

Aviation English Use in Operational Contexts in Algeria: A Mixed-Methods Study of Air Traffic Controllers at Houari Boumediene Airport

✉ SAHNOUNE Nisrine

Lecturer at University Centre of Maghnia (Algeria)

n.sahnoune@cu-maghnia.dz

ABSTRACT:

This study offers a novel contribution to English for Specific Purposes by examining English language competence, communication challenges, and training needs among air traffic controllers at Houari Boumediene Airport, Algeria, using a mixed-methods approach. Data were collected via a structured questionnaire with 30 ATC trainees and in-depth interviews with 10 experienced controllers. Findings reveal that most participants recognize the importance of ICAO-standard phraseology but struggle with listening comprehension—particularly due to unfamiliar accents, rapid speech, and real-time message processing under pressure. Notably, 80% reported inadequate preparation, having been exposed only to limited accents and lacking fluency in plain English. Participants emphasized the urgent need for more realistic training incorporating diverse international accents to prevent misunderstandings, especially in emergencies. The study recommends integrating simulation-based learning, ongoing language development programs, and digital tools to maintain consistent, safe, and effective communication skills throughout controllers' careers.

KEYWORDS: Aviation English, Air Traffic Control, Operational Safety, Listening Comprehension, Communication Challenges.

استخدام اللغة الإنجليزية الجوية في السياقات التشغيلية في الجزائر: دراسة مختلطة لموظفي مراقبة الحركة الجوية بمطار هواري بومدين

سحنون نسرين

أستاذ محاضر – ب- المركز الجامعي - مغنية - الجزائر

yamina.grini@ummta.dz n.sahnoune@cu-maghnia.dz

ملخص البحث

يقدم هذا البحث إسهامًا جديدًا في مجال اللغة الإنجليزية للأغراض الخاصة من خلال دراسة كفاءة اللغة الإنجليزية وصعوبات التواصل واحتياجات التدريب لدى مراقبي الحركة الجوية في مطار هواري بومدين بالجزائر، باستخدام منهجية مختلطة. جُمعت البيانات عبر استبيان منظم شمل 30 متدربًا ومقابلات عميقة مع 10 مراقبين ذوي خبرة. أظهرت النتائج وعي المشاركين بأهمية العبارات القياسية لمنظمة الطيران المدني الدولي (ICAO)، لكنهم يعانون من ضعف في الاستماع، خاصة أمام تنوع اللهجات، وسرعة الكلام، وضغط المعالجة الفورية. وذكر 80% أن تدريبهم كان غير كافٍ بسبب التعرض المحدود للهجات وعدم إتقانهم للغة الإنجليزية العامة. وشددوا على ضرورة تدريب واقعي يشمل لهجات دولية متنوعة لتفادي سوء الفهم في الطوارئ. وتوصي الدراسة بتبني التعلّم بالمحاكاة، وبرامج تطوير لغوي مستمرة، وأدوات رقمية لضمان كفاءة وسلامة التواصل طوال مسيرة المراقبين المهنية.

الكلمات المفتاحية: اللغة الإنجليزية للطيران، مراقبة الحركة الجوية، السلامة التشغيلية، فهم الاستماع، تحديات التواصل

1. INTRODUCTION

Effective communication in English helps pilots and air traffic controllers work well together, which is very important for safety in flying, both in our country and around the world. According to the ICAO standards, both air traffic controllers and pilots need to reach Level 4 (Operational Level) in English to make sure everyone understands each other clearly and that safety is maintained. However, in emergencies or when regular communication fails and there are no standardised phraseology to use, it's necessary to use plain English only to keep operations safe.

Air Traffic Controllers have to go through training in Aviation English, but there is a problem with what is taught in schools compared to what they actually need to communicate effectively. Using standard phrases can help make talks more predictable during normal situations, but issues like understanding speech, different accents, speaking smoothly, and needing to use simple English when feeling stressed still exist. These challenges can cause misunderstandings that might lead to serious mistakes, like planes getting too close on the runway or giving the wrong altitude information. It's important to understand how well Algerian air traffic controllers know English, how confident they feel, and how good their training is, all with the goal of creating programs that meet their job requirements while keeping safety in mind.

This study focuses on air traffic controllers at Houari Boumediene Airport as a case in point, investigating the effectiveness of listening English competency and to identify language-related difficulties encountered in daily operations particularly, and the factors that influence it. The current study addresses the following questions:

RQ1. What linguistic difficulties do ATCs at Houari Boumediene Airport encounter in English-based radio communications, particularly in listening comprehension and accent recognition?

RQ2. To what extent do current model-based Aviation English training programs enable air traffic controllers to handle authentic communication, especially when dealing with non-native speakers and during emergencies instances?

RQ3. In what way can simulation-based and technology-assisted training enhance listening, speaking and plain English competency of ATCs in high-traffic international settings?

The following hypotheses are tested in the light of this evidence.

H1: Air traffic controllers with more experienced exposure to various English accents and practice in authentic simulations have a higher listening comprehension and confidence in operational situations.

H2: The incorporation of formal plain English training will have a positive effect on air traffic controller ability to adjust between different situations, and decrease the probability of miscommunication in unfamiliar situations.

H3: The implication of interactive technology-based tools such as mobile applications, speech recognition system, virtual simulations positively enhance and maintain air traffic controllers' language skills.

The research provides a thorough overview of existing studies about why English is important as the global language used in aviation. It also describes the language rules and guidelines established by ICAO. The study's approach explains where the research took place, who was involved, how the data was gathered, and the methods used to review the information. This is done to make sure the data is correct and to help understand how well the participants can use the language. This skill is crucial for safety and needs to be constantly worked on, checked, and improved to keep up with the increasing needs of international air traffic control.

2. Literature Review

The worldwide power of English as a lingua franca has made it as a means of communication in international flying, helping to ensure safety, clear understanding, and operational efficiency (Crystal, 2003; Seidlhofer, 2005). Seidlhofer (2005, p. 399) points out that “In recent years, the term ‘English as lingua franca’ (ELF) has emerged as a way of referring to communication in English between speakers with different first languages”. As a focused area in English for Specific Purposes, Aviation English has developed to address the specific language needs of professionals working in aviation. It focuses more on practical communication skills instead of just knowing general English (Hutchinson & Waters, 1987; Dudley-Evans & St John, 1998). Park (2018) highlights that “aviation English is a key component of air traffic controller communication, a comprehensive but specialised subset of English for specific purposes (ESP) related broadly to aviation and consisting of both plain language and standardized phraseology for radiotelephony communication.” (p.45). ESP focuses on learning certain types of writing, specific genres, technical vocabulary and teamwork skills that are crucial for high-pressure jobs like air traffic control (Anthony, 2018; Basturkmen, 2006). This change from teaching general language to teaching specific language for a purpose is very important in air traffic control, where misunderstandings can lead to serious safety issues.

The International Civil Aviation Organization, or ICAO, controls how English is used for global airplane communications, requiring that it be the main language for conversations between pilots and air traffic controllers. (ICAO, 2010). Roger (2019, p. 5) points out that "The International Civil Aviation Organisation (ICAO) is an organisation under the United Nations that was established after the 1944 International Civil Aviation Conference in Chicago, commonly known as the 'Chicago Convention'". To ensure mutual intelligibility, ICAO set up the Language Competence Requirements (LPRs). Pilots and air traffic controllers need to reach at least Level 4, which is called Operational, in their speaking and listening skills. This evaluation looks at six different areas: how words are pronounced, the way sentences are structured, the range of words used, how smoothly someone can talk, how well they understand, and how they interact with others (ICAO, 2004, 2010). The rating system applies for both native and non-native speakers, which helps create a standard that is recognized worldwide for safety in operations.

In real life, radiotelephony communication works with two main linguistic framework: standardized phraseology and plain English. Phraseology—consisting of codified, predictable expressions—ensures consistency and reduces ambiguity in routine operations (Alderson, 2009; Lopez, 2011). Alderson (2009, p. 169) emphasizes that "Radiotelephony communication takes place between pilots and air traffic controllers, with standard phraseology at the core, and operational exchanges in plain English when phraseology is inadequate". However, in urgent, or complicated situations, plain language becomes necessary to share unexpected information. These two ways of communication need not just correct words but also the ability to think quickly and understand what is happening around you. They require not only linguistic accuracy but also cognitive flexibility and situational awareness (Lopez et al., 2014). Effective communication in these context demands good listening skills and clear, intelligible speech so that both people understand each other well.

To make things clearer and lower the chances of misunderstandings, ICAO has created a set of standard communication tools as ICAO (2004) states, "the purpose of phraseologies is to provide clear, concise, unambiguous language to communicate messages of a routine nature.", including the NATO phonetic alphabet and specific number pronunciations (e.g., “niner” for 9, “fife” for 5) (ICAO, 2010; Burge, 2024). These rules are made to lessen the problems caused by weak radio transmission, noise in the background, and differences in accents, which happen a lot in aviation where many languages are spoken. Studies have indicated that different regional accents and dialects can really make it hard for people to understand each other, which can result in mistakes in

communication, slow replies, and more stress during operations (McCollum, 2004; Clark, 2017). This shows how important it is to train people to become familiar with different accents and to learn about the various forms of English in air traffic control training.

Air traffic controllers have different operational roles, like managing the airport, overseeing planes as they get close, and directing flights while they are in the air. Each of these roles requires them to communicate in particular ways (ICAO, 2010). According to Abekhti and Hadjadj (2020), “The air traffic controllers work at control towers; they are a professional employee specialized in the control and guidance of the aircrafts on the air/ground. ATC provides pilots with advisory services in controlled and non-controlled airspaces to ensure safe.” (p.22). The lack of visual cues in voice-only communication in communication places focus on listening and speaking modalities. These skills are the most important parts of using radiotelephony. Auditory processing is vital for upholding situational awareness and avoiding errors, predominantly under high workload (Sebongbong, 2014). Sebongbong (2014) defines listening as “the act of hearing attentively” (p. 45).

In Algeria, French and Arabic are mainly used in technical education and everyday work. Switching to English for air traffic control communication brings its own set of difficulties. Many trainees have limited practice with spoken English, particularly in real aviation situations, which can make it hard for them to improve their listening and speaking skills (Mekkaoui, 2013). Research shows how important it is to use clear and standard language in aviation to keep things safe. It points out the need to be good at both technical terms and having straightforward English abilities, which require serious training and ongoing evaluations. This study looks at how air traffic controllers at Houari Boumediene Airport in Algeria understand and apply these international standards.

3. Methodology

Using a mixed-methods approach, this study gathered quantitative data from a structured questionnaire filled out by 30 trainee air traffic controllers at Houari Boumediene Airport who were selected via convenience sampling. The questionnaire looked at several factors: demographic information; self-assessed language ability; confidence in phraseology; communication challenges; teaching methods; and safety perception. Qualitative data also gathered via semi-structured interviews with ten senior air traffic controllers each with five or more years of experience chosen deliberately based on their operational knowledge and communications background. These interviews examined difficulties encountered at work, the effectiveness of training, and recommendations for improvements.

3.1 Questionnaire

3.1.1 Section 1: Demographic and Professional Background

The contextual frame brings together important factors like age, gender, education level, experience with air traffic control, and prior English learning. This helps to see how social and educational aspects affect air traffic’s ability to use English in aviation and how well they communicate.

3.1.1.1 Age

The study first examined the age demographics of the 30 air traffic control trainees to understand the generational spread within the program. Table 3.1.1.1 presents the frequency and percentage of participants across four distinct age categories.

Table 3.1.1.1: Age Distribution of ATC Trainees at Houari Boumediene Airport

Category	frequency	Percentage(%)
----------	-----------	---------------

18–22 years	8	26.7%
23–27 years	10	33.3%
28–35 years	9	30%
36–40 years	3	10%
Total	30	100%

The ages of 30 air traffic control trainees from Houari Boumediene Airport range from 18 to 40 years. Most trainees are between 23 and 27 years old (33.3%) and 28 to 35 years old (30.0%). Additionally, 26.7% are aged 18 to 22, indicating that many start training right after high school. Only 10.0% are aged 36 to 40, suggesting fewer older individuals enter the field due to possible challenges or market trends. This diversity in age provides insights into how age and experience influence skills in Aviation English, confidence, and communication, highlighting the need for varied training methods to meet the needs of different career stages.

3.1.1.2 Gender

The study also collected data on the gender distribution of the trainee cohort to examine potential variations in language learning experiences or communication confidence. Table 3.1.1.2 below summarizes the number and proportion of male and female participants in the sample.

Table 3.1.1.2: Gender Distribution of ATC Trainees at Houari Boumediene Airport

Gender	Frequencies	Percentage
Male	21	70%
Female	9	30%
Total	30	100%

The gender distribution of the 30 trainees in the ATC program shows that there are more males than females, with 21 males making up 70% of the group, and 9 females representing 30%. This is a typical pattern in aviation jobs, where factors from society and history have led to more men being involved. Considering differences in things like language skills, how people communicate, or job performance related to gender. Tackling these issues is important for encouraging diversity and fairness in aviation training and work at places like Houari Boumediene Airport.

3.1.1.3 Education

Participants' educational backgrounds were recorded to assess how prior academic training might influence their acquisition of Aviation English. Table 3.1.1.3 details the highest level of education completed by each trainee in the study.

Table 3.1.1.3: Educational Level of ATC Trainees

Education Level	Frequencies	Percentage
High School / Technical Diploma	5	16.7%
Bachelor's Degree	18	60%
Postgraduate / Advanced Training	7	23.3%
Total	30	100%

The educational backgrounds of the 30 air traffic control trainees show that 60% hold a bachelor's degree, indicating a strong understanding of complex material and aviation English. A smaller group, 16.7%, has completed only high school or a technical diploma, suggesting multiple paths to ATC training. Additionally, 23.3% of trainees have pursued postgraduate or advanced education, reflecting a trend towards higher education in the field. This diversity in education highlights the need for tailored teaching methods in language training to ensure all trainees can succeed, regardless of their academic background or language skills.

3.1.1.4 ATC Experience

Operational experience is a key factor in determining how air traffic controllers handle communication pressures and apply language skills in real-world situations. Table 3.1.1.4 presents the distribution of participants based on their years of professional experience in air traffic control.

Table 3.1.1.4: ATC Experience Duration Among Trainees

Years in ATC Experience	Frequencies	Percentage
1–2 years	12	40%
3-5 years	10	33.3%
6+ years	8	26.7%
Total	30	100%

The experience of 30 trainees in air traffic control shows a mix of experience levels: 40% have 1 to 2 years, 33.3% have 3 to 5 years, and 26.7% have 6 years or more. Many trainees are new and still learning to communicate effectively, especially using standardized language. There are also trainees with mid-level and extensive experience, which enhances their language skills, confidence, and ability to manage unexpected situations. This variety allows for comparisons at different career stages and highlights how practical experience improves skills in Aviation English. It emphasizes the need for experience-based learning in training programs to support both new and experienced controllers in better communication.

3.1.1.5 Prior Training

Understanding participants' prior exposure to formal English instruction is essential for interpreting their current proficiency levels and readiness for Aviation English training. Table 3.1.1.5 summarizes the self-reported levels of prior English language training among the ATC trainees.

Table 3.1.1.5: Prior Formal English Training Received by ATC Trainees

Prior English Training	Frequencies	Percentage
No formal training	6	20%
Yes – Basic Level	11	36.7%
Yes – Intermediate/Advanced	13	43.3%
Total	30	100%

The data on English training shows that 73.3% of the 30 ATC trainees have taken formal English classes. Of these, 36.7% possess basic skills, while 43.3% have intermediate or advanced skills. Only 20% have not received any training. This indicates they have a good English

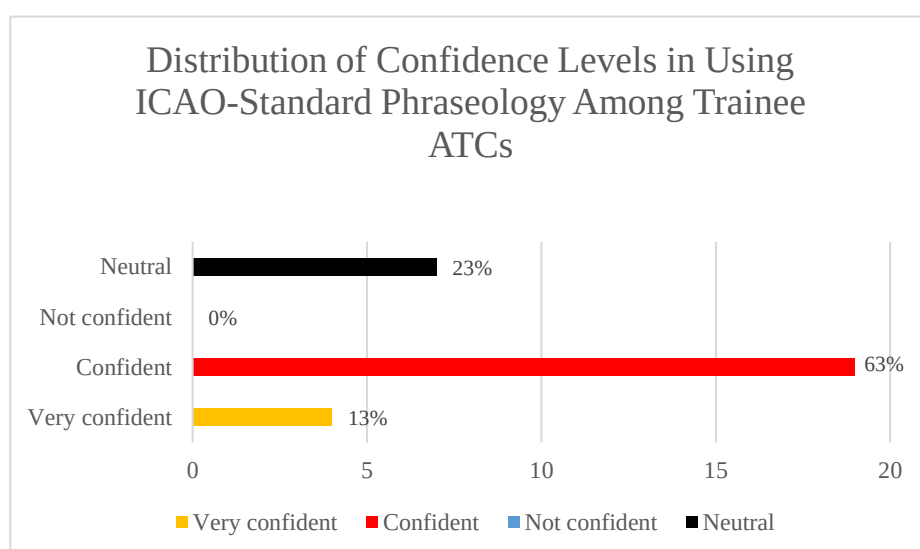
background, which will aid in learning Aviation English effectively. The presence of many trainees with intermediate to advanced skills means they can build on useful language abilities. However, the 20% without formal lessons may struggle to meet ICAO language standards. There is a need for tailored language programs and assessments to support all trainees in achieving necessary skills for air traffic control.

3.1.2 Section 2: Confidence and Language Use in ATC Communication

Question 01: *Considering your training and experience, how confident are you in correctly applying ICAO-standard phraseology during radio communications?*

This question aimed to assess trainees' self-perceived confidence levels in using standardized aviation phraseology during operational communications. Figure 3.1.2.1 visually represents the distribution of responses across four confidence categories.

Figure 3.1.2.1: Confidence Levels in Using ICAO-Standard Phraseology Among ATC Trainees

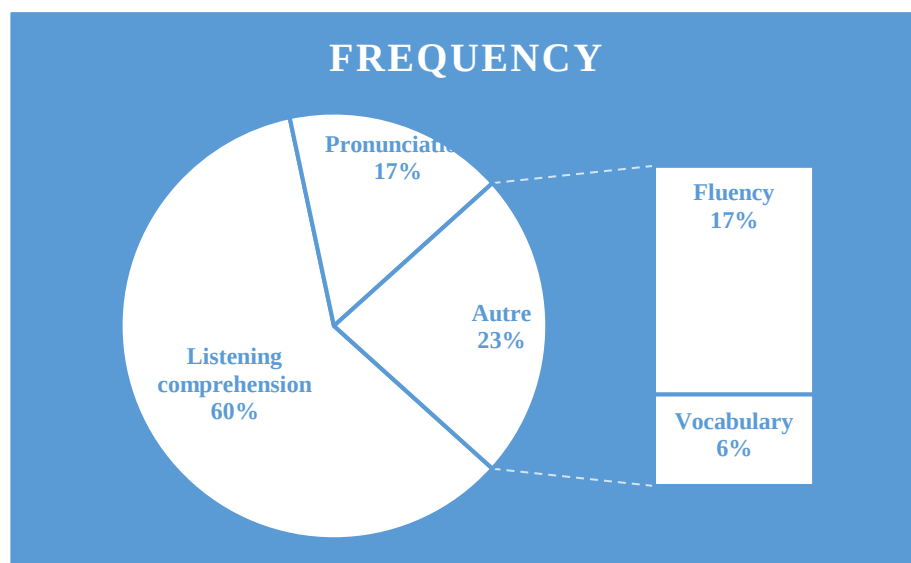


Data from 30 trainee air traffic controllers at Houari Boumediene Airport in Algiers reveal that 76% feel confident using ICAO-standard phraseology. Among them, 63% are confident, and 13% are very confident, suggesting that current Aviation English training is effective in building communication skills. No participant reported feeling unconfident, indicating a solid baseline of competence. However, 23% chose "neutral," highlighting some uncertainty, possibly due to limited exposure to challenging situations. Improved context-specific training, including simulations and real-time feedback, is needed to enhance overall confidence and communication safety.

Question 02: *In the context of Air Traffic Control, what aspect of using English in ATC communication do you find most challenging?*

This question sought to identify the specific linguistic components that trainees perceive as most difficult in their daily ATC communication tasks. Figure 3.1.2.2 illustrates the relative frequency of five different language skill challenges reported by participants.

Figure 3.1.2.2: Perceived Challenges in English Communication During ATC Operations

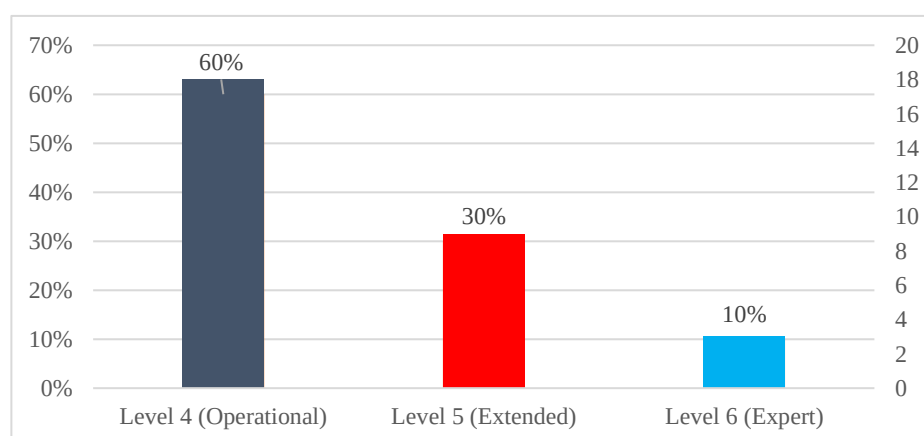


The survey showed that 60% of respondents (18 out of 30) find listening comprehension the hardest part of using English in Air Traffic Control (ATC). This difficulty often arises in stressful and noisy environments with varied accents. While 17% noted issues with pronunciation and fluency, only 7% had concerns about vocabulary, and grammar was not seen as a problem. The findings highlight the need for clear terminology and training in listening skills and accents for safe aviation communication.

Question 03: According to your language assessment in using plain English, *what is your current ICAO English language level?*

Participants were asked to self-evaluate their English proficiency according to the ICAO six-level language competence scale. Figure 3.1.2.3 displays the percentage distribution of trainees across Levels 4, 5, and 6.

Figure 3.1.2.3: Distribution of Self-Rated ICAO English Competence Levels Among Trainees



The responses show that the majority of participants—60%, assess their ICAO English language competency at Level 4 (Operational), thereby implying they can successfully communicate in daily and unusual situations with clear pronunciation and enough grammatical command and vocabulary. 30% rate themselves at Level 5 (Extended), which implies they are capable to clearly and fluently converse, even difficult situations. Only 10% define themselves as at Level 6 (Expert),

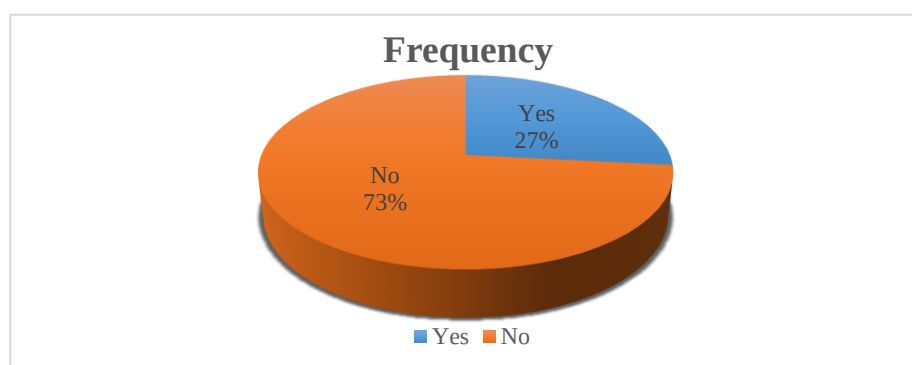
indicating native-like skill with total ease of expression and full command of the language. The distribution reveals that although most ATC employees satisfy the minimal operating requirement (Level 4), a significant portion exhibit greater aptitude, which might help to create safer and more efficient communication in multilingual aviation settings.

3.1.3 Section 3: Challenges in English Communication

Question 04: How challenging is it for you to switch from standard phraseology to plain English when required in ATC communication?

This question examined trainees' perceived ability to transition between standardized phraseology and plain English, a critical skill for handling non-routine situations. Figure 3.1.3.1 presents the frequency and percentage of respondents who find this transition easy or difficult.

Figure 3.1.3.1: Ability to Transition Between Standard Phraseology and Plain English in ATC Situations

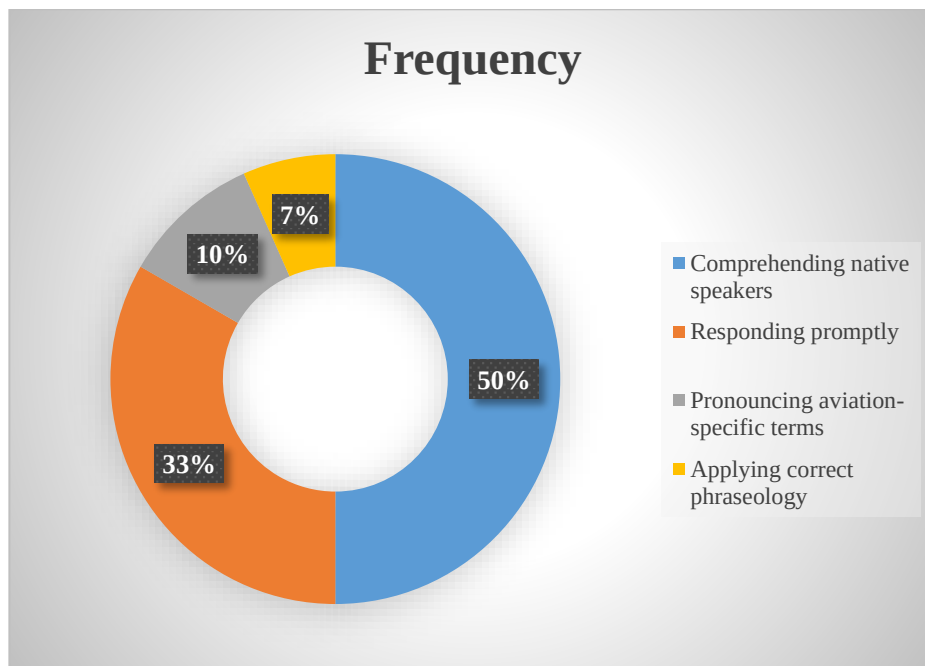


The data from Question N 04 shows that 73% of respondents find it easy to switch from standard phraseology to plain English in ATC communication, indicating good training. In contrast, 27% find this difficult, suggesting a need for ongoing focus on plain English skills in training to ensure safety in complex situations.

Question 05: *During simulation training, what specific challenges do you face when communicating in English during air traffic control exercises?*

This question identified specific communication difficulties encountered during practical simulation exercises, which are designed to replicate operational pressures. Figure 3.1.3.2 summarizes the frequency of four main challenges reported by trainees during simulation training.

Figure 3.1.3.2: Primary Communication Challenges Encountered in ATC Simulation Exercises

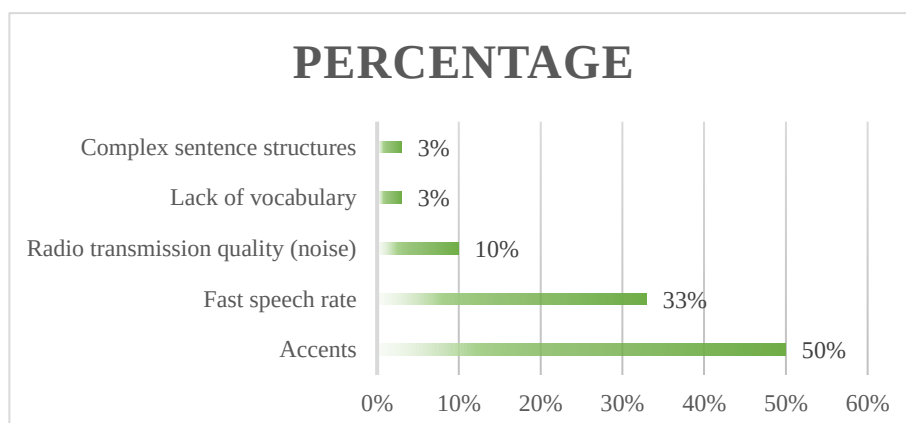


During simulation training, the main challenge reported in English communication is understanding native speakers even when standard aviation English is used, noted by 50% of responses. The second challenge is responding quickly, mentioned by 33%, likely due to mental pressure or the need for translation. Fewer participants struggle with pronunciation (10%) or phraseology (7%). This highlights the need for better listening practice and exposure to varied accents in training.

Question 06: *Which of the following do you find most difficult when understanding pilots or other controllers?*

This question explored the primary barriers that impede real-time comprehension of pilots and fellow controllers during operational communications. Figure 3.1.3.3 displays the distribution of responses across five potential comprehension barriers.

Figure 3.1.3.3: Key Factors Hindering Comprehension of Pilots and Controllers in Real-Time ATC Contexts



The results from Question N 06 show that accents are the main barrier to understanding pilots and controllers, identified by 50% of respondents. Fast speech rate poses a challenge for 33% of participants and can aggravate comprehension issues. Technical problems like poor radio transmission quality were a concern for only 10% of participants, while lack of vocabulary and complex sentence structures were rarely cited, each mentioned by just 3% (1 respondent). The

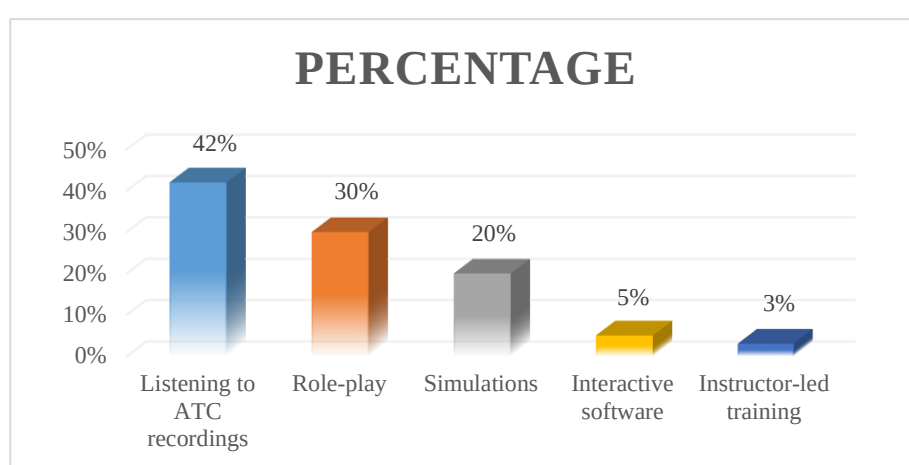
findings highlight the importance of training in listening skills, exposure to different English accents, and strategies for managing fast speech in air traffic control to ensure clear communication.

3.1.4 Section 4: Training Experience and Effectiveness

Question 07: In your Aviation English training, *which of the following teaching methods are used in your Aviation English training program? (Select all that apply.)*

This question assessed the instructional approaches currently employed in the Aviation English training program to understand pedagogical practices. Figure 3.1.4.1 presents the frequency and percentage of five teaching methods based on multiple responses from participants.

Figure 3.1.4.1: Frequency of Teaching Methods Used in Aviation English Training at Houari Boumediene Airport

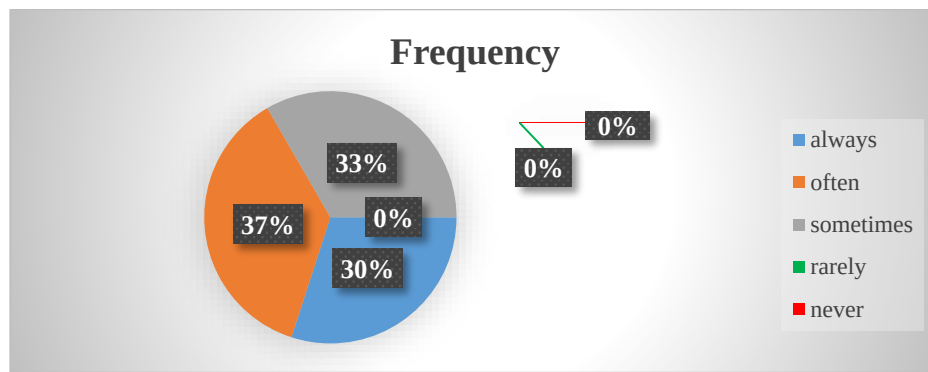


The data from Question N 07 shows that the main teaching method in Aviation English programs is listening to ATC recordings, chosen by 42% of participants. Role-play is the second most popular method at 30%, highlighting its role in improving communication skills. Simulations are used by 20%, while interactive software and instructor-led training are less common at 5% and 3%. Overall, the findings suggest a focus on listening and speaking, with opportunities to include more technology and structured instruction in the curriculum.

Question 08: *How often do you use standardized phraseology versus plain English in your air traffic control communications?*

This question examined the frequency with which controllers apply standardized phraseology compared to plain English in their daily operational communications. Figure 3.1.4.2 illustrates the distribution of responses across three frequency categories.

Figure 3.1.4.2: Usage Patterns of Standardized Phraseology and Plain English in Real-World ATC Communications

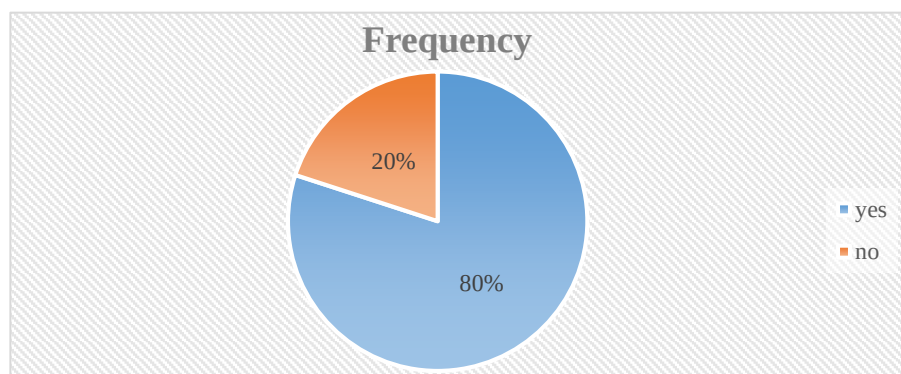


The responses to Question N 08 show that 67% of air traffic controllers use standardized phraseology often or always, with 37% using it "often" and 30% "always." This practice is vital for clarity, safety, and international cooperation. Additionally, 33% of respondents use it "sometimes," indicating that plain English is also used in complex or emergency situations. There are no responses indicating "rarely" or "never," highlighting that all participants understand the importance of standardized phraseology alongside plain language for effective ATC operations.

Question 09: *Considering your training experiences, to what extent do you believe your current training prepares you for real-life Air Traffic Control communication scenarios?*

This question evaluated trainees' perceptions of how adequately their current training prepares them for authentic operational communication scenarios. Figure 3.1.4.3 presents the frequency and percentage of respondents who feel prepared versus unprepared for real-world ATC situations.

Figure 3.1.4.3: Trainees' Perception of Training Preparedness for Real-World ATC Communication



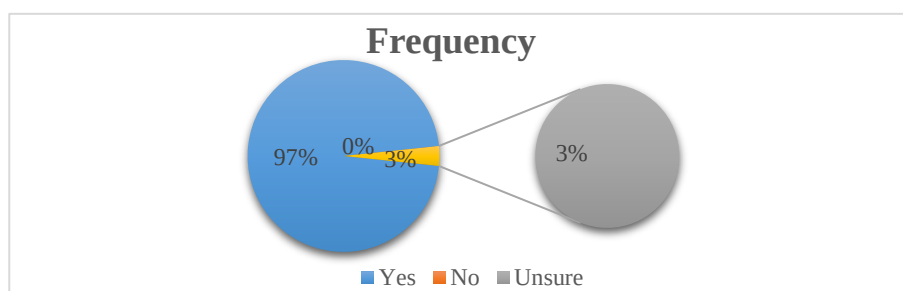
Most respondents (80%) believe their training effectively prepares them for real-life air traffic control communication, showing confidence in their Aviation English and operational training. The training methods, including ATC recordings and simulations, are seen as successful in building necessary skills. However, 20% feel their training lacks, especially in understanding different accents and handling fast speech. While the positive feedback indicates strengths in the program, concerns suggest a need for improvements in simulating real-world challenges and enhancing communication exercises.

3.1.5 Section 5: Language, Safety, and Future Improvements

Question 10: *In your view, could a poor command of English potentially cause miscommunication in air traffic control operations?*

This question assessed participants' awareness of the safety implications associated with inadequate English language proficiency in ATC operations. Figure 3.1.5.1 displays the distribution of responses regarding the perceived risk of miscommunication due to poor English competence.

Figure 3.1.5.1: Perceived Risk of Miscommunication Due to Poor English Competence in ATC Operations



A majority of respondents, 97%, agree that a poor command of English can cause miscommunication in air traffic control. Only one respondent was uncertain about this issue, and no one denied the risks involved. Clear English is essential for effective communication between pilots and controllers, especially in international airspace. Misunderstandings from language issues can lead to serious problems, like runway incursions or altitude deviations. This highlights the need for strict language training and assessment to promote safety in global air traffic systems.

Question 11: *What changes would improve your Aviation English training to better prepare you for real ATC operations?*

This open-ended question gathered qualitative feedback on specific improvements trainees recommend for enhancing the Aviation English training program. The responses were analyzed thematically and are presented below as key recommendations.

The feedback from those involved points out important and practical improvements for the Aviation English program:

- Boost interactive simulation exercises with both native and non-native English speakers.

This helps trainees to be exposed to different accents, speech rates, and the pressure of communicating in real-time, which boosts their understanding and speaking skills in international situations. Regular practice in simulated live environments helps them feel more confident and flexible, especially when they need to switch from using standard phraseology to plain English.

- Integrate organized listening and speaking practice using real air traffic control audio recordings.

Listening to actual radio communications regularly helps trainees get better at understanding and clearly saying aviation phrases, even when the situation gets tough, like when there's a lot to do or the signal is weak. This also strengthens their ability to be understood and stay aware of what's happening around them.

3.2 The Interview

3.2.1 Role of Controllers and Language Requirements in Busy Areas

Controllers manage intense mixed air traffic, both local and international, and need to speak both ICAO phraseology and plain English. It is essential for them to communicate accurately and adjust their language skills, especially when talking to pilots who may not speak English as their first language. This is very important for safety, especially when they're under a lot of mental stress.

3.2.2. Listening Skills and Challenges

Despite self-rating as being at ICAO Levels 4 or 5, they all still find it hard to understand speech when under pressure. They struggle to catch quick or accented speech, especially in bad audio situations. This remains a major challenge, revealing a gap between training and real-world demands.

3.2.3 Training Gaps and Real-World Operational Demands

The initial training for Aviation English provides a solid foundation but isn't very realistic. The practice uses perfect accents and expected situations, which doesn't really help controllers deal with the fast pace, unpredictability, and different accents they encounter in real life. Participants wanted more advanced and realistic training that reflects the actual pressures of air traffic control.

3.2.4 Communication Problems: Accents, Speed, and clarity

The biggest challenges come from different accents and quick talking. These issues are made worse by radio static and background noise, which slow down understanding and lead to mistakes. The problem isn't with using technical language; it's about processing speech when it's not clear. This shows the need for training to improve listening skills.

3.2.5 Miscommunication and Safety Risks

Six controllers mentioned incidents that affected safety due to misunderstandings, such as mishearing flight levels or confusing instructions like “hold short” and “line up.” These examples show how small mistakes in language can result in serious dangers, proving that just having standard terms isn't enough without clear communication practices.

3.2.6 Skills for Improvement: Listening and Speaking

Listening skills, especially when dealing with different accents, are prior for improvement. About half of the controllers also want to work on how clearly they pronounce words when under pressure. Being fluent in basic English and confident in stressful situations is also important. Bidirectional intelligibility (understanding others and being understood) is essential.

3.2.7 Standard Phraseology vs plain English

Controllers are highly confident using ICAO phraseology in regular operations. However, everyone agrees it doesn't work well in emergencies or when pilots use non-standard language. Many feel unsure about switching to plain English, highlighting the need for training in adaptive and unscripted communication.

3.2.8 Systematic Challenges in Maintaining Language Skills

After getting certified, controllers find they have little chance to hear different accents, rarely practice English, don't get feedback on how they pronounce words, and their skills drop when stressed. Language ability isn't fixed and needs constant support, which the current systems do not provide.

3.2.9 Enhanced Plain English Training

All ten controllers emphasized that plain English is crucial for about 20% of communications involving emergencies, technical problems, or atypical interactions. Many feel hesitant moving away from memorized scripts, which slows their response time. They support the idea of training in plain English that focuses on real situations as an important skill.

3.2.10 Modernized Aviation English Training for a Globalized Sky

Controllers suggest moving from one-time certification to a lifelong learning approach that includes:

- Tools enhanced by technology, like apps and speech analysis
- Realistic, high-pressure practice with various accents
- Specific training modules focusing on plain English
- Ongoing assessments and feedback

This method would make them more ready for the actual situations in worldwide flying and improve safety.

3.4 Interpretation and Discussion of the Results

Results indicate that the group of air traffic controller trainees at Houari Boumediene Airport is quite self-assured. They are learning the ICAO language guidelines really well, and it's important to see how their English skills relate to keeping aviation safe. The information about the trainees shows that they mostly are young, male, and educated, with 60.0% having bachelor's degrees. Also, 73.3% had some formal learning in English before, which likely helps them be ready with the language. Most of the candidates (60%) believe they are at ICAO Level 4, which is the minimum requirement, but 40% think they are even better, showing a solid foundation in their language skills.

However, there are still significant challenges. The biggest issue noted by 60% of the trainees is listening, particularly to native English speakers (50%) and understanding different accents (50%), along with keeping up with fast speech (33%). These findings highlight a clear gap between what they learn in class and how people actually communicate in the real world. Factors like unusual accents, quick talking, and operational issues can all degrade comprehension. While 73% feel neutral about their confidence with plain English exchanges, and 76% feel good about using standard phraseology, and 23% are not very confident and 20% feel unprepared for real-life situations. This suggests that the current training may be effective for routine operations, but it might not be suited for more varied experiences.

Training to minimize risks in aircraft is currently focused on listening to Air Traffic Control messages (42%) and role-playing (30%). There isn't much use of simulations (20%), interactive software, or structured instructor-led sessions. This shows that they mostly rely on less active ways of practice, lacking high-tech immersive tools that could better simulate the real pressures of air traffic control.

Almost everyone (97%) agrees that poor English can lead to misunderstandings, which shows a good culture around safety and highlights the need for ongoing language improvement. The suggested changes include creating more realistic practice situations with a wider variety of English speakers and using real-world audio recordings to help trainees receive, understand, and repeat instructions. This points to a clear need for training that has more realism and diversity in accents in the short term.

Aviation English training is generally considered effective, there's a strong argument for shifting from the usual phrase-based instruction to more engaging, simulation-focused, multilingual programs. This would better prepare controllers for not just regular communications but also for unexpected situations in managing global air traffic. If these changes are made, it will improve safety, confidence, and communication across different cultures in our changing airspace.

The discussions with ten skilled air traffic controllers at Houari Boumediene Airport show that they have a good grasp of the standard ICAO language and feel pretty sure about their everyday English conversations. Still, they face many challenges when it comes to understanding spoken

English, especially when they hear different accents, fast talkers, or when the radio signals are not clear. Even though they get enough basic training in the language, a lot of controllers think they are not ready for the range of accents they encounter or the high stress of working in air traffic control. Six of them mentioned times when misunderstandings led to safety issues, stressing how important good language skills are for safe operations. While they are all confident using standard terms, they all agree that they need better training in spoken English to handle emergencies and unusual events. They point out that not having enough chances to practice speaking after getting their certification, facing too few different accents, and lacking speaking practice are big problems with the current training. The controllers strongly believe in using technology like mobile apps, speech recognition tools, and simulated air traffic scenarios to create ongoing, realistic, and tailored learning experiences.

4. CONCLUSION

This research shows that air traffic controllers at Houari Boumediene Airport understand standardized aviation communication well and usually meet language skills requirements. Most of them feel they either meet or go beyond the basic level required. However, there are still significant challenges, especially in terms of understanding spoken English. The various accents, fast talking, and high-pressure work situations can really impact how clearly they communicate. Although the majority of newly controllers believe they can use plain English easily and feel prepared for real work conditions, but the experienced controllers suggest that there is a gap between the training they receive and what actually practice in operational context. Many experts air traffic controllers agree that better, realistic, and continuous language training is necessary. This training should include exposure to different accents, improving skills in plain English, and using technology. To ensure top performance in increasingly international airspace, Algeria's air traffic control training program needs to progress from just basic phrase training to a flexible, lifelong learning system that emphasizes adaptability, clear communication, and real-world readiness.

Bibliography List

- Abekhti, R., & Hadjadj, R. (2020). *English needs analysis of the air traffic controllers at Touat-Chiekh Sidi Mohammed Belekhir Airport - Adrar Province*.
- Agustini, E., Kareng, Y., & Victoria, O. A. (2021). The role of ICAO (International Civil Aviation Organization) in implementing international flight safety standards. *KnE Social Sciences*, 5(1), 100–114. <https://doi.org/10.18502/kss.v5i1.8273>
- Alderson, C. (2009). *Air safety, language assessment policy, and policy implementation: The case of aviation English*. Cambridge University Press.
- Alderson, J. C. (2009). *The language of air traffic control: A sociolinguistic perspective*. Routledge.
- Anthony, L. (2018). *Introducing English for specific purposes*. Routledge. <https://doi.org/10.4324/9781351031189>
- Aviation English Language Test Services. (n.d.). *Aviation English Language Test Services*. International Civil Aviation Organization. Retrieved July 3, 2024, from <https://www.icao.int/safety/OPS/OPS-Tools/Pages/AELTS.aspx>
- Aviation English Levels Explained. (2022, November 7). *ILPT*. <https://ilpt.net/aviation-english-levels-explained/>
- Barshi, I., & Farris, C. (2013). *Misunderstanding in ATC communication: Language, cognition, and experimental methodology*. Ashgate.

- Basturkmen, H. (2006). *Ideas and options in English for specific purposes*. Routledge.
- Burge, S. (2024). What is the NATO phonetic alphabet? *Security Journal UK*. <https://securityjournaluk.com/>
- Carver, D. (1983). Some propositions about ESP. *The ESP Journal*, 2(2), 131–137.
- Civil Aviation Authority. (2024). *SERA.14040 Pronunciation of numbers*. UK Civil Aviation Authority. https://regulatorylibrary.caa.co.uk/923-2012/Content/Regs/03410_SERA14040_Pronunciation_of_numbers.htm
- Clark, B. (2017). *Aviation English research project: Data analysis findings and best practice recommendations* (Report No. 044/2017). Civil Aviation Authority.
- Crystal, D. (2003). *English as a global language* (2nd ed.). Cambridge University Press.
- Dib, C. H. (2021). You've heard Alfa, Bravo, Charlie—but do you know where it came from? *Uniting Aviation*. <https://unitingaviation.com/>
- Dudley-Evans, T., & St John, M. J. (1998). *Developments in ESP: A multi-disciplinary approach*. Cambridge University Press.
- Haryani, H. (2017). *Miscommunication in pilot-controller interaction*. ResearchGate. https://www.researchgate.net/publication/329921857_Miscommunication_in_Pilot-controller_Interaction
- Hutchinson, T., & Waters, A. (1987). *English for specific purposes: A learning-centred approach*. Cambridge University Press.
- International Civil Aviation Organization. (2001). *Annex 10 to the Convention on International Civil Aviation: Aeronautical telecommunications* (Vol. II, 6th ed.).
- International Civil Aviation Organization. (2010). *Manual on radiotelephony* (Doc 9432, 4th ed.).
- International Civil Aviation Organization. (2010). *Manual on the implementation of ICAO language competence requirements* (Doc 9835).
- Jenkins, J. (2015). *Global Englishes: A resource book for students* (3rd ed.). Routledge.
- Lamri, C. E. (2016). *An introduction to English for specific purposes (ESP)*.
- Lopez, S. (2011). Phraseology and plain language: Norm and usage in air-ground communications. *Proceedings of the 11th International Civil Aviation English Association (ICAEA) Forum*, Toulouse, France. http://www.aerolingo.com/docs/Poster_ICAEA_StephanieLopez.pdf
- Lopez, S., Condamines, A., Josselin-Leray, A., O'Donoghue, M., & Salmon, R. (2014). Linguistic analysis of English phraseology and plain language in air-ground communication. *Journal of Aviation Technology and Systems*, 4(1), 1–15. <https://doi.org/10.38008/jats.v4i1.84>
- Mackay, R., & Mountford, A. (1978). *English for specific purposes: A case study approach*. Longman.
- Mauranen, A. (2010). Features of English as a lingua franca in academia. *Helsinki English Studies*, 6, 6–28. https://www.researchgate.net/publication/228616552_Features_of_English_as_a_lingua_franca_in_academia

- McCollum, E. E. (2004). *Effects of gender and regional dialect on performance in aviation communication* (Master's thesis). Embry-Riddle Aeronautical University.
- Mekkaoui, G. (2013). *English for aviation in the Algerian context: The case of pilots and air traffic controllers at Zenata–Messalli El Hadj Airport* [Master's thesis, University of Tlemcen].
- Park, M. (2018). Innovative assessment of aviation English in a virtual world: Windows into cognitive and metacognitive strategies. *Journal of Aviation English*, 7(2), 24–41. <https://doi.org/10.1017/S0958344017000362>
- Park, Y. (2018). *Aviation English: An introduction to the international language of flight*. Palgrave Macmillan.
- Park, P. (2012). An analysis of military ATCs' perceptions on English competence tests for aviation. *English Teaching*, 67(4), 267–285. https://journal.kate.or.kr/wp-content/uploads/2015/01/kate_67_4_12.pdf
- Rahmati, T., & Izadpanah, S. (2021). A study of the competence and performance of Iranian air traffic controllers: Attitude, work experience and specific aviation English courses. *Asian-Pacific Journal of Second and Foreign Language Education*, 6(2), Article 9. <https://doi.org/10.1186/s40862-020-00105-y>
- Roger, T. (2019). *English for civil aviation pilots in Iceland* (Master's thesis). University of Iceland. https://skemman.is/bitstream/1946/32649/1/Gu%C3%B0ny%CC%81O%CC%81skLaxdal_MA.pdf
- Seidlhofer, B. (2005). English as a lingua franca. *ELT Journal*, 59(4), 339–341. <https://doi.org/10.1093/elt/cci064>
- Sekelová, I., Korba, P., Koščáková, M., & Sekelová, M. (2022). A comparative study: Language competence requirements for pilots, air traffic controllers, and aircraft technicians. *Journal of Aviation and Transportation*, 3(1), 45–58.
- Temirova, N. (2019). The role of English in international aviation communication. *Journal of Aviation Linguistics*, 4(2), 125–138.