How does the Implementation of a Literacy Learning Tool Kit influence Literacy Skill Acquisition?

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Abstract: This study aimed at following how teachers transfer skills into results while using ABRA literacy software. This was done in the second part of the pilot study whose aim was to provide equity to control group teachers and students by exposing them to the ABRA-CADABRA treatment after the end of phase 1. This opportunity was used to follow the phase 1 teachers to see how the skills learned were being transformed into results. A standard three-day initial training and planning session on how to use ABRA to teach literacy was held at the beginning of each phase for ABRA teachers (phase 1 experimental and phase 2 delayed ABRA). Teachers were provided with teaching materials including a tentative ABRA curriculum developed to align with the Kenyan English Language requirements for year 1 and 3 students. Results showed that although there was no significant difference between the groups in vocabulary-related subscales which include word reading and meaning as well as sentence comprehension, students in ABRA-CADABRA classes improved their scores at a significantly higher rate than students in control classes in comprehension related scores. An average student in the ABRACADABRA group improved by 12 and 16 percentile points respectively compared to their counterparts in the control group.

Keywords: ABRACADABRA, Early Literacy, Achievement, Teachers, Learners

1 Background

Studies have shown that children in Kenya, especially girls, are not achieving educational success to the extent they are capable of (Dubeck, Jukes, Okello, 2012; Watkins et al., 2010; UNESCO, 2010). International statistics show that Kenyan rates in literacy, particularly English literacy, are well below the standards of developed countries in the OECD.

Only 34 % of boys and 27 % of girls complete secondary school in Kenya (United Nations Children's Fund, 2012). Additionally the Uwezo Report has shown that Learning levels remain low and that one third of all children in Class 3 cannot even read a Class 2 level story (Uwezo, 2012).

It is in this context that the Aga Khan Academy Mombasa, which runs Professional Development Courses for teachers of English to improve the levels of English language performance, and Centre for the Study of Learning and Performance (CSLP), a research centre from Montreal Canada, collaborated on a project; using technology to teach early literacy. This project in which twelve schools participated exposed learners to ABRACADABRA, which is an early literacy software that supports the learning of English.

2 Methodology

2.1 Research Design

As a follow-up to phase 1 pre-test/post-test control group design, phase 2 study focussed on delivering delayed treatment to the control participants. After six phase 1 control teachers and one new teacher were trained with ABRA, they used ABRA with their students. Pre- and post-test results collected in the six classes during phase 1 study were compared with the phase 2 post-test scores. Both pre- and post-test results were collected from students in a new class in phase 2.

Seven English teachers and their grade three (standard) (N=235) and grade two (N=39) students participated in phase 2 of the project. From the total sample of 276 students, test results were missing for 95 students for a variety of reasons. Specifically, 16 students were transferred to different classes during the year, 15 students were new to their classes and 64 did not attend lessons on the days of testing during either phase 1 or phase 2 or both. These reductions resulted in usable data for 181 students (N2= 33 and N3= 148).

2.2   Instruments

A set of instruments were used to gather data. These have been divided into two, those for students' achievement measures and teachers' and classroom measures.

The Group Reading Assessment and Diagnostic Evaluation, GRADE (Williams, 2001) which is a standardized measure designed to assess reading skills and to monitor reading progress was used in phase 2 of the project. The *Literacy Instruction Questionnaire* (LIQ; Abrami et al., 2011) was used to collect information about the English Language instruction. This is a CSLP-developed instrument that elicits teacher reports on aspects of the instructional methods they used in their classroom over the past semester. Specifically, the questionnaire includes two sections to explore: 1) approaches to reading and comprehension instruction; and 2) use of technology. *An ABRA classroom observation form* (Centre for the Study of Learning and Performance, 2012) was used to collect additional data about the details of classroom instruction. The form is a CSLP-developed instrument and includes four sections, general classroom environment. Lesson plans, *involving the integration of ABRA into language instruction*, were requested from teachers in order to cross-validate the trace data collected by the software as students used ABRA. *Videotaping of English language instruction* was conducted during the 11-week long intervention in order to capture teachers' pedagogical techniques and students' learning experiences with ABRA.

ABRA trace data reports were retrieved as an objective measure of ABRA use in order to complement and corroborate the implementation information collected via teachers' self-reports, lesson plans, and observations. *Teacher final interviews* were conducted shortly after the end of the intervention. The objective of holding these interviews was to learn about teachers': attitudes towards the use of the technology when teaching generally, and in the use of ABRA specifically.

3   Analyses

Before the main analyses, we applied standard procedures to clean the data. Only data from individuals who completed tests at all times of testing were used for analyses.

For all GRADE achievement measures, simple difference scores (post-test minus pre-test) were used. Although the difference score has often been ma-

ligned as an unreliable index of change, recent work (Zimmerman, Williams, 1998; Thomas, Zumbo, 2012) demonstrates a flaw in this perspective and suggests that the resulting non-use of difference score analysis is unwarranted.

To allow for the comparability of reading achievement results collected by means of GRADE Level 1 and 2 tests we used fall grade 1 norms to convert grade 3 students' raw scores. Hence three composite scores (Vocabulary, Comprehension and Total Composites) were used in lieu of four subtest raw scores (Word Reading, Word Meaning, Sentence Comprehension and Passage Comprehension). Listening Comprehension scores were not used.

4   Findings

Results indicate that there was a remarkable positive change in scores after ABRA intervention. Even though teachers reported significantly higher frequencies of using computers for instruction at the post-test than at the pre-test, these uses yet fall between rarely and occasionally. The ABRA trace data retrieved twice indicated that depending on class, an average student spent between 12 to 27 minutes per week on ABRA activities. With the exception of large classes. Specifically, grade three students spent more time on reading comprehension activities in comparison to phase 1 of the project. Additionally lesson plans showed that teachers attempted to integrate ABRA activities targeting different literacy components including phonemic awareness and phonics (e.g., word changing, syllable counting), fluency (e.g., speed reading, expression), comprehension (e.g., story elements, comprehension monitoring), and writing (e.g., word spelling). Observation forms form the implementation team showed that the teachers were able to guide the students through activities effectively. The information on ABRA activities reported in observations corroborates that in lesson plans when both are available.

Finally interviews conducted via web conferencing revealed that teachers developed some comfort level using technology and a positive shift in their attitudes towards using technology to teach literacy. The teachers also expressed a positive shift in their own teaching of English Language. The majority of teachers used a dedicated iBook in their for low ability students which brought these students up to speed with the others. Additionally most of the students who initially lacked general ICT skills, quickly learned how to successfully navigate within the software. The findings also show that Cultural sensitivity regarding the ABRA stories did not pose problems for the students some whose parents started enrolling them in lessons outside of school in order for them to learn more about computers.

5   Discussion

Reading achievement data show that after eleven weeks of ABRA exposure, students in the seven delayed ABRA classes showed similar gains with phase 1 ABRA students in regard to comprehension-related and total scores on the GRADE assessment.

Delayed ABRA students' improvements were almost ignorable on vocabulary subtest pertaining to student capacity to decode, recognize sight words and to understand their meaning. However, in phase 1 experimental and control students gained equally on the vocabulary subtests of the GRADE. An explanation we favour relates to the nature of measure of vocabulary knowledge. For instance, standardized tests used to measure changes in vocabulary skills may be accountable for capturing only small average effects in the development of vocabulary delivered by ABRA. According to the NRP report (2000), standardized tests of vocabulary development are not sufficiently sensitive. The more the vocabulary test matches the instructional context and content, the more appropriate this assessment is to measure the impact of instruction on vocabulary skills.

The data from the teacher self-reports provide some detail about the literacy instruction that occurred in the experimental and control classes. ABRA teachers' responses to the survey and interview questions reveal some positive shifts in their literacy instruction including alphabetics, comprehension and writing. Certainly their comfort level with teaching with computers improved – statistically significant gains were indicated with respect to teachers' declared use of computers. Nevertheless these im-provements were not powerful enough to make them use computers more than rarely and occasionally.

The ABRA trace data reports, observational data and lesson plans showed that during the eleven-week intervention, teachers developed a certain capacity in the integration of the ABRA software throughout the English Language curriculum. In comparison with phase 1, delayed ABRA teachers were able to address key literacy components in a more balanced fashion. However, time of exposure of an individual student to ABRA activities can be improved considering the length of a standard lesson. Additionally ABRA integration requires more effort. Better links should be established between the ABRA content and the student activities in the classroom. Similar to the phase 1, while there was a shift towards serving in new roles as facilitators of their students' learning, the period of time was rather short for them to stop using a teacher-directed approach for their literacy instruction.

6   Conclusion

This study showed that there is some level of comfort when teachers plan together observe each other and reflect on their lessons. Despite having three days of training only, the follow up scaffolding and collaboration with each other showed that teachers could actually become competent users of technology and get good results for the teaching and student achievement. However, there should be a system of tracking on how the teachers are using the software so as to advise them on effective infusion of the technology. Suffice it to say that technology integration should not be done as standalone but should be integrated in the instructional design and pedagogy

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Biographies

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Rosemary Waga is a lead teacher at the Aga Khan Primary school early primary year's section. Rose is a master trainer and a digital Ambassador with the learning tool kit. Waga is a secretary for English language teachers association which does teacher peer mentorship on communicative approach of teaching English.