Chapter III
A Reading Evaluation Method for English as a Foreign Language Learners Based on Reading Performances

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ABSTRACT

In this chapter, the authors examined reading evaluation methods for foreign language learners based on learners’ reading processes. The goal of this chapter is twofold. The first is to evaluate text reading, and the other is to evaluate sentence reading. First, the authors assessed a text reading test to evaluate reading proficiency based on reading process, that is, effective reading speed, which is a complex measure of reading speed and comprehension rate. Statistical analysis confirms the adequacy of our effective reading speed test. Next, they propose a reading time model for evaluating reading proficiency at the sentence level. Their reading time model predicts sentence reading time based on the linguistic
properties of a sentence and a learner’s proficiency. Linguistic properties consist of lexical, syntactic and discourse properties. Learners’ proficiency is defined using their score on the Test of English for International Communications (TOEIC). Their reading time model resulted in high prediction accuracy. From these results, they conclude that the reading process-based evaluation method is a promising test for foreign language reading proficiency.

INTRODUCTION

Owing to the advancement of computer technology, computer-based evaluation for foreign language proficiency is expected to enhance the effectiveness of foreign language learning and teaching. Various computer-based tests, such as the Test of English as a Foreign Language (TOEFL), have been proposed. Computer-based tests make use of computers to administer tests or assess test results, and have become very popular. Of the four linguistic skills, that is, speaking, listening, writing and reading, this chapter focuses on reading proficiency evaluation. An advantage of computer-based reading tests is the ease of measuring and recording reading process data.

It is supposed that comprehension rate can be estimated by examining the reading process (Kieras & Just 1979). Because the reading process correlates with the comprehension rate, various studies have applied reading process data to evaluate foreign language reading proficiency (Bell 2001, Patching & Jordan 2005, Ng et al. 2002). Upon examining the relationship between the reading process and the comprehension rate, we found that the correlation was not straightforward. Previous studies have reported opposing results. On the one hand, the comprehension rate decreases in slow reading (Carver 1982); on the other hand, a decrease in the comprehension rate is observed in fast reading (Dyson & Haselgrove 2000).

Given this contradiction, the relationship between reading speed and comprehension rate is subject to methodological criticism. The contradiction may be due to the individual differences of learners. Some learners may take longer to read a text than others, even if their proficiency is roughly the same. Hence, reading process-based test results are questionable. Unlike conventional paper-based comprehension tests, few studies have examined the adequacy of reading process-based tests (Lynch 2003). We found one study that examined the reliability and validity of a reading process-based test (Shizuka 1998). Assessing reading process-based tests should be mandatory before use in a foreign language classroom.

Assuming that a reading process-based test has to minimize individual differences in the reading process, we decided to employ effective reading speed as an evaluation metric for text reading. This is because effective reading speed is a combined measure of reading speed and comprehension rate (Jackson & McClelland 1979). Therefore, we decided to assess the reliability and validity of an effective reading speed test for EFL (English as a foreign language) learners. Because effective reading speed takes into account the comprehension rate, effective reading speed is expected to indicate reading proficiency more precisely than reading speed.

After confirming the adequacy of an effective reading speed test, we will move on to examine a reading process-based test for sentence reading. We suppose that a sentence-level test is appropriate to identify a sentence containing difficult elements for a learner. Such identification is difficult using an effective reading speed test because it is unreasonable to assign (at least) one comprehension question for each sentence in order to measure effective reading speed. In order to control effect from comprehension rate, we decided to compare a learner’s reading time with the reading time predicted by a sentence reading time model. This model calculates a sentence