

The Effect of Using a Mobile Literacy Game to Improve Literacy Levels of Grade One Students in Zambian Schools

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This intervention study was conducted to document conditions under which a computer-based literacy game (GraphoGame) could enhance the literacy skills of first-grade students in an African city. The game demonstrated a positive effect for the spelling test. The most effective intervention combined exposure of both the teachers and the students to the game.

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This intervention study was conducted to document conditions under which a computer-based literacy game (GraphoGame) could enhance the literacy skills of first-grade students in an

African city. The participants were 573 first-grade students from government schools who were randomly sampled into control (n = 314) and various intervention (n = 259) groups. GraphoGame was administered on mobile phones to students at their school under supervision. There was a positive effect of the game for the Spelling test. The most effective intervention combined exposure of both teachers and students to the game. Initial letter knowledge was a good predictor of final letter knowledge on GraphoGame.

- Literacy is a major cultural resource for effective communication and an essential skill for individuals to prosper in a modern society.
- The proportion of school students in Zambia achieving even the minimal expected standard of literacy by Grades 5 and 6 is exceptionally low, with only 32.3% of students attaining minimal acceptable mastery of skills and knowledge.
- In an attempt to improve reading levels, the Government of Zambia introduced a new educational policy: Primary Reading Program (PRP), which requires the seven Zambian official languages should be used for teaching initial literacy, depending on the geographical location.
- The PRP works on the premise that the orthography of the Bantu languages of Zambia is transparent or consistent in nature.
- Transparent alphabetic codes are much easier to teach and learn.
- Reading improvements have been documented since the introduction of the PRP.
- For example, an increase from 23% to over 60% has been reported in achieving minimal standards in the local languages in Grade 5.



The present study

This paper reports on the findings of an applied research project entitled *Reading Support for Zambian Children* (RESUZ). The objective was to assess the efficiency and effectiveness of a supplementary, computer-mediated learning resource in the form of a phonics game (GraphoGame) played on a hand-held device (mobile phone).

The goals of the study were as follows:

1. To examine the effectiveness of the desktop computer or mobile phone-based phonics game (GraphoGame) in improving initial literacy skills of first-grade students in the context of prevailing conditions as a supplementary resource for literacy instruction in Zambian public schools.
2. To establish which of several methods of providing intervention (students only, teachers only, or a combination of both) was most effective.
3. To investigate the influence of initial letter knowledge and amount of time playing GraphoGame on final letter knowledge.

Methods

Participants were 573 students (age range 5-9 years, 52.4% females) and their teachers ($n = 68$). In the post-test, 312 students participated. The participants were randomly selected from 42 government schools in the Lusaka District. Within each school, two Grade 1 classes were randomly selected and randomly assigned to either a control or intervention class. Six students were then randomly sampled from each classroom.

GraphoGame

- The game provides a computer-mediated online environment for learning letter–sound correspondences developed in Finland.
- The game provides an index of initial letter knowledge based on assessment of the child’s letter knowledge before they play the game.
- It provides an index of final letter knowledge after the child has played the game.
- The focus of the training was initially letter–sound knowledge and the steps needed thereafter for learning to read (if the training is to continue over a prolonged period).

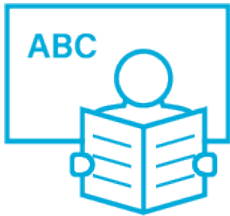


Findings

- GraphoGame produced significant improvements in the performance of the students who were exposed to it directly (when the individual student was exposed) or indirectly (when the teacher alone played the game) compared to students in the control group, as evidenced by the larger increase of mean scores from pre-test to post-test as a function of exposure to GraphoGame.
- Analyses further showed that this improvement was most prominent when both the students and teachers played the game and the teachers were introduced to the phonics approach so that they would not provide incompatible instruction.
- Playing the game produced a significant effect on participants’ decoding skills but not on orthographic awareness.
- Initial letter knowledge was a good predictor of performance in predicting final letter knowledge in

GraphoGame.

- Letter–sound knowledge documented by the GraphoGame programme is a significant predictor of performance on conventional paper and pencil test for decoding skills.



Conclusions

- The findings provide evidence that GraphoGame is a tool that can be used to help Zambian students learn to read by enhancing their letter–sound knowledge.
- The effect of playing the game is greater when teachers are introduced to letter–sound knowledge in ciNyanja to avoid interference from English letter names.
- The PRP used in Zambian schools emphasises letter-sound correspondence as basic introduction to literacy.
- This means that these two approaches (the PRP course and GraphoGame) can complement each other in the teaching of basic literacy to students—especially in the early grades.
- The results lead the authors to recommend that GraphoGame can be used as a tool to supplement the teaching of literacy in Zambian schools.
- Interventions that use the game should focus on both students and teachers.