



RESEARCH ARTICLE

THE EFFECTS OF LEARNING MODEL AND SELF LEARNING TOWARDS STUDENTS' SPEAKING SKILLS

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Abstract: This study investigates the effects of the Learning Model and Self-Learning towards senior high school students' speaking skills, as well as their interaction in improving performance. Employing a 2x2 factorial experimental design, the research compared an experimental group using the YouTube-mediated Project-Based Learning (PjBL) model with a control group applying the traditional learning model. Data were collected through pretest and posttest speaking assessments and questionnaires measuring self-learning. Results reveal that both the Learning Model ($F=47.374$, $p<0.05$) and self-learning ($F=282.048$, $p<0.05$) significantly affect speaking skills. Moreover, their interaction is also significant ($F=4.076$, $p<0.05$). Posttest outcomes show higher speaking scores for the experimental group ($M=86.31$) than the control group ($M=82.14$), with a significant mean difference ($p=0.003$). These findings suggest that YouTube-mediated PjBL combined with self-learning effectively enhances speaking skills and can be recommended for broader implementation in senior high schools.

Keywords: Project-Based Learning; YouTube; self-learning; speaking skills

PENGARUH MODEL PEMBELAJARAN DAN PEMBELAJARAN MANDIRI TERHADAP KEMAMPUAN BERBICARA SISWA

Abstrak: Penelitian ini bertujuan untuk menganalisis pengaruh Model Pembelajaran dan Pembelajaran Mandiri terhadap keterampilan berbicara siswa SMA serta interaksi keduanya dalam meningkatkan kemampuan tersebut. Desain penelitian menggunakan eksperimen faktorial 2x2 dengan dua kelompok: kelompok eksperimen yang menerapkan Pembelajaran Berbasis Proyek (PjBL) dimediasi oleh YouTube dan kelompok kontrol yang menggunakan pembelajaran tradisional. Data dikumpulkan melalui pretest, posttest keterampilan berbicara, dan kuesioner pembelajaran mandiri. Hasil penelitian

menunjukkan bahwa Model Pembelajaran ($F=47,374$; $p<0,05$) dan Pembelajaran Mandiri ($F=282,048$; $p<0,05$) berpengaruh signifikan terhadap keterampilan berbicara. Interaksi keduanya juga signifikan ($F=4,076$; $p<0,05$). Nilai posttest kelompok eksperimen lebih tinggi ($M=86,31$) dibandingkan kelompok kontrol ($M=82,14$) dengan perbedaan signifikan ($p=0,003$). Temuan ini menegaskan bahwa PjBL berbantuan YouTube dan peningkatan pembelajaran mandiri dapat secara efektif diterapkan untuk meningkatkan keterampilan berbicara siswa SMA.

Kata kunci: Pembelajaran Berbasis Proyek; YouTube; pembelajaran mandiri; keterampilan berbicara

INTRODUCTION

Speaking is a fundamental component of English proficiency and a vital skill for communication, academic success, and professional development. However, many Indonesian senior high school students continue to struggle with oral competence despite years of formal instruction. Their difficulties include hesitation, grammatical errors, mispronunciation, and limited vocabulary, which are compounded by low confidence, anxiety, and traditional teaching methods that emphasize reading and writing over speaking (Hermagustiana & Anggriyani, 2021; Wahyuni, 2019; Marlina & Setiawan, 2023). Consequently, students often lack opportunities for authentic communication, which hinders their fluency, accuracy, and overall speaking proficiency (Rezeki et al., 2022).

The importance of speaking in English as a Foreign Language (EFL) contexts has been repeatedly emphasized in both national and international frameworks. In Indonesia, the current *Kurikulum Merdeka* places a stronger emphasis on communicative competence, aiming to prepare students for global interactions and real-world communication scenarios (Kemendikbudristek, 2021). Nevertheless, classroom practices in many schools remain heavily teacher-centered, with limited opportunities for students to practice speaking meaningfully (Suryani, 2018). This discrepancy between curriculum goals and classroom realities highlights the urgent need for innovative teaching strategies that integrate authentic communication, learner autonomy, and the use of digital technologies to make language learning more engaging and effective (Zen & Ariani, 2022).

To address these challenges, student-centered and technology-enhanced instructional models are increasingly promoted. Project-Based Learning (PjBL) engages learners in real-world tasks, fostering active participation, collaboration, and critical thinking (Ariani, 2022; Jusmaya, 2022; Purnami & Widiadnya, 2024). When mediated by YouTube, PjBL provides authentic input, allows students to produce and share video content, and increases motivation and confidence (Novitasari, 2019; Alkathiri, 2019; Kusuma, 2022; Mudatsir & Wahyuniar, 2023). Complementing this, self-learning empowers students to regulate their learning through goal-setting, self-monitoring, and reflective practice, which are strongly associated with gains in fluency and confidence (Putri, 2018; Wulandari, 2021; De Vrind et al., 2024; Syamsuriani et al., 2024).

The role of YouTube in education has grown significantly in recent years. As one of the most widely used digital platforms, YouTube offers abundant resources in the form of authentic videos, tutorials, and interactive content that students can access anytime and anywhere. Studies have shown that YouTube enhances listening comprehension, vocabulary acquisition, and speaking fluency by exposing learners to natural language use and diverse accents, while also allowing them to create and share their own content (Sari et al., 2020; Rodríguez-Peñarroja, 2022; Rozal et al., 2021; Tyas & Fitriani, 2021). This makes YouTube particularly compatible with the principles of PjBL, where students are required to design, produce, and present projects collaboratively.

Meanwhile, the concept of self-learning, or learner autonomy, is essential for success in language acquisition. Autonomous learners are more likely to take responsibility for their learning

process, set realistic goals, and engage in activities beyond the classroom (Khulaifiyah et al., 2021; Yulianti et al., 2021). In the context of speaking skills, self-learning enables students to practice independently, seek feedback, and reflect on their progress. Research has shown that students with higher levels of autonomy are more resilient, motivated, and capable of overcoming language barriers compared to those who rely solely on teacher-directed instruction (Iskandar, 2020; Wulandari, 2021; Lee & Ko, 2023). Therefore, self-learning acts as a crucial complement to classroom-based instruction, amplifying the effects of innovative models such as YouTube-mediated PjBL.

Although research has shown the individual benefits of YouTube-based learning (Novitasari, 2019; Alkathiri, 2019; Kusuma, 2022) and self-learning strategies (Putri, 2018; Wulandari, 2021; Syamsuriani et al., 2024), limited studies have examined their combined impact on speaking skills in Indonesian EFL contexts. Most existing studies focus either on the role of digital platforms or on learner autonomy as isolated variables, leaving a gap in understanding how these factors interact to shape learning outcomes. This study addresses this gap by investigating the effects of YouTube-mediated PjBL and student self-learning on senior high school students' speaking skills, as well as the interaction between the two. By doing so, it aims to contribute theoretically to the literature on communicative and autonomous learning and practically to the development of effective instructional strategies in line with the *Kurikulum Merdeka* (Kemendikbudristek, 2021).

Furthermore, this study holds significance in preparing Indonesian students for the demands of the 21st century. Communication, collaboration, critical thinking, and creativity are key competencies required in the global era (Zen & Ariani, 2022). By integrating YouTube-mediated PjBL with self-learning, students are not only trained to improve their language skills but also equipped with transferable skills that enhance their academic and professional readiness. This makes the study relevant not only to English language education but also to broader educational reforms in Indonesia.

Finally, the scope of this study is limited to analyzing speaking performance in two senior high schools in Purwakarta, focusing on the interaction between instructional models and self-learning levels. While this provides valuable insights, it also leaves room for future research to explore the broader applicability of YouTube-mediated PjBL in other regions, grade levels, and language skills such as writing, listening, and reading. By identifying the specific conditions under which this model is most effective, further research can guide teachers, policymakers, and curriculum developers in making informed decisions to improve English language education in Indonesia.

RESEARCH METHOD

This study employed a quasi-experimental quantitative design with a pre-test–post-test control group structure. Such a design was chosen because it allows researchers to compare learning outcomes between two instructional approaches while still operating within the natural classroom setting where random assignment is not always feasible (Creswell, 2014). The independent variables were the learning model (YouTube-mediated Project-Based Learning vs. traditional instruction) and self-learning (high vs. low), while the dependent variable was students' speaking performance. The factorial 2x2 design provided an opportunity to examine both the main effects of each independent variable and the interaction effects between them.

The research was conducted between March and July 2025 at two public senior high schools in Purwakarta, West Java. Both schools were chosen because they represent urban state schools with relatively similar English curriculum structures and access to digital facilities, thereby ensuring consistency in implementation. The target population consisted of 857 11th-grade students, and a purposive sampling technique was applied to select a manageable sample that reflected the diversity of English proficiency levels. A total of 72 students participated in the study, divided equally into an experimental group and a control group, with 36 students in each.

The experimental group was taught using a YouTube-mediated PjBL model, while the control group received instruction through more conventional methods, primarily involving textbook-based

exercises, teacher explanations, and individual oral practice. Both groups were exposed to the same duration of instructional time, ensuring that differences in outcomes could be attributed to the learning model rather than variations in contact hours. Within each group, students were further categorized into high and low self-learning based on their questionnaire scores, enabling the researcher to examine interaction effects between instructional model and learner autonomy.

Instruments were carefully designed and validated to capture the different aspects of the study. First, an observational checklist was used to monitor fidelity of implementation, ensuring that the YouTube-mediated PjBL was applied consistently across sessions. Second, a 30-item Likert-scale self-learning questionnaire was adapted from Holec's framework of learner autonomy, measuring indicators such as self-regulation, goal setting, persistence, and reflection. The instrument was validated through expert judgment and piloting, and reliability testing yielded a Cronbach's Alpha of 0.963, indicating very high internal consistency. Third, speaking tests were conducted both before and after treatment. These tests were designed to assess fluency, pronunciation, grammar, vocabulary, and coherence using the widely recognized rubric by Hughes (2003). To ensure objectivity, two independent raters scored the performances, and inter-rater reliability was calculated to confirm scoring consistency.

The data collection procedure was divided into three distinct phases. In the pre-test phase, all participants completed a baseline speaking assessment and the self-learning questionnaire, allowing the researcher to classify students into high and low self-learning groups. The treatment phase lasted for six weeks. During this time, the experimental group carried out project-based activities mediated through YouTube, such as analyzing authentic video content, producing short group videos, and presenting their projects digitally. The control group, on the other hand, followed the traditional sequence of speaking activities commonly found in Indonesian classrooms, including role plays, question-answer sessions, and individual oral tasks. The post-test phase was conducted at the end of treatment to measure improvements in speaking skills.

Data analysis was performed using SPSS 22. Descriptive statistics were first applied to summarize the performance of each group. Normality and homogeneity tests ensured the assumptions for parametric testing were met. To compare mean differences, independent samples t-tests were used between experimental and control groups, while paired t-tests assessed pre- and post-test improvements within groups. A two-way ANOVA was then conducted to examine the main effects of the learning model and self-learning, as well as their interaction. Post-hoc analyses using Tukey's HSD further clarified subgroup differences. These procedures allowed the researcher to not only determine statistical significance but also to interpret the practical magnitude of the observed effects.

Ethical considerations were central to the study. Before data collection, the researcher obtained written authorization from both schools and approval from the local education office. Students and their parents were informed about the purpose of the research, and informed consent was secured from all participants. To protect privacy, all data were anonymized, and scores were reported only in aggregate form. Participation was voluntary, and students could withdraw at any stage without any academic penalty. These steps ensured compliance with research ethics and safeguarded the rights and well-being of all participants.

In summary, the methodological framework of this study was designed to provide reliable, valid, and ethically sound findings on the effects of YouTube-mediated PjBL and self-learning on speaking performance. The combination of robust research design, validated instruments, and rigorous data analysis strengthened the credibility of the study and ensured that its conclusions were grounded in empirical evidence.

RESULTS AND DISCUSSION

The results of this study demonstrate the strong influence of both the learning model and self-learning on students' speaking performance. Descriptive statistics showed that students in the experimental group, who were taught using the YouTube-mediated Project-Based Learning (PjBL) model, obtained

higher mean scores ($M=86.31$) compared to the control group taught with traditional methods ($M=82.14$). This indicates that incorporating YouTube as a learning medium creates a more engaging environment that better supports students' speaking practice. Similarly, students categorized as having high self-learning achieved markedly better outcomes ($M=89.31$) compared to those with low self-learning ($M=79.14$). At the subgroup level, the highest performance was recorded by A1B1 (YouTube PjBL + high self-learning) with a mean of 90.78, while the lowest was observed in A2B2 (Traditional + low self-learning) with a mean of 76.44. These differences illustrate the combined role of both instructional design and learner autonomy in language development.

Inferential analyses confirmed these descriptive findings. Independent t-tests revealed a significant difference between experimental and control groups ($t=-3.060$, $p=0.003$), suggesting that the positive effects of YouTube-mediated PjBL are statistically reliable. The two-way ANOVA further identified significant main effects for both the learning model ($F=47.374$, $p<0.05$) and self-learning ($F=282.048$, $p<0.05$), confirming that each variable independently contributes to improved speaking performance. Moreover, the analysis highlighted a significant interaction effect ($F=4.076$, $p=0.047$), suggesting that the influence of the learning model depends on the level of students' self-learning. Post-hoc Tukey tests further established that students in A1B1 consistently outperformed peers across all other groups, confirming the synergistic benefits of combining YouTube-mediated PjBL with strong self-learning habits.

The findings align with previous research showing that PjBL fosters active participation, collaboration, and meaningful communication in language learning (Thomas, 2000; Beckett & Miller, 2006). When enhanced with YouTube, this model provides students with authentic input, opportunities for creative production, and a wider audience for sharing their work, which increases motivation and confidence (Alkathiri, 2019; Kusuma, 2022). Furthermore, the importance of self-learning found in this study resonates with theories of learner autonomy, which emphasize the role of self-regulation, reflection, and persistence in achieving higher language proficiency (Zimmerman, 2002; Benson, 2011). Students with high self-learning were able to maximize the benefits of the PjBL approach, while those with lower self-learning skills benefited less, underscoring the interdependence of instructional strategies and learner characteristics.

Beyond confirming the effectiveness of YouTube-mediated PjBL, this study also contributes new insights into how learner autonomy interacts with digital instructional models. The significant interaction effect indicates that technology alone does not guarantee better outcomes; rather, its success is mediated by students' willingness and ability to engage in independent learning. This finding supports recent scholarship arguing that digital learning environments must be paired with efforts to cultivate self-directed learning skills (Wulandari, 2021; Iskandar, 2020). Thus, teachers should not only implement innovative teaching methods but also provide scaffolding that strengthens students' capacity for self-learning.

In practical terms, these results suggest that schools and teachers seeking to improve speaking proficiency should consider integrating YouTube-based PjBL into their English language curriculum. The model encourages authentic communication tasks, supports creative output, and accommodates differentiated learning styles. However, to ensure its effectiveness across diverse learners, educators must pay attention to students with lower levels of self-learning. Structured guidance, peer mentoring, and reflective activities may help such students gradually build the autonomy necessary to benefit fully from the model.

Finally, while this study reinforces the role of YouTube-mediated PjBL and self-learning in improving speaking skills, its scope was limited to two senior high schools in Purwakarta and focused solely on speaking proficiency. Future studies should expand the context to different regions and investigate other language skills such as listening, writing, and reading. Moreover, exploring additional learner variables—such as motivation, cognitive style, and cultural background—would provide a richer understanding of how instructional models interact with student characteristics.

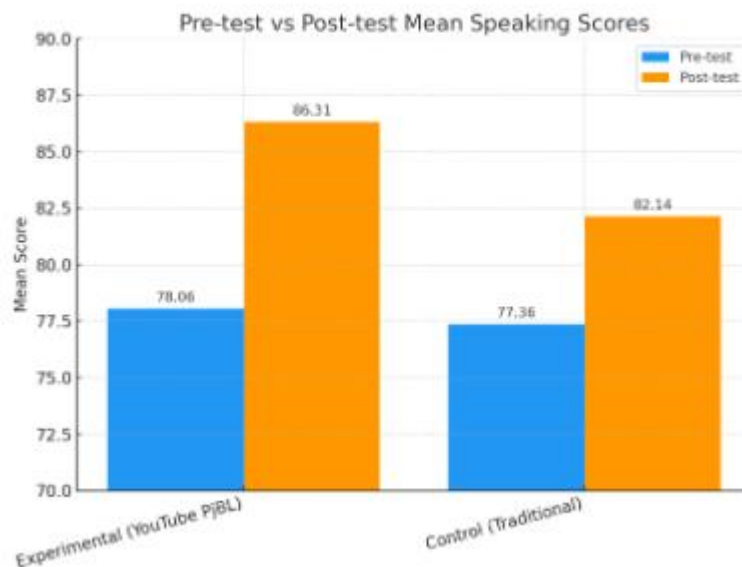


Figure 1 Pre-Test and Post test Mean Speaking Scores

Both groups improved after treatment, but the experimental group (YouTube PjBL) showed a greater gain (from 78.06 → 86.31) compared to the control group (Traditional) (from 77.36 → 82.14).

This supports the statistical findings that YouTube-mediated Project-Based Learning is more effective in improving speaking skills than traditional methods.

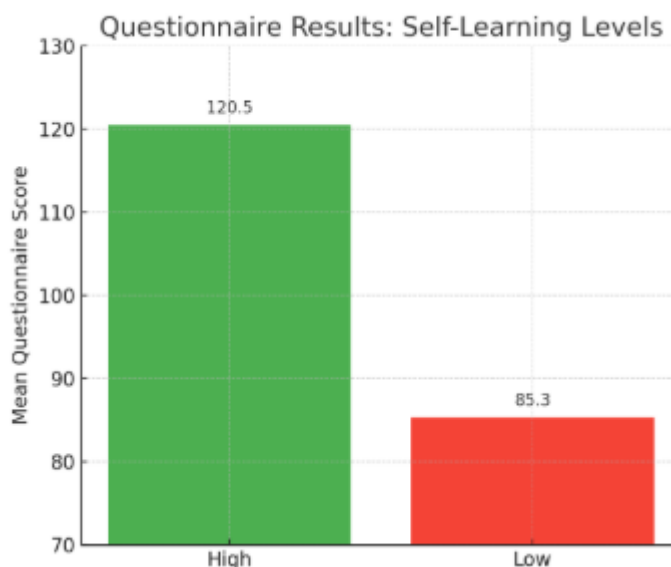


Figure 2 Self Learning Levels

The chart shows a clear distinction between students with high self-learning (Mean \approx 120.5) and those with low self-learning (Mean \approx 85.3). This confirms the effectiveness of the questionnaire in categorizing learners and highlights that students with higher self-learning tendencies performed significantly better in speaking skills.

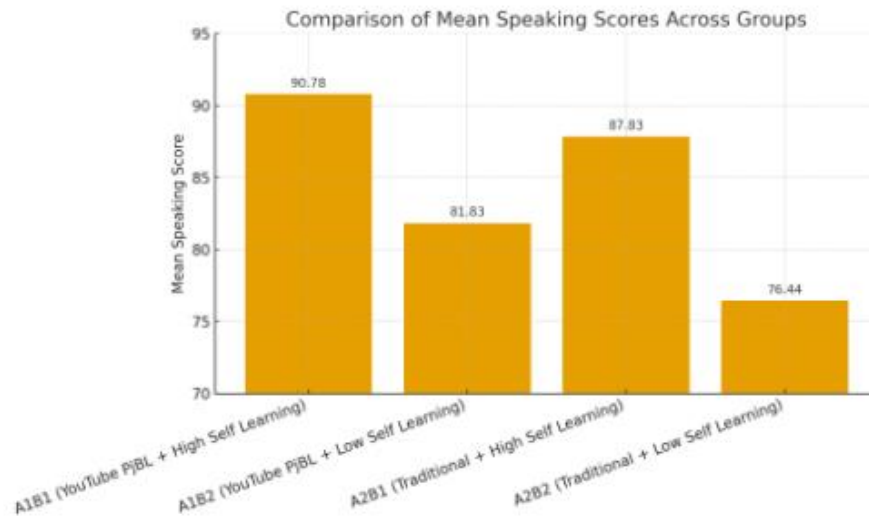


Figure 3 Comparison of Mean Speaking Scores Across Groups

The chart emphasizes that the combination of innovative pedagogy (YouTube-mediated PjBL) and strong learner autonomy produces the most significant improvements in speaking performance. These results support earlier studies which have highlighted the centrality of learner autonomy in language acquisition (Putri, 2018; Wulandari, 2021; De Vrind et al., 2024) and the effectiveness of digital project-based instruction in promoting communicative competence (Novitasari, 2019; Alkathiri, 2019; Mudatsir & Wahyuniar, 2023).

CONCLUSIONS

This study found that the YouTube-mediated Project-Based Learning (PjBL) model significantly enhanced students' speaking skills compared to traditional teaching methods. Students who engaged in the PjBL model achieved higher post-test scores, and those with strong self-learning abilities demonstrated even greater improvements. The statistical analysis confirmed significant main effects of both the learning model and self-learning, as well as a meaningful interaction between the two, indicating that the combination of technology-mediated instruction and learner autonomy produces the most effective outcomes.

These findings emphasize the importance of integrating interactive and technology-enhanced approaches in English language instruction, particularly in fostering speaking competence. The YouTube-mediated PjBL model not only provides authentic and engaging contexts for practice but also encourages students to become more independent and reflective

learners. This research therefore contributes to both pedagogical practices and theoretical discussions on digital tools in language education.

Nonetheless, this study was limited to speaking skills and was conducted in two senior high schools in Purwakarta, which may restrict the generalizability of the findings. Future research could explore the effects of similar approaches on other language skills such as listening, reading, and writing, or compare different interactive teaching models like flipped classrooms and gamification. Additionally, further studies could examine how learner characteristics, including motivation, cultural background, and learning styles, influence the effectiveness of technology-mediated instruction.

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