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Revolutionizing English for Accounting Education: How Technology-Enhanced Cooperative Learning Transforms Speaking Performance

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Abstract - The integration of application-based materials with cooperative learning approaches in English for Specific Purposes education has gained considerable attention in vocational settings. However, empirical evidence regarding their combined effectiveness in enhancing speaking abilities remains limited, particularly in accounting contexts. This study examined the impact of integrating application-based English for Accounting materials with cooperative learning methods on students' English speaking abilities. A quasi-experimental design was employed with 60 second-semester accounting students at Politeknik Negeri Bali, randomly assigned to experimental and control groups. The experimental group received instruction combining mobile application materials with cooperative learning structures, while the control group followed conventional teaching methods. Pre-test and post-test measurements assessed speaking abilities using validated rubrics covering six components of oral proficiency. Results revealed statistically significant differences between groups, with the experimental group demonstrating substantially higher improvement in speaking abilities. The experimental group achieved a mean gain score of 14.64 points compared to 5.16 points in the control group. Statistical analysis using independent samples t-test confirmed significant differences ($t = 12.456$, $p < 0.001$) with a large effect size. These findings demonstrate that integrating application-based materials with cooperative learning significantly enhances English speaking abilities in accounting education contexts, providing evidence for technology- enhanced collaborative approaches in ESP instruction.

Keywords: *Application-Based Learning, Cooperative Learning, English for Accounting, ESP Education, Speaking Ability*

1. INTRODUCTION

The globalization of business practices has created an urgent need for accounting professionals who can communicate effectively in English, particularly in speaking contexts where complex financial concepts must be articulated clearly and accurately (Aldamen et al., 2021; Chaikovska et al., 2024). Traditional approaches to English for Accounting instruction often fail to provide adequate opportunities for meaningful speaking practice, resulting in graduates who struggle with oral communication in professional environments (Ali et al., 2022; Huber et al., 2020). Research indicates that conventional teacher-centered methodologies limit student engagement and fail to develop the interactive communication skills essential for modern accounting practice (Ghufron & Ermawati, 2018; Bećirović et al., 2022).

The integration of technology-enhanced materials with collaborative learning approaches offers promising solutions to these pedagogical challenges, as evidenced by emerging research in ESP contexts (Bauer et al., 2021; Ellederová, 2021). Application-based learning materials provide authentic, contextualized content that mirrors real-world accounting scenarios, while cooperative learning methodologies foster peer interaction and reduce speaking anxiety (Bailey & Cassidy, 2019; Castrigano et al., 2021). However, limited empirical evidence exists regarding the effectiveness of combining these approaches specifically for developing speaking abilities in English for Accounting contexts (Barnard & Zemach, 2003; Tomlinson & Masuhara, 2017).

The theoretical foundation for this integration rests on social constructivist learning theory, which emphasizes the importance of collaborative knowledge construction in meaningful contexts (Hutchinson & Waters, 1987; Dudley-Evans et al., 1998). When learners engage with authentic materials through cooperative structures, they develop both linguistic competence and professional communication skills simultaneously (Creswell, 2022; Cohen, 1988). This synergistic approach addresses the dual challenges of language acquisition and professional skill development that characterize ESP education in vocational settings (Chaikovska et al., 2024; Ali et al., 2022).

Therefore, this study investigated the effectiveness of integrating application-based English for Accounting materials with cooperative learning approaches in enhancing students' English speaking abilities (Aldamen et al., 2021; Bećirović et al., 2022). The research addresses a critical gap in ESP literature by providing empirical evidence for technology-enhanced collaborative learning in accounting education contexts (Huber

et al., 2020; Ghufron & Ermawati, 2018).

2. METHOD

2.1 Research Design

This study employed a quasi-experimental design with pretest-posttest control group to examine the effectiveness of the integrated approach. The design allowed for comparison between experimental and control conditions while maintaining practical feasibility in educational settings.

2.2 Participants

Sixty second-semester accounting students from Politeknik Negeri Bali participated in this study. Participants were randomly assigned to experimental (n=30) and control (n=30) groups. All participants were enrolled in the English for Accounting course and ranged in age from 18-20 years with comparable English proficiency levels as determined by institutional placement tests.

2.3 Instruments

Speaking ability was assessed using validated rubrics measuring six components identified as crucial for oral proficiency assessment (Harris, 1969; Brown, 2004). These components include pronunciation, grammar, vocabulary, fluency, comprehension, and communicative competence. The assessment framework follows established principles in language testing that emphasize comprehensive evaluation of speaking abilities across multiple dimensions (Hughes, 2003; Underhill, 1987). Each component was rated on a 5- point scale, with total scores ranging from 30-150 points. The rubric demonstrated high inter-rater reliability (Cohen's $\kappa = 0.851$) and content validity as confirmed by expert judgment.

2.4 Procedure

The experimental group received eight weeks of instruction integrating application-based materials with cooperative learning structures. The mobile application provided authentic accounting scenarios, interactive exercises, and pronunciation guides. Cooperative learning activities included group discussions, role-plays, and collaborative problem- solving tasks. The control group followed conventional teaching methods using traditional textbooks and teacher-centered instruction. Both groups received equal instructional time and were taught by the same instructor.

2.5 Data Analysis

Independent samples t-tests were conducted to compare gain scores between groups. Effect sizes were calculated using Cohen's d to determine practical significance.

Statistical assumptions including normality and homogeneity of variance were verified prior to analysis using Shapiro-Wilk and Levene's tests respectively.

3. RESULTS AND DISCUSSION RESULTS

3.1 Descriptive Statistics

Table 1 presents descriptive statistics for both groups across pre-test and post-test measurements. The experimental group demonstrated substantial improvement from pre- test to post-test, while the control group showed modest gains.

Table 1. Descriptive Statistics for Speaking Ability Scores

Group	Measurement	N	Mean	Std. Deviation	Minimum	Maximum
Experimental	Pre-test	30	69.23	8.45	55	85
	Post-test	30	83.87	6.89	72	98
Control	Pre-test	30	68.97	8.72	53	86
	Post-test	30	74.13	7.42	61	89

The experimental group achieved a mean gain score of 14.64 points (from 69.23 to 83.87), while the control group gained only 5.16 points (from 68.97 to 74.13). This represents nearly three times greater improvement for the experimental group compared to the control group.

3.2 Assumption Testing

Prior to conducting t-tests, statistical assumptions were verified. Table 2 shows the results of normality testing using Shapiro-Wilk tests.

Table 2. Normality Test Results (Shapiro-Wilk)

Variable	Group	Statistic	df	Sig.	Interpretation
Pre-test	Experimental	0.982	30	0.674	Normal
Post-test	Experimental	0.987	30	0.812	Normal
Pre-test	Control	0.979	30	0.598	Normal
Post-test	Control	0.984	30	0.731	Normal

Levene's test for homogeneity of variance showed F = 1.897, p = 0.174 for speaking ability scores, indicating equal variances between groups. These results confirmed that assumptions for independent samples t-tests were met.

3.3 Independent Samples T-Test Results

Table 3 presents the results of independent samples t-tests comparing gain scores between experimental and control groups.

Table 3. Independent Samples T-Test Results for Gain Scores

Variable	Group	Mean Gain Score	Std. Deviation	t	df	Sig. (2-tailed)	Cohen's d
Speaking Ability	Experimental	14.64	3.21	12.456	58	0.000	3.23
	Control	5.16	2.78				

The t-test analysis revealed statistically significant differences between groups (t = 12.456, df = 58, p < 0.001). The effect size calculation yielded Cohen's d = 3.23, indicating a very large practical significance according to established conventions.

3.4 Component Analysis

Table 4 provides detailed analysis of improvement across different speaking components.

Table 4. Mean Improvement by Speaking Components

Component	Experimental Group		Control Group		Mean Difference
	Pre-test	Post-test	Pre-test	Post-test	
Pronunciation	11.2	14.8	11.1	12.6	2.1
Grammar	11.8	15.2	11.7	13.1	2.0
Vocabulary	11.5	14.9	11.4	12.8	2.7
Fluency	11.3	14.7	11.2	12.5	2.9
Comprehension	11.7	14.6	11.8	13.0	1.6

Communicative Competence	11.8	15.6	11.8	13.3	2.3

All components showed greater improvement in the experimental group compared to the control group, with fluency and vocabulary demonstrating the largest gains.

DISCUSSION

The significant improvement in English speaking abilities observed in this study aligns with previous research demonstrating the effectiveness of technology-enhanced cooperative learning in ESP contexts (Ali et al., 2022; Chaikovska et al., 2024). However, the magnitude of improvement (effect size d = 3.23) substantially exceeds findings from comparable studies using single-intervention approaches, suggesting synergistic benefits of combining application-based materials with cooperative learning structures (Aldamen et al., 2021; Bailey & Cassidy, 2019). This finding contrasts with research by Ghufron and Ermawati (2018) who reported moderate effect sizes (d = 0.68) for cooperative learning alone, and Bauer et al. (2021) who found similar moderate effects (d = 0.72) for technology-enhanced learning without collaborative components (Barnard & Zemach, 2003; Bećirović et al., 2022).

The substantial speaking gains can be attributed to the authentic, contextualized practice opportunities provided by application-based materials, which align with Hutchinson and Waters' (1987) emphasis on meaningful, purpose-driven language learning (Castrigano et al., 2021; Huber et al., 2020). Unlike studies by Ellederová (2021) that reported limited speaking improvement with generic ESP materials (d = 0.45), the accounting-specific applications in this study provided relevant contexts that motivated sustained engagement (Cohen, 1988; Creswell, 2022). This finding supports Tomlinson and Masuhara's (2017) argument that materials relevance significantly impacts learning outcomes, contradicting earlier claims by Dudley-Evans et al. (1998) that generic business English materials suffice for specialized contexts (Ali et al., 2022; Chaikovska et al., 2024).

The cooperative learning component proved particularly effective in enhancing speaking performance across all measured components, consistent with research by Bećirović et al. (2022) who found significant improvements in cooperative EFL contexts (Aldamen et al., 2021; Bailey & Cassidy, 2019). However, the current study's findings exceed their reported improvement measures, possibly due to the additional support provided by application-based scaffolding (Barnard & Zemach, 2003; Ghufron & Ermawati, 2018). This enhanced effectiveness contrasts with studies by Castrigano et al. (2021) who reported minimal speaking improvement using cooperative learning alone in accounting contexts, suggesting that technology

integration amplifies cooperative learning benefits (Huber et al., 2020; Cohen, 1988).

The comprehensive improvement across all speaking components indicates that cooperative structures facilitate holistic language development rather than isolated skill enhancement (Creswell, 2022; Tomlinson & Masuhara, 2017). This finding exceeds results from comparable studies using traditional cooperative methods, indicating that application-based materials enhance collaborative dynamics (Bauer et al., 2021; Ali et al., 2022). The particularly strong gains in fluency and vocabulary challenge arguments by some researchers who suggest that technology integration may reduce authentic communication, demonstrating instead that appropriate technology design enhances interpersonal learning (Chaikovska et al., 2024; Aldamen et al., 2021).

The application-based materials provided consistent, accessible practice opportunities that enhanced traditional classroom instruction, supporting arguments by Bailey and Cassidy (2019) regarding technology's complementary role in language learning (Barnard & Zemach, 2003; Bećirović et al., 2022). However, the learning gains achieved through this integration significantly exceed those reported in studies using technology as a standalone intervention, indicating synergistic effects when combined with cooperative learning approaches (Ghufron & Ermawati, 2018; Castrigano et al., 2021). This finding contradicts claims by some researchers that technology integration yields only marginal improvements over traditional methods, demonstrating instead that strategic integration produces substantial benefits (Huber et al., 2020; Cohen, 1988).

The consistent improvement across all speaking components suggests that well-designed applications address multiple aspects of language proficiency simultaneously, unlike studies reporting isolated skill development (Creswell, 2022; Tomlinson & Masuhara, 2017). The accounting-specific content provided meaningful contexts that enhanced motivation and engagement, supporting arguments by Chaikovska et al. (2024) that content relevance significantly influences learning outcomes (Ellederová, 2021; Bauer et al., 2021). This finding challenges earlier assumptions that technology features alone drive engagement, demonstrating instead that content authenticity and pedagogical integration determine effectiveness (Ali et al., 2022; Aldamen et al., 2021).

4. CONCLUSION

This study provides compelling evidence that integrating application-based English for Accounting materials with cooperative learning approaches significantly enhances students' English speaking abilities in vocational education contexts. The experimental group demonstrated nearly three times greater improvement compared to the control

group, with statistically significant results ($t = 12.456$, $p < 0.001$) and a very large effect size ($d = 3.23$), indicating both statistical and practical significance. The comprehensive improvement across all speaking components such as pronunciation, grammar, vocabulary, fluency, comprehension, and communicative competence. This demonstrates that this integrated approach addresses multiple dimensions of speaking proficiency simultaneously. These results answer the research question by confirming that the synergistic combination of technology-enhanced materials and collaborative learning structures creates optimal conditions for speaking skill development in ESP contexts, offering ESP educators a robust framework for enhancing speaking instruction effectiveness in accounting education.

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