

A study on radiotelephony English test design

Lixin Dai*

Department of Civil Aviation, Shenyang Aerospace University, Liaoning, China

Abstract. Radiotelephony English is taught in college for the learners whose future professions are mainly pilots and air traffic controllers. The present study is to analyse the radiotelephony English test design in a university to see the extent of which it evaluates learners' communicative competence in aviation scope. Theoretical frameworks on communicative competence, modern test theory and ICAO language proficiency requirements for the learners of radiotelephony communication are presented. The study reveals that learners' communicative competence which includes both radiotelephony and everyday communication skills are important components in radiotelephony test design. The study points out that the application of modern test theory in designing radiotelephony test in college is vital in meeting the validity and reliability of the test and the students' individual needs in English language learning for future career needs to be reflected in the test design.

Keywords: Communicative competence, Radiotelephony, Civil aviation.

1 Introduction

Presently civil aviation industry has been developing rapidly nationally and internationally, English language has become universal and played an important role in enhancing economic development and ensuring aviation safety. ICAO specifies English to be used as an international language in civil aviation context (ICAO DOC 9835) [1]. Learners' English language proficiency should be well developed in college since it will affect their personal development and flight safety and communication is one human element that is receiving renewed attention[2] in protecting aviation safety. The radiotelephony English test in college is to identify learners' language ability especially in the aviation context. The present study is to analyze the validity and reliability of the radiotelephony English test design in a university to see the extent of which it evaluates learners' English language proficiency. Data gathered from questionnaires and interview justified the validity and reliability of the test design. However, some factors in developing test papers needs to be taken into consideration, such as learners' general language proficiency and test contents in terms of authentic materials.

* Corresponding author: daisy55988@163.com

2 Literature review

2.1 Linguistic theory of communicative competence

The purpose of language teaching is to develop learners' communicative competence. From Hymes' point of view, a person's communicative competence acquires both knowledge and ability for language use [3]. Halliday (1970)'s functional theory of communicative competence is based on the view that L2 learning is similar to L1 acquisition. A more pedagogical analysis of communicative competence was given by Canale and Swain in 1980 in which four dimensions of communicative competence were identified: grammatical competence, sociolinguistic competence, discourse competence, and strategic competence (Richards and Rodgers, 2002) [4].

2.2 Modern test theory

With Criterion-referenced Measurement Approach, test scores are reported and interpreted with reference to a specific content domain or criterion level of performance, thus it provides information about an individual's mastery of a given criterion domain or ability level[5]. CR approach has been proposed as one of the basis for designing the college radiotelephony English test, since it evaluates the learners English proficiency in the domain of aviation. Item response theory is a powerful measurement theory that provides a superior means for estimating both the ability levels of test takers and the characteristics of test items (difficulty, discrimination). IRT makes it possible to tailor tests to individual test-takers' levels of ability, and thus to design tests that are very efficient in the way they measure these abilities [5].

Validity refers to the degree of correlation of test content and the test target, which reflect the test takers' ability of using language. The most important quality of test interpretation or use is validity, or the extent to which the inferences or decisions we make on the basis of test scores are meaningful, appropriate, and useful [6]. Face validity has to do with the surface credibility or public acceptability of a test; content validity, also called relevance validity, consists of the specification of domains of content, a major consideration in demonstrating content relevance is thus the specification of ability and task domains; construct validity concerns the extent to which performance on tests are consistent with predictions that we make on the basis of a theory of abilities, or constructs [7].

2.3 Reliability English language proficiency requirements in ICAO Doc.9835

Language proficiency requirements in ICAO Doc.9835 note that the purpose of ICAO language proficiency requirements is to set rules and regulations for the use of English in aviation context to reduce the miscommunication in radiotelephony communications to minimum and enable speakers to more readily recognize errors and work towards the successful and safe resolution of misunderstandings [2]. In Annex 10, Volume 2 it states that if a pilot and an air traffic controller don't speak a common language, the default language is English. The implication of this is that all pilots and controllers involved in international operations and that do not share a common language have to have stated on their license their level of English language proficiency [8].

2.4 Testing environment and authentic test materials

According to Bachman (1990), test takers might be expected to perform differently under differing environmental conditions. Testing environment includes the facets: (1) familiarity of the place and equipment used in administering the test; (2) the personnel involved in the test; (3) the time of testing, and (4) physical conditions[5]. Considering the effects of testing environment on test performance, test developers should make efforts to minimize the potential negative effects of testing environment.

An authentic environment is seen as an important factor in second and foreign language learning. Test materials are supposed to be authentic in that test takers are required to interact with and process both the explicit linguistic information and the implicit illocutionary or functional meaning of the test material[5]. Another approach to defining authenticity in language test tasks is to adopt Widdowson's (1978) view of authentic language use as the interaction between the language user and the discourse[9]. Oller's (1979) also states that language tests. . . must require the learner to understand the pragmatic interrelationship of linguistic context and extralinguistic contexts [10].

3 Research method and results

The participants involved in the study consisted of 120 sophomores in an aviation college whose future job would be civil pilots and air traffic controllers. 15 ESP teachers participate in the study. Questionnaire containing 10 questions for students is used as the main tool of the data collection. Students completed the questionnaires voluntarily and turned in their questionnaires anonymously. Besides, teachers' feedback on the quality of the test design and the correlation of the test context to ICAO language requirements by means of interview has been presented. The main findings are reported as follows.

See the table below: Data from the questionnaire and the interview.

<i>Questions in the Questionnaire</i>	<i>Descriptions</i>
Q1: the quality of the audio aids in the test	80% chose "neutral"
Q2: the structure of the test	98% answered "good"
Q3:the content relevance to aviation context	100% chose "very"
Q4: the proportion of questions relating to general English	97% chose "less"
Q5:the possibility to finish the test within the given time	87% chose "possible"
Q6: the instructions of the test	82% chose "clear"
Q7: the distributions of the difficult questions in each part	87% chose "neutral"
Q8: the distribution of the scores in each question	85% chose "reasonable"
Q9: the difficult of the test	95% chose "neutral"
Q10: the extent of the authenticity of the test material	56% chose "less"
<i>Questions in the Interview</i>	<i>Descriptions</i>
Q1: times of the test papers being used	100% answered "3"
Q2: times being interviewed	100% answered "3"
Q3: the correlation of the test context to ICAO language requirements	Most teachers state the contents of the test is closely related to aviation context and meet the ICAO language requirements but some of the general English questions need to be included.
Q4: the quality of the test design	A majority of the teachers say the quality of the design is basically good.

4 Discussion

According to Davies (1977), face validity has to do with the surface credibility or public acceptability of a test, the feedback on the overall test design in questionnaire and the general acceptance in the instruction of the test in Q6 and Q8 “the distribution of the scores in each question” proves the test face validity. The percentage of the students giving positive answers to Q2 “the structure of the test” and Q3 “the content relevance to aviation context” indicate that the test structure and contents are closely related to aviation context which reflects that the conceptual foundation of developing tests system is that language testing is done for a particular purpose and in a specific context[5]. It proves the validity of the test which focuses on the correlation of test content and the test target and thus justifies the content validity of the test design. The opinions on “quality of the test design” made by the teachers in the interview and percentage of the students in answering Q5 in the questionnaire are also indications of the content validity of the test. Data gathered from Q3 “the content relevance to aviation context” in the questionnaire and Q3 “the correlation of the test context to ICAO language requirements” in the interview demonstrate that the theory of language proficiency provides the basis for examining construct validity. Construct validity integrates ICAO language proficiency criterion and test content considerations into a common framework to evaluate the students’ language abilities. The satisfaction with the correlation of the text contents and to aviation context meet the ICAO language proficiency certain criterion, thus just the test construct validity. However, some of the contents of the test require to be modified.

During the interview, when asked the times of the test papers being used and the times being interview (Q1 and Q2), the participants all answered “3”, which means the design of the present test paper has been used to test the students’ language ability in aviation context for 3 times. By doing so, it provides an estimate of the stability of the test scores to ensure the appropriateness for estimating the test reliability. The reasonable distribution of the scores and allocation of the time (Q8 and Q5 in the questionnaire) also justify the reliability of the test.

The radiotelephony English test is designed based on CR approach and Item response theory. The in scores of the test are given and reported with reference to radiotelephony content and criterion level in ICAO language proficiency requirements and performance, this can be seen in the distributions of the test scores and the distributions of the difficult questions in Q8 and Q9, as well as Q3 “the correlation of the test context to ICAO language requirements” in the interview. However, data gathered from Q4 “the proportion of questions relating to general English” indicates that the test paid less attention to evaluate the students’ everyday conversation ability, which involves knowledge of general English and sociolinguistic competence. It is worth noticing that that students’ everyday communication ability need to be enhanced in aviation context, since the ICAO language proficiency requirements clarify the requirement for the use of plain language in the situation in which radio telephony English cannot be applied successfully [2].

With regard to the extent of the authenticity of the test material in Q10 in the questionnaire, the data implies that the test is not authentic enough. The literature review indicates that authentic environment is seen as an important factor in second and foreign language learning, thus it plays an important role in language test. In the non-native English-speaking settings, authentic materials which are the sources of radiotelephony English testing design seem crucial for measure learners’ language proficiency because authentic materials supply not only the background information about the communication activities but also the real knowledge of radiotelephony English in the context of aviation. In addition, the feedback on the quality of the audio aids in the test in Q1 of the

questionnaire shows that the test environment needs to be improved to minimize the potential negative effects of testing environment on the students who take the tests.

5 Conclusion

The radiotelephony English test in college is to identify learners' language ability especially in the aviation context. The purpose of this study is to analyze the radiotelephony English test design in a university to see the extent of which it evaluates learners' communicative competence in aviation context. Data gathered from questionnaires and interview indicates that the validity and reliability of the college radiotelephony English test have been proved to be acceptable. However, some issues still need to be stressed. For example, the test environment needs to be improved; some of the contents of the test require to be modified in terms of authentic test materials. The study reveals that learners' communicative competence which includes both radiotelephony and everyday communication skills should be taken into consideration in radiotelephony test design. Besides meaningful and authentic materials should be developed and applied in evaluating learners' English language proficiency. The study suggested that the application of modern test theory in designing radiotelephony test in college is vital in meeting the validity and reliability of the test and the students' individual needs in English language learning for future career needs to be reflected in the test design. The study is that it is not only pedagogically sound, but also makes the test developer aware of the fact that a well-designed radiotelephony test is critical in evaluating learners' English language proficiency thus affect aviation safety.

References

1. Manual on the Implementation of ICAO Language Proficiency Requirements DOC 9835 International Civil Aviation Organization, 2010, pp.vii, 1-2, Chapter2, Chapter 3
2. Manual on the Implementation of ICAO Language Proficiency Requirements 2010
3. Hymes, D. 1972. On Communicative competence. In Richards, J and Rodgers, *Approaches and Methods in Language Teaching*.p159, Cambridge: Cambridge University Press
4. Richards, J and Rodgers, 2002 *Approaches and Methods in Language Teaching*. Cambridge: Cambridge University Press
5. Lyle, F. Bachman 1995 *Fundamental considerations in Language Testing*. Oxford: Oxford University Press. p4, pp 7-8
6. American Psychological Association. 1975 *Standards for Educational and Psychological Testing*. Washington, DC: American Psychological Association.
7. Davies, A. 1977. 'The construction of language tests' in Allen and Davies, pp38-194,
8. Language Proficiency Requirements: Critical to Aviation Safety *ICAO JOURNAL – ISSUE 5* 2013.p64
9. Widdowson, H. G. 1978 *Teaching Language as Communication*. Oxford: Oxford University Press.
10. Oller, J. W. Jr. 1979. *Language Tests at School: A Pragmatic Approach*. London: Longman.