonesian instructional support may help reduce this burden by enabling students to understand instructions more efficiently and focus attention on task completion and content comprehension.

Importantly, the findings do not necessarily suggest that English-only instruction is ineffective. Several students in the English-only group reported that continuous exposure to English helped them become more familiar with English vocabulary and classroom expressions. Some participants also described English-only instruction as more immersive and challenging in a positive way. However, the findings indicate that fully English-only instruction may create additional comprehension pressure during fast-paced Kahoot! activities, particularly for intermediate-level EFL learners who still require occasional first-language support.

The results therefore suggest that instructional language practices should be adapted according to students' proficiency levels, lesson objectives, and classroom task demands. In gamified learning environments involving rapid response and time pressure, strategic translanguaging support may help maintain participation and comprehension without eliminating meaningful English exposure.

Integration of quantitative and qualitative findings

The integration of quantitative and qualitative findings strengthens the overall interpretation of the study. Quantitative analyses demonstrated higher engagement, motivation, perceived learning benefits, and achievement gains among students participating in Kahoot!-based learning, particularly within the mixed English–Indonesian condition. Meanwhile, qualitative findings explained how these experiences occurred in practice through increased confidence, reduced anxiety, faster comprehension, and stronger classroom participation.

The qualitative themes that emerged from the interviews included: (1) Increased classroom engagement through gamified competition (2) Greater learning motivation during interactive activities (3) Improved comprehension through bilingual instructional support (4) Reduced anxiety during fast-paced quizzes (5) Increased confidence in answering English questions

Together, these findings indicate that the effectiveness of Kahoot!-based learning cannot be separated from instructional language practices and classroom interaction patterns. Gamification alone may not guarantee positive learning experiences if learners struggle to understand instructions or experience excessive cognitive pressure during activities. The findings therefore highlight the importance of combining gamified learning with context-sensitive instructional language support in multilingual EFL classrooms.

Overall, this study contributes to current discussions on gamified EFL learning, translanguaging pedagogy, and instructional language practices by demonstrating that students' classroom experiences are shaped not only by technological tools but also by how language support is strategically integrated into classroom interaction.

CONCLUSION

This quasi-experimental mixed-methods study explored students' engagement, motivation, perceived learning benefits, and instructional language experiences during Kahoot!-based EFL learning in an Indonesian secondary school context. The findings indicate that students generally reported positive experiences during Kahoot!-based classroom activities, particularly in relation to engagement, enjoyment, classroom participation, and perceived learning support.

Quantitative findings showed high levels of engagement, motivation, and perceived learning benefits among the participants. The questionnaire instruments also demonstrated satisfactory reliability across the measured dimensions, indicating that the instruments were appropriate for examining students' perceptions and

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instructional language experiences during Kahoot!-based learning activities.

The pretest–posttest findings indicated that students in the mixed English–Indonesian group demonstrated higher posttest scores and greater learning gains than students in the English-only group. ANCOVA and regression analyses further showed that instructional language was associated with differences in posttest performance and perceived learning benefits after controlling for pretest scores. However, because the study employed a non-randomized intact-group design and included self-report perceptual data, the findings should be interpreted cautiously and should not be viewed as establishing definitive causal relationships.

The qualitative findings provided additional insight into students' classroom experiences during the intervention. Many students reported that bilingual instructional support helped them understand quiz instructions more clearly, reduced anxiety during time-limited activities, and increased confidence when answering questions. At the same time, several students perceived English-only instruction as beneficial for increasing exposure to English and encouraging more intensive target-language use during classroom interaction.

The findings also suggest that instructional language plays an important role in shaping students' experiences during fast-paced gamified EFL activities. Strategic use of mixed English–Indonesian instructional support appeared to help students manage comprehension demands while maintaining participation during classroom interaction. These findings align with translanguaging perspectives and Cognitive Load Theory, which emphasize the importance of reducing unnecessary linguistic burden to support meaningful learning participation.

From a pedagogical perspective, the study suggests that Kahoot! may function as a useful formative learning tool for promoting classroom interaction, participation, and student engagement in EFL settings. The findings additionally suggest that flexible instructional language practices may help support learners with varying English proficiency levels during technology-enhanced classroom activities.

Several limitations should also be acknowledged. The study involved participants from a single school and used intact classroom groups without random assignment, which may limit the generalizability of the findings. In addition, the study relied partly on self-report questionnaire data, which may be influenced by students' subjective perceptions. Future research involving larger samples, longitudinal designs, randomized procedures, and additional classroom observation measures may provide deeper understanding of instructional language practices and gamified learning in EFL contexts.

Overall, this study contributes to ongoing discussions regarding gamified learning, translanguaging pedagogy, and instructional language use in multilingual EFL classrooms. The findings suggest that Kahoot!-based learning, particularly when combined with appropriate bilingual instructional support, may be associated with positive classroom participation, engagement, and learning experiences among secondary EFL learners.

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