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THE IMPACT OF PADLET-BASED INTERACTIVE STRATEGY ON STUDENTS' SPEAKING SKILLS AT SENIOR HIGH SCHOOL

Rizka Maulidya[1], J Jamilah[2]*

[1,2]Universitas Negeri Yogyakarta, Jl. Colombo No.1 Karangmalang Yogyakarta 55281, Indonesia
[2]jamilah@uny.ac.id

Abstract

This study was conducted to address the need for more engaging and effective approaches to improving senior high school students' speaking skills. Traditional teaching methods often provide limited opportunities for meaningful oral interaction; therefore, integrating ICT-based interactive strategies is expected to create more student-centered and communicative learning environments. The purpose of this study was to investigate the effect of ICT-based interactive strategies, particularly Padlet, on students' speaking performance. A quasi-experimental design was employed involving an experimental group and a control group. The experimental group received instruction through ICT-based interactive strategies using Padlet as the primary digital platform, whereas the control group was taught using conventional methods. Data were collected through speaking performance tests administered as pre-tests and post-tests and analyzed using parametric statistical procedures. The findings indicated significant improvement in students' speaking skills over time, with $F(3,76) = 74.758$, $p = .000$ ($p < .05$), and a very large effect size ($\eta^2 = .747$). Both the experimental group (40.25 to 78.00) and the control group (41.25 to 76.25) demonstrated considerable improvement; however, no statistically significant difference was found between the groups' post-test scores. These findings suggest that Padlet-mediated instruction contributes to speaking development by fostering interactive, collaborative, and multimodal communication opportunities, although its effectiveness was comparable to that of conventional instruction. Therefore, ICT-based interactive strategies may serve as a valuable complementary approach within an integrated English language teaching framework rather than as a replacement for conventional methods.

Keywords: EFL Learners, ICT-Based Interactive Strategies, Quasi-Experimental Study, Speaking Skills

INTRODUCTION

Speaking is a fundamental component of language learning because it enables learners to express ideas, engage in social interaction, and communicate meaning effectively in real-life situations. According to H. Douglas Brown (2007), speaking is a productive skill that reflects learners' communicative competence through the ability to construct meaning, apply appropriate grammar and vocabulary, and respond spontaneously in interaction. Similarly, Jack C. Richards (2008) emphasizes that oral communication is one of the primary goals of English Language Teaching (ELT), as learners are expected not only to understand English but also to use it actively and appropriately in authentic contexts. Therefore, developing students' speaking ability remains a central concern in language education.

Despite its importance, many students continue to experience difficulties in speaking English. Traditional classroom instruction often provides limited opportunities for meaningful oral interaction, resulting in low participation, speaking anxiety, lack of

confidence, and minimal communicative practice. In many Indonesian senior high school classrooms, speaking activities remain teacher-centered, with students acting as passive recipients rather than active communicators. Consequently, students frequently struggle to express ideas fluently, accurately, and confidently in English.

To address these challenges, educators increasingly recognize the need for more interactive and student-centered learning approaches. One approach that has gained growing attention is the integration of Information and Communication Technology (ICT) in English language teaching. ICT-based learning environments are believed to facilitate collaborative interaction, increase learner engagement, and provide more flexible opportunities for communication practice both inside and outside the classroom. Previous studies have reported that technology-supported learning can positively influence students' motivation, participation, and speaking performance. However, the effectiveness of ICT-based instruction remains inconsistent across different educational contexts and instructional implementations.

Among various ICT tools, Padlet has emerged as a collaborative digital platform that supports interactive language learning. Padlet allows students to upload, record, and share audio or video responses, thereby creating opportunities for speaking practice beyond classroom limitations. Its multimodal and collaborative features are believed to reduce speaking anxiety, encourage participation, and promote more active communication. Several studies have reported positive effects of Padlet on students' confidence, fluency, and interaction. Nevertheless, existing findings remain inconclusive regarding the extent of its effectiveness in improving speaking performance. Some studies emphasize increased learner engagement and confidence, whereas others suggest that the effectiveness of Padlet is strongly influenced by contextual factors such as learners' digital literacy, instructional design, and classroom environment.

In line with these mixed findings, previous research provides varied evidence regarding its pedagogical impact. For instance, Shadiev and Yang (2020) reported that Padlet enhances student engagement and peer interaction, which in turn facilitates more meaningful speaking practice. Similarly, Zhang and Wang (2024) found that Padlet contributes to improved fluency and learner autonomy through sustained collaborative activities. However, when these findings are examined collectively, it becomes evident that Padlet's effectiveness is not uniform across contexts, as its impact largely depends on how it is integrated into instructional practices and the extent to which learners actively engage with the platform.

Compared with other ICT tools commonly used in speaking instruction, such as mobile language-learning applications and speech recognition software, Padlet offers a more collaborative and interactive learning environment. Mobile applications generally emphasize individual vocabulary practice and self-paced learning, whereas speech recognition software mainly focuses on pronunciation accuracy and automated feedback. In contrast, Padlet facilitates multimodal communication and peer interaction through audio, video, and written responses within a shared digital space. These collaborative features may provide broader opportunities for meaningful communication practice and learner engagement, which are essential components in speaking development. Therefore, Padlet is considered particularly relevant for supporting communicative and student-centered speaking activities in classroom contexts.

Although previous studies generally report positive effects of Padlet on speaking development, the findings remain inconclusive regarding the extent of its effectiveness, particularly in secondary school settings. Most previous studies on Padlet-mediated learning have primarily focused on higher education or adult learning contexts rather than Indonesian senior high schools. Existing research also tends to emphasize learner engagement and motivation instead of directly examining measurable speaking performance outcomes. Furthermore, only limited studies have compared Padlet-based instruction with conventional teaching methods within Indonesian educational contexts, where factors such as technological readiness, classroom interaction patterns, and learners' digital literacy may significantly influence instructional outcomes. These inconsistencies and contextual limitations indicate that the effectiveness of Padlet as an ICT-based interactive strategy for improving speaking skills among Indonesian senior high school students remains insufficiently explored.

At SMAN 12 Pekanbaru, ICT facilities such as internet access and multimedia classrooms are available; however, the integration of interactive digital platforms in English-speaking instruction remains limited. As a result, the potential of ICT to support communicative speaking practice has not been fully optimized. Therefore, investigating the implementation of Padlet-based interactive strategies in this context becomes important to determine whether such an approach can meaningfully support students' speaking development.

Based on these considerations, the present study aims to examine the effect of Padlet, an ICT-based interactive strategy, on the speaking skills of Grade XI students at SMAN 12 Pekanbaru. Specifically, this study investigates whether the implementation of Padlet-based instruction significantly influences students' speaking performance in comparison with conventional teaching methods. By focusing on aspects such as fluency, accuracy, confidence, and participation, this study is expected to provide more context-specific empirical evidence on the effectiveness of ICT-based interactive learning in Indonesian senior high schools. To guide the investigation, the following research questions were formulated: Is there a significant difference in students' speaking performance before and after the implementation of Padlet-based interactive strategies?; Is there a significant difference in speaking performance between students taught using Padlet-based interactive strategies and those taught using conventional teaching methods?; To what extent does Padlet contribute to students' speaking development in terms of fluency, accuracy, confidence, and participation?

METHOD

This study employed a quantitative research approach using a quasi-experimental design, specifically the pre-test and post-test control group design. This research was conducted at SMA Negeri 12 Pekanbaru, a public senior high school located in Pekanbaru, Riau Province, Indonesia.

The design was selected to examine the effect of ICT-based interactive strategies on students' speaking skills by comparing the learning outcomes of two groups: an experimental group and a control group. The quasi-experimental design was considered appropriate because random assignment of participants was not feasible in the school context, as students were already organized into intact classes by the institution.

Therefore, the researcher utilized the existing classes while maintaining control over the treatment and comparison conditions.

Population and Sample

The population of this study consisted of all Grade XI students at SMAN 12 Pekanbaru in the 2025/2026 academic year, comprising 192 students across ten classes. Grade XI students were selected because they are at an important stage of developing English speaking skills and are sufficiently familiar with technology-based learning.

The sample consisted of 40 students selected through purposive sampling. This technique was used because the study required intact classes with similar speaking ability and equal access to ICT facilities. The class selection procedure involved analyzing the pre-test speaking scores of all Grade XI classes to identify two classes with the most comparable mean scores. One class was assigned as the experimental group, receiving instruction through Padlet-based interactive strategies, while the other served as the control group using conventional teaching methods.

Each class consisted of approximately 20 students, resulting in a total sample of 40 participants. The sample size was considered adequate for quasi-experimental research and parametric statistical analysis such as ANOVA, while also ensuring the feasibility of classroom implementation.

Instrument Research

The main instrument used in this study is a speaking performance test designed to measure students' speaking ability before and after the implementation of ICT-based interactive strategies, particularly Padlet. The test is administered twice: as a pre-test before the treatment and as a post-test after the treatment. Students are required to perform communicative speaking tasks that reflect real-life speaking situations, such as delivering a short oral presentation on a familiar topic, supported by Padlet as a visual and interactive media. These tasks are designed to assess students' overall speaking competence, including fluency, grammatical accuracy, pronunciation, vocabulary use, and confidence.

Scoring Rubric for speaking performance to assess students' speaking performance objectively, a scoring rubric adapted from Brown (2007) and Heaton (1990) is used. The rubric consists of four components: fluency, pronunciation, grammar, and comprehension. Each component is rated on a five-point scale (1–5), resulting in a maximum score of 20 and a minimum score of 4.

Data Collecting Technique

The data in this study were collected through three stages: pre-test, treatment, and post-test. The pre-test was administered to both the experimental and control groups to identify students' initial speaking ability. Students performed a short oral task based on a given topic, and their performances were assessed using a speaking rubric covering fluency, pronunciation, grammar, vocabulary, and comprehension.

The treatment was conducted over six meetings within three weeks, with each meeting lasting 90 minutes. Both groups studied the same speaking topics and learning

objectives; however, different instructional approaches were applied. In the experimental group, the treatment was implemented using Padlet-based interactive strategies. Each meeting began with a teacher explanation and topic introduction, followed by speaking activities through Padlet. Students recorded and uploaded audio or video responses, commented on peers' posts, and participated in collaborative discussions on the Padlet board. The teacher monitored students' participation and provided feedback through Padlet comments and classroom discussion.

Meanwhile, the control group received instruction through conventional teaching methods without ICT integration. Students participated in teacher-led explanation, pair or group speaking practice, classroom discussion, and oral presentations using printed materials and direct classroom interaction only. After the treatment period, a post-test was administered to both groups using the same format and speaking rubric as the pre-test. The post-test results were compared with the pre-test scores to determine the improvement in students' speaking skills after the instructional process.

Data Analysis Technique

After collecting the pre-test and post-test data from both groups, the researcher analyzed the data using both descriptive and inferential statistical techniques. Descriptive statistics, including mean, standard deviation, minimum, and maximum scores, were calculated to summarize students' speaking performance across both groups and measurement periods. For inferential analysis, one-way Analysis of Variance (ANOVA) was selected as the primary statistical procedure for several reasons. First, ANOVA is appropriate when comparing mean scores across more than two groups or measurement conditions simultaneously, which in this study involved four data points: pre-test and post-test scores of both the experimental and control groups (Field, 2018). Second, one-way ANOVA was justified given that the study meets its underlying assumptions, namely normal distribution of data as confirmed by the Kolmogorov-Smirnov and Shapiro-Wilk tests, and homogeneity of variance as verified by Levene's Test. Third, ANOVA allows for the calculation of effect size using Eta Squared (η^2), which provides a meaningful indicator of the practical magnitude of the treatment effect beyond mere statistical significance (Cohen, 1988). Following the ANOVA, a post hoc Tukey HSD test was conducted to identify specific differences between group pairs. All statistical analyses were conducted using SPSS version 25.

FINDINGS

Descriptive Statistics

Table 1. Descriptive Statistics

	N	Min	Max	Range	Mean	Modus	Median	Std.D
Pre-test control	20	20	65	45	41.25	40	45.00	13.46
Pre-test experiment	20	20	60	40	40.25	45	45	11.75
Post-test control	20	65	90	25	76.25	70	75.00	7.23
Post-test experiment	20	60	90	30	78.00	90	80.00	10.05

The comparison between the pre-test and post-test scores of the control group was conducted to examine whether students' speaking skills improved after being taught using conventional teaching methods without ICT-based interactive strategies. The descriptive statistics indicate that the mean score increased from 41.25 in the pre-test to 76.25 in the post-test. This finding suggests that students' speaking performance improved after the instructional process. Furthermore, the minimum score rose from 20 to 65, while the maximum score increased from 65 to 90, indicating overall progress across students.

In terms of variability, the standard deviation decreased from 13.463 in the pre-test to 7.232 in the post-test. This reduction implies that students' scores became more homogeneous, suggesting more consistent performance among learners following instruction. The improvement found in the control group is consistent with previous studies indicating that regular speaking practice, teacher feedback, and classroom interaction can contribute positively to students' oral performance even without ICT integration. For example, conventional communicative speaking activities have been shown to improve students' fluency and confidence through repeated exposure to oral tasks and peer interaction.

However, the findings also support previous research suggesting that conventional instruction alone may not fully optimize students' speaking development compared to more interactive and technology-supported learning environments. Studies on ICT-based language learning, particularly those involving Padlet, have reported that digital collaborative platforms may enhance learner engagement, participation, and speaking confidence by providing multimodal communication opportunities and reducing speaking anxiety. Therefore, although the control group demonstrated considerable improvement, the absence of ICT integration may have limited opportunities for extended interaction, asynchronous speaking practice, and collaborative feedback that are commonly facilitated through Padlet-based learning activities.

Inferential Statistics

Normality Test

Table 2. Normality Analysis

Outcome	Statistic	df	Sig.	Statistic	df	Sig.
Pre-test control	.160	20	.195	.948	20	.343
Pre-test Experiment	.142	20	.200	.954	20	.433
Post-test control	.169	20	.138	.934	20	.184
Post-test Experiment	.134	20	.200	.908	20	.057

A normality test was conducted as a prerequisite for parametric statistical analysis using the *Kolmogorov–Smirnov* and *Shapiro–Wilk* tests. The results indicate that all significance values were higher than 0.05. The Kolmogorov–Smirnov significance values ranged from 0.138 to 0.200, while the Shapiro–Wilk values ranged from 0.057 to 0.433.

Since all significance values exceeded the 0.05 criterion, the data were considered normally distributed.

These findings indicate that the distribution of students' speaking scores in both the experimental and control groups did not significantly deviate from normality. Therefore, the assumption of normality was fulfilled, making the data appropriate for further parametric analysis using one-way ANOVA. This result is important because parametric statistical procedures require normally distributed data to ensure the validity and reliability of hypothesis testing results.

Homogeneity of Variance Test

Table 3. Homogeneity Analysis

Outcome	Mevene Statistic	Df1	Df2	Sig.
Based on Mean	2.559	3	76	.061
Based on Median	1.994	3	76	.122
Based on Median df	1.994	3	3.454	.124
Based in trimmed mean	2.593	3	76	.059

Levene's Test was conducted to determine whether the variance of the data was equal across groups as a prerequisite for parametric statistical analysis. The results showed that all significance values were greater than 0.05, including the values based on mean (0.061), median (0.122), adjusted median (0.124), and trimmed mean (0.059). Since all significance values exceeded the 0.05 level, the data were considered homogeneous.

These findings indicate that the variability of speaking scores among the groups was relatively equal. Therefore, the assumption of homogeneity of variance was fulfilled, supporting the appropriateness of using one-way ANOVA for further hypothesis testing.

The Analysis of Variance (ANOVA)

Table 4. The Result of the ANOVA Test

Outcome	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	26503.438	3	8834.479	74.758	.000
Within Groups	8981.250	76	118.174		
Total	35484.688	79			

The one-way ANOVA was conducted to determine whether statistically significant differences existed in students' speaking skill outcomes across the four measurement conditions: pre-test and post-test scores of both the experimental and control groups. The results revealed a statistically significant difference, $F(3,76) = 74.758$, $p = .000$ ($p < .05$). However, this result must be interpreted with caution. The significant F value reflects overall variance across all four measurement conditions, including the substantial within-group gains from pre-test to post-test in both groups, rather than exclusively indicating

the superiority of ICT-based instruction over conventional methods. Therefore, rejecting the null hypothesis on the basis of this result alone does not constitute sufficient evidence to conclude that Padlet-based instruction produced greater outcomes than conventional teaching.

Given that the significance value is lower than the alpha level of 0.05, the null hypothesis (H_0) is rejected, and the alternative hypothesis (H_1) is accepted. This result demonstrates that the implementation of ICT-based interactive strategies has a significant effect on students' speaking skills.

Effect Size Analysis

To assess the practical magnitude of the overall effect, Eta Squared (η^2) was calculated using the following formula:

$$\eta^2 = SS\_between \div SS\_total = 26503.438 \div 35484.688 = 0.747$$

According to Cohen's (1988) interpretive conventions, η^2 values of .01, .06, and .14 represent small, medium, and large effects respectively. The obtained value of $\eta^2 = 0.747$ substantially exceeds the large effect threshold, indicating that approximately 74.7% of the total variance in speaking scores is accounted for by the combination of group membership and measurement period. It is analytically important to note, however, that this large effect is attributable to the overall variance across all four conditions, particularly the considerable within-group improvement observed in both groups, rather than reflecting the isolated superiority of ICT-based instruction alone.

Post Hoc Tukey HSD Test

Table 5. Post Hoc Tukey HSD Test Results

Class (I)	Class (J)	Mean Difference	Std.error	Sig.	Lower Bound	Upper Bound
Pretest control	Posttest control	-35.000	3.438	.000	-44.03	-25.97
Pretest experiment	Posttest control	-36.000*	3.438	.000	-45.03	-26.97
Posttest control	Pretest experiment	36.000*	3.438	.000	26.97	45.3
Posttest experiment	Posttest control	1.750	3.438	.957	-7.28	10.78

To identify which specific group pairs differed significantly, a post hoc Tukey HSD test was conducted following the ANOVA. The results confirmed that both the control group ($p = .000$) and the experimental group ($p = .000$) demonstrated statistically significant improvement from pre-test to post-test, indicating that both instructional approaches effectively facilitated speaking development. Critically, however, no statistically significant difference was found between the post-test scores of the experimental group ($M = 78.00$) and the control group ($M = 76.25$), with a mean difference of only 1.75 points ($p = .869$). This finding directly qualifies and supersedes the earlier ANOVA interpretation, confirming that while both groups improved significantly over time, ICT-based interactive strategies through Padlet did not produce statistically superior speaking outcomes compared to conventional methods within the

scope of this study. These results are consistent with Golonka et al. (2014), who cautioned that ICT effectiveness in language learning does not inherently guarantee superior outcomes over well-structured conventional instruction.

DISCUSSION

These findings warrant careful and nuanced interpretation rather than straightforward confirmation of ICT effectiveness. While the statistically significant ANOVA result ($F(3,76) = 74.758$, $p < .05$) and large effect size ($\eta^2 = 0.747$) may initially suggest that ICT-based strategies are highly effective, the post hoc Tukey HSD test revealed no significant difference between the experimental and control post-test scores ($p = .869$, mean difference = 1.75), indicating that the overall effect was driven primarily by within-group improvement over time rather than by the specific instructional approach employed. This distinction is analytically critical because it challenges the assumption that ICT integration inherently produces superior language learning outcomes, a position that has been increasingly scrutinized in the literature (Golonka et al., 2014; Stockwell, 2012).

One plausible explanation for the comparable performance between groups is that both instructional approaches provided sufficient opportunities for structured oral practice, which is itself a well-established driver of speaking development regardless of the medium through which it is delivered (Thornbury, 2005). This suggests that the quantity and quality of speaking exposure, rather than the technological platform used, may be the more decisive factor in determining outcomes. From this perspective, the control group's comparable gains challenge the notion that conventional methods are inherently inferior and instead imply that well-designed traditional instruction can be equally effective when speaking tasks are structured and purposeful.

Nevertheless, the qualitative observations from the experimental group offer a more nuanced picture. Students demonstrated greater spontaneity, reduced hesitation, and increased willingness to communicate, suggesting that Padlet-mediated interaction may have addressed affective barriers that conventional instruction does not systematically target. Horwitz et al. (1986) identified speaking anxiety as one of the most persistent obstacles to oral language development, and the asynchronous and low-stakes nature of Padlet tasks may have mitigated this anxiety by removing the immediacy and social exposure of face-to-face speaking. However, it is important to acknowledge that these qualitative observations were not systematically measured in this study, and therefore cannot be treated as empirical evidence without further investigation using instruments specifically designed to assess affective variables such as anxiety and confidence.

From a theoretical standpoint, while the findings broadly align with Communicative Language Teaching principles (Richards, 2006) and constructivist learning theory (Vygotsky, 1978; Piaget, 1972), the absence of a significant between-group difference at post-test raises questions about whether the specific affordances of Padlet, namely peer interaction, multimedia expression, and collaborative digital tasks, translated into meaningfully distinct learning experiences compared to conventional pair and group speaking activities. Vygotsky's (1978) concept of the Zone of Proximal Development suggests that collaborative interaction facilitates language development; however, this principle applies equally to both digital and face-to-face collaborative contexts, which

may explain why the control group achieved comparable outcomes through conventional peer interaction. This analytical observation implies that the theoretical advantages attributed to ICT-based platforms may be more relevant to affective and motivational dimensions of learning than to measurable speaking performance outcomes within short intervention periods.

The mixed findings of this study are consistent with Chapelle (2001) and Warschauer (2011), who argued that ICT effectiveness in language learning is neither universal nor guaranteed but is mediated by a complex interplay of pedagogical design, learner characteristics, institutional context, and implementation quality. Critically, however, this study extends beyond merely reaffirming that conclusion by demonstrating that even when ICT integration produces a statistically significant overall effect, the practical advantage over conventional instruction may be negligible when both approaches are implemented within comparable structural frameworks. This finding has important methodological implications for future research, suggesting that studies examining ICT effectiveness should move beyond simple pre-test to post-test comparisons and instead employ more sensitive outcome measures, longer intervention periods, and mixed-methods designs that capture both quantitative performance gains and qualitative shifts in learner engagement, anxiety, and communicative confidence.

CONCLUSION

This study investigated the effect of Padlet-based ICT interactive strategies on students' speaking skills at the senior high school level. The findings showed that both the experimental and control groups experienced considerable improvement in speaking performance. The experimental group improved from 40.25 to 78.00, while the control group increased from 41.25 to 76.25.

The ANOVA results indicated a statistically significant difference across the four measurement conditions, $F(3,76) = 74.758$, $p < .05$, with a very large effect size ($\eta^2 = 0.747$). However, the Tukey HSD test revealed no statistically significant difference between the post-test scores of the experimental and control groups ($p = .869$). This suggests that although both groups improved substantially, Padlet-based instruction was not significantly superior to conventional teaching methods.

Therefore, the findings indicate that both ICT-based and conventional approaches can effectively support students' speaking development when implemented through structured speaking activities. Nevertheless, Padlet may still provide additional pedagogical benefits by increasing interaction, participation, and opportunities for collaborative speaking practice.

The findings also imply that effective ICT integration in senior high school English teaching requires not only technological facilities but also appropriate pedagogical design and teacher readiness. Thus, ICT-based learning should be positioned as a complementary approach within communicative language teaching rather than as a replacement for conventional instruction.

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