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ENHANCING APRON MOVEMENT CONTROL JOB PERFORMANCE THROUGH CONTEXTUAL TEACHING AND LEARNING IN AVIATION ENGLISH

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Abstract

Low proficiency in technical English, especially radiotelephony communication, remains a major challenge among aviation cadets. This skill is a core requirement for Apron Movement Control (AMC) officers to ensure effective and safe ground operations. This study aims to examine the effect of the Contextual Teaching and Learning (CTL) approach on improving AMC cadets' Aviation English competence. A quantitative approach with a one–group pretest–posttest design was employed. The participants consisted of 48 cadets from class MBU 03 at the Palembang Aviation Polytechnic. Data were collected through pretest and posttest assessments and analyzed using the Shapiro–Wilk normality test and the Paired Sample T-test. The findings revealed a significant improvement in cadets' competence, as indicated by an increase in the mean score from 215.52 (pretest) to 435.83 (posttest). The correlation test (r = 0.721; sig = 0.000) and the t-test (sig = 0.000 < 0.05) confirmed a statistically significant effect of CTL implementation. The results demonstrate that the CTL approach effectively enhances Aviation English competence by linking instructional materials with authentic operational contexts. This study introduces an innovative integration of CTL in Aviation English learning for AMC operations, offering a contextualized and industry-relevant model for vocational aviation education.

Keywords: *apron movement control, aviation english, competency, contextual teaching and learning*

Introduction

Education continues to evolve positively in response to the demands of globalization and technological advancement. Vocational education, as a vital component of the education system, emphasizes the mastery of practical skills and applied competencies to meet industry needs (Nugraha et al., 2025). In the aviation sector, vocational education plays a crucial role in producing skilled professionals who are capable of maintaining safety, efficiency, and operational excellence in line with global standards.

English proficiency is one of the key competencies in modern aviation. As stipulated by the International Civil Aviation Organization (ICAO) in Annex 1, English is the standard international language for aviation communication. Aviation personnel, particularly those involved in air and ground communication, are required to achieve a certain level of English proficiency to ensure the smoothness and safety of flight operations. For Apron Movement Control (AMC) officers, English mastery is not merely an additional skill but a fundamental competency needed to regulate aircraft movement and coordinate activities on the airside (Wulandari & Ulfa, 2025). However, difficulties in mastering Aviation English remain prevalent among aviation cadets. Limited opportunities for authentic communication practice and the dominance of traditional grammar-based learning methods hinder cadets' ability to apply English effectively in real operational contexts (Andika & Mardiana, 2023). Preliminary observations in the Airport Management Study Program at Palembang Aviation Polytechnic revealed that several cadets still struggle with technical vocabulary, standard phraseology, and the concise, clear communication required in AMC operations.

Previous studies have explored the use of Contextual Teaching and Learning (CTL) in various educational contexts. (Sambonu & Hardi, 2024) demonstrated that CTL improves student engagement and comprehension in secondary schools (Fithriyani & Anggraeni, 2025). Found that CTL enhances speaking skills in general English learning, while (Nurmeli & Idris, 2024) reported improved motivation and practical skills in vocational automotive training. However, these studies did not focus on domain-specific language learning, particularly in the aviation context. This gap highlights the need for contextualized learning approaches that bridge theoretical understanding with professional communication practice in aviation.

Despite the critical role of English in aviation, the implementation of innovative, context-based learning models remains limited in aviation vocational institutions. Most existing teaching practices emphasize rote memorization and grammar drills rather than contextual communication aligned with industry operations. Consequently, cadets often face low confidence and reduced readiness for professional duties in AMC environments. Therefore, a pedagogical innovation that links classroom learning with real-world operational contexts is essential.

This study aims to investigate the effectiveness of the CTL approach in improving the Aviation English competence of AMC cadets at Palembang Aviation Polytechnic. Theoretically, this study contributes to the development of contextual-based pedagogical frameworks in vocational English education. Practically, it provides an alternative instructional model that enhances cadets' communication skills, situational awareness, and overall readiness for industry demands.

The novelty of this study lies in integrating CTL principles into Aviation English learning specifically for AMC operations. By aligning instructional content with authentic communication scenarios such as apron coordination, radio telephony, and ground safety procedures, this research proposes a model that strengthens the link between language mastery and professional competence. The findings are expected to provide insights for aviation educators and policymakers in developing more effective English training programs that support global aviation standards and operational safety.

The research findings indicate a significant improvement in the Aviation English competence of AMC officers after implementing the CTL approach. The mean pretest score of 215.52 increased substantially to 435.83 in the post-test, showing a notable

enhancement in performance. A strong correlation coefficient of 0.721 between the pre-test and post-test results suggests that participants with higher initial abilities achieved better outcomes after the learning process. Moreover, the Paired Sample T-Test yielded a significance value of 0.000, which is below the 0.05 threshold, confirming a significant difference before and after the treatment. These findings demonstrate that the CTL approach effectively improves AMC officers' Aviation English competence by providing meaningful and context-based learning experiences closely related to real field situations. Based on these results, it is recommended that aviation vocational institutions adopt the CTL approach as a core learning strategy for English and other technical subjects to enhance the relevance of instruction with industry practices. Instructors are encouraged to integrate authentic operational simulations and communication scenarios into their lessons to strengthen students' practical competencies and readiness for professional aviation environments. Furthermore, future research could expand the scope of study by applying CTL to other aviation-related competencies, employing larger sample sizes, and incorporating control groups to increase the generalizability of findings.

Methods

The present study adopted a quantitative methodology with a pre-experimental research design, specifically employing the *One Group Pretest–Posttest Design* model. This design was selected to measure the effect of CTL on cadets' AMC competencies in Aviation English. The research involved one experimental class without a control group (Abraham & Supriyati, 2022). Measurements were conducted twice a pretest before the treatment and a posttest after the CTL-based learning intervention to determine the improvement in cadets' learning outcomes.

The research instrument consisted of a test adapted from the Test of English for International Communication (TOEIC), which is widely recognized for measuring English proficiency in professional and workplace contexts. Since the test items were taken directly from standardized TOEIC materials, additional validity and reliability testing were not conducted, as the instrument has been previously validated and internationally standardized. The test was designed to assess aspects of listening comprehension, vocabulary mastery, and aviation-related communication, which align with the indicators of AMC competence in English.

The operational definition of the dependent variable (*AMC competence in Aviation English*) is outlined in the following table:

Table 1. Operational Definition of Dependent Variable: AMC Competence in Aviation English

Variable	Indicator	Measurement Method
AMC Competence in Aviation English	Listening comprehension of ATC AMC communication	TOEIC based listening test
	Use of standard phraseology in apron operations	Structured simulation and written test
	Vocabulary mastery related to ground operations	Multiple-choice vocabulary section
	Communication clarity and accuracy	Oral and written posttest performance

The research procedure was carried out through several systematic stages. First, a pretest was administered to the cadets using a TOEIC-based test to assess their initial English competence before the implementation of the treatment. Next, during the treatment phase, the CTL approach was applied in Aviation English learning over four sessions. This stage involved various contextual learning activities, including simulations of communication between AMC and Air Traffic Control (ATC), role-playing exercises, and case-based discussions related to real operational scenarios. After the treatment, a posttest using the same TOEIC-based instrument was conducted to measure any improvement in the cadets' English competence. Finally, in the data analysis stage, the results of the pretest and posttest were statistically compared to determine the effect of the CTL approach on

enhancing the cadets' AMC competencies in Aviation English.

The population consisted of MBU 03 cadets with a sampling technique in the form of a census, involving 48 cadets. In this study, the pre-test functioned as the covariate, the post-test served as the dependent variable, while the experimental class was designated as the group under investigation. This study was conducted from June 2025 to July 2025. The initial data analysis technique involved a prerequisite test using the Shapiro-Wilk normality test (Ahadi & Zain, 2023) and hypothesis testing using the Paired Sample T-test (Maria et al., 2025), (Syuhada et al., 2025) using pre-test and post-test values. The significance level used is 5%. The hypotheses of this study are:

H0: There is no significant effect of Contextual Teaching and Learning (CTL) on AMC Competence in Aviation English

Ha: There is a significant effect of Contextual Teaching and Learning (CTL) on AMC Competence in Aviation English

Results And Discussions

The statistical description of the research data processing can be seen as follows**.**

Table 2. Descriptive Statistics

	N	Min.	Max.	Mean	SD
Pretest	48	135	330	215,52	48,26
Posttest	48	180	850	435,83	153,88

The pre-test was administered to 48 participants, yielding scores ranging from 135 to 330. The average score (mean) was 215.52 with a standard deviation of 48.26, indicating a moderate spread of scores around the mean. The posttest, also taken by 48 participants, produced scores between 180 and 850. The mean score was 435.83 with a relatively high standard deviation of 153.88, showing a wider variability in participants' performance compared to the pretest.

The researchers conducted sequential pre-tests and post-tests (Gunawan et al., 2022), After completing the pre-test, the cadets received treatment using the CTL approach for four sessions. Following the treatment, a post-test was administered to measure the effect of the intervention. Before analyzing the data, a prerequisite test namely the normality test was conducted, and the results are presented in Table 3.

Table 3. Shapiro-Wilk Normality Test

Data	Sign.
Pre-test	0,246
Post-test	0,065

The results of the Shapiro–Wilk normality test are presented in the following table. The pre-test data obtained a significance value of 0.246, while the post-test data showed a significance value of 0.065. Since both values are greater than the significance threshold of 0.05, it can be concluded that the data are normally distributed.

Table 4. Paired Sample Statistics

	M	N	SD	SEM
Pre-test	215,52	48	48,259	6,966
Post-test	435,83	48	153,884	22,211

From the Paired Samples Statistics analysis, a description of the mean scores for both the pretest and posttest was generated. The number of samples analysed was 48 respondents. The mean pretest score was 215.52 with a standard deviation of 48.259. This indicates that the initial ability of the participants before being given the treatment was at a moderate level with relatively narrow variation in scores between individuals (Rahman et al., 2025).

Meanwhile, the post-test mean score increased to 435.83 with a standard deviation of 153.884. The rise in the average score reflects a notable improvement following the implementation of the treatment. Nevertheless, the larger standard deviation observed in the post-test (153.884) compared to the pre-test (48.259) suggests that participants' learning outcomes became more varied, indicating greater dispersion after the intervention. This means that although there was an overall increase, the achievements of each participant were not uniform.

In addition, the Standard Error Mean (SEM) value for the pretest was 6.966, while for the posttest it was 22,211. The larger SEM in the posttest reinforces the picture that there is a greater difference in average accuracy, because the variation in learning outcomes among participants widened after the treatment. Descriptively, these results indicate

that the treatment given was able to improve the average learning outcomes of participants, but there were significant differences in individual achievements at the final stage. To ascertain whether this improvement was statistically significant.

Table 5. Paired Samples Correlations

	N	C	Sign.
Pre & Post	48	0,721	0,000

The Paired Samples Correlations table shows the relationship (correlation) between the pretest and posttest scores of 48 respondents. The correlation value obtained is 0,721 with a significance value (Sig.) = 0,000. A correlation value of 0,721 can be interpreted as a strong and positive relationship between the pretest and posttest scores. This means that participants who obtained high scores on the pretest tended to also obtain high scores on the posttest, and vice versa. In other words, there was consistency in individual performance before and after the treatment, even though on average the scores increased significantly (Dewi et al., 2024).

In addition, the Sig. value = 0,000 (< 0,05) indicates that this correlation is statistically significant (Fawzani et al., 2022), (Akbar et al., 2024). This indicates that the correlation between the pretest and posttest results did not occur by (Maziyah et al., 2025), but rather showed a consistent pattern in the data. In a descriptive sense, the findings demonstrate that while the treatment was effective in enhancing learning outcomes, the participants' prior abilities continued to play a role in shaping their final performance. In other words, participants who had a better knowledge base from the outset tended to achieve higher results after the treatment (Wahyuni et al., 2025).

Table 6. Paired Sample T-test

Pre & Post	M.D.	-220,312
	S.D.	123,721
	S.E.M.	17,858
	t	0,000
	df	47
	Sig. (2-tailed)	0,000

The Paired Samples Test revealed a mean difference of -220,312 between the pretest and posttest results. This negative value signifies that the scores obtained in the posttest were substantially greater than those recorded in the pretest (Hati, 2023). These findings align with the earlier descriptive analysis, which indicated an improvement in the average scores following the treatment. The difference yielded a standard deviation of 123,721, accompanied by a Standard Error Mean of 17,858. Significance (Sig. 2-tailed) = 0,000. Since the significance value is less than 0,05 ($p < 0,05$), the test decision is to reject H0 and accept Ha (Wati et al., 2024), (Nugraha, Yuniar, & Febiyanti, 2024), (Nugraha, Yuniar, Febiyanti, et al., 2024)

In this research, the assessment of data normality was carried out using the Shapiro-Wilk test (Chyalutfa et al., 2022) with a sample size of 48 respondents. The results of the analysis indicated an Sig. (p-value) of 0.246 and 0.065. According to the decision-making criteria, when the significance level exceeds 0.05, the data can be interpreted as normally distributed (Yuniar et al., 2024), (Ramadhan et al., 2024), and (Komalasari et al., 2024). On the other hand, if the significance level is below 0,05, the data is categorized as not normally distributed.

The findings of this study show that the CTL approach significantly improves the Aviation English competence of AMC officers, as indicated by the increase in mean scores from 215.52 to 435.83, a strong positive correlation ($r = 0.721$), and a significance value of 0.000 (< 0.05). These results confirm that CTL effectively enhances language proficiency by connecting learning materials with real-world contexts, aligning with the theories of (Dethan & Modok, 2024) and (Darmawati, 2023), which state that contextual learning fosters deeper understanding and retention. Consistent with prior studies by (Kamsiah et al., 2024), (Saleh, 2021) and (Ashila et al., 2024), this research demonstrates that contextual-based instruction not only improves cognitive abilities but also strengthens communication and problem-solving skills relevant to professional practice.

Academically, the findings contribute to the development of effective pedagogical models in vocational and professional education, while practically, they highlight that integrating CTL into aviation training equips

AMC officers with better communication competence and situational awareness, ultimately supporting operational safety and efficiency in airport environments.

Conclusion

The research findings indicate a significant improvement in the Aviation English competence of Apron Movement Control (AMC) officers after implementing the Contextual Teaching and Learning (CTL) approach. The mean pretest score of 215.52 increased substantially to 435.83 in the posttest, showing a notable enhancement in performance. A strong correlation coefficient of 0.721 between the pretest and posttest results suggests that participants with higher initial abilities achieved better outcomes after the learning process. Moreover, the Paired Sample T-Test yielded a significance value of 0.000, which is below the 0.05 threshold, confirming a significant difference before and after the treatment. These findings demonstrate that the CTL approach effectively improves AMC officers' Aviation English competence by providing meaningful and context-based learning experiences closely related to real field situations. Based on these results, it is recommended that aviation vocational institutions adopt the CTL approach as a core learning strategy for English and other technical subjects to enhance the relevance of instruction with industry practices. Instructors are encouraged to integrate authentic operational simulations and communication scenarios into their lessons to strengthen students' practical competencies and readiness for professional aviation environments. Furthermore, future research could expand the scope of study by applying CTL to other aviation-related competencies, employing larger sample sizes, and incorporating control groups to increase the generalizability of findings.

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