Original Research

Aviation communication challenges and language training development: Perspectives from pilots and air traffic controllers

by Haryani Hamzah, Pramela Krish and Afendi Hamat

Haryani Hamzah National University of Malaysia, Malaysia yanihamzah@gmail.com
Pramela Krish National University of Malaysia, Malaysia pramela@ukm.edu.my
Afendi Hamat National University of Malaysia, Malaysia fendi@ukm.edu.my

Having error-free communication in air-to-ground communication is somewhat nonsensical in real-life conditions. Multiple factors, external or internal, inevitably cause miscommunication or misunderstanding. During unprecedented situations, the ability to adapt and language competency becomes a significant factor in ensuring that communication between pilots and air traffic controllers can succeed. Aviation English falls under English for Specific Purposes and acts as a lingua franca for aviation communication. Thus far, language training is still inadequate to prepare pilots and air traffic controllers during emergencies or non-routine situations. The open-ended survey was conducted before the first development phase of the aviation communication competence framework. The rationale of this survey is to understand the need and perception of aviation language among pilots and air traffic controllers. The findings suggest that although they feel confident using aviation English in radiotelephony, most agree that it is imperative to have language training to improve aviation communication safety and standardise aviation phraseology and language. The findings also suggest that fundamental English language proficiency and non-standard phraseology use reduce efficiency in aviation communication. Furthermore, cultural and linguistic diversity among pilots and air traffic controllers creates misunderstandings and non-understanding in interactions. These findings suggest that aviation language development and training can be improved by diligent monitoring and evaluating the current needs of pilots and air traffic controllers.

KEYWORDS: *English for specific purposes, aviation English, aviation language development and training, non-native speakers, intercultural communication*

1. INTRODUCTION

The development of the aviation language has significantly progressed since International Civil Aviation Organization (ICAO) implemented the language proficiency requirement for non-native speaker (NNS) pilots and air traffic controllers. Subsequently, the testing for aviation language has become the primary focus for researchers, language practitioners, and linguists worldwide. Aviation authorities, organisations, and academicians collaborate in constructing the most suitable test

Aviation communication challenges and language training development: Perspectives from pilots and air traffic controllers

by Haryani Hamzah, Pramela Krish and Afendi Hamat

to measure language competency amongst NNS pilots and controllers. However, this circumstance made the development of aviation English sparse, and only a little research has been done to explore and improve the understanding of the language. Furthermore, globalisation has inevitably shifted aviation communication towards intercultural communications (Hazrati, 2015), which requires pilots and air traffic controllers to have specific skills to interact across different cultures. These skills need to be learned and trained, especially for NNS who do not possess the skill naturally. Mekkaoui and Mouhadjer (2019) and Bullock (2019) suggest that appropriately well-trained, experienced language trainers and teachers are imperative for NNS pilots and air traffic controllers to enhance their language ability. Pilots and air traffic controllers' day-to-day tasks require them to be expeditious and flexible to meet traffic demand. Although this undertaking on aviation language is not the same for every country, there are challenges for NNS countries. Most NNS countries are either economically challenged or lack the expertise to improve and provide the necessary language training for pilots and air traffic controllers (Park, 2012; Kim, 2018; Mekkaoui & Mouhadjer, 2019; Bullock, 2019).

Based on previous studies, the critical solution to improving aviation communication safety is advanced and copious research in language training and development, including experts in aviation operational and human factors and linguists to help address the gaps in aviation communication safety. Hamzah and Fei's (2018) previous findings in pilot-controller communicative discourse suggest that communicative abilities among NNS pilots and air traffic controllers could be improved by implementing language skills in aviation training with current and relevant testing and development of aviation language. This article aims to understand aviation communication challenges and language training needs among pilots and air traffic controllers.

2. METHODOLOGY
2.1. Research design
The survey presented in this paper was conducted before the first phase of developing a framework for aviation communication training. This survey is part of the need analysis for the aviation language framework and explores pilots' and air traffic controllers' perspectives on current development and

training for aviation language. The survey was conducted to identify the extent of the radiotelephony problem and the need for aviation language training to improve communication safety.

This survey is crucial for this study to identify learning theories and methods suitable for aviation language training from the perspectives of NNS pilots and air traffic controllers. The survey questions are a tool to elicit information from NNS air traffic controllers and pilots operating in Malaysia airspace. The survey follows the cross-sectional survey design created via google forms and consists of questions regarding ELPT level, years in service as a pilot or air traffic controller, current aviation communication safety and their opinion on the type of training in aviation communication. The questionnaire consists of 12 questions. The first three questions in the instrument prompted background information, followed by questions on the current development of aviation language in Malaysia. Other questions encouraged pilots and air traffic controllers to give their opinion and suggestions on aviation communication safety and training. Member checking for validity and reliability was conducted with aviation experts before the survey was distributed to ensure survey questions would elicit information that would fulfil the objectives of this study.

2.2. Respondents of the study
A total of 110 NNS pilots and air traffic controllers operating in Malaysian airspace completed the survey. All pilots and air traffic controllers hold a valid licence and have achieved a minimum level 4 (operating) ELPT. The duration of years respondents worked as pilots or air traffic controllers shows in Table 1, and their current ELPT is in Table 2.

Table 2 shows respondents' ELPT level for pilots and air traffic controller; a total of 64.1% (n=50) of pilots achieved level 6, while 32% (n=25) achieved level 5 and only 3.9% (n=3) at level 4. On the contrary, a total of 78% (n=25) controllers at level 4, a total of 9.4% (n=3) achieved level 5 and 12.5% (n=4) at level 6.

2.3. Data collection and analysis
The survey questions are combinations of multiple-choice and open-ended questions. Questions 1, 2, 3 are multiple-choice questions on background. Questions 4, 6 and 10 are yes or no questions; questions 5, 7, 9, and 12 are open-ended questions to elicit more information or opinions. While question 11 prompted types of language training for aviation communication.

The data were analysed using both quantitative and qualitative methods. Statistical Package for the Social Sciences (SPSS) was used for multiple-choice questions to analyse frequency statistics for the data. The open-ended answer was analysed qualitatively by creating themes and subthemes.

Table 1
Years as an active pilot or air traffic controller

LESS THAN 5 YEARS	6-10 YEARS	11-20 YEARS	21-30 YEARS	31 YEARS AND ABOVE
21 (22.7%)	31 (28.2%)	31(28.2%)	14 (12.7%)	9 (8.2%)

Table 2
Current ELTP for pilots and air traffic controllers

ELPT	TOTAL	PILOT	CONTROLLER
Level 6	54 (49%)	50 (92.6%)	4 (7.4%)
Level 5	28 (25.5%)	25 (89.3%)	3 (10.7%)
Level 4	28 (25.5%)	3 (10.7%)	25 (89.3%)
Total	110 (100%)	78	32

3. THEORETICAL BACKGROUND

Aviation communication, commonly referred to as radiotelephony amongst aviators, is an essential part of communication. Air-to-ground communication often becomes a challenge for pilots and air traffic controllers during unprecedented situations and bad weather conditions. Based on past research by (Tajima, 2004; Cookson, 2009; Prinzo et al., 2010), this problem is often due to a lack of fundamental English and vocabulary restrictions among NNS controllers and pilots. However, these errors can easily be overcome with experience and shared context (Molesworth & Estival, 2015; Hamzah & Fei, 2018). Although English acts as a lingua franca for aviation communication, its form and use are different from ordinary English. The use of English lies upon standard phraseology published by ICAO and within aviation jargon and context. The manual on implementing ICAO language proficiency requirements (DOC9835) and Cir.323 under ICAO guide organisations to develop language training for pilots and air traffic controllers worldwide.

The manual (DOC9835) discussed the use of English within the aviation setting and how imperative aviation specialists are in implementing appropriate language training and testing programmes. The critical summary for ICAO language proficiency requirements according to the ICAO manual are: strengthen the requirement for English to be provided by service providers from recommendation to that of a Standard (Annex 10); establish minimum skill language proficiency requirements for flight crews and air traffic controllers (Annex 1); introduce an ICAO language proficiency rating scale applicable for native and non-native speakers (Annex 1); clarify the requirement for the use of both plain language and phraseologies (Annexes 1, 10); standardise the use of ICAO phraseologies (Annex 10); recommend a testing schedule to demonstrate language proficiency (Annex 1); provide for service provider and operator oversight of personal compliance (Annexes 6, 11).

Past incidents and accidents proved that communication between pilots and air traffic controllers plays a pivotal part in aviation safety. One example of miscommunication occurred in 2017 at Medan Indonesia. A Boeing 737-900 aircraft operated by PT. Lion Mentari Airlines (Lion Air). The aircraft was a scheduled passenger flight from Banda Aceh to Medan, flight number JT197. Another aircraft was an ATR 72-500 operated by PT. Wings Abadi Airlines (Wings Air) is a scheduled passenger flight from Medan to Meulaboh, flight number IW1252. Medan controller issued a clearance to IW1252:

Aviation communication challenges and language training development: Perspectives from pilots and air traffic controllers

by Haryani Hamzah, Pramela Krish and Afendi Hamat

Medan Controller: Wings Abadi ONE TWO FIVE TWO behind traffic Lion short final landed passing line-up behind runway TWO THREE from intersection DELTA additional clearance after departure direct Meloubah.

IW1252: After departure direct to Meulaboh Wings Abadi ONE TWO FIVE TWO.

Medan Controller: Namu tower.

IW1252 proceeded to taxi and line up for departure runway 23; JT197 was on approach for landing when IW1252 taxied and lined up runway 23. JT197 landed on the runway and impacted with IW1252 on the runway a few seconds after landing. Although all passengers and crews survived, both aircraft were greatly damaged.

The miscommunication occurred when Medan controller issued the clearance to IW1252; the controller gave too much information in one transmission. Taxi clearance was issued together with after-departure and traffic information. The controller should keep their instruction concise and clear without ambiguity. The language structure of the instruction created vague information. The taxi clearance should be given first without any other information that could complicate the instructions. IW1252 did not give a full readback; this further complicates interactions' misunderstandings. The controller failed to confirm whether the pilot understood the instruction given. The pilot had the intention to expedite their departure hence by requesting taxiway DELTA for intersection departure; this is where the pilot had a presupposition of departure clearance since the controller failed to emphasise full readback.

Another example is a collision between Boeing MD-87, registration SE-DMA and Cessna 525-A, registration D-IEVX. While SE-DMA departed on runway 36R of Milano Linate airport, D-IEVX taxied into the active runway because of a misunderstanding due to the alternative use of words in instructions. SE-DMA continued on the runway and was temporarily airborne before stopping impacting a baggage handling building. D-IEVX remained unmoving on the runway; post-impact fire destroyed most aircraft. All crews and passengers of both aircraft suffered fatal injuries, and ground handling staff inside the building were injured and burned. The accident occurred for multiple reasons; code-switching in radio communication between Italian and English, and the ground controller issued ambiguous clearance and low visibility at the airport. The high-volume traffic for controllers; the ground controller had been in contact with eleven aircraft during

the time, and the final safety report stated that within 15 minutes and 58 seconds, the controller handled approximately 120 radio communications. While the tower controller was in contact with six aircraft for 11 minutes and 38 seconds, the controller managed 73 radio communications. Multiple factors contributed to the causes that led to the accident. Although communication rarely becomes the primary cause of accidents, it will always be one of the contributing factors. Under this circumstance, it is essential to have systematic and structured language testing and training for pilots and air traffic controllers.

Language-related standards and recommended practices (hereafter SARPs) are categorised into three main categories; (1) Annex 10 SARPs clarify the languages that are permitted in radiotelephony; (2) Annex 1 SARPs establish proficiency skill level requirements as a prerequisite for licensing; (3) Annexes 6 and 11 provide for service provider and operator responsibility. Aviation organisations and language experts develop and initiate aviation language testing for NNS pilots and air traffic controllers, according to DOC9835.

ICAO mandated English language requirements in 2008 for NNS considering the number of incidents and accidents that occurred due to lack of language proficiency among NNS pilots and air traffic controllers. The English Language Proficiency Test (ELPT) is a compulsory requirement for NNS pilots and air traffic controllers worldwide to work in the aviation industry. Since the ICAO manual and annexes only serve as guidance in implementing ELPT, the modules and materials for the training and testing vary from one organisation to another, even within the same countries. Due to this circumstance, the perspective and the practice of the training and testing standard is diverse within the range recommended by ICAO (Alderson, 2009, 2010; Fan & Jin, 2013).

Emery (2014) highlighted aviation English testing by addressing issues in language testing, specifically in aviation English. Emery lists out four issues that he finds valid: (1) In testing language for specific purposes, how specific is specific? (2) How does one decide what is to be tested? (3) Can one be relatively sure that one is not testing subject-matter knowledge rather than linguistic or communicative abilities? (4) How can one predict from one performance on a specific test to performance in real life? Emery (2014) emphasises the need to develop tests that fit the specified test takers and how the fundamental English component in radiotelephony is under research because access to sensitive data is

'Mastering the language is imperative for them to meet the traffic demand efficiently. Twelve years have passed since the ICAO implemented English for aviation (ELTP) with a minimum requirement of level 4 (operational) for every non-native speaker pilot and air traffic controller who is set to work in an international setting. Since then, the number of research on testing and materials development for testing in native speakers and non-native speakers' countries has increased significantly'

scarce in the professional domain. He agrees with Douglas (2000) that air traffic controllers and pilots should be assessed differently since their objectives in communication are different, and their perspectives on the task differ from one another. Furthermore, Emery added that ICAO stated that test materials should be relevant to their work roles (ICAO, 2010).

ELPT often becomes a frustrating issue among pilots and controllers in non-native countries. The main problem for test-takers is mainly due to how irrelevant the test feels compared to real-life communication (Kim, 2013). From the beginning, Moder and Halleck (2009) explored the variation in oral proficiency amongst air traffic controllers regarding work-related radiotelephony and non-specific English tasks on aviation topics. The findings show that aviation professionals in the sample scored below operational level 4 on the radiotelephony task, in which the task given was adapted from actual routine radiotelephony. The study concludes that the ICAO proficiency tests should include phraseology and unexpected work-related situations. Subsequently, Douglas (2004) remarks that in his survey of aviation tests concerning ICAO implementation of English tests, many of the assessment procedures failed to meet international professional standards for the language test. Furthermore, the assessment policy is inadequate under ICAO SARPs. Kim (2018) suggests that the basis of language tests that only focus on oral proficiency is ineffective; the test should incorporate knowledge and behavioural elements.

Kim (2018) highlights that pilots and controllers found it challenging to master aviation language even after years of experience in the industry. Past research in aviation language (Park, 2012; Mekkaoui & Mouhad-

jer, 2019) shows challenges to improving language proficiency due to a lack of communication or language training in most non-native speaker countries. Most non-native speaker pilots and air traffic controllers face difficulty using plain English when standard phraseology is inadequate to communicate efficiently (Mitsutomi & O'Brien, 2003). These circumstances require standardising and in-depth communication training for non-native pilots and air traffic controllers. Most pilots and air traffic controllers struggle to master aviation English after ICAO implements ELPT. Mastering the language is imperative for them to meet the traffic demand efficiently. Twelve years have passed since the International Civil Aviation Organization (ICAO) implemented English for aviation (ELTP) with a minimum requirement of level 4 (operational) for every non-native speaker pilot and air traffic controller who is set to work in an international setting (Alderson, 2009). Since then, the number of research on testing and materials development for testing in native speakers and non-native speakers' countries has increased significantly. However, this progress fell short regarding language training for air traffic controllers and pilots. Whilst native speakers' countries succeed in developing advanced language training for pilots and air traffic controllers, most non-native speakers' countries barely grasp the fundamentals of aviation language (Kim, 2018). Non-native speakers' countries consist of pilots and air traffic controllers who neither achieve a high English language proficiency nor acquire well-trained linguists or qualified English teachers with previous aviation communication experience.

Language training should be a replication or involve a real-life situation (Park, 2018; Vieira et al., 2014; Trippe, 2019; Mekkaoui & Mouhadjer, 2019). Standard phraseology shall be used throughout the training period, with plain English used only when the situation deems that standard phraseology is insufficient. Kovtun et al. (2014) suggest that non-routine or emergency communications should be rehearsed, and the language training should address all six language skills as specified by ICAO. Furthermore, (Tripp, 2019; Vieira et al., 2014) postulate that language training should be improved and viewed as a prerequisite for any pilot or air traffic controller before starting their aviation training and simulation to ensure they reach acceptable language competency. Mekkaoui and Mouhadjer (2019) and Bullock (2019) suggest that appropriate, well-trained, and experienced language trainers and teachers are imperative for non-native

Aviation communication challenges and language training development: Perspectives from pilots and air traffic controllers

by Haryani Hamzah, Pramela Krish and Afendi Hamat

speaker pilots and air traffic controllers to enhance their language ability. In reality, the day-to-day challenge for pilots and air traffic controllers requires them to be expeditious and flexible to meet traffic demand.

As suggested by Grigoryeva and Zakirova (2022) since language and culture are intertwined, English has emerged as a global leader in intercultural communication, with the majority of students choosing to study the language to integrate into society and acquire intercultural awareness successfully. Hazrati (2015) and Hamzah and Fei (2018) feel that since the majority of the pilot and air traffic controllers consist of non-native speakers, aviation communication has changed gradually to intercultural communication; hence intercultural communication competence should be included in aviation training as part of communication skills for pilot and controller to become 'intercultural speakers'. Houghton (2009) believed that misunderstandings in intercultural communication could be rectified with knowledge and skills in interpreting and relating across various cultures.

Tajima's (2004) findings revealed that for NNS, the need for proficiency in fundamental English is critical. He proposes that for NNS pilots or air traffic controllers to be competent in their tasks, they must have good English. The future training for pilots and air traffic controllers should be shifted towards competency in communication rather than passing the holistic descriptor scale set by ICAO.

Like other English for specific purposes, aviation language training should equip learners to use the targeted language efficiently and perform the task successfully. Language learning for a specific purpose starts with needs analysis, which will be the foundation of training (Dudley-Evans & Jones, 2013). According to Hutchison and Waters (1992), when it comes to a specific language, the developer needs to understand the 'target needs' divided into necessities, lacks, and wants.

Often, the lacks and necessities overlap; however, there are some cases where all three are not the same. Hutchinson and Water believed that the learning approach for ESP is categorised into three main course designs, language-centred, skill-centred, and learning-centred. Aviation language should adapt to these approaches to improve communication competence amongst pilots and air traffic controllers. It is important to note that for aviation communication, 'target needs' for each country or discourse community are never similar, even within the same specific language used.

Matthew (2017) postulates that one of the critical solutions in improving aviation communication safety is advanced and copious research in language training and development, including experts in aviation operational and human factors and linguists to help address the gaps in aviation communication safety.

4. STUDY AND RESULTS

4.1. Radiotelephony challenges in aviation communication

The study explores current challenges in radiotelephony and what respondents describe as a challenge for them. Overall, 62.7 % (n=69) reported that they do not feel radiotelephony has been a challenge for the past five years, while 37.3% (n-37.3) agree that there are challenges in aviation communication.

Table 3 and Table 4 report the response from the air traffic controllers and pilots according to the ELPT level, respectively. A total of 62.5% (n=20) of air traffic controllers responded that they do not feel any additional challenge in radiotelephony. In comparison, 37.5 % (n=12) responded otherwise. Amongst this result, 90% (n=18) responded 'No' from Level 4 ELPT (see Table 3). Table 4 shows that most pilots achieved levels 5 and 6 (95.6%); only three respondents were at level 4 ELPT. A total of 72.1% (n=49) of pilots' respondents believe there is no additional challenge in radiotelephony.

Table 3
Air traffic controller

ELPT	LEVEL 4	LEVEL 5	LEVEL 6	TOTAL
Yes	7	2	3	12 (37.5%)
No	18	1	1	20 (62.5%)
Total	25	3	4	32 (100%)

Table 4

Pilot

ELPT	LEVEL 4	LEVEL 5	LEVEL 6	TOTAL
Yes	2	9	8	19 (27.9%)
No	1	16	32	49 (72.1%)
Total	3	25	40	68 (100%)

In the comment section, respondents provide various feedback on current radiotelephony conditions. The responses were divided into themes. Although the respondents feel confident with their competency, they feel specific issues should be addressed.

4.1.1. The use of standard phraseology

Respondents suggest using standard phraseology at all times to avoid ambiguity in instructions or requests. The use of non-standard phraseology can differ from the actual meaning, and they find the proficiency of English within the NNS usually inadequate. Excerpts from some of respondents' responses are listed below.

Respondent 11: *RT communication in standard phraseology is easy to understand and avoid miscommunication.*

Respondent 30: *Use standard phraseology.*

Respondent 53: *Following a standard RTF is a real challenge.*

Respondent 61: *The fundamentals of RT communication are crucial. Recently I notice there has been an increase in non-standard and wrong RT phrases being used. Foreign English slang may be a little hard to understand, but that has nothing to do with fundamentals.*

4.1.2. Proficiency in fundamental English language

Another issue reported by respondents is the proficiency in fundamental English by pilots and air traffic controllers on duty. Respondents suggest that clearance and readback become intangible during bad weather conditions or other unprecedented situations due to poor construction of plain English and standard phraseology sentences. This condition similarly occurs during high-density traffic movements that require a spontaneous response by pilots or air traffic controllers due to traffic congestion. Excerpts from some of respondents' responses are listed below.

Respondent 10: *Once you work in the international airport, they are all kinds of countries inbound/outbound, and some are not fluent in English too.*

Respondent 23: *RT in Malaysia becomes a challenge, especially during bad en-route weather conditions. Too many pilots making weather deviation requests at once.*

Respondent 30: *Due to the increasing amount of air traffic.*

Respondent 61: *It's been the same, just the volume of traffic/flight has increased which causes radio congestion over the air.*

Respondent 95: *Language competency should improve from time to time, especially when considerably used in the working field with precise language attributes and appreciation.*

4.1.3. Diverse language and cultural background

For the past five years, the aviation industry has grown tremendously. The number of flights has increased worldwide. As a result, more NNS pilots participate in aviation communication. This condition creates intercultural communication settings requiring additional skills for pilots and air traffic controllers to facilitate successful interactions. Respondents reported that the different pronunciations and accents contribute to miscommunication in radiotelephony. Despite standard phraseology and aviation abbreviations used in radiotelephony, pilots and air traffic controllers face difficulties due to different backgrounds and cultures. Excerpts from some of respondents' responses are listed below.

Respondent 51: *Of course, especially international flights is a challenge with the different accent and culture I would say.*

Respondent 64: *Language barrier especially and different pronunciation.*

Respondent 66: *Local dialect and accent.*

Respondent 74: *There are some words that have almost the same pronunciation together with some countries having a deep accent.*

Respondent 81: *Level of accent and foreign pilot slang.*

Aviation communication challenges and language training development: Perspectives from pilots and air traffic controllers

by Haryani Hamzah, Pramela Krish and Afendi Hamat

'Although more than half of respondents agree with this notion, they were aware the ELPT could be improved to simulate close to real-life radiotelephony. Respondents assert that the test should be conducted by experts who understand local procedures and linguists with aviation backgrounds'

Respondent 86: *Different culture and accent from a different country.*

Respondent 83: *Management like to change small stuff that makes no difference and sweat too much on it. And other countries English is sometimes way too hard to understand.*

Respondent 109: *Message precision, annunciation, pronunciation, and grammatical understanding have to improve.*

Apart from the issues mentioned above, there are other reports regarding the level of ELPT, which respondents believe varies in standard within the NNS countries.

4.2. ELPT Relevance to real-life radiotelephony

Since 2008 ICAO mandated that every NNS pilots and air traffic controllers sit for ELPT as part of the pre-requisite for licensing (Annex 1, Annex 10). Table 5 shows that 62.7% (n=69) respondents agree that the current ELPT is suitable or represents skills required for real-life communication, while 37.3% (n=41) respondents disagree.

Although more than half of respondents agree with this notion, they were aware the ELPT could be improved to simulate close to real-life radiotelephony. Respondents assert that the test should be conducted by experts who understand local procedures and linguists with aviation backgrounds. In addition, the test should focus on aviation subjects and standard phraseology.

Respondents believe that anyone can sit for the ELPT and pass without having any aviation background since the test solely evaluates general English language proficiencies. Excerpts from some of respondents' responses are listed below.

Respondent 1: *In my opinion, the ELPT tester should at least know some local procedures of the airport that the candidate comes from. Sometimes, the question is really hard to answer & not relevant because as we know every airport has its procedure.*

Respondent 4: *Should be conducted by Professionals and, not by ATC.*

Respondent 18: *Not that I remember since my last test in the year 2010, but the test had very little to do with aviation radiotelephony.*

Respondent 25: *It is good, but sometimes the ELPT questions expect a higher level than the required skill.*

Respondent 28: *Only graded a person on their English communication.*

Respondent 49: *With the standard RT in flying that we are used to communicating with, I would say it is not suitable.*

Respondent 53: *Provide the basics of what to expect in a real environment.*

Respondent 59: *Current ELPT emphasises the usage of the English language as a whole. Non-Pilot/ATC could take the test and pass as long as he/she is good in English. ELPT should have more inclination towards real-life tasks as Pilot/ATC.*

Respondent 63: *Need to be relevant with aviation.*

Respondent 84: *For standard day to day use I believe it's sufficient. But when it comes to abnormals, some people do have difficulty.*

Respondent 87: *ELPT and the real world is set in a very different environment and scenario. I have heard at times when there's a communication misunderstanding, e.g., similar sounding words, the Malay language was used. However, the message was delivered successfully.*

Table 5
Responses regarding ELPT suitability for aviation language testing

RESPONSES	FREQUENCY	PERCENT
Yes (suitable)	69	62.7%
No (not suitable)	41	37.3%
Total	110	100%

4.3. Implementing aviation language training

Even though their perspectives in ELPT are relatively positive, most respondents agree that it is imperative to have language training in aviation communication to improve aviation safety. A total of 91% (n=101) respondents agree that aviation language training should be implemented, while only 8.2% (n=9) responded otherwise (Figure 1). This result implies that the current language competency amongst pilots and air traffic controllers is still below operational standard. However, respondents believe that comprehension and efficiency are within the acceptable range.
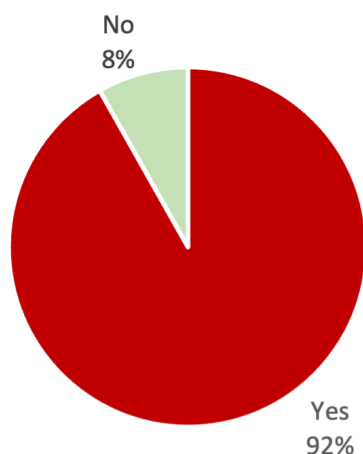

Figure 1. Respondents' feedback on implementing aviation language training to improve communication safety

Respondents implied some reasoning in implementing aviation language training, particularly in Malaysia. In the comment section, respondents feel that aviation language competency amongst pilots and air traffic controllers, especially for NNS, can be improved with a suitable syllabus and trainers. Furthermore, respondents believe language training might be the solution for aviation communication to be standardised through a systematic module implemented worldwide.

4.3.1. Language skills and communication skills

Respondents feel that with higher competency, the communication skills amongst pilots and air traffic controllers will improve exponentially. Many respondents believe that lack of vocabulary, mispronouncing words, and inappropriate slang in radiotelephony create unnecessary miscommunications in radiotelephony. Excerpts from some of respondents' responses are listed below.

Respondent 7: *Need to learn how to explain the situation in short and precise.*

Respondent 11: *Improve on pronunciation to have better communication.*

Respondent 16: *Sometimes our request is misunderstood as I mentioned above. The accent makes it hard to get across your true intention.*

Respondent 33: *To improve communication skills.*

Respondent 39: *To set base standard from basic.*

Respondent 80: *For better pronunciation and rely upon message clearly.*

4.3.2. Language training facilitate a standard language in aviation communication

Apart from improving current competency amongst pilot and air traffic controllers, respondents believed that the standard English use in aviation communication could be standardised, similar to standard phraseology with aviation language training. Practising language use during emergencies and unprecedented situations such as bad weather conditions and equipment failure could immensely benefit pilots and air traffic controllers, particularly for ab-initio and less experienced aviation personnel. Furthermore, language training could prepare pilots and air traffic controllers beyond routine aviation communications. Excerpts from some of respondents' responses are listed below.

Respondent 44: *Standardised.*

Respondent 46: *Should emphasise more on words during abnormalities, such as during an emergency, or whenever pilots or ATC requires quick attention and response.*

Respondent 49: *To ensure a common language and that can be used by all pilots and ATCs. It can avoid incidents and accidents from occurring.*

Aviation communication challenges and language training development: Perspectives from pilots and air traffic controllers

by Haryani Hamzah, Pramela Krish and Afendi Hamat

Respondent 53: *To standardise phraseology and etiquette of radio comms.*

Respondent 60: *Special class or manuals for pilots and ATCs. We know standard RT manual is available to us but not everyone is updated and willing to find out what's the correct RT communication.*

Respondent 62: *It is required since the term and way of pronouncing certain words is different from the layman. And the way a sentence is developed is also different. In the flying pilot and ATC need to follow standards phraseology which is adapted around the world.*

Respondent 63: *Yes, but I think it will be more on standardisation of RT to ATC and also among pilots.*

Respondent 68: *More of standardisation of RT practices. What is good, what is bad. As well as local aerodrome RT requirements.*

Respondent 72: *Aviation language must be taught and tested to ensure the highest level of safety is achieved. Miscommunication could lead to incidents or even accidents.*

Respondent 87: *Training will be good and not just testing. Having expiry dates for ELP doesn't make much sense. Does this mean, if one would get a Level 5 and require a retest a few years later and ends up in getting level 4, would this be an indication that his/her ELP has deteriorated? If yes, then it could happen to a level 6 too.*

Respondent 89: *A simple short course on communication safety will be a great help.*

Respondent 96: *Training must be something of an additional value or beyond the norms, e.g., psychological English where one must tackle language differently during work. A regular school-like English classroom should be deemed redundant as basic English is already a prerequisite for these professionals upon stepping into their respective career.*

Respondent 101: *So, the phraseology and the term used can be standardised.*

4.3.3. Inadequate aviation language trainer and tester

Since 2008, the role of trainers and testers for aviation language consists of either subject matter experts (frequently air traffic controllers or pilots with higher English competency) or academicians from institutions or universities. Respondents feel that both qualities do not qualify them as professional testers or trainers; they believe professionals should conduct testing and training with suitable qualifications and aviation experience.

Excerpts from some of respondents' responses are listed below.

Respondent 17: *Need to 3rd party if ever to be implemented.*

Respondent 56: *Bias, inconsistent and by non-aviator.*

Respondent 96: *ELPT test has unfortunately overlooked quite a few aspects of simple yet effective English. As it is aviation-centric, it may poorly rate an already proficient language user in a less favourable surrounding, or it can overrate an average language user with a collective work dialogue or script gained over the years.*

Respondent 110: *Aviation Language tutors, lecturers, or instructors must be qualified as well to conduct aviation language training. Courses should also be audited more often to constantly improve quality training for ATC's and pilots.*

4.4. Type of language training in aviation communication

Currently, most aviation language training focuses on passing ELPT rather than training on language proficiency to ensure aviation safety. When asked if any organisation or academy offers aviation language training that focuses on operational safety, a total of 85.5% (n=94) of the respondents responded: 'No', and only 14.5% (n=16) responded, 'Yes' (Figure 2).

This feedback implies that aviation language training for operational safety is still scarce; either the course is inaccessible or economically challenging.

The type of language learning plays a major role in aviation communication since the demand for learner's competency is highly critical. The respondents were given three choices. They can choose more than one answer for the type of language learning they feel is suitable or appropriate for aviation language: face-to-face learning, blended learning, and content integrated language learning. The total of 37.3% (n=79) responded for face-to-face learning, followed by 33.0% (n=70) responded for content integrated language learning and 29.0% (n=63) responded for blended learning. While per cent of cases are 71.8% for face-to-face learning, 63.6% for content integrated language learning and 57.3% for blended learning (Table 6).

This result indicated that face to face learning is still favourable for aviation language, and respondents were inclined to choose content integrated learning since they needed the syllabus to be more aviation subject related.
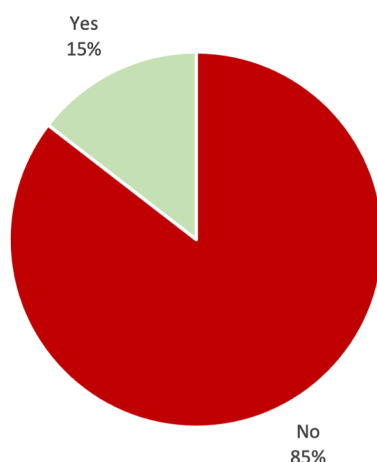
Figure 2. Respondents' input on organisation or academy that offers aviation language training that focuses on operational safety rather than testing

Table 6

Type of language learning responses

TYPE	TOTAL RESPONSES	PERCENT	PERCENT OF CASES
Face to face Learning	79	37.3%	71.8%
Content Integrated Language Learning	70	33.0%	63.6%
Blended Learning	63	29.0%	57.3%
Total	212	100.0%	192.7%

*Dichotomy group tabulated at value 1

4.5. Aviation language development and training in Malaysia

Since the survey was set to explore current aviation language development and training, respondents were asked to give their perceptions and opinions on the aviation language future in Malaysia (this section is not compulsory for respondents to answer). The question yielded 82 responses, and the responses were divided into two major themes.

4.5.1. Aviation language training

The majority of the respondents agreed that aviation language training should be the primary focus for authorities and organisations to improve aviation communication safety. Respondents believe that with suitable training facilities, qualified and experienced trainers and specific training modules, aviation language within non-native speakers' settings can be improved tremendously. Respondents added that aviation English should be a fundamental requirement and prerequisite for ab-initio pilots and air traffic controllers. Furthermore, respondents suggested that collaboration training between pilots and air traffic controllers could be a catalyst in standardising aviation English used within Malaysian airspace. The respondents insisted that aviation language training should include radio communication during emergencies and unprecedented situations, consistent with past research (Park, 2018; Vieira et al., 2018; Trippe, 2019; Mekkaoui & Mouhadjer, 2019). Excerpts from some of respondents' responses are listed below.

Respondent 1: *More courses for both ATC and pilots.*

Respondent 3: *I believe, by having proper training, it will help the English proficiency of ATC and pilot in Malaysia.*

Respondent 11: *Need more classes to improve our English.*

Aviation communication challenges and language training development: Perspectives from pilots and air traffic controllers

by Haryani Hamzah, Pramela Krish and Afendi Hamat

Respondent 21: *Computer-based training for updated requirements and regulations.*

Respondent 25: *Attend English course/training/refresher frequently.*

Respondent 27: *Impose training requirements and set appropriate tests suitable to the degree required.*

Respondent 30: *Communication skill training is required at least once a year.*

Respondent 32: *Provide training about words or terms that are used during handling emergencies and focus on that topic only.*

Respondent 48: *Collaboration in training between ATC controllers and pilots so that the root cause of the error can be shared and learned by both parties.*

Respondent 61: *Enhanced learning during early stages of training.*

Respondent 73: *Ensure classroom training by Qualified ATC Controllers & Pilots. The classroom must consist of pilots and ATC controllers to promote dialogue and a better understanding of each other's work environment.*

Respondent 74: *A proper class or training is required, at the moment only English tests that are focusing on and there is no official or proper lesson.*

Respondent 94: *Classes based on the hour before attending the ELPT.*

Respondent 100: *Provide aviation English classes that emphasise standard phraseology and terminology used in aviation.*

4.5.2. Adhere to standard phraseology and radio communication etiquette

Past research (Tajima, 2004; Prinzo et al., 2010) highlights that standard phraseology in aviation communication is imperative to ensure comprehension amongst pilots and air traffic controllers can be established successfully. Respondents frequently asserted that pilots and air traffic controllers deviated from standard phraseology unnecessarily and replaced them with poorly constructed instructions or requests. As a result, communication will naturally become incoherent and inefficient. Respondents believe that courses or training in standard phraseology should be implemented diligently and periodically to maintain efficiency and safety. Excerpts from some of respondents' responses are listed below.

Respondent 16: *Use standard phraseology and sometimes other request requires non-standard phraseology, maybe that's where the English understanding is important.*

Respondent 19: *As long we follow the standard phraseology of RT, everything will be safe.*

Respondent 20: *Pilots and ATC should learn each other's standard/non-standard phraseology. Pilots should learn more RT etiquette.*

Respondent 23: *Pilots and ATC should learn each other's standard/non-standard phraseology. Pilots should learn more RT etiquette.*

Respondent 37: *Introduce standard exam every 6 months.*

Respondent 47: *Make sure pilots and ATC are tested on the clarity and the use of standardised terms in controller-pilot communication.*

Respondent 51: *Standardisation with both ATC Malaysia and to all Malaysian company airlines. And standardise also to the international standard such as ICAO and all the international aviation board as it will reflect us as Malaysian to a higher standard.*

Respondent 62: *Follow strictly on the standard phraseology. And listen out.*

Respondent 72: *Emphasise more on standards worldwide of pronouncing and minimise the need to talk unnecessarily over the air. Just because u speak fluently in English Does not mean you are level 6 proficient in aviation.*

The findings show that pilots and air traffic controllers should use standard phraseology and limit the use of non-standard phraseology or plain English to avoid communication errors. Code-switching between standard phraseology and plain English should be done appropriately and without distorting messages and creating ambiguity. The findings also show that standard English should be considered to be used in radiotelephony to improve comprehension among pilots and air traffic controllers. Furthermore, the study believes radio etiquette should be emphasised in communication to reduce the non-standard phraseology practice in radiotelephony. The concept of cooperative principles could benefit aviation communications by following maxi principles in interactions.

5. DISCUSSION

Although years have passed since ICAO implemented ELPT for non-native speakers' pilots and air traffic controllers, the problems in aviation communication remained the same. The lack of aviation language training, non-standard phraseology, and unqualified trainers and testers is still a constant issue within non-native countries. English language proficiency amongst pilots and air traffic controllers fluctuates from one country to

another. The main aim of this study was to investigate the perspective of pilots and air traffic controllers who currently operate within the Malaysia airspace on the development and training of aviation language. This will help propose efficient aviation language training modules to improve communication safety.

The majority of participants, regardless of pilots or air traffic controllers, agree that aviation language training is essential and implemented in aviation training. The lack of suitable materials and courses representing actual communication in aviation is a recurrent problem for NNS countries (Park, 2018; Vieira et al., 2018; Trippe, 2019; Mekkaoui & Mouhadjer, 2019). This study's overall result supports that NNS still face difficulty in mastering fundamental aviation language, especially during abnormal situations. Although, respondents did not appear to have significant challenges in understanding each other's instructions or requests. However, the practice of non-standard phraseology is still a critical issue. Most pilots and air traffic controllers suggest that a course or training in communication

standards should be implemented and checked periodically. Furthermore, the study indicates that aviation language training is crucial for communication. Despite ICAO implementing ELPT in 2008, NNS pilots and air traffic controllers still suffer from the lack of available training and courses to improve language competency. The difficulties in finding qualified testers and trainers and relatable materials and modules further complicate the progress. Nevertheless, this circumstance cannot be held solely on the organisation, authorities, and institutions involved.

The present study does shed some light on aviation communication challenges and training development; further details or in-depth studies regarding communication problems could be explored in the future. The outcome of this study could guide researchers and linguists to construct frameworks that are more relatable to pilot-controller communications that are realistically effective for non-native speakers. Figure 3 illustrates a workable aviation language training model for non-native speakers.
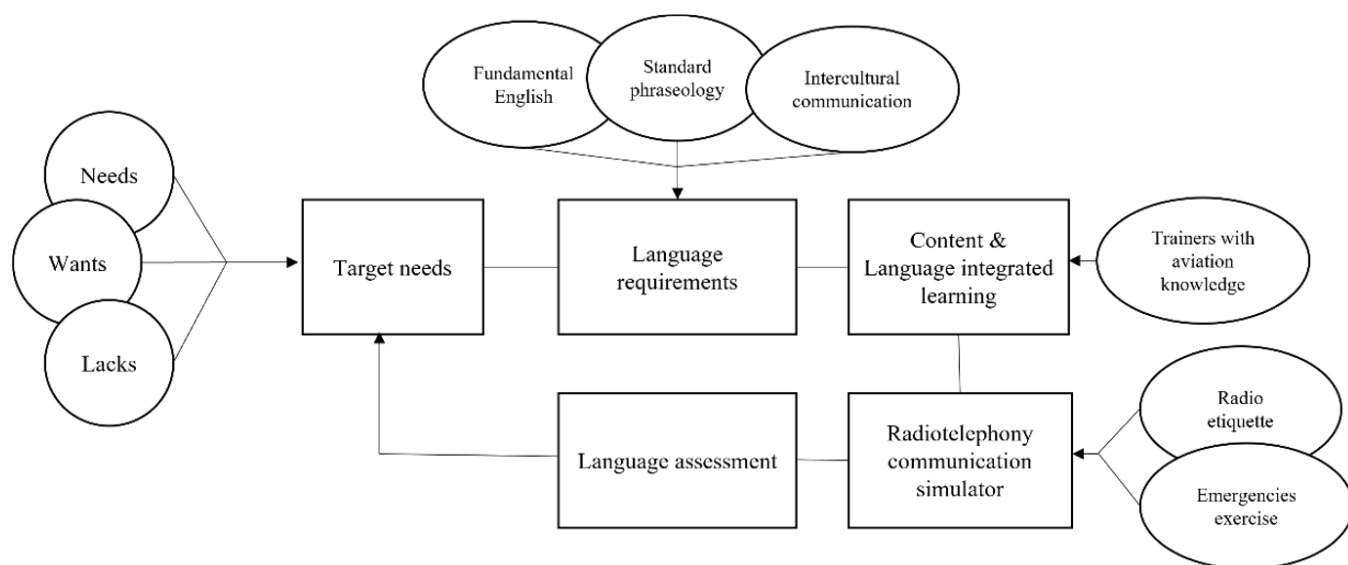

Figure 3. Aviation communication training model

Aviation language training begins by understanding the target needs of the learners, consisting of needs, wants and lacks. Language requirements for aviation communication are naturally different from one another. However, the essential needs for aviation communication can be narrowed down into three areas: fundamental English, standard phraseology and intercultural communication knowledge and skills. Once learners are equipped with essential requirements, they can proceed with aviation content-specific learning

conducted by trainers with aviation knowledge and experience. Simulator training can only be conducted when learners have the competency for aviation language and sufficient aviation knowledge. Radio etiquette and emergencies exercise shall be implemented in simulation training to improve learners' radiotelephony skills. Language assessment is essential to ensure learners' competency, and standard phraseology is used at all times unless plain English is deemed necessary. In the event of unsatisfactory performance by learners, the

Aviation communication challenges and language training development: Perspectives from pilots and air traffic controllers

by Haryani Hamzah, Pramela Krish and Afendi Hamat

trainer can refine the target needs to suit the learners' specific target needs. In summary, the study suggests that the development and aviation language training can be achieved through diligent monitoring and evaluation of current needs (need analysis) amongst pilots and air traffic controllers, primarily focusing on their specific needs. Laborda (2011) also believed that language and content knowledge desired by learners to be integrated with language learning for professional development.

Furthermore, Borowska (2017) and Estival (2019) agree that language awareness among native speakers and NNS pilots and controllers is crucial and be implemented in aviation training. Other than the issues mentioned above, other factors such as the variety of Englishes, cultural differences, and task difficulty play essential roles in aviation communication (Douglas, 2014).

6. CONCLUSION

The results of this study support the notion that aviation language training and development are still critical in non-native speakers' settings. Most pilots and air

traffic controllers possess high comprehension in interactions due to shared context and past experiences. However, threats in aviation communication frequently occur during unexpected situations, especially during an emergency procedure and harsh weather conditions. The findings suggest that general or academic English does not fit aviation communication needs. Pilots and air traffic controllers should be trained as closely to real-life communication as possible to prepare them for communication demands. Actual needs should be the main consideration for aviation language training to be more suitable and effective.

Future research should also include native-speaker pilots and air traffic controllers, and the result could be compared and analysed for better aviation language training and development.

Furthermore, amidst the pandemic, most aviation language training, including simulation training, entirely shifted to online learning, which becomes conveniently accessible for learners to participate and interact globally. This shift marks a new paradigm in aviation language learning and should be explored and improved rigorously.

References

Alderson, J. C. (2009). Air safety, language assessment policy, and policy implementation: The case of aviation English. *Annual Review of Applied Linguistics, 29,* 168-187. https://dx.doi.org/10.1017/S0267190509090138

Alderson, J. C. (2010). A survey of aviation English tests. *Language Testing*, 27(1), 51-72. https://doi.org/10.1177/0265532209347196

Borowska, A. P. (2017). *Avialinguistics: The study of language for aviation purpose.* Peter Lang.

Bullock, N. (2019). Validating new perspectives and methodologies for learning and teacher training in English for aeronautical communications. In S. Papadima-Sophocleous, E. K. Constantinou, & C. N. Giannikas (Eds.), *ESP teaching and teacher education: Current theories and practices* (pp. 79-93). Research Publishing. https://dx.doi.org/10.14705/rpnet.2019.33.927

Cookson, S. (2009). Zagreb and Tenerife: Airline accidents involving linguistic factors. *Australian Review of Applied Linguistics,* 32(3), 221-224. https://doi.org/10.2104/aral0922

Douglas, D. (2000). *Assessing languages for specific purposes.* Cambridge University Press.

Douglas, D. (2004). English language testing in the context of Aviation English. *ICAO Journal, 59*(3), 17-18.

Douglas, D. (2014). Nobody seems to speak English here today: Enhancing assessment and training in aviation English. *Iranian Journal of Language Teaching Research,* 2(2), 1-12.

Dudley-Evans, T., & Johnes, M. J. (2013). *Developments in English for specific purposes: A multidisciplinary approach.* CUP.

Emery, H. J. (2014). Developments in LSP testing 30 years on? The case of aviation English. *Language Assessment Quarterly, 11*(2), 198-215. https://dx.doi.org/10.1080/15434303.2014.894516

Estival, D. (2019). *Aviation English training for native English speakers: Challenges and suggestions.* In *ICAEA Conference Proceedings* (pp. 23-44). International Civil Aviation English Association Publishing Office.

Fan, J., & Jin, Y. (2013). A survey of English language testing practice in China: The case of six examination boards. *Language Testing in Asia, 3*(1), 1-16. https://doi.org/10.1186/2229-0443-3-7

Grigoryeva, L. L., & Zakirova, R. R. (2022). The role of English in intercultural communication: Past, modernity and future global perspectives. *Training, Language and Culture, 6*(2), 45-55. https://dx.doi.org/10.22363/2521-442X-2022-6-2-45-55

Hamzah, H., & Fei, W. F. (2018). Miscommunication in pilot controller interaction. *3L: The Southeast Asian Journal of English Language Studies, 24*(4), 199-213.

Hazrati, A. (2015). Intercultural communication and discourse analysis: The case of aviation English. *Procedia – Social and Behavioral Sciences, 192,* 244-251. https://doi.org/10.1016/j.sbspro.2015.06.035

Houghton, S. (2009). The role of intercultural communicative competence in the development of world Englishes and lingua francas. *3L: The Southeast Asian Journal of English Language Studies, 15,* 69-95.

Hutchinson, T., & Waters, A. (1992). *English for specific purposes: A learning-centred approach.* Cambridge University Press.

ICAO. (2010). *Manual on the implementation of ICAO language proficiency requirements* (2nd ed.). International Civil Aviation Organization.

Kim, H. (2013). Exploring the construct of radiotelephony communication: A critique of the ICAO English testing policy from the perspective of Korean aviation experts. *Papers in Language Testing and Assessment, 2*(2), 103-110.

Kim, H. (2018). What constitutes professional communication in aviation: Is language proficiency enough for testing purposes? *Language Testing, 35*(3), 403-426.

Kovtun, O., Gudmanian, A., & Mikhaylov, A. (2014, September 23-25). Requirements to pilots and air traffic controllers' proficiency in aeronautical communication. In *Proceedings of the 6th World Congress Aviation in the 21st Century: Safety in Aviation and Space Technologies* (pp. 91-94). AeroLingva.

Laborda, J. G. (2011). Revisiting materials for teaching languages for specific purposes. *3L: The Southeast Asian Journal of English Language Studies, 17*(1), 102-112.

Mekkaoui, G., & Mouhadjer, N. (2019). Addressing air traffic controllers' English language proficiency needs: Case of Zenata airport. *Global Journal of Foreign Language Teaching*, 9(3), 167-183.

Mitsutomi, M., & O'Brien, K. (2003). The critical components of aviation English. *International Journal of Applied Aviation Studies, 3*(1), 117-129.

Moder, C. L., & Halleck, G. B. (2009). Planes, politics and oral proficiency. *Australian Review of Applied Linguistics, 32*(3), 251-256.

Molesworth, B. R. C., & Estival, D. (2015). Miscommunication in general aviation: The influence of external factors on communication errors. *Safety Science, 73,* 73-79.

Park, P. (2012). An analysis of military ATCs' perceptions on English proficiency test for aviation. *English Teaching, 67*(4), 110-123.

Park, M. (2018). Innovative assessment of aviation English in a virtual world: Windows into cognitive and metacognitive strategies. *ReCALL*, 30(2), 196-213.

Prinzo, O. V., Campbell, A., Hendrix, A. M., & Hendrix, R. (2010). *US airline transport pilot international flight language experiences. Report 4: Non-native English-speaking controllers communicating with native English-speaking pilots.* Federal Aviation Administration.

Tajima, A. (2004). Fatal miscommunication: English in aviation safety. *World Englishes, 23*(3), 451-470.

Trippe, J. (2019). Aviation English listening and repeating task for native English speaker and non-native English speaker pilots. *Psychology*, 5, 235-240.

Vieira, A. M., Santos, I. C., & Morais, P. R. (2014). Poor communication skills mean high risk for aviation safety. *Gestão & Regionalidade, 30*(88), 123-137.

HARYANI HAMZAH
National University of Malaysia, Malaysia yanihamzah@gmail.com

PRAMELA KRISH
National University of Malaysia, Malaysia pramela@ukm.edu.my

AFENDI HAMAT
National University of Malaysia, Malaysia fendi@ukm.edu.my