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The influence of public speaking skills and project-based learning on the leadership of office administration education students at FKIP UNS

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Abstrak

Penelitian ini dilaksanakan untuk menelaah (1) pengaruh kemampuan public speaking terhadap kepemimpinan mahasiswa PAP FKIP UNS, (2) pengaruh model project based learning terhadap kepemimpinan mahasiswa PAP FKIP UNS, dan (3) pengaruh kemampuan public speaking dan model project based learning secara simultan terhadap kepemimpinan mahasiswa PAP FKIP UNS. Pendekatan penelitian yang digunakan adalah kuantitatif dengan total populasi berjumlah 199 mahasiswa PAP FKIP UNS angkatan 2022 dan 2023. Sampel penelitian berjumlah 133 mahasiswa yang dipilih menggunakan probability sampling. Perolehan data dilakukan menggunakan kuesioner, lalu dianalisis dengan metode regresi linear berganda berbantuan software IBM SPSS statistics versi 27. Berdasarkan hasil analisis diketahui bahwa (1) Kemampuan public speaking memberikan kontribusi positif yang signifikan terhadap kepemimpinan, dibuktikan dengan nilai signikansi < 0,05 serta nilai thitung > ttabel yaitu 6,059 > 1,657, (2) Model project based learning juga memberikan pengaruh positif dan signifikan terhadap kepemimpinan dengan nilai signikansi < 0,001 < 0,05 dan nilai thitung > ttabel yaitu 6,382 > 1,657, (3) Kemampuan public speaking dan model project based learning berpengaruh positif dan signifikan terhadap kepemimpinan, yang dilihat dari nilai signikansi < 0,001 < 0,05 dan nilai Fhitung > Ftabel yaitu 96,36 > 3,06. Temuan lainnya yaitu sumbangan efektif variabel X1 dan X2 terhadap Y secara simultan sebesar 59,7%, sementara sisanya berasal dari pengaruh variabel di luar model penelitian yang digunakan. Dengan demikian, hasil penelitian ini menunjukkan bahwa peningkatan kemampuan public speaking serta penerapan model project based learning secara optimal dapat menjadi strategi yang efektif dalam mengembangkan jiwa kepemimpinan mahasiswa PAP FKIP.

Kata kunci : kepemimpinan; komunikasi; project based learning; pendidikan tinggi

Abstract

This study examined: (1) the effect of public speaking skills on the leadership of Office Administration Education (PAP) students at FKIP UNS, (2) the effect of the project-based learning (PjBL) model on student leadership, and (3) the simultaneous effect of public speaking skills and the PjBL model on student leadership. A quantitative causal-associative approach was employed with a total population of 199 PAP FKIP UNS students from the 2022 and 2023 cohorts. A sample of 133 students was selected using stratified random sampling. Data were collected through a closed-ended Likert-scale questionnaire and analyzed using multiple linear regression with IBM SPSS Statistics version 27. The results indicate that: (1)

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public speaking skills have a positive and significant effect on leadership ($t = 6.059 > t\text{-table} = 1.657$; $p < 0.001$); (2) the PjBL model has a positive and significant effect on leadership ($t = 6.382 > t\text{-table} = 1.657$; $p < 0.001$); and (3) public speaking skills and the PjBL model simultaneously have a positive and significant effect on leadership ($F = 96.366 > F\text{-table} = 3.06$; $p < 0.001$), collectively explaining 59.7% of the variance in student leadership ($R^2 = 0.597$). The effective contributions of public speaking skills and PjBL to leadership were 29.0% and 30.7%, respectively. These findings suggest that enhancing public speaking competencies alongside the systematic implementation of project-based learning constitutes an effective strategy for developing student leadership capabilities in higher education.

Keywords: leadership; communication; project-based learning; higher education; public speaking

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Introduction

Leadership is increasingly recognized as a foundational competency that higher education graduates must possess to navigate the demands of contemporary professional environments. It is consistently listed among the top ten core skills urgently required in the era of digital transformation and the Fourth Industrial Revolution. The World Economic Forum (2023) reported that communication, collaboration, leadership, and problem-solving are among the most critical competencies employers seek in new graduates, underscoring the imperative for higher education institutions to prepare students not only with technical expertise but also with the interpersonal and organizational capabilities essential for effective leadership. As Pecamuya (2025) argued, universities must actively and systematically cultivate leadership in their graduates to ensure their competitiveness and readiness in the global labor market.

Despite this imperative, evidence suggests that many university students currently possess underdeveloped leadership capabilities. Khairuddin et al. (2023) found that student leadership levels remain low, attributable in part to limited organizational engagement, with many students prioritizing academic coursework over extracurricular involvement. Similar findings were reported by Arifin et al. (2023) regarding students in the Biology Education Program at Universitas Galuh. This pattern of low leadership development is also evident among students in the Office Administration Education (Pendidikan Administrasi Perkantoran/PAP) Program at the Faculty of Teacher Training and Education, Universitas Sebelas Maret (FKIP UNS). A preliminary study involving questionnaires administered to 35 students from the 2022 and 2023 PAP FKIP UNS cohorts revealed that 91.5% had not yet demonstrated the initiative to lead in group work, 74.3% were unable to make effective decisions within a team, 82.9% were unable to influence team members toward shared goals, and 22.8% had difficulty collaborating within team settings. These findings collectively indicate that student leadership at PAP FKIP UNS remains suboptimal and requires more systematic and intentional developmental interventions.

Two factors are hypothesized as particularly influential in this context. The first is public speaking ability, which extends beyond the capacity to deliver ideas to an audience and encompasses the skills of inspiring others, exercising persuasion, and projecting confidence. Public speaking training cultivates critical thinking, self-confidence, and interpersonal influence—capacities that directly underpin effective leadership (Yunita et al., 2025). Lu et al. (2025) demonstrated experimentally that structured public speaking activities—such as competitive debate—significantly enhanced participants' likelihood of assuming leadership positions, compared with control groups that received no such training. Consistent evidence is provided by Alfiansyah et al. (2023), who found that public speaking ability exerted a positive

and significant influence on student leadership, and by Tanwa (2024), who confirmed this relationship in the Indonesian university context. The preliminary study conducted for the present investigation further corroborates this link: 40.0% of PAP FKIP UNS students identified public speaking ability as a primary factor underlying their relatively low leadership development.

The second hypothesized factor is the project-based learning (PjBL) instructional model. Grounded in constructivist principles, PjBL centers on authentic problem-solving, integrative study, and a deliberate balance between theoretical understanding and practical application (Rehny & Sari, 2023). The model's primary objectives—fostering critical thinking, communication, collaboration, and problem-solving through real-world project engagement—align directly with core leadership competencies. Santos et al. (2025) confirmed that PjBL contributes significantly to the development of student leadership, and Hasanah et al. (2023) similarly found that PjBL exerted a significant positive effect on student leadership development. In the preliminary study, 42.9% of students identified PjBL as a contributing factor to their leadership underdevelopment, making it the most frequently cited external factor alongside public speaking.

A notable gap in the existing literature is that prior studies have examined public speaking ability and PjBL as independent predictors of leadership, without testing their simultaneous and relative influences within a unified analytical model. This gap is particularly pronounced in the context of PAP FKIP UNS students, whose future professional roles as office administrators will demand effective team management, decision-making, and communicative leadership. The present study addresses this gap by empirically examining the independent and simultaneous effects of public speaking skills and PjBL on student leadership, contributing to both the theoretical literature on leadership development and the practical agenda of curriculum enhancement in higher education.

The research questions guiding this study are: (1) Does public speaking ability have a positive and significant effect on the leadership of PAP FKIP UNS students? (2) Does the PjBL model have a positive and significant effect on student leadership? (3) Do public speaking ability and the PjBL model simultaneously have a positive and significant effect on student leadership? Hypotheses corresponding to each research question propose that these effects are positive and statistically significant.

Literature Review

Student Leadership in Higher Education

Leadership in the higher education context refers to a student's capacity to guide, motivate, and coordinate peers toward shared academic and organizational goals. It encompasses a constellation of behavioral and cognitive competencies including initiative-taking, decision-making, team coordination, persuasive communication, and responsibility for collective outcomes. The World Economic Forum (2023) identified leadership as among the most urgently needed graduate attributes globally, particularly as workplaces increasingly demand professionals capable of operating autonomously, managing cross-functional teams, and adapting to rapidly evolving organizational environments.

Despite the widely acknowledged importance of leadership, evidence from the Indonesian higher education context indicates persistent deficits in student leadership development (Arifin et al., 2023; Khairuddin et al., 2023). These deficits are often attributed to curriculum structures that prioritize academic knowledge acquisition over experiential leadership learning, limited integration of leadership development activities into formal coursework, and students' underparticipation in organizational activities that could provide leadership experience outside the classroom.

Public Speaking Skills and Leadership

Public speaking is a multidimensional communicative competency encompassing verbal and nonverbal expression, audience analysis, persuasive argumentation, and confident self-presentation. Yunita et al. (2025) conceptualized public speaking as a capacity that trains communication skill while simultaneously building confidence, persuasive power, and critical thinking—all of which are constituent elements of leadership effectiveness. The connection between public speaking and leadership operates

through several mechanisms: the ability to articulate ideas clearly enables leaders to set and communicate vision; the capacity for persuasion facilitates the mobilization of followers; and the command of nonverbal communication—including gesture, posture, and vocal modulation—strengthens the authority and credibility of leadership communication (Darmawan & Sa'i, 2025).

Empirical support for the public speaking–leadership relationship is provided by multiple studies. Alfiansyah et al. (2023) found that public speaking exerted a positive and significant influence on student organizational leadership. Lu et al. (2025) demonstrated through a controlled experimental design that debate training—a structured form of public speaking practice—promoted leadership emergence by enhancing participants' assertiveness. Rahayu et al. (2025) similarly identified public speaking as a key factor in the cultivation of leadership capacity. Tanwa (2024) confirmed through regression analysis that public speaking partially and significantly predicted student leadership.

Project-Based Learning and Leadership

Project-based learning (PjBL) is a constructivist instructional approach in which students engage with authentic, complex problems through sustained collaborative project work (Rehny & Sari, 2023). Unlike transmission-oriented pedagogies, PjBL places students in active, responsible roles within collaborative processes—requiring them to plan, delegate, manage resources, resolve conflicts, and present results. These activities directly exercise the behavioral dimensions of leadership (Faslia et al., 2023). Through repeated engagement with team-based project challenges, students develop not only content knowledge but also the 21st-century competencies—critical thinking, communication, collaboration, and creativity—that constitute the foundation of contemporary leadership practice.

The leadership-enhancing effects of PjBL have been documented across educational levels and disciplines. Hasanah et al. (2023) found that PjBL significantly enhanced student leadership skills in postgraduate research contexts, with students reporting heightened capacity for initiative, decision-making, and team coordination following PjBL engagement. Santos et al. (2025) confirmed that pedagogical approaches grounded in project-based curriculum design positively and significantly predicted students' problem-solving and leadership behaviors. Prasetyo et al. (2024) further identified PjBL as an effective vehicle for strengthening 21st-century leadership character, particularly in university settings.

Method

Research Design

This study employed a quantitative approach with a causal-associative design, which is suited to examining the directional relationships between predictor variables and an outcome variable (Ghozali, 2021). The independent variables were public speaking skills (X_1) and the project-based learning model (X_2), while the dependent variable was student leadership (Y). The quantitative approach was deemed appropriate for measuring the magnitude and significance of interrelationships among variables through statistical analysis, enabling objective, replicable inferences.

Research Setting and Participants

The study was conducted in the Office Administration Education (PAP) Program, Faculty of Teacher Training and Education (FKIP), Universitas Sebelas Maret (UNS), located at Building B, FKIP UNS, Jl. Ir. Sutami 36A, Surakarta 57126. This site was selected purposively on the basis of the identified leadership development deficit among its students, institutional access and data availability, and granted research permission.

The study population comprised all 199 PAP FKIP UNS students from the 2022 and 2023 cohorts. These cohorts were selected because all members had participated in at least one Merdeka Belajar Kampus Merdeka (MBKM) activity, ensuring relevant experiential commonality across respondents. A sample of 133 students was drawn using stratified random sampling, which divides the population into strata (cohort year) and draws proportional subsamples from each stratum.

Instrumentation and Data Collection

Data were collected using a closed-ended questionnaire employing a four-point Likert scale (1 = strongly disagree; 4 = strongly agree). The four-point format was deliberately selected to eliminate a neutral midpoint, thereby encouraging respondents to express clearly differentiated positions and reducing acquiescence bias.

The instruments were developed independently by the researchers based on theoretical indicator frameworks drawn from the relevant literature. The public speaking skills scale (X_1) comprised 9 items; the PjBL scale (X_2) comprised 13 items; and the leadership scale (Y) comprised 14 items—totaling 36 validated items. Prior to main data collection, all instruments underwent pilot testing with students from the Economics Education Program (Pendidikan Ekonomi) at FKIP UNS, 2022 and 2023 cohorts, who shared similar MBKM participation characteristics with the main sample. Pilot testing was conducted to assess item clarity, response time, and preliminary psychometric properties.

Validity was assessed using the Pearson Product Moment correlation technique, with items declared valid when r-calculated exceeded r-table at a significance level of 0.05. Reliability was assessed using Cronbach's Alpha, with a threshold of $\alpha > 0.60$ indicating acceptable internal consistency. Items failing validity criteria were eliminated or revised; all retained items met both validity and reliability standards.

Data Analysis

All data were analyzed using IBM SPSS Statistics version 27. Prior to hypothesis testing, four prerequisite assumption tests were conducted: (1) normality (Kolmogorov-Smirnov test); (2) linearity (deviation from linearity F-test); (3) multicollinearity (tolerance and VIF diagnostics); and (4) heteroscedasticity (Glejser test and scatterplot inspection). Hypothesis testing was performed using multiple linear regression, with the t-test for partial effects and the F-test for simultaneous effects. The coefficient of determination (R^2) was computed to quantify overall model explanatory power. Effective contribution (EC) and relative contribution (RC) indices were calculated to partition R^2 across the two predictors, enabling comparison of their respective contributions to the outcome variable.

Result and Discussion

Descriptive Statistics

Table 1 presents the descriptive statistics for the three study variables across the sample of 133 participants.

Table 1
Descriptive Statistics for Study Variables

Statistic	Public Speaking Skills (X_1)	Project-Based Learning (X_2)	Leadership (Y)
N (Valid)	133	133	133
Missing	0	0	0
Mean	33.41	49.46	49.93
Median	33.08	48.81	49.48
Mode	32	46	52
Std. Deviation	4.551	5.780	6.732
Variance	20.716	33.404	45.318
Range	23	30	28
Minimum	22	35	34
Maximum	45	65	62

Sum	4,444	6,579	6,641
No. of Items	9	13	14

Note. N = 133. All variables measured on a four-point Likert scale.

As shown in Table 1, the leadership variable (Y) ranged from 34 to 62 with a mean of 49.93 and a standard deviation of 6.732, measured across 14 items. The public speaking skills variable (X_1) ranged from 22 to 45 with a mean of 33.41 and a standard deviation of 4.551, measured across 9 items. The PjBL variable (X_2) ranged from 35 to 65 with a mean of 49.46 and a standard deviation of 5.780, measured across 13 items. No missing data were recorded for any variable.

Assumption Testing

Four prerequisite assumption tests were conducted prior to hypothesis testing. The Kolmogorov-Smirnov normality test yielded an Asymp. Sig. (2-tailed) value of 0.200 ($p > 0.05$), confirming that the data distribution was approximately normal. Linearity tests returned deviation from linearity significance values of 0.289 for X_1–Y and 0.076 for X_2–Y (both $p > 0.05$), confirming linear relationships between each predictor and the outcome variable.

Multicollinearity diagnostics for both X_1 and X_2 yielded tolerance values of 0.642 and VIF values of 1.558—both well within acceptable thresholds (tolerance > 0.10; VIF < 10)—indicating the absence of problematic multicollinearity between the predictors. The Glejser heteroscedasticity test returned significance values of 0.848 for X_1 and 0.860 for X_2 (both $p > 0.05$), and scatterplot inspection revealed no systematic pattern in residual dispersion, confirming that the model is free from heteroscedasticity. Collectively, these results confirm that all four regression assumptions were satisfactorily met.

Multiple Linear Regression

Table 2 presents the unstandardized and standardized regression coefficients from the multiple linear regression analysis.

Table 2
Multiple Linear Regression Coefficients

Model	B	Std. Error	Beta (β)	t	Sig.
(Constant)	3.581	3.391	—	1.056	.293
Public Speaking Skills (X_1)	0.623	0.103	0.421	6.059	< 0.001
Project-Based Learning (X_2)	0.516	0.081	0.443	6.382	< 0.001

Note. Dependent variable: Leadership (Y). df = 130. t-table = 1.657 ($\alpha = 0.05$).

As shown in Table 2, the regression equation for this study is:

$$\hat{Y} = 3.581 + 0.623X_1 + 0.516X_2$$

where $\hat{Y}$ = predicted leadership score, X_1 = public speaking skills, and X_2 = project-based learning. The constant of 3.581 indicates the expected value of leadership when both predictors are set to zero. A one-unit increase in public speaking skills (X_1), holding PjBL constant, is associated with a 0.623-unit increase in leadership. A one-unit increase in PjBL (X_2), holding public speaking constant, is associated with a 0.516-unit increase in leadership. Both regression coefficients are positive, confirming the directional hypotheses.

Partial Effects (t-Test)

Table 3 presents the results of the partial hypothesis tests (t-tests) for each independent variable.

Table 3
Results of Partial Effects t-Tests

Model	t-calculated	t-table	Sig.
(Constant)	1.056	—	0.293
Public Speaking Skills (X_1)	6.059	1.657	< 0.001

Project-Based Learning (X_2)	6.382	1.657	< 0.001

Note. t-table = 1.657 ($\alpha = 0.05$; df = 130). H_0 rejected when t-calculated > t-table and $p < 0.05$.

As shown in Table 3, the t-test for public speaking skills (X_1) yielded t = 6.059 > t-table = 1.657, with $p < 0.001$, indicating that public speaking skills have a statistically significant positive partial effect on student leadership (H_1 supported). Similarly, the t-test for PjBL (X_2) yielded t = 6.382 > t-table = 1.657, with $p < 0.001$, confirming a statistically significant positive partial effect of the PjBL model on student leadership (H_2 supported).

Simultaneous Effect (F-Test)

Table 4 presents the results of the simultaneous hypothesis test (F-test, ANOVA).

Table 4
Results of the Simultaneous Effects F-Test (ANOVA)

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	3,572.387	2	1,786.193	96.366	< 0.001
Residual	2,409.606	130	18.535		
Total	5,981.993	132			

Note. F-table = 3.06 ($\alpha = 0.05$; $df_1 = 2$; $df_2 = 130$). H_0 rejected when F-calculated > F-table and $p < 0.05$.

As demonstrated in Table 4, the F-test yielded F = 96.366 > F-table = 3.06, with $p < 0.001$, providing strong evidence that public speaking skills and PjBL jointly and significantly predict student leadership (H_3 supported).

Coefficient of Determination and Variable Contributions

Tables 5 through 8 present, respectively, the coefficient of determination, the correlation and regression coefficients used in contribution calculations, and the effective and relative contributions of each predictor variable.

Table 5
Coefficient of Determination (R^2)

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.773	0.597	0.591	4.305

Note. Dependent variable: Leadership (Y).

As indicated in Table 5, the R-square value of 0.597 signifies that public speaking skills and PjBL together explain 59.7% of the variance in student leadership, while the remaining 40.3% is attributable to variables not included in the present model.

Table 6
Regression and Correlation Coefficients for Effective Contribution Calculation

Variable	Regression Coefficient (Beta)	Correlation Coefficient (r)
Public Speaking Skills (X_1)	0.421	0.686
Project-Based Learning (X_2)	0.443	0.695
R Square	0.597	

Note. Correlation coefficients are bivariate Pearson r values between each predictor and Leadership (Y).

Table 6 presents the standardized regression coefficients (Beta) and bivariate correlation coefficients used to compute each predictor's effective contribution to R^2. These values serve as inputs for the calculations reported in Table 7.

Table 7
Effective Contributions of X_1 and X_2 to Leadership (Y)

Variable	Calculation	Effective Contribution (%)
Public Speaking Skills (X_1)	0.421 × 0.686 × 100%	29.0%
Project-Based Learning (X_2)	0.443 × 0.695 × 100%	30.7%
Total		59.7%

Note. Effective contribution = Beta × Pearson r × 100%. Total equals R^2 × 100%.

As shown in Table 7, the effective contribution of public speaking skills (X_1) to leadership is 29.0%, and the effective contribution of PjBL (X_2) is 30.7%. The combined effective contribution of 59.7% is consistent with the R-square value, confirming internal coherence of the partitioned estimates.

Table 8
Relative Contributions of X_1 and X_2 to Leadership (Y)

Variable	Calculation	Relative Contribution (%)
Public Speaking Skills (X_1)	29.0% ÷ 59.7%	48.6%
Project-Based Learning (X_2)	30.7% ÷ 59.7%	51.4%
Total		100%

Note. Relative contribution = Effective contribution ÷ Total R^2 (59.7%). Values rounded.

As presented in Table 8, within the proportion of variance explained by the model, PjBL accounts for a slightly larger relative contribution (51.4%) compared with public speaking skills (48.6%), with the total summing to 100%.

Discussion

Effect of Public Speaking Skills on Student Leadership

The finding that public speaking skills exert a positive and significant partial effect on student leadership ($t = 6.059$; $p < 0.001$) is consistent with the prevailing literature on the communication–leadership nexus. Alfiansyah et al. (2023) similarly demonstrated that public speaking skills significantly predict student leadership within organizational contexts, and Tanwa (2024) confirmed this relationship in the Indonesian university setting. The present finding extends this evidence base to the PAP FKIP UNS context, confirming the generalizability of the public speaking–leadership relationship.

Item-level analysis revealed that the highest-scoring item (item 3; aggregate score = 434) concerned the use of hand gestures during public speaking to reinforce the message delivered. This finding is consistent with Darmawan and Sa'i (2025), who demonstrated that gestural communication plays a critical role in the effectiveness of public presentations—specifically by reinforcing verbal content, signaling confidence, and commanding audience attention. The prominence of this item suggests that students recognize the holistic, embodied nature of effective public communication, which in turn supports leadership emergence by projecting confidence and competence.

Theoretically, the public speaking–leadership connection is explicable through at least two mechanisms. First, public speaking practice develops the self-efficacy and confidence that enable students

to take initiative and assert themselves in group settings—behaviors directly associated with leadership emergence (Lu et al., 2025). Second, the persuasion and audience engagement skills cultivated through public speaking training equip students with the interpersonal influence capabilities that underpin the ability to motivate and coordinate team members. Rahayu et al. (2025) explicitly positioned public speaking as a key catalyst for leadership development, a conclusion strongly supported by the present findings.

Effect of Project-Based Learning on Student Leadership

The PjBL model similarly exerted a positive and significant partial effect on student leadership ($t = 6.382$; $p < 0.001$), consistent with Hasanah et al. (2023) and Prasetyo et al. (2024), who confirmed PjBL's significant positive influence on student leadership in university settings. The present findings add to this literature by providing quantitative evidence within the specific context of Indonesian office administration education.

The highest-scoring PjBL item (item 4; aggregate score = 444) concerned students' initiative in independently seeking relevant information sources to support their projects. This behavioral indicator directly reflects a core leadership disposition: proactive information seeking and autonomous problem-framing. The high endorsement of this item suggests that PjBL environments cultivate the self-directed, information-driven behaviors that are foundational to effective leadership in complex work settings.

The mechanisms through which PjBL cultivates leadership are multifaceted. PjBL situates students in authentic collaborative roles that require real-time decision-making, task delegation, conflict resolution, and accountability for collective outcomes—all of which are behavioral enactments of leadership competencies. Santos et al. (2025) characterized this as PjBL's capacity to create contextual learning experiences that demand and thereby develop leadership behaviors. In contrast to decontextualized instructional formats, PjBL provides the authentic complexity and collaborative accountability that enable leadership skills to be practiced, refined, and internalized.

Simultaneous Effect and Comparative Contributions

The simultaneous analysis confirmed that public speaking skills and PjBL together significantly predict student leadership ($F = 96.366$; $p < 0.001$; $R^2 = 0.597$). The combined model explains 59.7% of the variance in leadership—a substantial proportion that underscores the importance of both communicative and experiential learning dimensions in leadership development. The remaining 40.3% of unexplained variance points to the influence of factors outside the current model, potentially including emotional intelligence, organizational experience, self-efficacy, peer social environment, academic motivation, and family socialization patterns (among others), which future research may productively examine.

A particularly informative finding is the comparative analysis of the two predictors' contributions. While both variables made statistically equivalent partial contributions ($t = 6.059$ vs. $t = 6.382$), their effective contributions were closely matched: 29.0% for public speaking and 30.7% for PjBL. The slight margin in favor of PjBL can be theoretically grounded: whereas public speaking training primarily develops communicative and presentational dimensions of leadership—confidence, articulation, and interpersonal influence—PjBL additionally cultivates the structural and organizational dimensions of leadership, including decision-making, strategic planning, task management, and collective responsibility. These additional behavioral domains mean that PjBL addresses a broader range of leadership competencies than public speaking practice alone, resulting in a marginally larger contribution to overall leadership variance.

The two predictors are best understood as complementary rather than competing contributors to leadership development. PjBL provides the authentic collaborative contexts in which students must exercise leadership in practice—organizing teams, navigating disagreement, and driving projects toward completion. Public speaking, in turn, equips students with the communicative tools necessary to lead effectively within those contexts—articulating vision, persuading peers, giving direction, and inspiring effort. Leadership development is therefore most likely to be maximized when students engage in both structured public speaking practice and PjBL, as the two approaches address different but mutually reinforcing dimensions of the leadership competency profile.

The highest-scoring leadership item (item 7; aggregate score = 464) concerned the ability to listen to group members' opinions before making decisions—a behavior reflecting consultative, democratic leadership. The prominence of this item among student respondents suggests that, despite self-reported leadership deficits in the preliminary study, students do possess and value at least some relational and participatory leadership dispositions, which PjBL and public speaking training may further develop and institutionalize.

Implications for Practice

The findings carry several implications for the PAP FKIP UNS program and for higher education institutions more broadly. First, public speaking practice should be more systematically and explicitly integrated into formal coursework—including courses that involve presentations, seminars, and group discussions—rather than left to informal or extracurricular development. Structured, criterion-based public speaking activities, such as debates, panel discussions, and formal oral examinations, provide targeted practice in the communicative dimensions of leadership.

Second, the scope of PjBL implementation should be deliberately expanded across the curriculum, with attention to designing projects that replicate the complexity, interdependence, and accountability of real-world professional leadership contexts. Projects that require sustained team leadership, resource management, stakeholder communication, and formal presentation of outcomes are particularly well-suited to this purpose. Third, the program may consider instituting periodic leadership and communication development workshops as structured extracurricular complements to formal coursework, providing students with additional opportunities to practice and reflect on leadership behaviors.

Conclusion

This study examined the independent and simultaneous effects of public speaking skills and the project-based learning model on the leadership of PAP FKIP UNS students from the 2022 and 2023 cohorts. Three principal conclusions were established. First, public speaking skills exert a positive and significant partial effect on student leadership ($t = 6.059 > t\text{-table} = 1.657$; $p < 0.001$), with an effective contribution of 29.0%. Second, the PjBL model exerts a positive and significant partial effect on student leadership ($t = 6.382 > t\text{-table} = 1.657$; $p < 0.001$), with an effective contribution of 30.7%. Third, public speaking skills and PjBL jointly exert a positive and significant simultaneous effect on student leadership ($F = 96.366 > F\text{-table} = 3.06$; $p < 0.001$; $R^2 = 0.597$), collectively accounting for 59.7% of the variance in student leadership.

The finding that PjBL contributes slightly more than public speaking to overall leadership variance reflects its broader scope in developing the organizational, collaborative, and decision-making dimensions of leadership, in addition to the communicative capacities that public speaking addresses. Nevertheless, both predictors are substantively important, and their contributions are most effectively realized in combination. Optimal student leadership development requires both communicative competence and authentic collaborative learning experiences.

This study is subject to several limitations. The single-program sample restricts generalizability beyond the PAP FKIP UNS context. The cross-sectional design precludes causal inferences regarding developmental trajectories over time. The PjBL measure relied on student self-report perceptions, which may be subject to social desirability or recall biases. And the unexplained 40.3% of leadership variance indicates that important predictors remain unexamined in this model. Future research should employ multi-program, multi-institution samples; longitudinal designs to track leadership development trajectories; observational measures of PjBL implementation quality; and expanded variable sets incorporating emotional intelligence, self-efficacy, organizational involvement, and peer learning environment as additional predictors of student leadership.

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