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Research Paper

Mayday! Mayday! What critical communication skills are needed for young aviators?

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Abstract

Communication is one of the fundamental factors in operating complex and highly regulated industries such as aviation maintenance. Aviation graduates' job performance and career development are highly dependent on their communication skills. However, the transition from student to aviation worker requires individuals to adapt to new communication practices in the workplace. Therefore, this study was conducted to identify the oral and written communication activities that the young aviation personnel in the aviation industry frequently encounters. In addition, this study was also conducted to find out what challenges they face in terms of communication. Nine participants, young aircraft maintenance technicians and License Aircraft Engineers (LAE), were involved in semi-structured interviews. Data were analyzed thematically and managed using ATLAS.ti software. The results show that the English language is critical for the development of professional communication skills among young aircraft maintenance technicians, as they need English language skills for oral and written activities. The identified needs and challenges in communication skills would help aviation institutions develop solutions to meet the aviation industry's needs.

Keywords *Communication skills, Aircraft maintenance, Aviation, English for Specific Purposes, Maintenance, Oral, Written*

INTRODUCTION

Communication is essential for any professional field, including the aviation industry. It is a basic requirement for aviation personnel to deliver information, knowledge, and experience to others. They must communicate regularly with supervisors, colleagues, clients, and team members. To avoid accidents, all aviation personnel need to communicate in English. Communication has been one of the most important aspects of site safety (Yusof & Misnan, 2019). Various alternatives need to be updated to ensure that the safety culture in the construction industry can be socialized through effective communication (Masduki & Zakaria, 2020).

Many studies in the aviation sector have revealed that communication problems within the aircraft maintenance organization are primarily caused by accidents, haste, and misunderstanding of procedures (Hobbs, 1999). According to the International Civil Aviation Organisation (ICAO), the three main causes of aircraft accidents attributed to poor English language skills are the incorrect use of standard phraseologies, lack of knowledge of the simple language, and the use of more than one language in the same airspace, as stated by Shukri et al. (2021). In addition, numerous researchers have highlighted the problem of ineffective communication between maintenance staff, cabin crew, and flight crew and have offered various solutions to this problem (Mattson et al., 2001; Caldwell, 2005).

In an aircraft tragedy caused by a maintenance communication, Atlantic Southeast Airlines Flight 529 crashed during an emergency landing in August 1995 after losing a propeller blade. It killed nine people and injured 20 others. In its report, the National Transportation Safety Board

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cited the manufacturer's inadequate internal communication and documentation systems as a major element that led to confusion and improper processes among maintenance personnel.

Misunderstandings can occur because of the nature of language and how a person interprets it; even an aircraft maintenance engineer can write a report and speak fluent English. Undoubtedly, aircraft maintenance engineers must always avoid linguistic misunderstandings, whether they are writing a field report, speaking, or responding to crucial communication.

Communication skills were recognized by the industry as the most important skill, although most engineering graduates lacked them (Saleh & Murtaza, 2018). This study is in line with the findings of Mustapha et al. (2014), who showed that the biggest shortcoming of engineering graduates was a lack of communication skills.

Thus, the development of communication skills in English should start at the university level. In order to provide aviation personnel with the required profile of a technician or engineer, universities should therefore work closely with the industry to identify their communication requirements and adapt the curriculum accordingly.

This study was carried out to determine the oral and written activities that young aviation professionals regularly experience in the aviation industry and to investigate their communication challenges. It was limited to a group of young aircraft maintenance workers who have between 2 and 9 years of work experience in the industry. The research findings should help educational institutions prepare students for the future and ensure that their students are equipped with the necessary professional skills to start their careers soon. This will be very important and beneficial to the aviation industry as this kind of research is still lacking in Malaysia especially in the field of aircraft maintenance.

LITERATURE REVIEW

English used in the aviation industry is particularly specific to the tasks of each department. One of the divisions of the aviation industry is aircraft maintenance. The English criteria for aircraft maintenance differ from those for pilots, air traffic controllers, and flight attendants based on the task. The basic task of aircraft maintenance is to ensure that an aircraft or aircraft parts remain airworthy. These tasks should serve as a starting point for aviation schools' teaching and learning procedures.

The discrepancy between what students have to offer and what industry demands suggests that there is still a gap between students' skills and the situation in the workplace (Kahirol et al., 2010). The study is consistent with previous studies in that it suggests that the communication skills of engineering graduates are generally poor, despite the fact that engineering departments have worked explicitly to improve the communication skills of their employees (Donnel et al., 2011). Efforts to improve the communication skills of engineering students at university may not be in line with industry expectations (Almeida, 2019).

In Malaysia, graduates who cannot find jobs due to poor English communication skills are considered problematic (Sanmugam & Kadir, 2019). According to Rahmah et al. (2011), referred to by Sanmugam & Kadir (2019), one of the variables contributing to the unemployment problem among Malaysian graduates is the quality of graduates. It could be related to a lack of communication skills and language proficiency.

Moslehifar and Ibrahim (2012) state that effective oral communication skills are more important than written ones. They added that making contact with clients, having conversations, arguing with supervisors or colleagues, and participating in workshops are all types of workplace events requiring a good English command. They also stressed that students' language deficits could make it difficult for them to participate in such activities. However, this study only focused on the perceptions of human resource trainees, not even those in the engineering sector. Furthermore,

this study does not explain the importance of written communication skills, which were considered one of the communication skills in each industry.

Meanwhile, a study by Lenard & Pintaric (2018) found that employers require active listeners, capable first-language speakers, and English language presenters. In addition, the study found that employees are expected to adhere to email etiquette and display excellent grammar and style in both written and oral communication, accompanied by appropriate non-verbal communication methods. Nevertheless, this study used a survey as its research method, consisting of closed questions that may have less validity than open ones. Furthermore, this study did not focus on the perspective of aviation stakeholders, which was highlighted in the problem statement in the previous section.

In the meantime, aviation management trainees' most desired language skills were speaking and writing, reading and listening (Singh et al., 2021). The study mentioned that besides the expertise and relevant skills of the workforce, effective communication skills are also required to ensure that aviation management personnel can manage the business and operations of any aviation organization. However, this study was limited to the perspective of aviation management personnel, not maintenance staff. Most studies have examined workplace communication in various other settings without paying much attention to the field of aircraft maintenance.

For the above reasons, this study was conducted to find out what specific communication activities in oral and written form take place among young aircraft maintenance personnel. In addition, this study also explored the challenges faced by them in terms of communication.

RESEARCH METHOD

This study aims to investigate the critical communication skills required by aviation personnel in Malaysia to meet the communication needs of the aviation industry. To achieve this objective, semi-structured interviews were conducted to gain an understanding from the perspective of industry stakeholders. To fully represent the current phenomenon, this study employs a qualitative approach and few participants (Bloomberg & Volpe, 2008; Creswell, 2012). Purposive sampling of small samples allows the researcher to understand the rich information and detailed descriptions of the participants. Qualitative research in the social sciences aims not to reflect the study population but to provide an in-depth analysis of the phenomenon (Hong & Cross Francis, 2020).

Nine (9) aviation personnel were selected using purposive sampling for this study. They are all currently working in nine different aviation companies in Malaysia that are involved in aircraft or helicopter maintenance, aircraft simulation, and aircraft parts manufacturing. The names of the companies were kept confidential. Most of them were between 23 and 33 years old. Participants were given pseudonyms such as Boi and Mn to protect their identities. A pseudonym is a fictitious identity often used by researchers or authors to protect the confidentiality of participants (Allen & Wiles, 2016). This study involved seven (7) male and two (2) female participants. Most of them have 2 to 9 years of work experience in the aviation industry. Table 1 provides an overview of the technicians and engineers in the aviation industry who were interviewed for this study. It shows the pseudonyms used in this study, age, years of work experience in the industry, and their position in the companies.

Table 1. Participant background information

No	Pseudonym (Male/Female)	Age	Years of (Working)	Position
1	Am (M)	23	3	Technician
2	Suol (F)	23	2	Junior technician

3	Mn(F)	28	5	Technician
4	Boi (M)	33	9	Senior engineer
5	Luk (M)	25	3	Assemble technician
6	Tan (M)	29	8	License aircraft engineer (LAE)
7	Am (M)	30	5	Industry engineer
8	FR (M)	24	2	Simulator technician
9	Fuad (M)	29	9	License aircraft approval

These participants were selected for this study because they have experience in their fields and have completed their studies in aircraft maintenance at an aviation school in Malaysia, accredited by the Malaysian Civil Aviation Authority (CAAM) as a recognized training institution.

As part of the data collection, all participants were interviewed individually. Each interview lasted about 40-60 minutes, and questions were asked about the critical oral and written communication activities they frequently encountered. They were also asked about the challenges they face as aviation personnel in relation to communication. After the interview, it was transcribed verbatim and sent to participants to edit, refine, add, or revise as needed. The data was analyzed using the six-level thematic analysis (Braun & Clarke, 2006) and ATLAS.ti. It was used to support data management and presentation.

FINDINGS AND DISCUSSION

The results of the qualitative research revealed three significant themes that emerged from the transcribed data and were categorized as oral communication, written communication, and communication challenges. Based on the interviews conducted with nine young aviation personnel, ten sub-themes were identified in relation to oral communication activities, four sub-themes in relation to written communication activities, and four sub-themes in relation to challenges in communication, both as individuals and as a team. Figure 1 shows the three themes of aviation industry workplace communication.

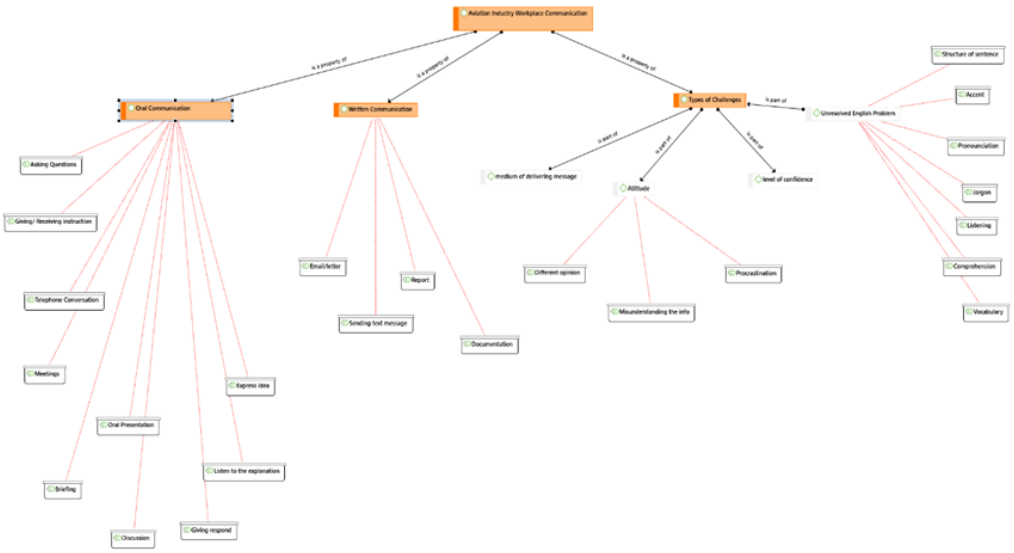

Figure 1 Network view of the aviation industry workplace communication

Theme 1- Oral Communication

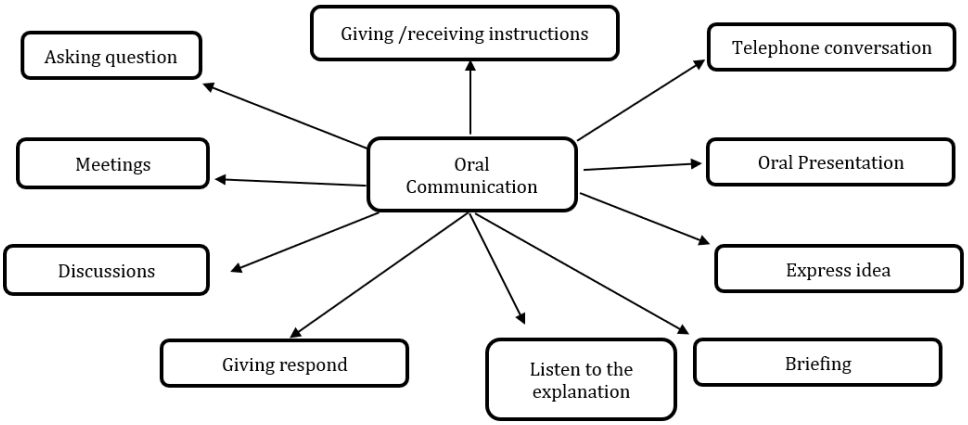

Figure 2. Oral communication activities

Based on Figure 2 above, ten types of oral communication activities are common among young aviation personnel. The details of these oral communication activities are explained below.

All participants agreed that oral communication is crucial for individuals working in the aviation sector, especially in aircraft maintenance, to ensure that all instructions and explanations on work procedures and tasks are fully understood and that misunderstandings can be avoided, which can prevent accidents at work.

Most participants stated that although they work with equipment, machines, and tools, oral communication is still necessary to ensure they will carry out their tasks properly. They stated that the briefing occurs at the beginning of the day before they start working. Usually, the leader conducts the briefing and delivers the important message about their tasks that day. In the briefing session, many oral communication activities are required to ensure that the technicians and engineers understand and are clear about the types of tasks they need to complete. This includes asking questions, giving and receiving instructions, and also discussions.

One participant shared that the technician and the other engineers received general instructions and short explanations during the briefing. They can ask questions if there are any ambiguities or questions before they start their work. A team briefing is a regular face-to-face meeting between team members that provides an opportunity to exchange information sharing, comments, and questions. It is about bringing together all participants engaged in a work activity to reflect on the issues, problems, hazards, behavior, and best course of action (Hase & Davis, 1999).

> *"...Usually, boss or supervisor. Manager, he is Indian, he will give briefing, 10 minutes before we start our works. We listen and after the briefing, he will ask on the floor, any questions or problem, just tell me. So, we ask regarding certain problem or suggest anything."- Am*

In addition, most participants stated that they needed to participate in the discussion by asking clarifying questions. Luk shared that when he encountered difficulties in completing certain tasks, he discussed with his team member or leader to solve the problem. He believed that discussions about certain problems made his work faster and more efficient. They are allowed to understand others' perspectives and work authentically with people by asking questions. To build their general skills, employees must be willing to ask questions and actively participate in team

conversations (Zakaria et al., 2018).

> *".. When clarification about the task that you want to do, discussion with your partner, or teams and with the engineer from Quality department to solve certain problem."- Luk*

Moreover, aircraft maintenance personnel also communicated orally during internal and external meetings. One of the participants works as a senior engineer, and his job is to get approval for the aircraft to be operated by the company and the production organization. Boi mentioned in the interview that he is responsible for contacting other potential cooperating companies and authorities to apply for product certification and liaise with the companies. He added that oral communication in the meeting was the primary channel he used in his position. Usually, the meeting was held when he had to make a proposal or seek approval. A meeting may only be necessary if the matter(s) takes up at least an hour of your time; anything less can usually be resolved by other means (Butchibabu et al., 2016).

> *"..In the aspects of product certification, obviously, I am the one who need to speak with CAAM, authority , and also with aircraft principal in the aspect of talk about workwise, collaboration wise, in VC setting, call, f2f or email also. That is the communication channel that needed to be used in my position."- Boi*

Furthermore, some oral communication activities are carried out in the meeting, such as oral presentations, expressing ideas, and listening to the explanation of other committee and meeting members. Am, who works as an industrial engineer and is responsible for the continuous improvement of certain processes or equipment, shared his experience with an oral presentation in a meeting held by his company's head office. He had to speak full English as many branches from different countries attended the meeting. This shows that English language use is essential in the industry, as not only local companies but also international companies worldwide are involved. Engineering students who are fluent in English could advance in their profession and compete in the industry (Chan, 2019; Saleh & Murtaza, 2018; Zahari et al., 2016).

> *"The first one, was about the improvement, cockpit area, the floor that we step on. So, we made a plan. Because that is the new product. So, we did not meet with our target hours. So, how we plan. What types of improvement that we did to get the hours as fast as we can. Maybe, by set 100, we can get what we want."- Am*

Meanwhile, maintenance technicians or engineers who normally work in the hangar or on the site must be prepared to respond to the questions of others, especially supervisors, customers, and staff from other departments. One of the participants shared her experience of communicating with her supervisor regarding her task. In order to answer the supervisor's question about the task done, it is very important to have a high level of self-confidence in the task done and to explain it clearly. People with high self-confidence are needed because they can attract and convince others of their points of view or arguments (Alih et al., 2018).

> *"If someone asks me, I have to answer and explain it to him or her. Morning briefing, listen to this. Start the day, read the scope of work, SV ask me what I have understood or a team member discusses with me, then I explain, I do the task, then the SV sit next to me and observe what I have done."- Suol*

In summary, this study found ten types of oral communication activities that young aviation personnel frequently encounter. Even when dealing with practical tasks, they have to rely on oral communication to ensure that tasks are completed successfully and without incident.

Theme 2 - Written Communication

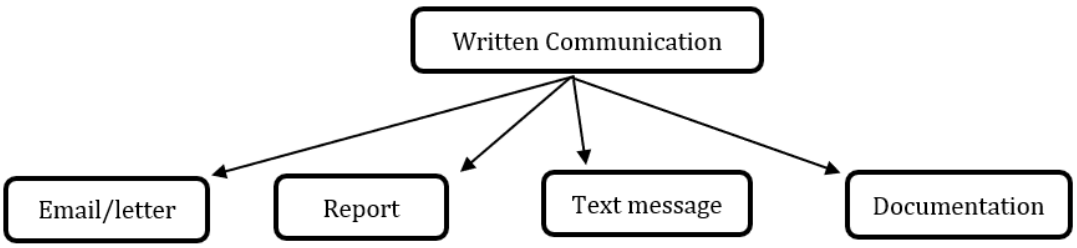

Figure 3. Written communication activities

Figure 3 depicts four written communication activities that young aviation personnel commonly engage in email, report, text message, and documentation. These written communication activities are described in detail below.

As a very concrete form of documentary evidence, written communication is also one of the communication skills used by people to convey information. Since information does not change from person to person, the accuracy of the information transmitted remains the same for all recipients.

Writing activities in aviation schools do not conform to the form expected by the aviation industry, and students are not successfully trained to write reports or other work relevant to their assignments (Vieira & dos Santos, 2010). According to Ruiz (2004), writing assignments in aviation schools should realistically reflect the type of communication these professionals may experience during their careers.

All participants agreed that written documents were important in their position as they mostly referred to documentation before starting a work process, such as the aircraft maintenance manual, work scope and technical log, service bulletin, production order, task card, and many others. One of the participants mentioned that he started his day by reading the manual before work to ensure he followed the correct steps and procedures. The best known is the Aircraft Maintenance Manual, abbreviated AMM. It is written in an imperative form as it contains a set of maintenance rules for tasks such as inspection, cleaning, repair, and replacement of damaged or malfunctioning components (Terenzi, 2021).

> *"…Before we do the task, we have to print out the manuals, so all the manuals are in English, so we have to read it. We do the tasks in pairs. So, our partner read the manual, then we do the job. Sometimes, we have to communicate among us. One read it, remove this and this. Other one listen and do the job."- Am*

In aviation, they have to read and write many types of documents, from technicians to aircraft engineers to senior engineers in management positions. This includes writing reports to convey information in a structured way. One of the technicians mentioned that after completing a task, she has to fill in details to report a problem, defect, or further action to be taken by the next person. The logbook is one of the official records of all data pertaining to the aircraft, and the

information available in this book is used to determine the condition of the aircraft, the date of inspection, and so on (Terenzi, 2021).

> *"…Report, testing sheet, SAP system. In testing sheet, I have to write the problem, and then, all the information in the testing sheet, then I have to transfer it into SAP system. What to type, what to write."- Mn*

In addition, sending and receiving emails is also used as a written communication activity among aircraft maintenance personnel. Emails and letters are a written record of communication where important emails can be stored. This can be helpful when we need to refer to what someone said in a previous message and provide some evidence. Boi explained that he usually uses an email to deliver the message or submit important attachments to the authority CAAM for the product certification application. According to Chan (2019), emails, minutes, and reports are common written communications in the workplace that must be conducted in English, even for non-native speakers, as this is the international language. As reported by Terenzi (2021), this is consistent with Yusuf et al.'s (2018) assertion that English writing skills are crucial in today's global workplace, especially when writing memos, emails, notices, minutes and agendas, contract papers, reports (technical, daily, problem reports) and contracts.

> *"…So, to follow the CAAM regulation, and those approvals, one of the documents that needed to submit is letter of intention. So, I need to write those letters of intention. Sometimes, I have to write email, as softcopy. Sometimes the test result, we send the article to test lab to come out with the report, and we have to compile all those of reports in documents and submit all of them to CAAM for their approval."- Boi*

Finally, most participants agreed that they often send text messages like WhatsApp to get their messages across faster and that it is easy to use. Mn, one of the participants, said that she and her team usually use WhatsApp to convey a short message about something that needs to be done in the short time available at their workplace. Social media functions are not only traditionally intended for social networking but are also frequently used for business and professional purposes (Kasim et al., 2022). Therefore, many of the available social media platforms are used by businesses for official purposes, including Facebook, WeChat, DingTalk, WhatsApp, Twitter, blogs, YouTube, and photo-sharing sites (Pavithra & Deepak, 2021; Song et al., 2019). Workplace social media use is considered a form of computer-based communication used by workers for work-related purposes (Song et al., 2019; Braojos et al., 2019), personal use (Brooks et al., 2017; Andreassen et al., 2014) or both (Jafar et al., 2019; Benitez et al., 2018).

> *"… And sometimes, we use WhatsApp, but not always. Just to inform this week, there will be audit, this week, we have visitors."- Mn*

In summary, even though the subthemes of written communication are fewer compared to oral communication, it is still very important to use them as black-and-white documents, as it is easy for aviation personnel to understand what is right and wrong.

Theme 3- Challenges of communication skills

Figure 4 depicts three communication challenges that young aviation personnel often face: misunderstanding the information, confidence level, and unresolved English problem. The

challenges are explained in more detail below.

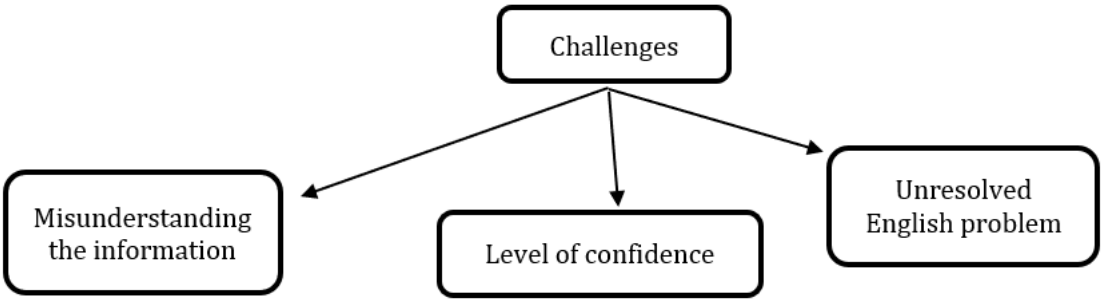

Figure 4. Challenges of communication skills

Although oral and written communication is very important in the industry, aviation personnel still struggle to communicate. When working in a team, listening to instructions is a must. However, it becomes problematic when the instructions are inaccurate or when two different leaders give two different instructions. One of the participants told of a difficult situation where the coach of the team and the leaders gave two different instructions. As we know, accuracy and clarity of information are paramount in instructions, especially in aviation, concerning passenger safety. Aviation personnel must avoid any form of miscommunication, whether written or verbal. They should also avoid misunderstanding the opinions and thoughts of others, as this can lead to delays or danger (Venkatesan & Ravenell, 2011).

> "*..When we refer to two different people with two opinions, how to dissemble certain parts, confusion with two different instructions." – Suol*

In addition, some participants admitted that they were not confident in using English even if they had been working in the industry for three years or more. Mn mentioned in her interview that she could not answer her clients' questions because she was not sure about her command of the English language. Young graduates lack confidence when it comes to doing things they are asked to do, which could result from their poor English skills (Alih et al., 2018).

> *"…They ask and I do not know how to answer. Not confident. But usually, I have my certifying staff next to me, so I depended on him to answer it. I tell him, and he will translate it to the visitors"- Mn*

Finally, the participants also had unresolved English communication problems, such as lack of vocabulary, comprehension difficulties, listening problems, jargon problems, unsure about certain pronunciation, and difficulties in sentence structure when writing. Suol admitted in her interview that she had difficulties pronouncing certain English words and was afraid that her colleague might misunderstand her. It can be said that even though they entered the industry, they still faced the same issue they had in the previous institution. To be successful in the industry, they must master and demonstrate both technical and communication skills in the industry (Wijesinghe & Jayawardene, 2010).

"...Not so good. Because sometimes, I have difficulties in pronouncing the words in English, they sometimes, misunderstanding to what I was saying. They will ask me again, what did you say..." - Suol.

Communicating using English involves a lifelong effort for personal improvement and professional purposes. By its very nature, learning English requires a lifetime of learning, and the process takes longer. In conclusion, there are three sub-themes that young aviation personnel face in terms of communication, as mentioned above. These challenges are interrelated. If they do not have a good command of the English language, they will have little confidence when it comes to conveying a written or oral message. Then it is not surprising when misunderstandings occur because the message is not clear or accurate. In summary, aviation personnel must develop their English language skills to succeed as technicians or engineers because English is the only language recognized in the industry.

CONCLUSIONS

The study has shown that oral and written communication is necessary for aircraft maintenance graduates to succeed in the industry. According to the interview, all participants indicated that oral and written communication are equally significant. This result is in line with Almeida's (2019) findings that engineers in industry spend a lot of time communicating in different forms and need to be proficient in both oral and written communication. This study has helped to identify the oral and written communication activities that young employees in the aviation industry often face. It can help stakeholders, especially teachers and curriculum developers, to improve English courses in the institution in the future by identifying the types of communication skills used in the workplace and the problems they face. They can carefully consider which elements should be retained and which should be improved or outsourced. Language training modules that provide aviation maintenance students with functional skills will help them meet employment criteria.

LIMITATION & FURTHER RESEARCH

In order to develop a comprehensive understanding of the case, this study used a qualitative approach in which semi-structured interviews were conducted. Due to the small number of participants in this study, the generalisability of industry actors' perceptions of communication skills in the workplace was not the expected aim of this study. Furthermore, this study focused only on communication skills in the aviation sector, especially in aircraft maintenance. Future research should examine workplace communication skills with larger numbers of qualitative and quantitative participants. More research is needed to evaluate the effectiveness of university courses emphasizing communication skills from an employer's perspective to meet industry needs.

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