

Teaching English to Aircraft Maintenance Students: Challenges and Needs

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ABSTRACT

Aviation English is a specialized language mainly used in aviation, such as in aircraft maintenance areas. Teaching Aviation English usually faces more challenges compared with teaching general English. It pays more attention to the specific needs of learners and the language in the context. Therefore, this study aimed to discuss the challenges of English teachers in teaching English to aircraft maintenance students. Semi-structured interviews were conducted with the three English teachers from three different aviation schools in Malaysia. The data were analyzed thematically and managed by ATLAS.ti software. Overall, the findings showed that the teachers face challenges in teaching and designing Aviation English materials, activities, and syllabi. It was revealed that there was a shortage of textbooks and materials on Aviation English. Another challenge is related to the student's motivation and language proficiency and teachers' excessive workload. Meanwhile, in terms of needs, they should have support in some aspects like teaching materials sources and Aviation English training. Besides that, there is a need for the teachers to collaborate with people from the industry in order to find out their requirements and revise the English course accordingly. The revealed challenges and needs would help the teachers and learning institutions develop solutions to fulfill the needs of the teachers and aviation students

Keywords: Aviation English, English teachers, Challenges, Needs

Introduction

English for Specific Purposes (ESP) has long existed as a separate discipline of English language teaching. Aviation English is a subset of ESP (English for Specific Purposes). It is a subset of English specifically designed for use by aviation students and those working in the aviation industry. Aviation personnel uses more jargon to maintain smooth flight operations when communicating in spoken and written forms.

Teaching ESP, including aviation English, usually presents greater difficulties than teaching general English. In order to build a combination of professional skills and specific job-related tasks, greater emphasis is placed on the needs of students and the language used in the setting.

ESP is a language teaching method that works directly with the curriculum, methodologies, and activities (Hutchinson, 1987). It is designed to meet the specific needs of learners related in content to particular disciplines, occupations, and activities.

In the ESP model, the three (3) components of necessities, lacks, and wants were underlined (Hutchinson, 1987). Hutchinson and Waters claim that the "necessities" refers to the type of need which is defined by the target situation's demand, such as, in this learning case, what the students need to know in the target environment. Meanwhile, "lacks" refers to the discrepancies between what the students know and deciding which necessities they lack. Finally, "wants" refers to the type of need that the students want to learn. The outcomes of these needs can be used to guide the resources and activities in the classroom and raise the standard of ESP teaching.

However, teaching ESP is difficult, as has been covered in many previous studies. The same applies to teaching English to future aviation personnel. It remains a significant learning experience for the teachers responsible for delivering the courses. English teachers have had difficulty identifying the types of ESP practices that can bridge the gap between the implementation of English in the classroom and the English used in the workplace (Othman et al., 2017). Understanding the connection between professional discourse, professional practice, and the ESP classroom is crucial. English teachers encounter a variety of difficulties from stakeholders who require engineering students, including aviation personnel, to be fluent in the language (Othman et al., 2017). According to Pareti (2008), the concepts of learning institution and work are distinct activity systems. The learning institute ion focuses on students' learning (mastery of the subject matter), whereas the industry's goal objective is a profitable product or process. This also seems consistent with other research showing that the efforts to improve engineering students, including those in aircraft maintenance, may be inconsistent with the workplace's needs (Almeida, 2019).

Since English is the only subject involving communication skills, a thorough study of teachers' experiences teaching aviation English in Malaysia is essential. This study aims to explore teachers' perspectives on the challenges and needs of teaching aviation English.

Literature review

The emphasis on more than just the four language skills distinguishes ESP from general English. Unlike General English, which equally emphasizes speaking, reading, writing, and listening, ESP focuses on the requirements of this "new sort of learner who had their own specific reasons and goals for learning English" (Kirkgöz & Dikilitaş, 2018). On the other hand, ESP course designers begin by considering the needs of a particular group of students in the intended environment (Hutchinson & Waters, 1987). In this sense, aviation students need to have good communication skills in English, as many aircraft maintenance jobs require considerable use of the language. Job requirements usually drive ESP students, and the aim of ESP teaching is to help ESP students achieve these goals (Anthony, 2015; Hutchinson & Waters, 1987). Therefore, ESP developers, especially English teachers, must ensure that all related skills are included in the curriculum and identify academic skills applicable to most workplace

scenarios (Gatehouse, 2001).

However, although English for Specific Purposes (ESP) has been adopted in 21st-century education, English teachers continue to confront challenges in equipping students with industrial demands and English communication skills. They face difficulties in teaching unfamiliar subjects and must collaborate with subject experts.

Rasyimah et al. (2017) mentioned that challenges are inevitable when teachers design an ESP course. The study found that English teachers do not fully apply for the ESP course in the English classroom because they implement a course that is mainly combined with general English and little ESP content. One of the challenges highlighted in the previous study, English teachers do not have sufficient language proficiency and expertise (Rasyimah et al., 2017). However, this study is limited to ESP for engineering students in a university in Indonesia. More thorough and comprehensive research that examines the implementation of specific disciplines of ESP across the universities needs to be conducted.

In the Malaysian context, various challenges have led to the need for broader knowledge and understanding of the approach as well as specific competencies for practitioners to address the challenges (Khamis et al., 2019). However, this study was not conducted with teachers specifically teaching in an ESP field such as aerospace, nursing, or aviation. Again, the different fields may have different perspectives. Therefore, a comprehensive study needs to be conducted to find out the challenges and needs of teaching in a specific field of ESP.

Meanwhile, low self-efficacy and low contextual knowledge have been identified as the major challenges for ESP teachers in teaching English, with a particular focus on aviation (Demirdöken, 2021). However, it should be noted that the above study was conducted at a university in Turkey. Moreover, the study was conducted with teachers who taught English to pilots and studied aerospace engineering, electrical engineering, industrial engineering, and computer engineering. However, there is no study that examines English teaching specifically for the aircraft maintenance program.

The ESP literature focuses on linguistic description and learner needs, curriculum description, and material design. However, there are few studies on ESP teaching, teacher learning, and teacher training needs (Basturkmen, 2019; Ding & Campion, 2016). In addition, there is a lack of research on novice teachers' progress in ESP and professional development (Chang, 2017). Therefore, this research aimed to find out what challenges teachers face and what needs they have when teaching aviation English.

Research Questions

To achieve the objectives of the study, two research questions are posed:

1. What are the challenges of teaching aviation English to aircraft maintenance students in Malaysia?
2. What are the needs of English teachers in teaching aviation English to aircraft maintenance students in Malaysia?

Methods

This study employed the qualitative approach, which utilized the interview as the main method of data collection. The interview was conducted with three participants individually. Data were then analyzed thematically and managed by ATLAS.ti.

Pedagogical Setting & Participants

Qualitative research methods often address a comprehensive understanding of the phenomenon or focus on the meaning (and heterogeneity of meaning) – usually, the how and why of a particular problem, process, method and cause, environment, subculture, setting or group of social interactions (Dworkin, 2012). This study uses a qualitative approach and requires a small number of participants to fully capture the current phenomenon (Bloomberg & Volpe 2008; Creswell 2012). Although generalisability was not this study's intended aim, the transferability question was crucial. The reader decides whether and to what extent this specific phenomenon can be transferred to another situation (Lincoln & Guba, 1986).

This research featured three English teachers who were recruited through purposive sampling. They all teach English at three Malaysian aviation schools accredited by the Malaysian Civil Aviation Authority (CAAM) as approved training organizations. They have over 8 years of teaching experience. To protect their identities, the participants were given pseudonyms. A pseudonym is a fictitious name that the researcher or writer usually employs to preserve the confidentiality of the participants (Allen & Wiles, 2016). The interviewees were DrSa, a Ph.D. holder with 15 years of teaching experience, and MdmZue and MdmThi, both master's degree holders with 8 and 15 years of teaching experience, respectively. All of them are teaching English to aircraft maintenance students.

Design of the Study

This study employed the semi-structured interview, which is often used in qualitative research. It provides a decent narrative of significant events and participants' viewpoints. It is one of the most common qualitative data methods to acquire information on teachers' challenges and needs in teaching Aviation English.

Data collection & analysis

All participants were interviewed one-on-one as part of the data collection process. Each interview lasted roughly 40-60 minutes, and questions were asked about the participants' obstacles as well as their needs to teach Aviation English. After the interview was conducted, it was transcribed verbatim, and then it was sent to the participants to provide the opportunity to edit, refine, elaborate, or revise as needed.

The six-step thematic analysis guided the data analysis (Braun & Clarke, 2006), and ATLAS.ti was used to assist with data management and presentation.

Results

Findings from the qualitative inquiry revealed several challenges and needs that were classified under the four major themes: aviation knowledge, course design, level and type of the students, and teacher's workload. For teachers' challenges, there are four subthemes to consider: insufficient aviation knowledge, limited books and materials, students' interest and their different backgrounds, and excessive tasks. Meanwhile, the teacher's needs can be divided into three subthemes; needs of aviation knowledge, aviation English training, and the support system from an institution and the industry. Figure 1 shows the four themes of challenges and needs.

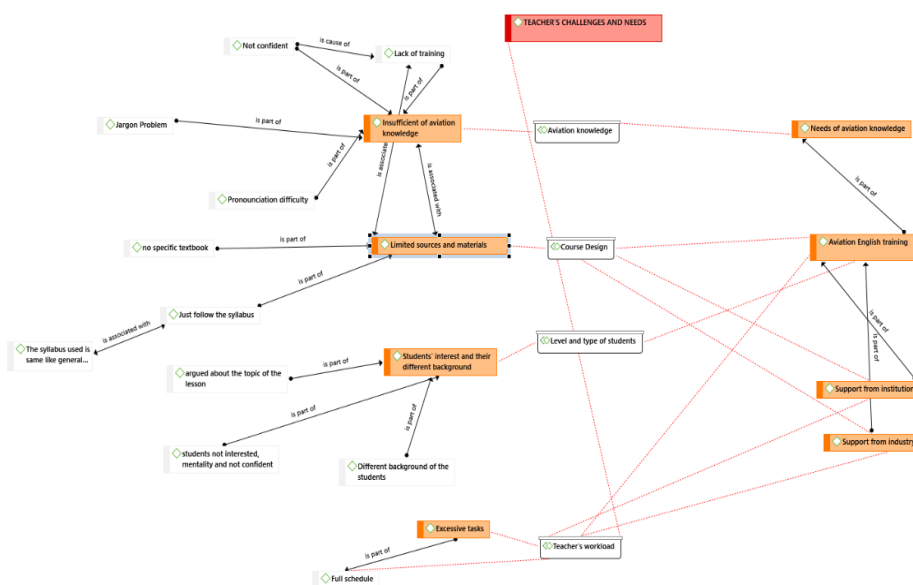


Figure 1 Network view of the challenges and needs

Figure 1 is a network view that is output from ATLAS.ti. There were four themes for both challenges and needs, four subthemes of challenges, and three subthemes for teachers' needs. The details of the subthemes are as below.

Teacher's challenges in teaching Aviation English

The teacher's challenges in teaching Aviation English are divided into four subthemes: insufficient aviation knowledge, limited sources and materials, students' interests and backgrounds, and excessive tasks. As previously stated, there were four themes of teachers' challenges and needs: aviation knowledge, course design, level and type of students, and teacher's workload. Each subtheme reflects the main theme. The details of the challenges subthemes are below.

Insufficient aviation knowledge

Limited aviation knowledge was a big challenge to the participants in order to deliver their teaching in class. Lack of subject knowledge will cause negative feelings among English teachers, such as not being confident in teaching Aviation English. All the participants agreed that when they were not confident, they felt unsure of the content that they delivered. Furthermore, they had difficulty pronouncing the technical term and could not understand the

meaning of the jargon. One of the participants said,

...The one, that I remember most is the pronunciation of technical terms. The other task still hmm.. use the same thing, making gliders. If I try to recall, earlier, kak Zilia.. Because I had to teach her subject, and her subject was too technical, it was too aviation. Even the presentation pun, yes, that one is that we start with topics like presentation process, description, and descriptive presentation, during that period, in which students have to. (DrSa)

Meanwhile, one of the participants felt nervous about teaching Aviation English because it was an unfamiliar area for her. This kind of feeling caused her to be skeptical of her teaching practices. She shared,

... I was lack of confidence because I didn't know what to teach, and I didn't know how to teach, and I questioned myself. Am I teaching the right thing? As time goes on, I think what I mentioned is very important to ask around... (MdmZue).

One of the participants said that her institution did not provide any Aviation English training. She had to take her own initiative to provide her students with the related content during teaching. She said,

Last time, we had English for Technical Purposes., and English for commercial purposes, but now it changed into general English, which is communicative English. So, now, we don't get that kind of training. But again, when I look at the syllabus of the communicative English course, if there is a possibility for me to include their engineering content, I would do that... (MdmThi)

From the interview, it can be said that lack of training is one of the reasons they had insufficient aviation knowledge, which can affect their teaching in the class and their feeling of uncertainty about some aviation-related topics.

Limited sources and materials

The second theme will be limited sources and materials. Due to the previously described lack of training, the teacher also encountered difficulties when it came to planning lessons and preparing materials for the students. According to one of the participants, they did not have any specific textbook to refer to, and they usually developed the materials by themselves. MdmThi shared,

We don't have the textbook. We have the syllabus, and then we find the materials by ourselves. (MdmThi)

Furthermore, MdmThi stated that she merely followed the assigned syllabus because it was a requirement for all teachers. She admitted that she never participated in curriculum development or revision discussion.

Hence, it can be seen that English textbooks for aircraft maintenance are not as widely available as those for pilots and air traffic controllers. For this reason, teachers have minimal information to work with in order to plan their classes.

Student's Interests and previous education background

Besides that, different interest and different previous education background among students is also one of the challenges in teaching Aviation English. One of the participants reported negative emotions such as frustration with students due to their low competency and confidence level, as well as students' attitudes who were less enthusiastic in reading and writing class.

I believe they lack enthusiasm for writing and grammatical conventions. They, therefore, paid that less attention. However, we have writing assessments as part of our curriculum and evaluation process. I have no idea why they didn't like writing at all. (MdmThi)

MdmZue also mentioned that the students' diverse backgrounds presented some difficulties in explaining something connected to aviation situations. Some of them were from an arts background, accounting courses, and so on. It will require more time to ensure that the students understand what she said in class. She said,

In addition, not all of the students have technical backgrounds, which presents an additional issue. Several of them are artists. That is pretty tough to do, to spark your interest in them. Let's argue that pupils who have studied science and engineering, for instance, students from technical schools, have the necessary background knowledge. It's simple to grab their attention in them. However, if the students have an artistic background, we should begin at the beginning, A. For them, that will take some time. (MdmZue)

This qualitative interview revealed that the teachers' experiences were disrupted by the students' attitudes in the classroom. All of this had an impact on their confidence when teaching in class and affected their enthusiasm for teaching.

Excessive tasks

The last sub-theme of challenge in teaching Aviation English is excessive tasks. One of the participants complained that her schedule was so tight, and she experienced 6 hours of classes in a day. Consequently, she did not have enough time to plan appropriate activities for the next class. She shared that,

I just prepare what I have. That time, I had 18 credit hours a week, right? Every day, I had classes. I have experienced 6 hours of classes a day. Three hours morning, there are hours in the evening. But, same subjects. So, I just reused it. No choice at that time. Just the activities, like what I informed you earlier, we had planned, but the activities are dependent on the students on that day. (MdmZue)

Furthermore, teachers' job responsibilities include more than just teaching in the classroom; they are also syllabus developers who must conduct post-mortems on a regular basis, evaluators of students' assignments, activity planners, and so on. The workload appears to be increasing for teachers, as does the stress.

Teacher's needs in teaching Aviation English

As previously said, there are three teachers' needs; needs of aviation knowledge, Aviation English training needs, and needs of support system. The specifics are as follows.

Needs for Aviation knowledge

The first subtheme of teachers' needs is aviation knowledge needs. All the participants were equally insistent on the significance of aviation knowledge and understanding. DrSa, one of the participants, stated that as an English teacher teaching Aviation English, she must have at least fundamental knowledge of the language that is used in the field. This does not mean that she must be an expert, but she must have some knowledge.

Let's say we are talking about aircraft; it does not mean we must know everything about aircraft. But we must know the basic. Whatever it is, we have to start from the basic. Then, we can understand if we do not understand the concept; hmm example, we do not know what an aircraft is and what is the function of an aircraft part, so when we want to teach the students, we ourselves do not understand how? (DrSa)

Acquiring some aviation knowledge would be advantageous for English teachers. Nonetheless, they expressed concern about the breadth of the required aviation knowledge and comprehension.

Needs of Aviation English training

Meanwhile, Aviation English training is the second subtheme. Based on the challenges stated earlier, teachers need proper training to impart the relevant context and information to their students. Professional growth and reflective practice are critical components of a teacher's professional life. This type of need is related to the earlier described need for aviation knowledge.

Aviation English training must be given to the teachers to ensure that they will grasp the aviation expertise to develop their teaching practices. One of the participants agreed that if the institutions give English teachers sufficient training, she can perform better in the classroom. She mentioned that,

I think that all of these TVET institutions' English teachers should have specialized training in appropriate subjects, which could better prepare their students. (MdmThi)

The necessary training will provide instructors with approaches and current pedagogy practices to help them connect with, manage, and teach their students in a way that ensures that all students learn and get benefits.

Good support system

Teachers in our educational system have several tasks and responsibilities that extend beyond the delivery of instruction. As previously said, teachers require strong support from both institutions and industry.

The teachers spoke about ongoing heavy workloads, a busy schedule, a lack of resources to turn to, and the need for training. The institutions should be aware of the highlighted issue. In order to verify that the students are learning the relevant content and context, the teachers must consult any technical instructors or professionals in the field.

One of the participants was also concerned that the topics, materials, and syllabus she used in the class might not be the same as what the industry wants. She said,

Anyone who has a background, such as TESL graduates, can teach English, but very important to ask around and ask those who work in the field. Because what we learned here may not be the same as what the industry demand. (MdmZue)

In the end, these support systems can assist teachers in getting through challenging periods and prolonging their careers. In summary, in the interview sessions conducted with three (3) participants, they revealed that there were four (4) types of challenges and three (3) related needs. The challenges that they faced could be overcome by the needs that they have shared.

Discussion

Insufficient aviation knowledge was deemed the most critical challenge by the teachers when compared to other challenges. The assertions that English teachers were incapable of teaching language and communication skills in aviation areas were supported by a lack of technical expertise and understanding. The findings corroborate the ideas of Khamis et al. (2019) that technical knowledge and understanding have become the most important competency. Inadequate basic knowledge in a particular area has led teachers to face difficulties in preparing materials for ESP teaching and learning methods. This problem coincides with the claim that English teachers are unable to teach language in technical and engineering fields.

Contextual knowledge and self-confidence are interrelated. According to Ahmed (2014), ESP teachers typically have less subject understanding than students. As a result, they lack confidence in teaching ESP (Astika, 1999) and instead teach general English with a grammar emphasis (Yoestara, 2017). Kirkgoz & Dikilitas (2018) had previously noted that ESP teachers understand they need to know more about the context in which they will be teaching and that it is necessary to refresh their knowledge constantly. They need to have at least a basic knowledge of the subject area, which affects their confidence in carrying out the teaching activity.

This study has also shown that students' different interests and previous educational backgrounds are one of the challenges for English teachers. Students enrolled in ESP courses know more about the content to be taught than the teachers who are trying to teach it (Bayram & Canaran, 2020). This is an important factor for teachers to consider and accept (Day & Krzanowski, 2011). However, ESP teachers seem to disagree about their roles and need support to vary their roles. Therefore, identifying the roles of ESP teachers and communicating these to students is crucial and should be considered in curriculum development.

Furthermore, excessive tasks have been discussed extensively in previous research. All participants stated that they have little time for lesson preparation as they have a tight schedule, have to prepare the activities and materials for the next lesson, and also have to look at the students' work. The current study's findings are consistent with those of Quoc et al. (2021), who found that time constraints prevented them from training or improving their assignments. This leads them to become exam-focused educators.

Lampert (2010) states that teaching is a "learning profession." Teachers continue to learn and improve as they give opportunities for self- and peer learning. Teachers learn as they apply past life experiences to solve professional difficulties in the present and envision a better future.

Moreover, the job scope of English teachers in teaching any relevant ESP field expands beyond the limitations of education. Due to the complexities of the profession, Evans and John (1998) prefer the term "practitioner" compared to the term "teacher." According to them, the ESP practitioner must fulfill five roles: instructor, course designer and materials provider, collaborator, researcher, and evaluator. Firstly, the teacher's responsibility is to assist students in learning, which is related to the strategies and methods used in their teaching activities. The second is course developer, which refers to the parts and resources that will be included in the future course, whether he or she chooses to construct a syllabus from scratch or use accessible textbooks, supplementing the offered activities with additional materials. As a collaborator, they must rely on assistance and direction from a variety of sources. One source is represented by students who have stated their goals, and another is with specialists in the subject who can offer support and guidance regarding the specialized books and resources to be used. As researchers, ESP practitioners should be prepared to stay in touch with the most recent advances in the subjects they teach and incorporate the findings into their course design. The last one is as an evaluator. From this point, the teacher should always check the achievement of the targets set out at the start of the course.

In terms of teachers' needs, the results showed that teachers believed that acquiring knowledge and understanding in aviation would help them overcome the 'uncomfortable and unfamiliar' technical knowledge. Nguyen (2022) suggested that professional development does not traditionally focus on filling one's mind with more knowledge but is also aware of developing other related skills. It is a well-known fact that the quality of an educational institution is inextricably linked to the quality of its teachers. To improve the quality of teachers, institutions invest money, time, and effort in ESP teaching practices (Bayram & Canaran, 2020). To ensure that ESP teaching practices are effective, they must meet the needs of teachers. Therefore, in order to ensure that the teachers will gain the necessary aviation knowledge, several series of training must be conducted for the English teachers, as mentioned in the previous sections.

In addition, a closer dialogue is needed between ESP teachers and the technical teaching staff. This dialogue is especially important at the stages of needs assessment, selection of textbooks, and design of materials. They cannot be sure if they are doing the right thing for their students. Therefore, technical and English teachers need to meet, discuss needs and expectations, and share ideas. Also, collaboration with industry stakeholders is a must to know the current needs of the industry. In order to develop a curriculum that meets current needs while providing students with the communication skills they need to succeed as engineers, a better understanding of industrial communication needs is required (Wilson, 2020).

In summary, there were four types of challenges: insufficient aviation knowledge, limited sources and materials, different interests and educational backgrounds of the students, and excessive assignments. At the same time, there were three (3) related needs: the need for aviation knowledge, English training for aviation, and a good support system. The challenges they faced were overcome by their common needs.

Conclusion

The teaching experience is undoubtedly related to student achievement growth over the course of a teacher's career. This study provided important insights into the experiences of English teachers in aviation that had not previously been illuminated. The findings of this study also had important implications for ESP researchers, as the issues that emerged set the stage for future research and provided insights into the important challenges and needs of teaching English to aviation students.

Although the sample size of participants was small, the use of multiple case studies allowed for a dense description and for the participants' voices to be heard. Multiple case studies can be used to predict the comparative outcomes of the expected reasons or similar outcomes predicted in this study (Yin, 2003). In this way, the research can illustrate whether the results are valuable or not (Eisenhardt, 1991). An all-encompassing fact is that evidence from multiple case studies is considered strong and reliable (Baxter & Jack, 2008).

In order to meet industry expectations, all stakeholders, including teachers, technical instructors, lawmakers, higher education institutions, and industry participants, must exchange ideas, take appropriate steps, and share best practices.

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Biodata

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Dr. Nurhayati Mohd Nur is a Senior Lecturer in Aerospace Department and currently serves as a Head of Research and Innovation at Universiti Kuala Lumpur, Malaysian Institute of Aviation Technology (UniKL-MIAT). Her main research interests include ergonomics design, human factors, manufacturing processes, maintenance activities, quality management systems, and technical education.

Appendix

Interview protocol for English lecturers

1. Knowledge of Aviation English

- a. How did you become familiar with Aviation English?
- b. How long have you been teaching Aviation English?
- c. How would you explain your experience as an English lecturer teaching Aviation English?
- d. Given your experience, what kind of knowledge do language lecturers need to teach this subject?
- e. How is teaching aviation English different from teaching general English?
- f. How important is this knowledge for your teaching?

II. Knowledge of the content and pedagogy of Aviation English

- a. Where did you get your knowledge of the content of Aviation English?
- b. How does your knowledge of aviation English content affect your teaching?
- c. How do you decide what content your students need?

III. Challenges in teaching aviation English

- i. What challenges have you encountered in teaching aviation English?
- ii. How do you deal with these challenges?
- iii. Is there anything else you would like to add?