

Evaluating the Syllable Count Feature of a Mobile Application Designed to Track L2 Spoken Fluency

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Spoken fluency—the ease and speed of speech—is important for maintaining listeners' attention (Lennon, 2000). It also influences scores on tests evaluating second language speaking skills (Ogawa, 2022). Despite its significance, educators currently lack a convenient way to track students' fluency. The app we built is designed for in-class use for the 3-2-1 activity—a modified version of Maurice's (1983) 4-3-2, a well-known fluency activity based on skill acquisition theory. During the activity, students deliver three iterations of their monologues for three minutes, two minutes, and one minute. While speakers deliver their monologues, the app records speakers' speech. One of its functions is to count the number of syllables in speakers' speech. Once it counts syllables, the app calculates untrimmed speech rate (i.e., the average number of syllables per minute without omitting disfluencies). Currently, first-year university students in our classes use the app at a private, co-edu university in Tokyo, Japan with proficiency from B1 to C1 on the CEFR. Three syllable counting methods—pitch analysis, Apple's speech-to-text, and WhisperX's speech-to-text—are evaluated to determine the extent to which they report the correct number of syllables in classroom settings when compared to our human-calculation. 84 participants recorded their 1-minute in-class monologues across four months. Using Bland-Altman analysis, results show that WhisperX's speech-to-text is in most agreement with researchers' human-based syllable count. Additionally, the syllable count appear more accurate for highly fluent students compared to less fluent students. Moving forward the results will help us to improve the app's performance.

Primary author: Ms WOODWARD, Heather (Rikkyo University)

Co-author: Mr RAPPENEKER, Joshua (Rikkyo University)

Presenters: Ms WOODWARD, Heather (Rikkyo University); Mr RAPPENEKER, Joshua (Rikkyo University)

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