OVERVIEW OF STEPPINGSTONES: TEXT-TO-SPEECH PHASE II

Improving High School Students’ Reading using Text-To-Speech Software.

THE PROBLEM
- Hawaii’s reading scores are lower than 41 of the other states and jurisdictions (NCES, 2009)
- 33% of Hawaii’s 8th graders are below basic levels of reading achievement; 45% at the basic level; 21% at the proficient level; and 1% at advanced level (NCES, 2009).
- Reading difficulties experienced in the K-12 system often persist into adulthood; researchers estimate that approximately 23% of U.S. adult population meets only basic reading proficiency levels (NCES, 2004; Pressley & Harris, 2006).

HYPOTHESES
Students who participate in the intervention group will have significantly improved reading comprehension, fluency rate, and vocabulary, as measured without the use of the software, in comparison to students in the control group. In addition, improved reading skills may result in better academic performance and aspirations.

TARGET POPULATION
O’ahu area high school 9th graders at risk for or with disabilities, whose reading scores are between a 1.0 and 6.9 grade level equivalencies. Over 3 years of the project, our study aims to have 384 students and 48 teachers in 12 schools participate in the study.

OUR PREVIOUS STUDY
Our present study builds upon 2 pilot studies implemented in 2 high schools on O’ahu. The results of the pilot studies demonstrated a significant increase in reading comprehension, vocabulary and rate after the students used the text-to-speech software for one semester.

OUR PURPOSE
To investigate the effectiveness of a text-to-speech software as an intervention to improve overall reading ability, academic and career aspirations. Our study will implement the software in multiple O’ahu high schools targeting 9th grade students, who are reading between the first and sixth grade level.

METHODS
Gates MacGinitie Reading Tests are administered at the beginning and end of the semester to determine the efficacy of text-to-speech software use in improving overall reading skills. Students are also asked to complete project developed pre-post surveys to assess whether changes occurred in their attitudes towards reading, academic expectations and career aspirations.

RESEARCH DESIGN
- Length: 4 semesters
- Design type: Multi-site cluster randomized trial
- 12 O’ahu High Schools
- 12 teachers per semester
- 96 students per semester
- Each semester, teachers are randomly assigned to either the intervention group or comparison group

REPORT OF PROGRESS
For the Spring 2011 semester:
- 111 9th graders meeting the participant criteria
- 9 O’ahu high schools
- 18 Teachers
- Content area implemented in: history, science & language arts.

PRE-INTERVENTION READING LEVEL
Average vocabulary grade equivalency: 6.1 (grade 6, 1 month)
Average reading comprehension grade equivalency: 5.2 (grade 5, 2 months)
Average total score grade equivalency: 5.8 (grade 5, 8 months)

WHAT IS TEXT-TO-SPEECH?
Text-to-speech is a speech synthesis application that is able to read electronic text back to the reader. Kurzweil 3000 TM is a comprehensive TTS software. As the computer reads the text aloud, it also simultaneously highlights the word, sentence or paragraph being read. Students are able to modify the reading speed, voice, and visual appearance, such as size of text and color of the highlighter, to suit their individual needs. Furthermore, the software is also equipped with other features, such as the dictionary tool where students can have the definition of an unknown word read to them.

BY JESSE HSU, KENDRA NIP, KIRIKO TAKAHASHI, HYE-JIN PARK, & KELLY ROBERTS