A Study of Pilots' English Proficiency Development Based on ICAO LPRs

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Abstract. Based on International Civil Aviation Organization Language Proficiency Requirements (ICAO LPRs) the study investigates the implementation of Chinese pilots' aviation English training which replaced PEPEC examination in some airlines. It also reported the evaluation status of some student pilots in an aviation college. The results show that the effects of teaching and training pilots' English language proficiency based on ICAO LPRs vary. The study suggests that it is advisable to further improve the understanding of the necessity of implementing the ICAO LPRs.

Keywords: ICAO LPRs; ESP; Aviation English; flight safety

1   Introduction

Air transportation safety has always been a matter of great concern. Studies have shown that many flight incidents and accidents are due to language factors [1-2]. For this reason, ICAO has proposed LPRs to pilots globally, requiring pilots operating on international routes to have their industry licenses endorsed with an ICAO English language proficiency level of 4 or above since May 2008, and has issued the ICAO Language Proficiency Requirements Implementation Handbook [3], which provides member states with a language proficiency scale as a basis for evaluating pilots' language proficiency. Pilot's English belongs to the category of English for Special Purposes (ESP), and the ICAO LPRs reflects the distinctive characteristics of ESP Aviation English, which divides language proficiency into 6 levels, each of which requires the subjects' language proficiency in six dimensions, namely, pronunciation, structure, vocabulary, fluency, comprehension and interaction. The LPRs plays an important role in establishing a learner-centered, step-by-step approach to improving pilots' language proficiency and evaluating pilots' language level. However, there are many shortcomings in the implementation in some airlines and aviation colleges. Therefore, it is necessary for pilots to have better understanding of ICAO LPRs to reach the minimum level acceptable to ensure safe flight operations.

2   ICAO LPRs rating scales

In 2003, ICAO introduced language proficiency requirements for pilots worldwide, and since May 2008, pilots engaged in international airline operations are required to endorse their industry licenses with an ICAO English language proficiency level of 4 or above. In order to effectively and scientifically implement the assessment of pilots' aviation English, ICAO issued the ICAO Language Proficiency Requirements Implementation Manual, or the Language Proficiency Rating Scale. The rating scale mainly defines the level of the examinee's speaking and listening proficiency in Aviation English, covering six levels, from Level 1 to Level 6, which provides a macro description of English proficiency and then a micro description of each sub-skill. The scale emphasizes the practical use of aviation English in airline operations. The scale is described as follows: Level 1 pre-elementary level, Level 2 elementary level, Level 3 pre-operational level, Level 4 operational level, Level 5 Extended level and Level 6 expert level. 4, i.e., working level, is the minimum level of language proficiency to be achieved by pilots. Level 4, the working level, is the lowest level of language proficiency to be achieved by a pilot. The scale puts forward specific requirements for the subjects' language proficiency in terms of six structures: pronunciation, structure, vocabulary, fluency, comprehension and interactions. The following table 1 shows the four levels of language proficiency, i.e., the four levels of fluency. Table 1 below shows the descriptions of the six language dimensions at Level 4, the operational level.

Table 1. ICAO LPR level 4 descriptors

Language Structure	Descriptors
Pronunciation	Pronunciation, stress, rhythm and intonation are influenced by the first language or regional variation, a dialect and/or accent intelligible to the aeronautical community.
Structure	Basic grammatical structures and sentence patterns can be used creatively and are usually well controlled are determined by language functions based on the context.
Vocabulary	Vocabulary range and accuracy are usually sufficient to communicate effectively on common, concrete and work related topics. common, concrete, and work-related themes. Can often paraphrase successfully when lacking vocabulary in unusual situations.
Fluency	The stretches of language are at an appropriate tempo. There may be occasional loss of fluency on transition from rehearsed or formulaic speech to spontaneous interaction, but this does not prevent effective communication. Can make limited use of discourse markers or connectors in aviation context.
Comprehension	Understanding is mostly accurate on general, speciaific and work-related topics when the accent or variety used is sufficiently intelligible for an international user. When the speaker encounters with a situational

	complication or an unexpected turn of events, comprehension may be slower or require further clarification.
Interactions	Responses are usually swift, proper and informative. Propose and maintains exchanges even when dealing with an unexpected events. Deals with apparent misunderstandings by checking, confirming or clarifying adequately.

ICAO LPR level 4 descriptors exemplifies the criteria of pilots' aviation English proficiency that learners need to acquire in the process of aviation English learning or training.

3　A Survey of Instructional aviation English teaching and training based on ICAO LPRs rating scale

ICAO LPRs serve as guidelines for pilots, It assists them to raise the language awareness of their professional use of radiotelephony phraseology and plain language and of the potential dangers in miscommunications during radio communications. In order to understand the implementation of the ICAO LPRs rating scale in the context of teaching and training, the study used questionnaires and interviews to collect data from active pilots from national airlines and student pilots in an air space university. In August, 2023, a Panel of PEPEC conducted a survey on the training of pilot aviation English based on ICAO LPRs in some domestic Airlines, including China Southern Airlines, China Eastern Airlines, Air China, Sichuan Airlines, Hainan Airlines, etc. The results of the research showed that the aviation college involved in this study was able to focus on reflecting the six dimensions of language in the ICAO LPRs scale in its curriculum, but appeared to be unable to develop students' problem-solving skills in classroom teaching and learning, with a satisfaction rate of 53%. The open-ended interviews showed that the teachers' own insufficient level of aviation English, their lack of understanding of the ICAO LPRs scale, and the students' lack of effective Self-directed learning resources have hindered the implementation of ICAO LPRs scale. The research on some domestic airlines showed that the aviation English proficiency level of airlines training teachers varied, but the learning resources were better than the college in this study. The basic conclusion is that the current situation of aviation English proficiency development of national pilots based on ICAO LPRs rating scale is uneven. It suggests that both aviation colleges and airlines should strengthen the understanding of ICAO LPRs rating scale which provide practical guidance enabling successful implementation of teaching and training, and explore effective ways for developing pilots' aviation English proficiency for the purpose of improving flight safety and efficiency of aviation operations.

4   Suggestions on building pilots' competence in English for special purposes based on ICAO LPRs scale

4.1   Building professional aviation English teaching and training team

Because aviation English teaching and training is especially specialized, which belongs to EPS, learners needs certain apprenticeship to gain familiarity with the technical requirements of aviation communications in radiotelephony context, therefore, an excellent pilot aviation English teaching and training team is important for cultivating pilots with proficient aviation English that meet ICAO LPRs which serve as benchmarks for training and teaching. [3] By combining inside college cultivation and external training or experiment in airlines, a comprehensive implement of the professional pilot training construction should be built. For instance, Shenyang Airspace University employs PEPEC examiners and raters with relevant aviation backgrounds to take up the teaching task of aviation English for flight technology major students, at the same time, some outstanding young teachers are sent to certain airlines to practice aviation English in real world situations. As to airlines, companies are encouraged to assess pilots' language proficiency through test training for those pilots with operational level for obtaining the English language rating endorsement, According to Foged et al. (2022) study, the long-term effects of language training on employment may be much larger than the short-term effects. [4] So airlines should further improve their internal aviation English training programs to build aviation English expert teams with better understanding of ICAO LPRs.

4.2   The availability of aviation English learning resource platform

The prominent issues concerning high education curricula are lack of resources in facilitating learning and lack of awareness of the availability of resources. [6] Both colleges and airlines have the responsibility to provide pilot learners with available access to aviation English learning resources which meet LPRs. For example, learners can obtain radio telephony and plain language materials through online platforms, such as 900 sentences APPs, mobile phones, Pads, and online alive en-route radio communication provided by airlines and son on. Within these authentic or authentic-like materials, the participants focused on how the language is used in real world situations, since speaking requires simultaneous management of fluency, accuracy, and complexity demands, as well as spontaneous comprehension and immediate response, making achieving a high level of speaking proficiency a challenging skill for second language (L2) learners (Zhang et al., 2022) [5] .

Besides, the aviation English teachers and trainers have to contribute to accelerate the development of programs, learning materials in accordance with ICAO LPRs. The language teaching materials and teaching software can be developed in form of cooperation of college teachers and airlines aviation professionals including experienced pilots, language trainers to set up platform or develop training materials that can be adapted by aviation English learners.

With the development of artificial intelligence (AI), it is more convenient for pilot learners to practice aviation English. Because AI can simulate human language, it can promote aviation English learning in many aspects such as simulated flight scenarios and provide more opportunities for learners to practice in specific situations, for example, runway incursion, engine fire, bird strikes, cabin decompression and emergency evacuation and so on.

In the future, with the support of AI, more and more pilot learners can study aviation English anytime and anywhere, with no longer constrained by time and space. At the same time, AI can provide personalized study by creating actual flight situation for learners, which is a perfect learning platform for developing learners' aviation English proficiency and assist learners to meet ICAO LPRs.

4.3 The necessity for enhancing aviation English trainers' language proficiency and personal development

Teacher's aviation English proficiency is the abilities accumulated and developed in their long-term educational and teaching or training practice, which includes not only a certain level of aviation knowledge, aviation English language proficiency, teaching and research ability, but also intrinsic qualities like basic virtues, values and ideal beliefs. Therefore, it is necessary for aviation English trainers to develop aviation English trainer's personal qualities which are fundamental factors and necessary conditions for the implementation of the overall high-quality aviation English training.

The necessary for enhancing aviation English trainers' language proficiency is obvious, without sufficient and high level of aviation English proficiency, it would be impossible for trainees to acquire oral abilities that meet ICAO LPRs.

Moreover, trainer's personal qualities which involve basic virtues, values and ideal beliefs need to be developed. In the training process, they should also employ various methods and strategies to stimulate learner's motivation, rather being confined to the traditional mode of transferring knowledge. It is suggestive that aviation English trainers recognize the transformation of their multiple identities of teacher, scientific researcher, and learning theory constructor. This new teaching or training concept encourages aviation English trainers to become reflective individual who organically integrate language teaching theories into aviation English learning practice.

Besides, teaching reflection is generally recognized as an effective way to promote teacher development and a key factor, and the ability to reflect is an important quality for language teachers or trainers.

Another contributing factor that influences the effectiveness of pilot aviation English proficiency is the trainer's reflection behavior -- an effective way of trainers' professional development and the driving force of personal growth. By reflecting on training process and the learners' individual personalities, trainers can develop more practical and effective methods to help learners in the aviation English learning. They should firmly believe in reflection and fully understand the key role of personal development in improving his or her cognitive level, evaluating ability and thus promoting professional growth and assisting pilot learners to improve the aviation English level and meet ICAO LPRs.

The model of aviation English training reflection should be flexible and diverse, with pilot learners as the main body. To be specific, reflection methods such as reflection journal, cooperative communication, role plays based on radio telephony, OPI practice, group discussion on particular abnormal situations, observation and so on are effective ways to form training reflective ability.

5   Conclusion

The study concludes that aviation colleges and airlines should strengthen their understanding of the ICAO LPRs and carry out pilot special-purpose English teaching and training based on the rating scale. In addition, critical focus is required for course-specific resources to develop learners' professional competence and align professionalism and proficiency within the desired discipline (Gomis et al., 2023) [6] to set up first-class team of teachers and trainers of aviation English and provide various learning resources are indispensable for pilots' acquiring their aviation English proficiency, especially the AI engagement that provides aviation English learners more real world situations and opportunities to improve learners language abilities. Besides, it is necessary for aviation English trainers to develop aviation English trainer's personal qualities which are fundamental factors and necessary conditions for the implementation of the overall high-quality aviation English training.

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