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Communication competence model: how to train ability to say what you really mean

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ABSTRACT

Business is becoming increasingly multinational. Non-native language communication is a background activity for many jobs and a challenge for those whose first language is not English. The problem is that a non-native language activity distracts attention, increases the risk of misunderstanding, and reduces the effectiveness of professional communication. The article aims to present a Foreign Language Communicative Competence model that is a way to solve the problem and enables fluent, errorless communication that supports professional activity. The main question of the research is what learning conditions, methods and strategies, approaches, and technologies provide the development of foreign language communication competence. We used questionnaires, interviews, psychological diagnostic techniques, observations, and a pedagogical experiment in the research. The pedagogical experiments occurred at the National Aviation University in the 2021 to 2022 academic year. Two groups of second-year students majoring in "Aviation Maintenance" were involved. The experiment outcomes show the enhanced level of students' foreign language communication competence, motivation, and engagement in learning. The developed model contributes to the ability to concentrate on the job and make quick decisions under the influence of psychological factors like time pressure, stress, or noise while speaking a foreign language.

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1. INTRODUCTION

The study of current trends in language teaching at technical universities revealed that graduates' communication skills are inefficient because attention primarily focuses on their ability to read and understand manuals and shift reports in a foreign language. The problem is that a non-native language activity distracts attention, increases the risk of misunderstanding, and reduces the effectiveness of professional communication. Therefore, we developed the aircraft maintenance technicians' (AMTs) foreign language communication competence which implementation in English for specific purposes (ESP) teaching is a way to solve the problem. The main question of our research was: "what learning conditions, methods and strategies, approaches, and technologies provide the development of foreign language communication competence?" Language training should support professional activity with fluent, errorless communication. Otherwise, insufficient foreign language communication competence can lead to incidents and near misses. In aviation, the consequences can be fatal. That is why we based our research on the aviation context, but its fundamentals can contribute to any student's language teaching. The research aims to develop a model of the Aviation Maintenance Technicians' foreign language communication competence and prove its effectiveness.

Aviation human factor researchers consider human factors as a causative agent in aviation accidents and often reveal an interaction of a systematic sequence of factors that ultimately point to an error and consequential accident [1]–[3]. Federal Aviation Administration [4] stated that aviation safety relies heavily on maintenance, and 80 percent of maintenance errors involve human factors such as human capabilities, human limitations, emotional state, human-machine interface, environmental conditions, and physical state. All of them are significant to achieve the intended result of AMTs' language teaching [4], [5]. Researchers in many countries highlight increased incidents related to the misinterpretation of Aircraft Maintenance Manuals. It is concerned that non-native English aircraft technicians may be prone to a high error rate that could potentially affect airworthiness [6]–[14].

Aviation maintenance professionals spend about 20% of their working hours consulting written materials to ensure that each aircraft is fit to fly and safe. Rahman *et al.* [15]. emphasize the significance of precise interpretation of technical manuals and giving explicit instructions. Communication is meaningful in aviation maintenance engineering since aviation maintenance professionals communicate with their teammates, especially during shift rotation [15]. Since writing reports is a significant component of aircraft maintenance activity, technical vocabulary is a prominent element for Aircraft Maintenance professionals [16], [17]. Writing skills and reading comprehension are obligatory for all categories of aviation personnel. Misunderstanding of maintenance manuals and ineffective communication between system designers and maintenance personnel through maintenance documentation are called the causes of the maintenance errors made by 80 percent of the global maintenance personnel whose first language is not English [18], [19]. Correctly applied terminology facilitates successful communication and helps reduce incidents arising from errors made during aircraft pre-flight preparation [20]. The European Association of Aerospace Industries (formerly AECMA, now ASD) developed a specification for aircraft documentation, but the AECMA/ASD1 standardized simplified technical English cannot solve the problem. Therefore, clear and concise communication is vital in an aviation maintenance environment.

Noise levels and time pressure are considered unavoidable factors that make AMTs commit errors [21], [22]. AMTs must rectify all the discrepancies logged in the Aircraft Journey Log within the ground time before Return to Service is signed off. Turnaround time can also be shorter because aircraft ground time depends on factors such as air traffic and weather. Stress is one more factor that contributes to communication errors [23]. The Ram's study shows that psychosocial risks, like negative interactions with peers and management, create distractions which can lead to increased stress and further exacerbate communication issues. Santos *et al.* [24] analyze stress, pressure, and fatigue, emphasizing that maintenance-related personnel are under the negative influence of external circumstances. It can lead to errors in the performance or evaluation of maintenance-related tasks. Communication, including aircraft maintenance documentation, is one of the fundamental preconditions of human errors in aviation maintenance [25].

Considering the awareness of human factor issues affecting maintenance personnel, the aviation safety reporting system (ASRS) presents enough evidence to conclude that communication failure continues to contribute to flight accidents. We investigated how AMTs' foreign language proficiency impacts flight safety. We concur with the accident investigators who consider language proficiency a contributory factor because it constructs the landscape where other errors can emerge. Poor language proficiency is an element of the complex chain of events that can lead to disastrous consequences. Mathews *et al.* [12] revealed the following: i) low levels of reading proficiency can affect the operational understanding of the aircraft and procedures when manuals and safety updates use complex English; ii) operational or maintenance manuals written in non-standard or unclear English may cause comprehension difficulties; iii) using two languages in a single operating environment may contribute to a loss of situational awareness.

Ukraine has been a member of the International Civil Aviation Organization (ICAO) since 1992. It implies that along with getting knowledge on professionally-related issues, aviation professionals must meet the ICAO English Language Proficiency Level 4 requirements [26]. The International Civil Aviation English Association (ICAEA) and professional aviation maintenance association (PAMA) offer recommendations to improve Aviation Maintenance Technicians' professionalism since the aircraft maintenance industry is to provide successful aircraft operation. The aviation maintenance technicians model code of conduct (AMTMCC) presents a vision of excellence for AMTs.

Another reason is that "aircraft maintenance technician is a profession that ought to be licensed according to international aviation organizations" [27]. Mainly, Aviation Maintenance Technicians get combined airframe and powerplant licenses (A&P mechanics). "Certifying staff should have a general knowledge of the language used within the JAR6145 approved maintenance organization, including a knowledge of common aeronautical terms in the language. The level of knowledge should be such that the applicant can read and understand the instructions and technical manuals in use within the organization; make written technical and any maintenance documentation entries, which can be understood by those with whom they are normally required to communicate; read and understand company procedures; verbally communicate at such a level as to prevent any misunderstanding when exercising the privileges of their authorization. The level of understanding ought to be compatible with the level of certification authorization granted." (IEM 66.15b).

According to the fundamental requirements, AMTs' foreign language knowledge is one of the components of their proficiency. It contributes to flight safety, as AMTs often work in multinational teams and deal with technical documentation in English. It calls for a reliable foreign language training system at aviation universities to ensure the proper level of the AMTs' foreign language communication competence (FLCC) [8], [25], [28]–[32]. There are verbal, nonverbal, written, written and graphics, human-machine, and machine-machine types of communication in aviation. AMTs are mainly involved in written communication, namely asynchronous or one-way communication. Aircraft personnel work in shifts, so communication through reports, working cards, and workplace emails is more common than face-to-face interaction. Nevertheless, faultless face-to-face communication is vital in non-standard situations [33], [34]. AMTs find themselves in time-pressure situations when they have to make quick decisions. Therefore, verbal skills are no less essential than the ability to avoid misunderstanding while dealing with working cards, maintenance manuals, checklists, illustrated parts catalog (IPC), troubleshooting manual (TSM), service bulletins (SB), flight deck documentation, service information letters (SIL), structural repair manual (SRM) data cards, notices to airmen (NOTAMs), and airworthiness directives (ADs). Having analyzed these communication types, we considered some potential language error scenarios [3].

- AMTs do not understand the meaning of some new technical words.
- AMTs do not understand the task cards because the procedure is too complex.
- AMTs have difficulties with words such as "replace" because they can interpret this word as either installing a new piece or fixing the old one and reinstalling it.
- The information in the task cards is incomplete. The engineering department contacts the manufacturers to ask for more documents to clarify the issues addressed by the AMTs;
- Translation includes errors.

We concluded that inadequate verbal English is one of the frequent causes of misinterpretation of maintenance instructions.

2. METHOD

The research hypothesis is that AMTs FLCC model implementation at technical universities will provide a higher level of communication competence. We used empirical methods, namely questionnaires, interviews, psychological diagnostic techniques, observation, and the pedagogical experiment, to prove the effectiveness of the developed model. Mathematical and statistical methods enabled processing, evaluating, and proving the reliability of the results of the pedagogical experiment. We used graphical and analytical methods of displaying information to demonstrate the study's findings.

We conducted the pedagogical experiment at the National Aviation University in the 2021-2022 academic year. Two groups of 82 undergraduate students majoring in "Aviation Maintenance" were involved. Questionnaires, tests, and methods analysis determined the actual state of the AMTs' language training with the help of. The ascertaining stage findings indicated that the learning process had not been organized as an ever-evolving system. The experiment detected low student motivation and engagement in learning, excessive use of the first language (L1), language barrier, and insufficient student professional language skills.

3. RESULTS AND DISCUSSION

3.1. AMT FLCC model components

The operational component is the AMTs' ability to apply non-native language skills to perform their jobs successfully, deal with English-written maintenance technical documentation, and make effective decisions quickly. AMTs must have skills in problem-solving, communication, and attention to detail.

Personal traits like integrity, scrupulousness, adaptability, flexibility, commitment, analytical thinking, and the ability to work in a team are also essential.

The motivational component is a set of incentives and priorities that encourage learners to communicate in the target language. The survey of the groups showed that 68% of the AMTs considered English essential for their future job, and only 32% believed that they would deal with only equipment. The experiment aimed to transform language instrumental motivation into integrative one and convince AMTs that English is an indispensable tool in aviation maintenance technician jobs.

The reflexive component of the AMT FLCC model involves self-analysis, self-development, self-regulation, and self-improvement. Work-related situations enhance learners' reflexivity. It empowers them to think critically, make effective decisions, and consciously control the results of their activity and personal achievements.

3.2. Methods and strategies

Think-pair-share (TPS) and team interactive activities dominated to form AMTs' ability to work in a team and solve real-life maintenance problems. We applied maintenance-related situations and professionally oriented simulation activities to practice critical thinking and problem-solving. Though AMTs are hands-on workers, their duties include filling in repair orders, safety inspection forms, task cards, and defective equipment reports. Keeping in mind the AECMA Simplified English, we taught the learners more extensive vocabulary to prevent misunderstandings and misinterpretations. SMART Board was a good choice for game-based, questioning and reflection, and handout activities: Flip Out, Shout It Out, Match 'em Up, Super Sort, Game Show, and Create a six-word summary. We used maintenance-relevant content like working cards, manufacturer documents, maintenance manuals, checklists, Illustrated Parts Catalog, Troubleshooting Manuals, and Structural Repair Manual data cards. These conditions, approaches, methods and strategies provide unity of the FLCC model's components.

3.3. Training conditions

We defined the following experimental training conditions as a constituent of the AMT FLCC model: Cooperation of English teachers and aviation experts. Since English teachers are not aviation experts, we believe collaboration with the Faculty of Aviation staff and maintenance experts is reasonable to develop realistic maintenance-related scenarios. Moreover, students get professional support while simulating troubleshooting. Aviation English refresh courses. ICAO Training Institute at National Aviation University delivers upgrading training for Aviation English teachers to meet ICAO Aviation English requirements. Compliance with these training conditions contributes to the intended result.

3.4. Teaching and learning approaches

3.4.1. Communicative approach

Shift turnover makes communication in the aircraft maintenance environment essential, since insufficient information can affect aircraft safety. Therefore, we use a communicative approach to teach learners to request and clarify information. "Communication refers to the transfer of information (written, verbal, or non-verbal) within the maintenance organization. A breakdown in communication can prevent a maintenance technician from getting the correct information in a timely manner regarding a maintenance task" [35].

3.4.2. Student-centered approach

AMT's job-related skills were the focus of teaching. They included independent problem-solving, critical thinking, time management, root-cause analysis, and decision-making. Since these skills are crucial for ensuring flight safety, meaningful learning strategies gave students profound comprehension, insights, and the ability to apply knowledge to real life. Dealing with repair orders, safety inspection forms, defective equipment reports, and other maintenance documentation requires the mentioned skills. We also consider case studies of maintenance-related aircraft accidents the best method for developing such skills. Modeling and role-playing profession-related communication situations meet the students' cognitive and communication needs.

3.4.3. Technologies-based approach

Language learning today increasingly depends on the use of technology. Computer-based training materials support purpose-made, flexible, and cost-effective learning activities. There is an endless amount of aviation-related audio and video, grammar exercises, tests, games, and virtual simulators available today [36]–[38]. Therefore, we used ICT intensively within the AMTs' learning process. An example is CAE Virtual Maintenance Trainer (VMT), which enables English teachers to adapt language teaching to AMTs' operational realities. It provides a learning environment for aircraft maintenance technicians to gain practical experience in maintenance tasks by performing normal and abnormal maintenance procedures. The CAE virtual aircraft is suitable for systems familiarization, maintenance procedural training, and troubleshooting. We used various learning tools and applications, smart notebook technology, open educational resources (OER), and social networks. As our students are “digital natives” [39], ICT increased their motivation and participation.

3.4.4. Content and language integrated learning (CLIL)

Being content-focused, content and language integrated learning (CLIL) is a natural way to learn a language as students have a real job-related context to learn the language in (engine maintenance; aircraft maintenance; engine failure; aircraft systems), and they are often more motivated. The CLIL approach provides a deeper level of assimilation and promotes critical thinking and the ability to work in a team. It makes the language learning process more oriented on the intended result of the professional training. We believe that the teaching process should not be organized as a simple summation of academic subjects. All the subjects must be interconnected within an ever-evolving system and aimed to train highly qualified maintenance specialists. We defined this training condition keeping in mind that communication is not the main AMTs’ activity. The communication function is to support the job. “Operational efficiency, rather than linguistic correctness, is the ultimate criterion by which proficiency is assessed” [40]. When applied to teaching English to digital natives, CLIL is effective in boosting motivation and engagement. Figure 1 presents the ways the CLIL approach motivates digital natives to learn English.

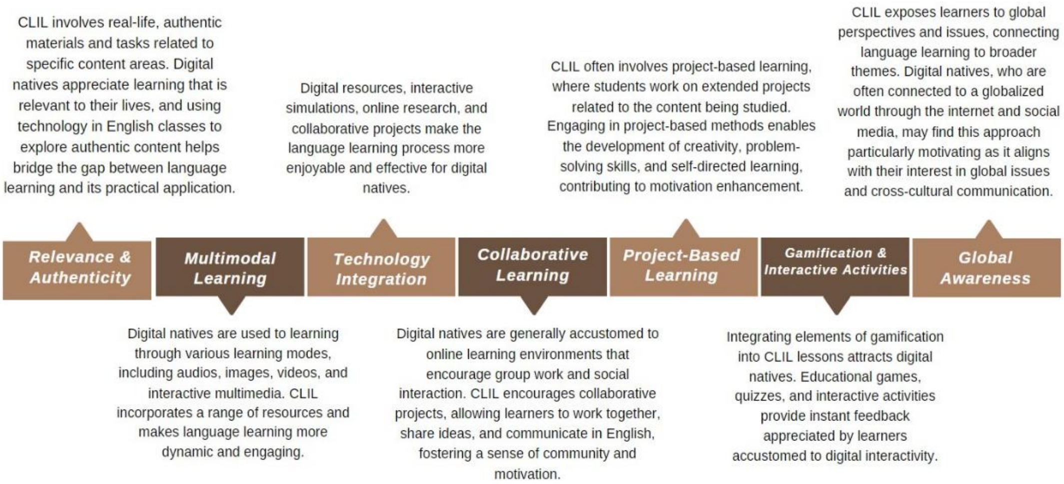

Figure 1. The ways the CLIL approach motivates digital natives to learn English

3.4.5. Cross-cultural approach

Effective communication can be affected by cultural factors, namely lifestyles, habits, education, religion, beliefs, language, and values. Therefore, we used the cross-cultural approach to reveal how it impacts the AMTs' daily jobs. Cross-cultural differences in understanding improve communication between AMTs from different cultures by fostering greater trust. Being aware of potential cultural differences, they pay closer attention to the information they deal with. The AMT FLCC model as shown in Figure 2 focuses on the ability to communicate appropriately and effectively.

3.5. AMT’s communication competence aspects

The communication competence generally consists of linguistic, sociolinguistic, discourse, and strategic competence aspects [41]. We distinguished the competencies according to the peculiarities of the AMT’s job. The job-based competence provides the foundation for developing standards of professional practice. It gives the student an understanding of work, the ability to assess different aspects of the maintenance environment, and intuitive expert knowledge that allows AMTs to make decisions quickly and effectively. We do not distinguish communicative and pragmatic competence. We consider them as a whole. Communication competence includes language (a set of linguistic knowledge and skills: lexical, phonetic, spelling, and grammar), speech (language, speaking, writing, and listening), and cross-cultural (ability to work in an international team and exchange information) components.

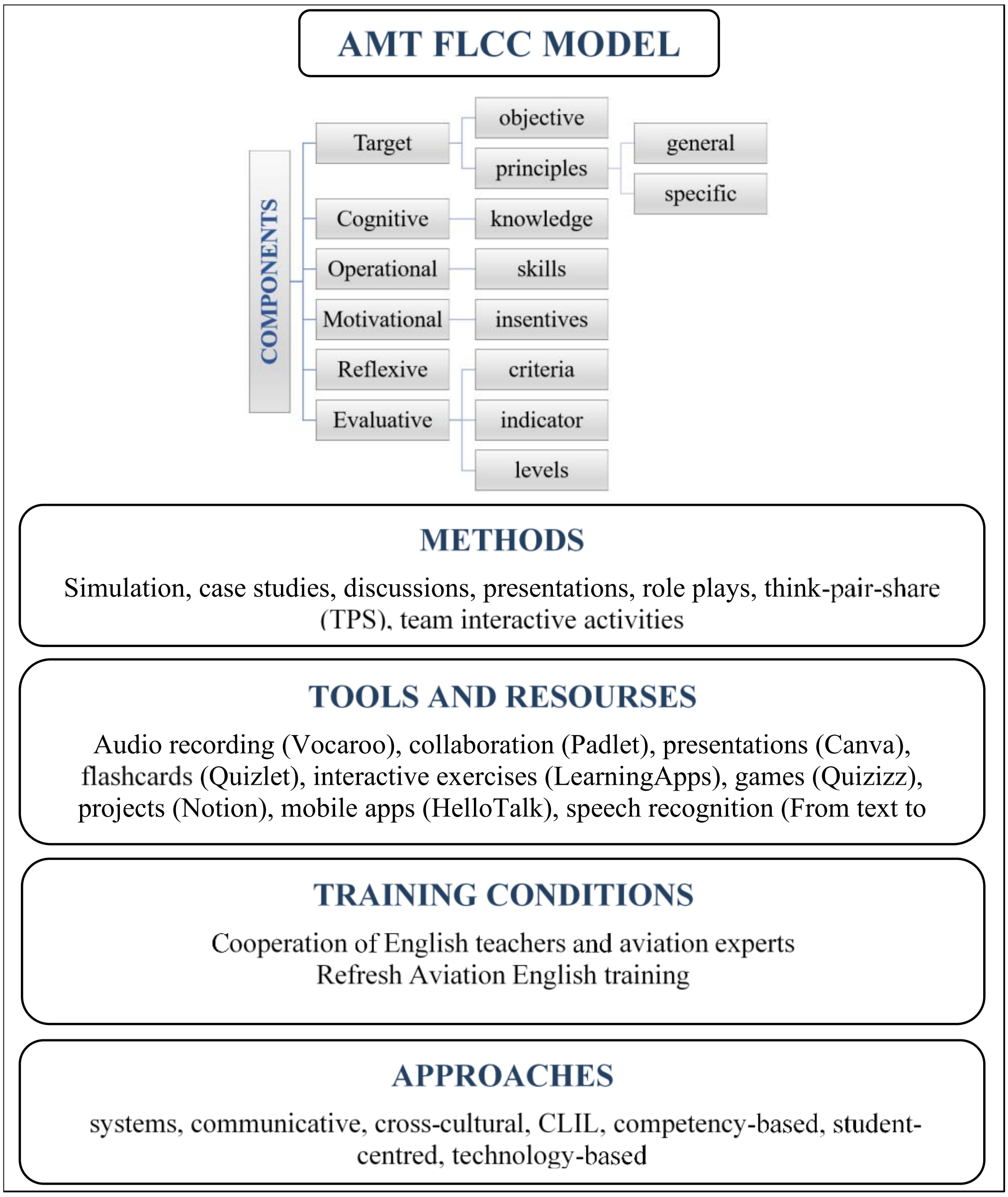

Figure 2. AMT FLCC model

3.6. Data analysis

To check the level of AMTs' FLCC development, we identified the motivational, cognitive, operational, and reflexive criteria. The indicators of the level of AMTs' FLCC development are the following: i) The adequate application of aircraft maintenance-related knowledge; ii) The proper use of communication skills in work-related situations; iii) Awareness of the necessity of the English language to perform professional duties properly; and iii) Ability and willingness to make effective decisions quickly in time scarcity and adverse weather conditions.

Four levels of the AMTs' FLCC development are determined: high (creative), sufficient (productive), medium (consciously personal), and inadequate (reproductive). We developed a system of professional maintenance-oriented communication tasks. Each block of them contributes to the development of the competencies. The students of the groups were given tests before and after the experiment. Table 1 presents the findings of the comparative analysis of the mistakes.

Table 1. Comparative analysis of the mistakes made by the students of the groups before and after the formative experiment (%)

	Number of students (%) who made mistakes related to													
	Sentence building		Question making		Verb tenses		Other grammar rules		Maintenance-related vocabulary		Aviation terminology		General vocabulary	
	EG	CG	EG	CG	EG	CG	EG	CG	EG	CG	EG	CG	EG	CG
Before exp.	66	60	35	34	50	47	23	21	80	78	85	87	34	29
After exp.	30	43	20	27	26	31	8	14	41	50	51	63	10	17

EG=experimental group; CG=control group

To assess the communication skills of the AMTs, we used the "Communication and organization skills" questionnaire and analyzed the answers. To determine their communication and organization skills level, we calculated the coefficients (1). The results obtained at the beginning and after the experiment are in Table 2.

$$K_k = \frac{K_x}{20} \quad (1)$$

$$K_o = \frac{O_x}{20},$$

Where:
$К_к$ = coefficient of communication skills;
$К_о$ = coefficient of organization skills;
$К_х$ and $О_х$ mean the number of matches with the decoder of answers according to communication and organization skills.

Table 2. The level of communication skills development before and after the formative experiment

The level of communication skills	Before the formative experiment				After the formative experiment			
	EG (40)		CG (42)		EG (40)		CG (42)	
	Number of students (%)		Number of students (%)		Number of students (%)		Number of students (%)	
High (creative)	-	-	-	-	10	25	5	12
Sufficient (productive)	7	17.50	8	19	21	52.50	17	40.50
Medium (consciously-personal)	20	50	22	50.40	9	22.50	16	38
Inadequate (reproductive)	13	32.50	12	28.40	-	-	4	9.50

EG=experimental group; CG=control group

Thus, the students in the experimental group (EG) had a much higher level of communication skills than students in the control group (CG) due to the developed training conditions and the system of professionally oriented situations. The research used Karpov's "Diagnosis of Reflection" method to assess reflexivity in EG and CG. We used the questionnaire method. In the answer sheet, students chose one option: i) incorrect; ii) rather incorrect; iii) do not know; iv) rather true; v) true. There could not be right or wrong answers in this case. The analysis of the obtained data showed that before the formative experiment, 65% (EG) and 62% (CG) of the students had a medium level of reflexive component development; 39.5% (CG) and 33.4% (EG) – were inadequate. In general, the level of initial reflexivity in both groups was almost the same.

The data obtained after the formative experiment indicated that 21% of students in the EG had a high level of reflexivity; the level of reflexivity in the EG increased by 3.3% compared to the results in the CG. A comparison of the experimental data obtained showed that the number of students in EG after the formative experiment with a high and sufficient level of reflexivity increased due to the developed system of real work-based situations in classroom sessions. Before the formative experiment, EG and CG students did the preliminary test to show their level of knowledge and skills. The assessment of the levels corresponds to the following points: 13-14 – excellent (high level), 12-11-10 – good (sufficient level), 9-8-7 – satisfactory (medium), and 6 – unsatisfactory (inadequate).

After the experiment, the percentage of students with; i) a high level of cognitive and operational components in the EG increased by 15%, and compared to the results in the CG by 8%; and ii) a sufficient level of cognitive and operational components in the EG increased by 40% and compared to the results in the CG by 12.4%. Nobody showed an inadequate level in EG. Table 3 presents the test results.

Table 3. The level of communication skills development before and after the formative experiment

Level of knowledge and skills (cognitive and operational component)	EG (40)				CG (42)			
	Before the formative experiment Number of students (%)		After the formative experiment Number of students (%)		Before the formative experiment Number of students (%)		After the formative experiment Number of students (%)	
High (excellent)	-	-	6	15	-	-	3	7
Sufficient (good)	8	20	24	60	15	35.70	20	47.60
Medium (satisfactory)	29	72.50	10	25	25	60	18	43
Inadequate (unsatisfactory)	3	7.50	-	-	2	4.70	1	2.40

After the formative experiment, the results in the EG improved by 20% (high level of FLCC). The percentage of students with sufficient levels of FLCC in the EG increased by 38%. There were not any students with insufficient levels in the EG. To assess the FLCC level, the students filled in the self-assessment cards, which included the ability to perform errorless communication, use aviation terminology, work with aviation maintenance documentation in English, and get, critically analyze and use professionally related information. Having analyzed the obtained data, we found that students succeeded in working with maintenance documentation and getting professionally oriented information due to the proper use of aviation terminology. We used the data presented in Table 4 to calculate the student's t-test to confirm the validity of the study results. We calculated the student's t-test using (2).

$$t_e = \left|\frac{\bar{x}-\bar{y}}{S_d}\right| \tag{2}$$

Where $S_d = \sqrt{S_x^2 + S_y^2}$

In the case of sampling inequality, that is, the equation is calculated using (3).

$$S_d = \sqrt{S_x^2 + S_y^2} = \sqrt{\frac{\sum(x_i-\bar{x})^2 + \sum(y_i-\bar{y})^2}{(n_1+n_2-2)} \cdot \frac{(n_1+n_2)}{(n_1 \cdot n_1)}} \tag{3}$$

The student's t-test after the experiment was calculated using (4).

$$t_e = \left|\frac{\bar{x}-\bar{y}}{S_d}\right|, \text{ where } S_d = \sqrt{S_x^2 + S_y^2} \tag{4}$$

The arithmetic means in the experimental group after the experiment:

$$\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n} = \frac{374}{40} = 9.35 \tag{5}$$

The arithmetic means in the control group after the experiment:

$$\bar{y} = \frac{\sum_{i=1}^{n} y_i}{n} = \frac{358}{42} = 8.52 \tag{6}$$

The difference in absolute values between the mean values:

$$\left|\bar{x}-\bar{y}|\right| = 9.35 - 8.52 = 0.83 \tag{7}$$

The equation calculation gives the following:

$$S_d = \sqrt{\frac{73.1+58.4768}{40+42-2} \cdot \frac{40+42}{40 \cdot 42}} \approx 0.28 \tag{8}$$

Then the value of t_e after the experiment is as (9):

$$t_e = \frac{0.83}{0.28} = 2.9 \tag{9}$$

Table 4. The levels of students’ FLCC development before and after the formative experiment

The levels of students’ FLCC development	Before the formative experiment				After the formative experiment			
	EG (40)		CG (42)		EG (40)		CG (42)	
	Number of students (%)		Number of students (%)		Number of students (%)		Number of students (%)	
High (excellent)	-	-	-	-	8	20	2	4.8
Sufficient (good)	5	12	6	14.3	20	50	16	38.1
Medium (satisfactory)	28	70	31	73.8	12	30	22	52.3
Inadequate (unsatisfactory)	7	17.5	5	11.9	-	-	2	4.8

The number of degrees of freedom k=40+42-2=80. According to the table for a given number of degrees of freedom, we find tkp: 1.99 $p \leq 0.05$; 2.64 $p \leq 0.01$. Thus, the statistical analysis of the studied parameters showed that the revealed differences between the average indicators of the ability to perform foreign language professional communication are statistically significant, since the result obtained by us t_e=2.9 exceeded the table value of the student’s t-test of 2.64 at the level of significance of 0.01 and degree of freedom of variation 80. Therefore, the results we have obtained are not accidental.

The significance of the study is that the developed model brings the essential component to teaching a foreign language for specific purposes. The lack of attention paid to the errorless communication skills development necessary to conduct communication under the negative influence of external circumstances decreases professional effectiveness. There are many examples where communication in a non-native language led even to catastrophic consequences. The most striking example confirming our theory is the largest disaster in the history of aviation, which occurred on the island of Tenerife in 1977 and claimed 583 lives. It is considered a language accident caused by miscommunication in a non-native language.

Not excluding the importance of the development of all communicative skills [17], most researchers pay their attention to the AMT’s technical writing ability’s development [11], [42], [43] or consider reading skill the most often used [44]. We also revealed that ICAO requirements do not contain the development of the necessary professionally important qualities, providing reliable communication in a non-native language in emergencies [45]. As a result, there is a gap between the quality of aviation students' language training and the necessary level of their language proficiency. We concluded that this issue has not been sufficiently learned. It is proved by numerous studies on aviation maintenance students’ language competence development [12], [13], [46]–[48]. Therefore, to take into account the peculiarities of AMT’s job in our FLCC model, we studied the publications in aviation psychology and the aircraft accident investigation reports.

The practical significance of the research results is that it contributes to flight safety. Our study directly addresses the challenges faced by AMTs and emphasizes the crucial role of errorless communication in multicultural environments. The study also makes an empirical contribution by identifying and distinguishing competencies crucial to the AMT's job. Defining the four levels of FLCC development provides a practical framework that can be used to assess and improve AMTs' language proficiency. The developed experimental training conditions as a component of the FLCC model represent our study's practical contribution. This empirical approach makes it possible to test and refine language training methodologies adopted to the specifics of AMT's job. Consideration of influencing factors such as stress, noise, time pressure, and professionally significant personal traits makes up our study's empirical contribution. Our research outcomes provide a more comprehensive understanding of the challenges in maintaining effective communication in aviation.

The research makes a theoretical contribution by developing a model specifically tailored to AMTs' FLCC. This model advances theoretical frameworks in language training by aligning competencies with the peculiarities of the aviation maintenance job. The emphasis on preventing miscommunications from leading to accidents or near misses adds theoretical significance to our study. It provides a broader discourse on language in high-stakes environments, highlighting the critical role of communication in ensuring flight safety. The consideration of stress, noise, time pressure, and personal traits within the FLCC model enriches existing theories on language proficiency by accounting for contextual elements specific to the AMT's job.

The study introduces an approach to provide unity among the various components of the FLCC model. This methodological contribution highlights the need for a cohesive framework in language training methodologies, enhancing the effectiveness of the overall model. Since our study results can be applied to any language training, it extends its methodological contribution. We believe that our research makes significant practical, theoretical, and methodological contributions by addressing real-world challenges, developing a tailored theoretical framework, and introducing a cohesive and applicable methodology for enhancing FLCC in aviation maintenance.

4. CONCLUSION

Aircraft maintenance technicians' foreign language knowledge is one of the components of their proficiency. It contributes to flight safety, as AMTs often work in multicultural teams and communicate with system designers and maintenance personnel through manuals and reports written in English. Managing human failures is essential to prevent accidents and incidents, which number is increasing. It calls for a reliable training methodology to ensure the proper level of the AMTs' FLCC.

The research aimed to develop a model of AMT's FLCC. We distinguished the competencies according to the peculiarities of the AMT's job. We identified the four levels of the FLCC development as high (creative), sufficient (productive), medium (consciously personal), and inadequate (reproductive). Furthermore, we developed the experimental training conditions as a constituent of the AMT FLCC model. The chosen approaches and strategies are to provide unity of the FLCC model components. The AMT FLCC model focuses on preventing miscommunications that lead to maintenance errors and aircraft accidents. We considered stress, noise, time pressure, and insufficiently formed professionally significant personal traits as the factors that can negatively influence the performance of maintenance-related tasks. Clear and concise communication is essential in any business environment, so the study results apply to any language training. As a result of the model implementation, students became more confident while communicating in English and motivated to enhance the intercultural dialogue in the professional environment. Insight from the studies will be beneficial in any professional career.

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