ABRACADABRA (ABRA) 
EARLY CHILDHOOD 
LITERACY PROJECT, 
ANNUAL REPORT NO. 1 

A FEASIBILITY PILOT STUDY OF 
THE ABRA LITERACY SOFTWARE 
IN NORTHERN TERRITORY 
INDIGENOUS CLASSROOMS

Jennifer Wolgemuth, John Ehrich, Janet Helmer, Sue Emmett, 
Claire Bartlett, Heather Smith and Tess Lea 
School for Social and Policy Research 
Charles Darwin University 
Darwin, Northern Territory

Phil Abrami and Gia Deleveaux 
Centre for the Study of Learning and Performance 
Concordia University 
Montreal, Canada

Rob Savage 
Centre for the Study of Learning and Performance 
McGill University 
Montreal, Canada

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CITATION

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Despite well-intentioned efforts to narrow educational disparities between Indigenous and non-Indigenous students, Indigenous students in the Northern Territory (NT) continue to struggle to learn to read. Poor performance on literacy tests points to the need for early, intensive and expertly informed intervention, which should include direct phonological and phonemic instruction (Ball & Blachman, 1991). At the same time, skilled early childhood instructors are not consistently available in NT schools, and attempts to compensate through in-service training can be difficult to sustain in high turnover conditions. Finding scientifically sound and replicable ways to address this gap is the focus of the three year ABRACADABRA (ABRA) early childhood literacy project (ABRA Project).

The ABRA software was developed by the Centre for the Study of Learning and Performance (CSLP) in Montreal, Canada. ABRA implements a balanced reading curriculum to help students develop word, text, fluency, and eventually writing skills. ABRA aims to build and enhance the literacy skills of emerging and young readers by helping students master foundational skills in the early years of schooling, engaging students in literacy instruction that captures interest and sustains engagement, and assisting educators to support students by providing scaffolded instruction. Previous research in Canada has shown ABRA effectively enhances the literacy skills of children with poor attention (Deault, Savage, & Abrami, in press) and urban low socioeconomic pre-reading students in transition classes (Comaskey, Savage, & Abrami, 2009).

The ABRA Project has three discrete phases: a pilot study in year 1 (2008) with three schools to establish the feasibility of using ABRA in the NT, a quasi-experimental study in year 2 (2009) with 6 schools to provide preliminary evidence of ABRA’s effect on student literacy outcomes and a randomised control trial in year 3 (2010) with nine to twelve schools to test the hypothesis that ABRA will improve student literacy significantly more than traditional instruction alone.

PILOT STUDY METHODS

The ABRA Project Pilot Study was conducted during the 10 weeks of Term 2, 2008. The aim of the research was to determine the feasibility of using ABRA in the NT related to teacher training, implementation and student literacy outcomes. The Pilot Study was guided by four research questions:
1. How well are teachers trained and supported to deliver ABRA?

2. How well is ABRA implemented in NT classrooms?

3. What modifications to ABRA, if any, are required for successful translation from a general Canadian to Indigenous and/or Australian contexts?

4. Does ABRA have an impact on student literacy outcomes?

Three schools reflecting the residency patterns of Indigenous and non-Indigenous students in the NT participated in the Pilot Study. The three primary schools represented two of the three regional classifications in the NT: large urban towns (Darwin) and very remote (all NT schools not located within the NT’s four major cities). Student enrolment per school ranged from 100 to 400. All schools taught literacy using Accelerated Literacy.

Two early childhood classrooms from each of the three schools participated in the Pilot Study. Of the six classes, there was one Transition and one Grade 1 class. The remaining four classes were multi-grade: Transition/Grade 1, Grade 1/2, Grade 2/3, and a Grade 1-3 Indigenous class. The average enrolment per class was 21 students.

Student literacy gains were assessed using a pretest-posttest single group design in which students were tested immediately prior to and after the ABRA intervention using the Group Reading and Diagnostic Evaluation (GRADE) and the Longitudinal Literacy and Numeracy Study (LLANS) survey instruments.

**RESULTS**

**Teacher Training and Support**

Overall, teachers were satisfied with the training session, but felt it was too long and did not provide enough examples of lesson plans. Researcher/Coaches who supported the teachers during the 10 week implementation were best able to meet regularly with teachers when they spent long periods of time in schools and regular meetings were associated with more frequent and better ABRA lesson planning. Future training sessions will include time for presenting and discussing lesson plans.

**Implementation Fidelity**

Implementation fidelity is concerned with how well an intervention was delivered. Overall, the quality of delivery was adequate, but not superb. Only one teacher consistently created lesson plans, demonstrated the lesson prior to having students use ABRA, brought in other classroom resources to support ABRA lessons, used the teaching assistants as tutors, and employed differentiated instruction. Future ABRA training and support will emphasise the importance of best-practices for ABRA implementation.
Teachers reported students were very engaged when using ABRA, but no data was collected directly from the students. Student interviews will be conducted as part of the Phase II study to gather their feelings and thoughts about ABRA.

ABRA helped teachers learn to explicitly teach phonics, an identified gap in the Accelerated Literacy (AL) methodology. Yet some teachers expressed reservations that ABRA activities were out of context from the stories embedded in ABRA; explicit instruction had to be scaffolded and contextualised, which to their minds was in conflict with AL philosophies. This suggests that future trainings will need to emphasise that a good literacy program contains instruction that is both in and out of context.

**Modifications to ABRA**

The Pilot Study sought teachers’ feedback to make modifications to the ABRA software. Teachers noted specific software bugs, and instances where Canadian accents and pronunciation interfered with student learning. Most teachers said ABRA could be improved by adding Australian stories and characters, but only one teacher felt these improvements were essential to student learning. A revision request was sent to the CSLP and all major revisions have been enacted as at the writing of this report.

**Student Outcomes**

On average, all students gained significantly from pre-test to post-test, especially on measures of phonological awareness and phonemic awareness. Non-Indigenous students gained significantly more than Indigenous students, and there was no difference between students with high, medium and low implementing teachers. Student attendance was significantly related to performance on the GRADE K instrument.

Due to the limitations of a single-group design, we cannot make any claims about causality. In other words we have no way of knowing whether the students’ gains were caused by ABRA instruction, good teaching in general, and/or were simply developmental. Yet there are two reasons to believe ABRA played at least a part in the students’ literacy gains. First, the students experienced the greatest gains in phonological awareness and phonemic awareness. According to the teachers, these were the skills they felt the least prepared to teach and the ones for which they most used ABRA. Second, and significantly, the GRADE is a norm-referenced test and the gains for the GRADE P and K represented 7 and 4 months of learning; far above and beyond what would be expected over a 10 week period of regular instruction.

**FUTURE RESEARCH**

The positive Pilot Study results demonstrate the feasibility of using ABRA in NT schools and justify moving to the Phase II quasi-experimental study. Alongside a continuing investigation of implementation fidelity, this study will focus on whether ABRA causes increases in student literacy with the inclusion of a control group for comparison. The Phase II study will see several revisions to the teacher training and
support based on the Pilot Study results— including developing lesson plans and emphasising the importance of teaching literacy in and out of context and the addition of data collection tools and activities. A teacher support instrument will gather teachers’ perceptions of the support provided and interviews with Aboriginal and Islander Education Workers (AIEWs) and students will collect their impressions of the ABRA software.

The Phase II study will contribute to the growing body of evidence that ABRA in particular, and computer-based instruction in general, is a particularly effective means of redressing the literacy disparity between Indigenous and non-Indigenous students, between struggling and adept readers.
1. INTRODUCTION

For nearly a decade there has been intense pressure on governments and schools to lift literacy standards across Australia; to ensure every child leaving primary school can read, write and spell. Indigenous children in particular tend to lag far behind their non-Indigenous counterparts (DEET, 2006; Masters & Forster, 1997). In the Northern Territory (NT), Indigenous students’ literacy test scores are particularly low and poor educational outcomes in this population are likely to contribute to high rates of unemployment, ill-health and social problems. Only 20% of Indigenous students in very remote areas achieve minimum literacy benchmarks by Year 3, compared to 85% of non-Indigenous students (DEET, 2006). Despite well-intentioned efforts to narrow this disparity, Indigenous students continue to struggle to learn to read. Students who fail to acquire basic reading skills in their early years are less likely to attain educational parity with the passing of each school year (Good, Simmons, & Smith, 1998; Rowe, 2005). This has certainly been the case for Indigenous school children in regional and remote Australia whose literacy benchmarks drop from 20% in Year 3 to 15% by Year 7 (DEET, 2006). Overall poor performance on literacy tests points to the need for early, intensive and expertly informed intervention, which should include direct phonological and phonemic instruction (Ball & Blachman, 1991). But at the same time, skilled early childhood instructors are not consistently available in NT schools, and attempts to compensate through in-service training can be difficult to sustain in high turnover conditions. Finding scientifically sound and replicable ways to address this gap is the focus of the three year ABRACADABRA (ABRA) early childhood literacy project (ABRA Project).

Interactive computer software can be an exceptional motivating tool for Indigenous Australians (see O'Donoghue, 1992; Fleer, 1989; Steen, 1997; Stanton, 1992). Additionally, an information technology (IT) platform for assisting teachers in the critical task of conferring foundational literacy skills might be of assistance in high turnover and thinly-skilled settings, such as the NT. However, research on the academic outcomes of children’s language learning software is relatively scant. There have been very few well-designed studies in Australia investigating the use of computer software to support literacy learning (Brooks, Miles, Torgerson & Torgerson, 2006). Within the Indigenous domain, there is an extreme lack of information.

To address these critical issues, a pilot study of ABRA, a computer-based early literacy intervention targeting at-risk, Indigenous students was implemented by the School of Social Policy and Research (SSPR) at Charles Darwin University (CDU) and the Centre for the Study of Learning and Performance (CSLP) at Concordia University in Montreal. This report describes the first year Pilot Study designed to evaluate the feasibility of using the ABRA software in NT classrooms, the fidelity of implementation (or how well ABRA was used in the classrooms) and ABRA’s potential impact on student literacy outcomes.
THE ABRA SOFTWARE
http://grover.concordia.ca/ABRA/version1/abracadabra.html

Drawing on best-practice recommendations from the US National Reading Panel (National Institution of Child Health and Development, 2000), ABRA was developed in 2002 by a team of literacy and classroom technology experts at the CSLP to improve the literacy of students four to eight years old, specifically targeting those at risk of school failure (for a description of ABRA’s development, see Hipps, Abrami, & Savage, 2005). ABRA implements a balanced reading curriculum in a digital environment, helping students to develop word, text, fluency, and eventually writing skills. In its entirety, ABRA provides an opportunity to enrich students’ reading while fully supporting those who teach these students. ABRA aims to develop and enhance the literacy skills of students at risk of failure by helping these students master foundational skills in the early years of schooling, engaging students in literacy instruction that captures interest and sustains engagement, and assisting educators to support students by providing scaffolded instruction.

ABRA activities are organised into alphabetics, fluency, comprehension and writing categories (the foundations of literacy acquisition), so that teachers can target specific skills for instruction or guide students to progress from basic sound and letter identification to complex tasks such as spelling, and personal responses to stories.

Alphabetics

Alphabetics activities begin with phonemic awareness, focusing predominantly on listening skills, auditory discrimination and letter naming and then moving on to word family manipulation, decoding games and blending tasks with text support.

Reading fluency

Reading fluency activities cover reading expression and speed. ABRA has models of reading built into the story-related activities so students can monitor their improvement, as well as how to decode words within the context of the story.

Comprehension

Comprehension activities are levelled and range from simpler tasks like placing a well-known story in order (beginning, middle, and end) to summarising an entire text. Other activities include question prompts encouraging students to think critically about the text and respond appropriately given the context of the story.

Writing

The writing component is designed for children to apply phonetic principles and their literacy experiences to the writing of words and sentences. Scaffolded mechanisms are built in so that students can complete the writing activities on their own.
ABRA RESEARCH

Software Development

ABRA is not a static tool, but is updated through an iterative process of research and development to ensure its efficacy, usability and practicality. ABRA’s continual development is informed by regularly soliciting stakeholder feedback and through ongoing research projects, such as the current Pilot Study. Because ABRA is embedded in a framework of rigorous testing and development, it has an advantage over numerous software rivals in Australia (such as Reader Rabbit, Hooked on Phonics and Word Shark) and North America. While some effort has been made to study the impact of software (such as Reader Rabbit) on Australian children’s literacy outcomes, these studies have been limited to small-scale qualitative designs. By contrast, the ABRA software has demonstrated effectiveness under the highest standards of academic scrutiny in Canada (Savage, Abrami, Piquette-Tomei, Wood, & Deleveaux, 2008).

Stakeholder Perceptions

Research in Canada has shown ABRA to be popular with students, teachers and parents. One Canadian teacher said: “My kids were all different levels. I liked ABRA because I could work at the level that was best for them.” Observations of students using ABRA in groups showed they responded positively to the characters and activities and discussed the stories together when prompted to do so by the program (Hipps, et al., 2005).

Implementation

Research suggests ABRA is effective when delivered for at least 20 hours (Savage, Abrami, Piquette-Tomei, Wood, & Deleveaux, 2008). Although no research has compared teachers with various levels of training, all ABRA teachers in the Canadian studies have attended a full-day training session to familiarise themselves with the software. Implementation in Canada has included a support component where undergraduate or graduate student research assistants visit classrooms weekly to observe ABRA lessons and provide technical and content support. Research reveals this support is vital as teachers reported in logbooks being disappointed when support was not consistently available during the first four-weeks they delivered ABRA lessons (Savage, et al., 2008).

Student Outcomes

ABRA has been shown to enhance student literacy in Canada with a wide range of learners. Since 2004, several randomised control trials (RCTs) and quasi-experimental studies have been conducted in Canadian classrooms to measure ABRA’s impact on kindergarten (transition) and grade 1 students’ literacy. The Canadian RCT data to date has shown that ABRA aids typical students in Grade 1 (Savage, Abrami, Hipps, & Deault, in press) as well as children with poor attention (Deault, Savage, & Abrami, in press) and low socioeconomic pre-reading students in transition level classrooms.
(Comaskey, Savage, & Abrami, 2009). An RCT comparing two different ABRA treatments (ABRA with a focus on synthetic phonics and ABRA with a focus on analytic phonics) to typical instruction revealed significant advantages for ABRA students on key literacy skills of letter-sound knowledge, phonological blending, listening comprehension and reading comprehension (Savage, et al., in press; Savage, et al., 2008). Preliminary results of an RCT conducted in kindergarten, first and second grade classrooms in Canada showed ABRA students significantly outperform non-ABRA students on measures of sight word reading and phonological blending (Savage et al., 2008).

ABRA PROJECT THREE YEAR TRIAL

The argued and demonstrated positive impact of interactive computer programs on Indigenous student motivation (O’Donoghue, 1992; Fleer, 1989; Steen, 1997; Stanton, 1992) coupled with well-designed Canadian research showing ABRA significantly improves early literacy skills suggest ABRA may be a highly effective literacy tool in NT early childhood classrooms. The purpose of the three year ABRA Project is to subject that logic to increasingly rigorous standards of proof.

Based on Shadish, Cook and Campbell’s (2002) recommend a five-step model for testing a new educational intervention, the ABRA Project research will proceed through three discrete phases: a pilot study with three schools to establish the feasibility of using ABRA in the NT; a quasi-experimental study in six schools to provide preliminary evidence of ABRA’s effect on student literacy outcomes; and a randomised control trial in nine to twelve schools to test the hypothesis that ABRA will improve student literacy significantly more than traditional instruction alone.


The first year of the ABRA Project, the Pilot Study, was one of exploration. It was designed to intervene minimally in the teachers’ classrooms and ultimately to determine whether ABRA was (or can be made to be) appropriate in an NT and Indigenous context. Therefore Phase 1 attended primarily to ‘careful implementation,’ or implementation fidelity.

During the Pilot Study, most aspects of the program were untested and ‘raw’ in Australia. The means of training teachers and providing relevant classroom support, the advice given on what is involved, and the knowledge of what is going to be problematic in terms of cross-cultural translation were all in rudimentary form. The aim of Phase 1 is test out all the different parts of the project to establish the feasibility of training and using ABRA (including determining what modifications may need to be made to the ABRA software) in the NT and to prepare for a fuller ‘audition’ of its effects in a small scale quasi-experimental study (Phase II, 2009).
Phase II: Quasi-experimental Study (2009)

The second year of the ABRA Project will begin to examine ABRA’s impact on student outcomes and the variables that may mitigate or enhance those impacts. Six schools will participate in the Phase II quasi-experiment. Two classes from each school will be selected to participate and assigned to either the treatment (Experimental) or typical instruction conditions (Control). Student attendance and implementation quality will be assessed to determine whether these variables impact on the extent to which Experimental students gain as compared to Control students.

Phase III: Randomised Control Trial (2010-11)

If Experimental students participating in ABRA during Phase II show greater gains than their Control peers, and if additional funds can be sourced to supplement the Telstra Foundation funds that support the initial pilot and trial phases, then the ABRA Project will conduct an RCT in Phase III. The aim of the RCT is to test the hypothesis: Students who receive 4 hours of ABRA instruction per week will have greater early literacy score gains than students who receive equivalent amounts of typical literacy instruction.

THIS REPORT

The purpose of this report is to describe the activities and findings of the Phase I, Year I Pilot Study. As stated above, the purpose of the Pilot Study was exploratory, to determine the feasibility of implementing, using and researching ABRA in NT classrooms. Part of this focus on feasibility was to determine whether literacy assessment instruments could detect student gains associated with ABRA instruction; and whether students would improve on standardised measures of literacy over the course of the ABRA intervention. To answer the question of feasibility, the Pilot Study was designed to collect data to inform teacher training and support (Section 3), implementation (Section 4), the development of ABRA software and ICT issues (Section 5) and student outcomes (Section 6). The overall feasibility of using ABRA in NT classrooms is discussed in the Conclusion (Section 7). The following Section 2 describes the Pilot Study methods.

References


2. METHODS

The ABRA Project Pilot Study was conducted during the 10 weeks of Term 2, 2008. The aim of the research was to determine the feasibility of using ABRA in the NT related to teacher training, implementation and student literacy outcomes. The Pilot Study was guided by four research questions listed below.

RESEARCH QUESTIONS

1. How well are teachers trained and supported to deliver ABRA?

2. How well is ABRA implemented in NT classrooms?

3. What modifications to ABRA, if any, are required for successful translation from a general Canadian to Indigenous and/or Australian contexts?

4. Does ABRA have an impact on student literacy outcomes?

DESIGN

The Pilot Study utilised a mixed-methods design, which draws on a pragmatic framework to answer ‘what works’ questions about the use of ABRA in NT schools. The mixed-methods design was: 1) parallel -- meaning quantitative and qualitative data were gathered at the same time (Tashakkori & Teddlie, 1998); and 2) for triangulation -- meaning quantitative and qualitative results were used together to answer the research questions (Creswell, 2002). The strength of mixed-methods research is its pluralism and non-reliance on a singular method for evidence of effectiveness and impact – an important feature given the interdisciplinary, dynamic and complex nature of education (Johnson & Onwuegbuzie, 2004).

To address the fourth research question concerning student outcomes, a single group pretest-posttest design was used in which student literacy was assessed immediately prior to and after receiving ABRA instruction.

SCHOOLS AND PARTICIPANTS

Three schools reflecting the residency patterns of the larger Indigenous and non-Indigenous communities participated in the Pilot Study. In Australia, 30% of Indigenous people live in large urban towns, while 42% reside in provincial (rural towns) and 28% in remote towns (Gray & Beresford, 2008). The three primary schools represented two of the three geolocation classifications in the NT: large urban towns (Darwin) and very remote (all NT schools not located within the NT’s four major cities). Student enrolment per school ranged from 100 to 400. All schools taught literacy using

Two early childhood classrooms from each of the three schools participated in the Pilot Study. Of the six classes, there was one Transition and one Grade 1 class. The remaining four classes were multi-grade: Transition/Grade 1, Grade 1/2, Grade 2/3, and a Grade 1-3 banded Indigenous class. The average enrolment per class was 21 students.

School 1 – Remote community school

The remote community in which ABRA was implemented had a population of about 450. In 2008 the school enrolled nearly 90 students from Preschool to Year 6. There were five teaching staff and an equal number of teaching assistants helping in the classrooms. The two teachers who took part in the Pilot Study had a combined Transition and Year 1 class and a combination Year 2 and 3 class. All children who attended the school were Indigenous.

School 2 – Remote town school

The remote town in which ABRA was implemented is one of the five largest towns in the NT. In 2008 the school enrolled 380 students from Preschool to Year 6. The two teachers who participated in the Pilot Study taught a Year 1-3 Indigenous class and a Year 1 class. Eighty percent of the students at the remote town school were Indigenous.

School 3 – Provincial city school

The provincial city in which ABRA was implemented is in one of the largest cities in the NT. In 2008 the provincial city school enrolled 200 students from Preschool to Year 6. A diverse range of cultures attend the school with families coming from the city’s Indigenous community, the Defence Force and the local community. The two teachers who participated in the Pilot Study taught a Transition class and a combined Year 1 and Year 2 class. Approximately 30% of the students at the provincial city school were Indigenous.

Participants

A total of 126 students participated in the study. Of these, 29 students were either absent during pre- or post-testing for both the GRADE and the LLANS so that the final sample for the student outcomes portion of the study was 97 students who completed either the GRADE or the LLANS or both (see Table 1). There were 11 students in Transition, 66 students in Grade 1, 18 students in Grade 2, and 3 students in Grade 3. Fifty-four students (56%) were male and 43 (44%) were female. The students were 64% (n=63) Indigenous.
### Table 1

*Early Literacy Pilot Study Student Demographics*

<table>
<thead>
<tr>
<th>Grade</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transition</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>1</td>
<td>66</td>
<td>68</td>
</tr>
<tr>
<td>2</td>
<td>18</td>
<td>19</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>54</td>
<td>56</td>
</tr>
<tr>
<td>Female</td>
<td>43</td>
<td>44</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indigeneity</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous</td>
<td>63</td>
<td>64</td>
</tr>
<tr>
<td>Non-Indigenous</td>
<td>35</td>
<td>36</td>
</tr>
</tbody>
</table>

**Age**  
Mean age 6.8 years

### TRAINING AND IMPLEMENTATION

Two weeks prior to implementing ABRA in their classrooms, teachers attended a full-day training session conducted by two ABRA Project researchers (Researcher/Coaches) at Charles Darwin University (CDU). Both Researcher/Coaches were ex-primary school teachers and had several years’ experience supporting teacher practice and professional development. During the Pilot Study the two Researcher/Coaches regularly conducted classroom visits for 20% of the ABRA lessons (either one lesson per week or two lessons every-other-week) and worked with teachers either in person or over the phone to plan lessons and trouble-shoot any technical problems.

One class in the provincial city school experienced a high degree of teacher turnover. The teacher who had originally attended the training session left the school prior to Term 2. The replacement teacher was individually trained by a Researcher/Coach during 2, one hour sessions. By the end of Term 2, this class had 2 additional replacement teachers, all who had to be individually trained by the Researcher/Coach.
The teachers were asked to implement ABRA at least 30 minutes per day for 4 days during 10 weeks of Term 2, or 2 hours per week for a total of 20 hours. Observations revealed most teachers used ABRA more than the minimum requested amount.

INSTRUMENTS AND DATA COLLECTION

Teacher Log Books

Teachers were asked to maintain daily log books documenting the amount of time they taught ABRA each day, what was taught during that time, and their thoughts on the lesson (See Appendix A). The logbooks were collected at the end of Term 2 and analysed for recommended changes to ABRA, teachers’ perceptions of ABRA and teachers’ perceptions of ABRA’s impact on their students.

CSLP Checklist and Researcher Log Book

To assess how ABRA was implemented in the classrooms, once a week or twice every-other week (20% of the time) a Researcher/Coach observed the teachers’ implementation of ABRA. The Researcher/Coach used a structured observation checklist developed by the CSLP (See Appendix B) and a semi-structured observation log during observations (See Appendix C). The CSLP observation checklist covered general areas such as the classroom environment and classroom management and specificities of the ABRA lessons such as duration, activity type and teacher instruction/facilitation. The Researcher Log had observers respond narratively to prompts such as “How do you feel the ABRA lesson progressed today? (Were all the children engaged? What aspects were you particularly pleased / displeased with?)” and “Did the teacher experience any technical difficulties? How was this handled? How much time was taken to resolve the difficulties?”

Reliability between the two raters was established during the first two weeks of implementation where the Researcher/Coaches observed three ABRA lessons together and compared their ratings. They estimated their ratings agreed between 80-100% of the time.

ELLCO and Teacher Questionnaire

The Early Language and Literacy Classroom Observation (ELLCO) instrument was used once to observe the teachers’ delivery of a full literacy lesson. This 90-minute observation occurred during weeks 8 and 9 to ensure teachers had adequate time to become proficient with the ABRA software. After the observation, a researcher interviewed the teacher (20-30) minutes using the Teacher Questionnaire. Reliability between the two Researcher/Coaches was not established for the ELLCO.
Teacher Quality Implementation Rubric

Teachers were classified as high, medium and low implementers using a quality implementation rubric (See Appendix D). Developed immediately following the pilot, the rubric enabled researchers to numerically rank the teachers according to the quality of their teaching whilst implementing ABRA. Figure 1 graphically depicts the development of this observation tool.

Figure 1

*Development of the ABRA Teacher Implementation Quality Rubric*

Reviewed research regarding teacher effectiveness and quality

Researcher observations of ABRA classroom effectiveness, documented in researcher logbooks, the ELLCO and CSLP Checklist

Development of new implementation quality observation tool providing criteria and benchmarks for ranking implementation quality
Focus Groups

Focus groups were conducted during week 5 of the Pilot Study and two months after the Pilot Study, during Term 3, with all participating teachers and school administrators, to gather their thoughts and impressions of ABRA. The focus groups lasted an hour each and were facilitated by one of the Researcher/Coaches, and recorded and transcribed. The transcription was analysed for recommendations for augmenting the ABRA software, teachers’ perceptions of implementation and teachers’ perceptions of ABRA’s impact on students.

Student Literacy Outcomes

Student literacy was assessed using the Longitudinal Literacy and Numeracy Study (LLANS) instrument and the Group Reading Assessment and Diagnostic Evaluation (GRADE). CDU researchers, lecturers and education student volunteers attended a half-day training session on administering the GRADE and LLANS instruments and student testing was conducted two to five days prior to and after the ABRA intervention. Prior to assessing the students, lead Researcher/Coaches at each school met with teachers to determine the appropriate assessment for their students. All assessments were conducted in private or semi-private rooms (resource rooms or libraries) and took approximately 45 minutes per student. Most students were tested at the lowest levels of the GRADE (P, n=31, 43%) and the LLANS (Survey 1, n=77, 85%). Twenty-three (32%) and 18 (25%) students were tested using the GRADE 1 and 2, respectively, and 14 students were assessed using the LLANS 2.

LLANS. The LLANS instrument was developed by the Australian Council for Educational Research (ACER) in 1998 (Meiers, Khoo, Rowe, Stephanou, Anderson, & Nolan, 2006). The LLANS was designed for use specifically with Australian children, and has been used in a number of literacy and teacher effectiveness studies (e.g., Frigo, Corrigan, Adams, Hughes, Stephens, & Woods, 2004; Louden, Rohl, Barrat-Pugh, Brown, Cairney, Elderfield, House, Meiers, Rivalland, & Rowe, 2005).

The LLANS consists of a series of five surveys, each designed to measure proficiency at various stages and levels of development. Each survey investigates performance in relation to five main areas of literacy – making meaning from text, reading fluency, concepts about print, phonemic awareness, and writing. Each individual survey consists of approximately 6 activities which contain a number of tasks that vary in difficulty.

Students in the Pilot Study were tested using the LLANS Survey Booklets 1 and 2. Survey Booklet 1 consists of 5 core reading activities that assess environmental print, phonemic awareness, book orientation, listening comprehension, and print concepts. Survey Booklet 2 contains 7 reading activities that assess reading comprehension, writing, word identification, phonemic awareness, letter recognition and knowledge of print concepts.
The LLANS was administered one-on-one, and took approximately 30 minutes to complete.

While studies of the reliability and validity of the LLANS have yet to be published, our research revealed the LLANS and GRADE assessments were highly correlated (See Table 2). Analyses were not run on GRADE 2 as there were too few students who were assessed using the GRADE 2 at pre- and posttest (7 and 4, respectively).

Table 2

Bivariate correlations between LLANS Raw scores & GRADE Raw Scores at Pre- and Post-test, (two-tailed)

<table>
<thead>
<tr>
<th></th>
<th>LLANS Pre-test raw scores</th>
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<td></td>
<td>(r)</td>
<td>P</td>
<td>n</td>
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<tr>
<td><strong>LLANS</strong></td>
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<tr>
<td><strong>GRADE Pre-test raw scores</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRADE P</td>
<td>.740</td>
<td>.000</td>
<td>36</td>
</tr>
<tr>
<td>GRADE K</td>
<td>.853</td>
<td>.000</td>
<td>25</td>
</tr>
<tr>
<td>GRADE 1&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.536</td>
<td>.032</td>
<td>16</td>
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<table>
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<tr>
<th></th>
<th>LLANS Post-test raw scores</th>
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<tr>
<td></td>
<td>(r)</td>
<td>P</td>
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<tr>
<td><strong>GRADE Post-test raw scores</strong></td>
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<tr>
<td>GRADE P</td>
<td>.692</td>
<td>.000</td>
<td>29</td>
</tr>
<tr>
<td>GRADE K&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.704</td>
<td>.000</td>
<td>22</td>
</tr>
<tr>
<td>GRADE 1&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.616</td>
<td>.011</td>
<td>16</td>
</tr>
</tbody>
</table>

<sup>a</sup>Students who were assessed using GRADE P or K were tested with LLANS 1. Students receiving GRADE 1 were tested with LLANS 2.

<sup>b</sup>Normality assumptions were not met hence Spearman’s (r) was calculated.

**GRADE.** The GRADE measures reading skills at a variety of levels. To match the ability levels of our sample, only the first four were used (GRADE P, K, 1 and 2). GRADE P requires no print-recognition skills and measures three main cognitive processing skills: phonological processing, visual processing, and listening. GRADE K measures knowledge of printed letters and words,
phonological processing, visual processing, orthographic processing and word reading. GRADE 1 tests word reading and other decoding skills and more complex reading processes, such as top-down reading skills. GRADE 2 focuses on more complex top-down reading skills and vocabulary.

The GRADE author (Williams, 2001) reports the GRADE instruments have strong internal consistency (.95-.99). Alternate form reliability (.81-.94) and test-retest reliability (.80) were both high.

While the GRADE is designed to be administered in large groups, testers most often conducted the GRADE assessments one-on-one or in small groups of no more than 3 students per group. Many of the students, especially the Indigenous students from very remote schools, had little experience with standardised tests and had yet to develop the skills required to successfully engage in group testing, such as working individually, sitting in one place and attending to the tester’s instructions. Administering the GRADE one-on-one also enabled testers to ensure students with hearing impairments correctly heard the questions and response options (Helmer, et al., 2009).

ANALYSES

Qualitative Data Analysis

The teacher logbooks, researcher logbooks, ELLCO teacher interviews and focus group transcripts were analysed by the two Researcher/Coaches. First they typed up all the hand-written observations and logs and made notes about important points and recurring themes. Then, together they read through the transcripts, looking for themes under the topics of modifications to the ABRA software, teachers’ perceptions of ABRA (including training and support) and teachers’ perceptions of the impact of ABRA on students. They presented their findings to the broader research team who offered alternative interpretations and feedback. This feedback was incorporated in a revisions request to ABRA sent to the CSLP and a write-up of teachers’ perceptions of ABRA.

Quantitative Data Analysis

The student literacy outcome data was analysed using within-subjects t-tests comparing the students’ pretest and posttest scores. Comparisons between high medium and low implementing teachers (designated by the Researcher/Coaches using an implementation rubric – See Appendix D) and Indigenous and non-Indigenous students on literacy gain scores were conducted using independent samples t-tests and ANOVAs. To determine the strength of the relationship between classroom attendance and literacy gains, a series of bivariate correlations (Pearson’s r or Spearman’s rs) were conducted on student gains in performance for GRADE P, K, and 1 and student attendance.
References


3. TEACHER TRAINING AND SUPPORT

SUMMARY

The purpose of this section is to report on the effectiveness of the ABRA Project’s teacher training and support strategy. The ABRA Project training and support strategy was designed around best practices for professional development, including providing ongoing expert support. Overall, teachers were satisfied with the training session, but felt it was too long and did not provide enough examples of lesson plans. Researcher/Coaches were best able to meet regularly with teachers when they spent long periods of time in schools and regular meetings were associated with more frequent and better ABRA lesson planning. Future training sessions will include time for presenting and discussing lesson plans. As a condition of participating in the Phase II study, teachers will agree to schedule regular weekly meetings with the Researcher/Coach. Finally, because this information is vital to fully assessing the quality of the ongoing support, a survey will be developed to solicit the teachers’ perceptions of the helpfulness and quality of the Researcher/Coach support.

INTRODUCTION

Ongoing professional learning is an essential component of all effective professional development programs (Guskey, 2003; Hawley & Valli, 1999; Ingvarson, 2004; Ingvarson & Meiers, 2005; Ingvarson, Meiers & Beavis, 2005). Supporting teachers to continually seek new information to improve classroom instruction is ‘vital to building capacity in literacy teaching’ (Darling-Hammond & Bransford, 2005 in Commonwealth Department of Education, 2005, p. 21). Indeed, a meta-analysis of research on the processes of professional learning that impact on student outcomes highlighted the importance of regular participation in formal professional learning activities that involve interaction with colleagues and/or experts. This is especially pertinent when the professional learning program involves substantial changes to teaching practices, beliefs, values and understandings (Timperley, Wilson, Barrar & Fung, 2007), as may be the case with the introduction of computer-based instruction in the classroom (Abbott, Lochs, & Williams, 2001).

Instructional principles espoused in contemporary approaches to professional learning highlight the importance of an ongoing approach that is: embedded in teacher practice; organised around collaborative problem solving, involves reflection and feedback and is followed up with support from a range of experts (Guskey, 2003; Hawley & Valli, 1999; Ingvarson, Meiers & Beavis, 2005; Timperley et. al, 2007).

The ABRA Project training and support strategy was built around these best practice principles for professional development. Teachers were trained in the use of ABRA, but then their training and continued learning was encouraged and reinforced by pairing them with an expert Researcher/Coach who had taught literacy in early-childhood classrooms for a number of years. This supportive relationship was intended to build the teachers’ skills specifically in using ABRA to teach literacy, but also more broadly in
the area of literacy instruction. The purpose of this section is to report and discuss the research around the effectiveness of the ABRA training and support.

**ABRA Training**

All ABRA teachers attended a full-day training session one-week prior to implementing ABRA in their classrooms. The training session was conducted by the two Researcher/Coaches in a university computer lab. The training included:

- Review of the ABRA program, development and research
- Description of the literacy assessment instruments
- Direct instruction on using ABRA
- Computer time to explore ABRA
- Group planning time

The aim of the training was to provide teachers with an uninterrupted block to time to think about and work together to develop lesson plans, as well as to become more familiar with ABRA.

**ABRA Support**

The Researcher/Coaches provided teachers on-going support throughout the trial. One Researcher/Coach was based at the remote town school, while the other Researcher/Coach supported teachers at both the provincial city and remote community schools. Due to the placements of the Researcher/Coaches, the remote town school received daily on-site support for the full 10 weeks of implementation, while the provincial city and remote community schools were visited on a fortnightly basis for two days. The on-site support included observing and providing feedback on ABRA lessons, meeting with teachers to discuss their impressions of ABRA and assisting teachers with planning future lessons.

**DATA SOURCES**

The quality and effectiveness of the training and support were evaluated through analysis of the following data sources:

1. A training evaluation survey completed at the end of the training session (See Appendix E)

2. Researcher logbooks, which contained researchers’ notes on the ongoing support
RESULTS

Training

Generally, the Researcher/Coaches recorded they were satisfied that ABRA teachers were prepared to begin teaching with ABRA after the initial training session. However, some teachers came to the training session more prepared than others. The teachers who had the opportunity to view ABRA software and read the online manual were more prepared to engage in training activities such as lesson planning. These teachers also displayed a greater level of enthusiasm and interest from the beginning.

Support

The Researcher/Coaches noted that on-site, in-person support was easiest to give when they were able to stay in the schools for extended periods (i.e., for full days rather than just immediately prior to and after ABRA lessons). This enabled the Researcher/Coaches to work around the teachers’ schedules, and organise meetings before or after school or during breaks. Even so, both Researcher/Coaches noted that teachers’ schedules were busy and tight and it was often difficult to fit in ABRA support time around other planned and unplanned school activities, particularly if teachers did not have regular planning time. Not surprisingly, the Researcher/Coaches observed that when teachers took full advantage of the support, they were more likely to experiment with the ABRA program and develop very creative lesson plans. As will be discussed further in the Section 4 on implementation fidelity, having structured lesson plans was associated with organised, focused and enriched ABRA literacy lessons.

DISCUSSION

Implications for Training and Support

Based on the findings, the Researcher/Coaches have developed a number of strategies for enriching future training sessions. Training for the Phase II quasi-experimental study will be conducted over an extended period of time whereby teachers will receive information about ABRA to read prior to the formal training day. In this way teachers have an opportunity to familiarise themselves with the program and to come to the training day with background knowledge of the ABRA software.

The findings revealed that Researcher/Coaches encountered difficulties in meeting regularly with teachers and that, in general, fewer meetings meant the teachers engaged in less lesson planning. Supportive relationships and regular meetings were more likely to be had if the Researcher/Coach spent an extended period of time in the school. The foreseeable difficulty is that the Phase II study will recruit six, rather than three schools, yet the number of Researcher/Coaches will remain the same. This means Researcher/Coaches, who will have to divide their time between three, rather than one or two schools each, will have less time to spend at each school. To overcome this
problem and ensure teachers and Researcher/Coaches meet regularly, the Phase II study will include as a requirement for participation that teachers and Researcher/Coaches schedule regular support meetings each week. These support meetings will last a minimum of 30 minutes.

Future training sessions will also be modified to explain the importance of lesson planning and model the structures, techniques and content of developing lesson plans.

The findings revealed that regular contact is vital to establishing a professional and trusting relationship between the teacher and the Researcher/Coach, where issues can be discussed openly and thoroughly and coaches can offer constructive feedback in confidence. During the Phase II study, teachers will be supported on-site on a bi-weekly basis and by a telephone conference on the alternate weeks whereby plans and queries can be discussed.

**Implications for Research**

While the training survey was adequate to gather teachers’ feedback on the training session and the researcher logs captured the Researcher/Coaches’ observations about supporting teacher to use ABRA, no data was collected to evaluate teachers’ perceptions of the support provided. We have no way of determining whether teachers felt adequately supported, whether their learning was enhanced by the Researcher/Coach relationships and what they feel could be done to better support their use of the ABRA software. This important information will be gathered formatively, through ongoing conversations about the support during weekly meetings and summatively, through a teacher feedback survey to be completed by teachers the last week of the ABRA Project.

**References**


4. IMPLEMENTATION FIDELITY

SUMMARY

Implementation fidelity is concerned with how well an intervention was delivered. The ABRA Project asked to what extent the teachers adhered to implementing ABRA for 20 hours, whether students were adequately exposed to ABRA, how well the teachers delivered ABRA, how students responded to ABRA and how ABRA could be distinguished from AL. All teachers taught ABRA for at least 20 hours, but student absenteeism meant many students, especially Indigenous students, did not receive the full intervention. To rectify this problem, the Phase II study will be conducted over two terms so all students will receive at least 20 hours of ABRA instruction.

The quality of delivery was adequate, but not superb. Only one teacher consistently created lesson plans, demonstrated the lesson prior to having students use ABRA, brought in other classroom resources to support ABRA lessons, used the teaching assistants as tutors, and employed differentiated instruction. Future ABRA training and support will emphasise the best-practices of ABRA implementation.

Teachers reported students were very engaged when using ABRA, but no data was collected directly from the students. Student interviews will be conducted as part of the Phase II study to gather their feelings and thoughts about ABRA.

ABRA helped teachers learn to explicitly teach phonics, an identified gap in the AL methodology. Yet some teachers expressed reservation that ABRA activities were out of context from the stories, and that explicit instruction had to be scaffolded and contextualised, which to their minds was in conflict with AL philosophies. The Phase II ABRA Project will explicitly explain that a good literacy program contains instruction that is both in and out of context.

INTRODUCTION

Implementation fidelity, or treatment integrity, is concerned with the extent to which a program is well delivered (Dane & Scheider, 1998; Carroll, Patterson, Wood, Booth, Rick, & Balain, 2007). Dane and Schneider (1998) describe five aspects of implementation fidelity: 1) adherence – Was the program implemented as prescribed?, 2) exposure – What was the amount of program content receive by participants?, 3) quality of the delivery – Was the program implemented according to ideal practice?, 4) participant responsiveness – How did participants respond to the program, and 5) program differentiation – What are the unique features of the program that differentiate it from other programs?
For the ABRA Project, implementation fidelity meant teachers delivered ABRA lessons every day, 30 minutes per day for 4 days or some other combination of days and times to equal at least 20 hours of ABRA instruction per week. It meant monitoring and factoring in student absenteeism into estimates of ABRA’s effects. It meant ABRA was used as an instructional tool embedded within structured literacy lesson plans, rather than as a free time computer game. It meant monitoring how students responded to ABRA and finally, implementation fidelity entailed examining how ABRA was different from the students’ regular literacy instruction, in this case AL as set out by NALP (http://www.nalp.edu.au/index.html).

**DATA SOURCES**

For the ABRA Project, implementation fidelity was promoted by the Researcher/Coaches who visited teachers weekly or bi-weekly, providing technological and pedagogical support. The Researcher/Coaches were also responsible for monitoring implementation fidelity through:

1. Researcher logbooks (completed during every site visit)
2. The observation checklist (completed during every site visit)
3. The ELLCO instrument (completed during weeks 8 or 9 of the 10 week trial)
4. Teacher logbooks (completed after every ABRA lesson)
5. Teacher focus groups (held once during the Pilot Study and once after the Pilot Study)

The researcher logbooks, observation checklist and the ELLCO instrument were used as data sources to categorise teachers into High Medium and Low implementers. The rubric for these categories (See Appendix E) was developed based on the attributes of effective teachers (engaging in continuous reflection, seeking out professional development, understanding that different children respond to different instructional strategies and varying practice accordingly (Nakata, 2007) and six dimensions of effective teacher practice: participation, knowledge, orchestration, support, differentiation, and respect (Louden, Rohl, Barrat-Pugh, Brown, Cairney, Elderfield, house, Meiers, Rivalland, & Rowe, 2005).
RESULTS

Adherence

Teachers were asked to use ABRA with children for a minimum of 30 minutes each day for at least four days per week. The average amount of time per observed ABRA lesson was 44 minutes. While teachers were asked to record the lesson length daily in logbooks, adherence to filling in this field was approximately 50%. The average lesson time of the recorded lessons was 38 minutes, suggesting teachers may have spent slightly less time on ABRA when unobserved. Regardless, all teachers met at least the minimum requirement for lesson length.

In all cases but one, teachers were able to meet the minimum four days per week requirement. The one exception was a school that experienced technical problems during the first two weeks the intervention. The teachers at this school were only able to use ABRA 2 days the first week and 3 the second. Because the lesson length was not consistently recorded, we estimated the total time using ABRA by multiplying the number of ABRA lessons by the average length of the recorded lessons, as recorded in the teacher logbooks. The estimated total time spent using ABRA ranged from 20 to 34 hours.

Exposure

Student absenteeism, which is known to be particularly high for Indigenous students, presented a known and significant threat to ensuring implementation fidelity. Indigenous children consist of 5% of all children enrolled in Australian schools, however approximately a third of all school children who truant are Indigenous (Gray & Hunter, 2000). According to the Australian Council for Educational Research (ACER) 2007 report, attendance plays a critical role in literacy acquisition because many literacy-specific skills are taught only within the school context. Therefore, children who fail to attend class do not receive the pre-requisite instruction necessary to acquire basic early literacy skills (see also Bourke, Rigby, & Burdon, 2000).

The average attendance rate for non-Indigenous students during Term 2 was 84.3% (SD=16.3) for non-Indigenous students and 62.6% (SD=18.1) for Indigenous students. This means, on average, Indigenous students received between 12.5 and 21.8 hours of ABRA instruction while non-Indigenous student received between 16.9 and 28.7 hours of ABRA. These data suggest not all students received the recommended 20 hours of ABRA instruction and that this was particularly true for Indigenous students.

Quality of the Delivery

The Researcher/Coaches observed considerable variation in how teachers delivered ABRA lessons to students. At the remote community school, teachers used a learning centre approach that involved four children working on laptops whilst others worked on other activities. The children rotated between the learning centres approximately
every 15 minutes. Teachers reinforced activities and introduced new concepts for 10 minutes with the whole class using the interactive white board.

At the remote town school, teachers used a variety of delivery strategies due to an overburdened computer lab schedule. On the first day of the week teachers usually used the LCD projector and a laptop to introduce the new ABRA lesson in the classroom. On another day they would use the interactive white board for the whole lesson and then for two or three days each week they worked with children in the computer lab in which each child had his/her own computer. Prior to using their own computer in the lab, the lesson would be introduced using the LCD projector and a pull down screen.

At the provincial city school, teachers used an interactive white board to introduce lessons and then moved to the larger computer lab where children could practise activities on their own computers. On some occasions the interactive white board was used for the whole lesson. Teachers found they often needed to monitor children as they worked individually on the computer and, at the remote community and remote town schools, teacher aids were actively encouraged to work with individual children.

ABRA lessons judged to be the most effective were those that were 1) planned ahead of time with clear goals and objectives, 2) included a combination of direction instruction and group or individual work, 3) used differential instruction so that students worked at the level best suited to them, 4) employed other classroom resources and teaching techniques to support ABRA lessons and 5) made use of teaching assistants to support students' independent or group use of ABRA.

Using the teacher quality rubric, 5 of the 6 classroom teachers participating in the ABRA pilot were ranked based on the quality of the implementation of ABRA literacy lessons. Due to high turnover and subsequent insufficiency of data, the three teachers in the sixth class were not included in the ranking. Results depicted in Figure 2 indicate that three of the five teachers were medium implementers, whilst one teacher was a low implementer and one teacher was a high implementer. However, an analysis of student literacy gains by teacher implementation rank (high, med and low) yielded no significant differences (see Section 6, Student Outcomes).
Student Responsiveness

Teacher perceptions of ABRA were collected via log books and two focus groups. Their reactions and recommendations for improvement are fully described in Section 5. Participant responsiveness here refers to how the students reacted to the ABRA software and lessons.

Student responsiveness data was gathered from the teachers. For every lesson the teachers were asked in their logbooks to respond to the questions, “Were all your students engaged” and “Did any of your students experience ‘eureka’ moments?” An analysis of the teachers’ responses revealed the teachers felt their students were highly engaged during ABRA lessons, especially during group lessons with a whiteboard. Teachers who assigned students to individual computers and did not provide a structured lesson (either before or during individual computer time) reported experiencing more difficulties keeping students on task and engaged in the program.

In their logbooks teachers made the connection between engagement, motivation and learning. One grade 1 teacher said:

*Their confidence has gone through the roof which has enabled them to be more willing to take risks with their learning. This has helped them in all areas of their learning not just literacy.*

Other teacher comments on student responsiveness to ABRA included:

*ABRA is such a visual program which instantly engages the students. They seem to enjoy it. They loved the ABC song.*
The kids really enjoyed working at their own computer and would yell out for me to come when they got a new key in the rhyme matching activity.

“It’s magic,” one student said.

One student said “LOOK I DID IT”, when she matched two sounds.

The students were pleased to show their parents what they had been learning in ABRA.

My transition class voiced approval when I said we were going next door for ABRA.

Program Differentiation

All schools in the ABRA Project taught literacy using AL. Accelerated Literacy is designed to rapidly increase the literacy skills of students who have failed to make appropriate literacy gains in school (SSPR, 2009). The AL program methodology is designed to lift learners’ reading levels in highly supported ways in minimal time so that students quickly become confident in working with texts (SSPR, 2009).

According to its developers, AL uses written texts to ‘scaffold’ students into the invisible rules of Western schooling (Cowey, 2007; Grey & Cowey, 2001). This knowledge is an essential part of being able to decode text and therefore succeed educationally. Through whole book or passage instruction, fluent reading and discussion of a familiar text becomes a powerful resource for learning how the ‘ground rules’ of English literacy work in a classroom context (SSPR, 2009).

Because ABRA was being introduced in schools that relied entirely on AL methods to teach reading, it was important to initially differentiate ABRA from AL, but also to make clear how the two programs could complement one another. It was initially argued that a stage of AL, referred to as ‘literate orientation’ in which students and teachers discuss the meaning and role of pictures and text in a story, could be coupled with explicit early literacy instruction through ABRA lessons.

In practice, teacher observations revealed ABRA filled a gap in the AL pedagogy. Only one teacher in the study used AL frequently to explicitly teach foundational literacy skills. Other teachers recognised these skills needed to be explicitly taught, but either lacked the training to do so with confidence or were worried explicit instruction might conflict with the methods outlined by AL. One Transition teacher commented:

As a teacher, I have learned a lot from the [ABRA] program too. There are things like rhyming and syllable counting that I realise I have not taught so well over the last few years. This program has given me more ideas in how to improve my teaching in these areas.
A Year 1 teacher commented:

"ABRA is a real reinforcement to early literacy skills, getting phonological awareness and that sort of thing, it’s a real backup to the AL. Going back to the earlier comments, it is different to AL, it joins in a different way of backing up those earlier skills – reinforcing them or taking out syllables and saying how do we divide up a word, so that does then feeds back into the AL."

The observations revealed ABRA complemented the existing AL program by providing a tool to explicitly teach foundational literacy skills.

However, the distinction between ABRA as a tool for explicit teaching and AL as a method for teaching students through whole book instruction in which all literacy learning is contextualised within a text, proved problematic for some teachers. ABRA, for example, contains several story books, one of which is also part of the AL curriculum (The Little Red Hen). When teachers selected activities in ABRA associated with The Little Red Hen story, their AL training told them all words and ideas should be from that story; that no new or unfamiliar words should be introduced. Several teachers commented that skills taught in the ABRA program were being presented out of context and were confusing for children. One Transition teacher said:

"Once again we had difficulty with the syllable counting ‘Little Red Hen’, aligning at all. Some words which came up were ‘disappeared’ and ‘environment’. These words are totally out of context and have nothing to do with the selected text. This is not appropriate for ESL learners."

ABRA activities do not rely on such a strict correspondence between activities and stories. ABRA is a balanced reading tool that tries not to teach skills in isolation. Because the texts are often short and the skill-level in each activity dictates the content to which the children will be exposed, ABRA uses the texts’ words as a base then builds on them. For example, Level 2 of Auditory Blending practices 3-phoneme words with short vowel sounds. In the story “How a bean sprouts”, there are about 8 words fitting the aforementioned criterion. To build the content, ABRA includes words that rhyme with those from the story or those that follow a similar spelling pattern. Future trainings will stress that ABRA intentionally teaches words in and out of context.

**DISCUSSION**

Implementation fidelity for the ABRA Project was evaluated by examining adherence, exposure, quality of the delivery, student response and program differentiation. While adherence was excellent, with every teacher meeting and most teachers exceeding the minimum time requirement, exposure was low due to student absenteeism, especially for Indigenous students. This is of concern and Section 6 examines the degree to which absenteeism is related to the students’ literacy gains. This issue will be rectified in Phase II which will study the impact of ABRA over two terms instead of one. Even with student absenteeism at 50%, all students should be exposed to at least 20 hours of ABRA instruction.
The quality of the delivery overall was acceptable with most teachers scoring in the middle of an implementation quality measure, while one teacher was low and another was high. Training and support during Phase II will be modified to include instruction in teaching phonics, as the research highlighted many teachers are not familiar with teaching foundational literacy skills in a structured and explicit manner. Phase II training and support will also emphasise differentiated instruction, how ABRA can be used to successfully differentiate and teach to students of differing ability levels. An ABRA upgrade release will allow teachers to assess students and monitor their progress in ABRA, a feature that will be introduced to teachers in Phase II. Finally, the teacher training and support strategies will be modified to include teacher assistants, emphasising how teaching assistants can fully support children during the lessons.

The student response, as recorded by teachers, was overwhelmingly positive. However, no data was collected from the students. During Phase II, the Researcher/Coaches will conduct brief interviews with students asking what their favourite things are about ABRA, what they don’t like about ABRA, and what they’re learning with ABRA.

It is clear ABRA is different from AL and while this is a positive for implementation fidelity, the difference was philosophically challenging for some teachers. Future training will be modified to address the differentiation directly – specifically attending to the issue of contextualisation. The Phase II study will emphasise that literacy instruction is most effective when it contains elements both in and out of context. Foundational literacy skills such as letter sound and recognition are activities that can and often should be taught out of the context for any novice reader (Wharton-McDonald, Pressley, Rankin, Mistretta, Yokoï, & Ettenberger, 1997). Because these phonemic skills are foundational and essential, they should be taught explicitly and systematically, as opposed to contextually (Commonwealth of Australia, 2005).

References


5. TEACHER PERCEPTIONS: MODIFICATIONS TO ABRA

SUMMARY

The Pilot Study sought teachers’ feedback to make modifications to the ABRA software. Analyses of teacher logbooks and focus group transcripts showed teachers noted specific bugs and instances where Canadian accents and pronunciation interfered with student learning. Most teachers said ABRA could be improved by adding Australian stories and characters, but only one teacher felt these improvements were essential to student learning. A revision request was sent to the CSLP and all revisions, except one, have been enacted as at the writing of this report. It was decided one revision request was based on teachers’ concerns that some ABRA activities introduce words and concepts unrelated to the stories to which they are connected and therefore attempts should be made in training to explain the importance of introducing some unfamiliar words for students to generalise their learning.

INTRODUCTION

Part of the attraction for trialling ABRA in the NT is that the software is not static, but under continual development. A major aim of the three year ABRA Project is to determine what modifications, if any, are required to ensure ABRA is successfully translated from a Canadian to an Australian and Indigenous context. After the three years, assuming research shows positive effects and adequate funding is secured, it is hoped a complete set of recommended changes will guide the development of a fully “Australianised” version. During the three year ABRA Project, some teachers’ recommendations for changes will be incorporated into successive versions, bringing the software closer to an idealised Australian version.

The first year Pilot Study trialled an unmodified version of ABRA. Teachers were asked to simultaneously suspend beliefs that a Canadian program would be contextually inappropriate and pay close attention to when students struggled with accents, concepts and terminology.

DATA SOURCES

Teachers’ observations and comments on ABRA’s appropriateness were gathered from the teacher logbooks and the two focus groups. Their comments were thematically analysed and then converted into prioritised recommendations for ABRA revisions to CSLP based on 1) importance and 2) ease of modification.
RESULTS

Opinions about the Canadian context and language of ABRA varied amongst the 5 teachers. Some teachers believed the Canadian accents were difficult for children to understand, whilst other teachers did not mention this issue. When asked what, in particular, was difficult for students to understand, the teachers said the sounds for ‘m’ and ‘n’ were virtually indistinguishable. They also noted that the words ‘wrath’ and ‘bath’ do not rhyme in Australian pronunciation.

The teachers did not unanimously identify any characters as being more problematic than others. In fact all specific critical comments about ABRA characters came from one Transition teacher. This teacher felt the character room was difficult for students to understand:

*The students have difficulty understanding the explanation of each character in the character room. The narrator speaks far too quickly and some of the concepts are really difficult for the kids to understand.*

The same teacher found the Yeti “annoying:”

*The yeti is not a model for spoken English…it sounds like he says ‘nother’one instead ‘another’ one.*

And this teacher felt ABRA would be improved if it included Australian accents, stories and characters:

*The Canadian accent can be hard to understand at times. It would be great if there were more characters which the students could relate to eg. Australian animals.*

While most of the negative comments were voiced by one teacher, a general consensus seemed to develop in the final focus group and from a review of the teachers’ logbooks. The teachers felt the accents were sometimes difficult to understand, but, with the exception of one teacher, were not prepared to say this difficulty interfered with students’ learning. The teachers said they would like to see Australian stories and characters added to ABRA, but, again with the exception of one teacher, did not see these additions as vital to students’ comprehension.

Most of the teachers were less concerned with the broader modifications to ABRA, but to specific problems they encountered while using ABRA. During the Pilot Study, teachers noticed software bugs that were immediately sent to and fixed by the CSLP. This was in addition to the rhyming and letter pronunciation difficulties noted above.
DISCUSSION

To address the teachers’ concerns a prioritised list of modification requests was delivered to the CSLP (see Appendix F). This list requested that, 1) any activities that asked students to distinguish between the ‘m’ and ‘n’ sounds be modified so that students would not have to make the comparison, 2) that a different word replace the rhyming pair ‘wrath’ and ‘bath’, 3) that all alphabetic activities be made available without having to choose a book and 4) that Australian stories be animated and read by Australian narrators.

At the time of writing this report, all changes have been made (including the writing, animating and narrating three Australian stories – Counting Cuddly Koalas, The Adventures of Bertie Balloon and Why Koalas Live in Trees) with the exemption of request #3. As explained in Section 4, ABRA is designed to teach reading both in and out of context and, rather than modify ABRA, Phase II training will emphasise the importance of a balanced approach to reading instruction that helps students generalise learning to novel words and concepts.

Phase II research will continue to ask teachers to comment on the appropriateness of the ABRA software for an Australian and Indigenous context. While the teacher logbooks and focus groups provided some good data from which a modification request was developed, the teachers were never directly asked what changes they would make to ABRA and why. It is possible a wider array of opinions and suggestions would have surfaced were this question included in the research. Teachers will be asked to consider ABRA modifications during the two focus groups in Phase II.
6. STUDENT LITERACY OUTCOMES

SUMMARY

Students’ scores on the GRADE and LLANS instruments were assessed to understand how students’ literacy changed over the course of the ABRA intervention. Also investigated was whether student attendance was related to literacy gains and whether having a high, medium or low implementing teacher affect students’ gains. Results indicated that, on average, all students gained significantly from pretest to posttest, especially on measures of phonological awareness and phonemic awareness; that non-Indigenous students gained significantly more than Indigenous students; that there was no difference between students with high, medium and low implementing teachers; and that attendance was significantly related to performance on the GRADE K instrument.

Due to the limitations of a single-group design, we cannot make any claims about causality. In other words, we have no way of knowing whether the students’ gains were caused by ABRA, good teaching in general, and/or were simply developmental. Yet there are two reasons to believe ABRA played at least a part in the students’ literacy gains. First, the students experienced the greatest gains in phonological awareness and phonemic awareness. According to the teachers, these were the skills they felt the least prepared to teach and the ones for which they most used ABRA. Second, and significantly, the GRADE is a norm-referenced test and the gains for the GRADE P and K represented 7 and 4 months of learning; far above and beyond what would be expected over a 10 week period of regular instruction.

INTRODUCTION

While the Pilot Study was predominately concerned with the feasibility of using ABRA in an Australian and Indigenous context, the quality of instructional delivery and student outcomes were assessed to understand how students’ literacy scores changed over the course of the ABRA intervention. We were also interested in whether student attendance during the 10 week ABRA intervention was related to student literacy gains and whether having a high, medium or low implementing teacher impacted student outcomes. Due to the limitations of a single-group design, we cannot make any claims as to whether ABRA caused student literacy gains (or lack thereof), but we may be able to determine whether ABRA students who had high quality teachers and attended school more frequently, for example, were more likely to experience gains in their literacy scores.

DATA SOURCES AND ANALYSIS

Gains in student literacy were analysed using within-subjects t-tests comparing the students’ pretest and posttest GRADE and LLANS total and subscale scores. To determine the strength of the relationship between classroom attendance and literacy...
gains, a series of bivariate correlations (Pearson’s $r$ or Spearman’s $r_s$) were conducted on student gains in performance for GRADE P, K, and 1 and student attendance (the percentage of days the students were present in school during Term 2). Comparisons between high medium and low implementing teachers and Indigenous and non-Indigenous students’ literacy gain scores were conducted using independent samples $t$-tests and ANOVAs. In all analyses, Bonferroni adjustments were applied as required.

RESULTS

Literacy Gains

For all levels of the GRADE (K, P and 1) and LLANS (1 and 2) student improved their total test scores significantly from pretest to posttest (see Table 3). The effect sizes for these comparisons were medium to very large, ranging from 0.6 to 1.1 (Cohen, 1988).

An analysis of subscale gains for each test revealed students gained the most on phonological and phonemic awareness, reading comprehension and word reading (See Table 4).

<table>
<thead>
<tr>
<th>Test</th>
<th>Pre-Test Total</th>
<th>Post-Test Total</th>
<th>$t$</th>
<th>df</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$ ($SD$)</td>
<td>$M$ ($SD$)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRADE P</td>
<td>28.6 (13.2)</td>
<td>45.0 (15.5)</td>
<td>7.19**</td>
<td>15</td>
<td>1.1</td>
</tr>
<tr>
<td>GRADE K</td>
<td>60.0 (9.3)</td>
<td>67.4 (14.0)</td>
<td>4.04**</td>
<td>20</td>
<td>0.6</td>
</tr>
<tr>
<td>GRADE 1</td>
<td>28.6 (13.2)</td>
<td>45.0 (15.5)</td>
<td>7.19**</td>
<td>15</td>
<td>1.1</td>
</tr>
<tr>
<td>LLANS 1</td>
<td>55.5 (12.1)</td>
<td>65.3 (14.5)</td>
<td>11.3**</td>
<td>76</td>
<td>0.7</td>
</tr>
<tr>
<td>LLANS 2</td>
<td>61.2 (6.4)</td>
<td>65.6 (7.6)</td>
<td>2.57*</td>
<td>13</td>
<td>0.6</td>
</tr>
</tbody>
</table>

* $p < .05$, **$p < .001$
## Table 4

*Subscale score means and SDs for GRADE and LLANS and Comparison of Pre- and Posttest data (t-tests, two-tailed)*

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Pre-Test M (SD)</th>
<th>Post-Test M (SD)</th>
<th>t</th>
<th>df</th>
<th>p</th>
<th>d</th>
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<tr>
<td>Phonological Awareness</td>
<td>11.8 (3.9)</td>
<td>18.6 (5.5)</td>
<td>9.01</td>
<td>28</td>
<td>.001*</td>
<td>2.58</td>
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<tr>
<td>Visual Skills</td>
<td>15.9 (2.6)</td>
<td>17.2 (1.5)</td>
<td>2.75</td>
<td>30</td>
<td>.01*</td>
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<tr>
<td>Reading Concepts</td>
<td>13.9 (3.5)</td>
<td>16.3 (3.1)</td>
<td>4.71</td>
<td>28</td>
<td>.001*</td>
<td>0.74</td>
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<tr>
<td>Listening</td>
<td>14.8 (2.5)</td>
<td>15.9 (2.4)</td>
<td>2.02</td>
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<td>.052</td>
<td>0.45</td>
</tr>
<tr>
<td><strong>GRADE K</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phonological Awareness</td>
<td>13.2 (3.1)</td>
<td>16.5 (6.7)</td>
<td>2.61</td>
<td>22</td>
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<td>Phoneme-Grapheme Correspondence</td>
<td>11.0 (4.1)</td>
<td>12.8 (4.0)</td>
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<td>Early Literacy Skills</td>
<td>20.2 (3.7)</td>
<td>21.3 (4.0)</td>
<td>1.81</td>
<td>22</td>
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<td>0.31</td>
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<td>Listening Comprehension</td>
<td>15.1 (2.1)</td>
<td>16.0 (2.1)</td>
<td>2.35</td>
<td>21</td>
<td>.029</td>
<td>0.41</td>
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<tr>
<td><strong>GRADE 1</strong></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Vocabulary</td>
<td>23.6 (8.5)</td>
<td>32.6 (8.5)</td>
<td>7.95</td>
<td>15</td>
<td>.001*</td>
<td>1.06</td>
</tr>
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<td>Sentence/Passage Comprehension</td>
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<td>12.4 (8.6)</td>
<td>4.45</td>
<td>15</td>
<td>.001*</td>
<td>0.95</td>
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<td>Listening Comprehension</td>
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<td>15.1 (1.3)</td>
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<td>.001*</td>
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Table 4 Cont…

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<thead>
<tr>
<th></th>
<th>Pre-Test</th>
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<th>p</th>
<th>d</th>
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<td>M (SD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td><strong>LLANS 1</strong></td>
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<td></td>
<td></td>
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<tr>
<td>Environmental Print</td>
<td>11.5 (4.1)</td>
<td>13.3 (3.8)</td>
<td>-5.68</td>
<td>76</td>
<td>.000**</td>
<td>0.45</td>
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<td>8.6 (2.3)</td>
<td>-6.40</td>
<td>76</td>
<td>.000**</td>
<td>0.74</td>
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<td>Book Orientation</td>
<td>5.9 (3.0)</td>
<td>7.8 (3.0)</td>
<td>-6.59</td>
<td>76</td>
<td>.000**</td>
<td>0.63</td>
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<tr>
<td>Retell Story</td>
<td>1.9 (1.2)</td>
<td>2.4 (1.4)</td>
<td>-3.57</td>
<td>76</td>
<td>.001*</td>
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<tr>
<td>Print Concepts</td>
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<td>14.0 (5.7)</td>
<td>-8.51</td>
<td>76</td>
<td>.000**</td>
<td>0.61</td>
</tr>
<tr>
<td><strong>LLANS 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retell Story</td>
<td>5.3 (1.7)</td>
<td>6.6 (0.9)</td>
<td>-2.72</td>
<td>13</td>
<td>.017</td>
<td>1.00</td>
</tr>
<tr>
<td>Writing</td>
<td>6.7 (2.5)</td>
<td>6.8 (2.9)</td>
<td>-0.78</td>
<td>13</td>
<td>.939</td>
<td>0.37</td>
</tr>
<tr>
<td>Word Identification</td>
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<td>9.1 (2.8)</td>
<td>0.000</td>
<td>13</td>
<td>1.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Phonemic Awareness</td>
<td>8.3 (4.0)</td>
<td>12.1 (5.3)</td>
<td>-3.36</td>
<td>13</td>
<td>.005*</td>
<td>0.82</td>
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<tr>
<td>Letter Recognition</td>
<td>20.1 (3.1)</td>
<td>21.6 (3.1)</td>
<td>-1.79</td>
<td>13</td>
<td>.096</td>
<td>0.48</td>
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<tr>
<td>Retell Story</td>
<td>8.4 (2.8)</td>
<td>9.8 (2.8)</td>
<td>-1.77</td>
<td>13</td>
<td>.099</td>
<td>0.50</td>
</tr>
<tr>
<td>Print Conventions</td>
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<td>6.7 (1.1)</td>
<td>-0.672</td>
<td>13</td>
<td>.513</td>
<td>0.21</td>
</tr>
</tbody>
</table>

*Note. All items are summed data. Bonferroni adjustments were applied to all comparisons (α = .01 for GRADE P, K, 1 and LLANS 1; α = .006 for LLANS 2). *p < .01 or p < .006.
Indigenous vs non-Indigenous Students

Only three non-Indigenous students were assessed using the GRADE P, only two Indigenous students were assessed using the GRADE 1, and only 4 Indigenous students were assessed using the LLANS 2. Therefore comparisons between Indigenous and non-Indigenous students’ total test gain scores were only conducted only for the GRADE K and LLANS 1. These comparisons revealed non-Indigenous students significantly outperformed their non-Indigenous counterparts (see Table 5).

Table 5

Total Test Pre- and Posttest Means, SDs and Comparisons for the GRADE and LLANS Instruments

<table>
<thead>
<tr>
<th>Test</th>
<th></th>
<th>Total Test Gain</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>n</td>
<td>M (SD)</td>
<td>t</td>
<td>df</td>
<td>p</td>
</tr>
<tr>
<td>GRADE K</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indigenous</td>
<td>11</td>
<td>2.54 5.5</td>
<td>3.58 19</td>
<td>.002</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Indigenous</td>
<td>10</td>
<td>13.4 8.2</td>
<td>2.31 75</td>
<td>.023</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LLANS 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indigenous</td>
<td>51</td>
<td>8.35 7.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Indigenous</td>
<td>26</td>
<td>12.4 7.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Student Attendance and Literacy Gains

There were no significant relationships between total test gains on the GRADE P, 1 and LLANS Level 1 and 2 and student attendance during the implementation of the ABRA project (see Table 6). There was, however, a significant relationship between total test score for the GRADE K and student attendance.
Bivariate correlations between student Total Test Gains on GRADE P, K and 1 and LLANS 1 and 2 and school attendance (one-tailed)

<table>
<thead>
<tr>
<th>Total Score</th>
<th>School Attendance</th>
<th>(r)</th>
<th>p</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRADE P</td>
<td></td>
<td>.13</td>
<td>.26</td>
<td>27</td>
</tr>
<tr>
<td>GRADE K</td>
<td></td>
<td>.61</td>
<td>.002</td>
<td>20</td>
</tr>
<tr>
<td>GRADE 1</td>
<td></td>
<td>-.02</td>
<td>.47</td>
<td>16</td>
</tr>
<tr>
<td>LLANS 1</td>
<td></td>
<td>-.01</td>
<td>.47</td>
<td>74</td>
</tr>
<tr>
<td>LLANS 2</td>
<td></td>
<td>.14</td>
<td>.32</td>
<td>14</td>
</tr>
</tbody>
</table>

Further analysis of the GRADE K test revealed that phonological awareness and early literacy skills were significantly positively correlated with attendance (see Table 7).

Table 7
Bivariate correlations between student sub-scale gains on the GRADE K and school attendance (one-tailed)

<table>
<thead>
<tr>
<th>School Attendance</th>
<th>(r)</th>
<th>p</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phonological Awareness</td>
<td>.51</td>
<td>.007*</td>
<td>22</td>
</tr>
<tr>
<td>Early Literacy Skillsª</td>
<td>.48</td>
<td>.012*</td>
<td>22</td>
</tr>
<tr>
<td>Phoneme-Grapheme Correspondence</td>
<td>.30</td>
<td>.10</td>
<td>20</td>
</tr>
</tbody>
</table>

ª Normality assumptions were not met hence Spearman’s (r) was calculated. *p<0.05 significant at α = .017.
To examine whether Indigenous students performed worse than non-Indigenous students solely based on attendance, the LLANS gain scores were compared between Indigenous and non-Indigenous students whose exposure to ABRA exceeded 20 hours. The LLANS instrument was used because all students tested are scored on the same scale regardless of whether they are tested using the LLANS 1 or 2, and therefore a singular analysis on the entire sample (as opposed to several analysis using the GRADE which did not have adequately sized groups for comparisons) could be conducted. Among the students who were exposed to ABRA for at least 20 hours, Indigenous students (n = 11, Mean gain = 11.5, SD = 10.4) outperformed non-Indigenous students (n = 34, Mean gain = 7.2, SD = 9.4), but this difference was not significant (t = 1.31, df = 43, p = .20). However, the lack of significance is likely due to the smaller sample size because the mean gains for these groups of students are very similar to those of the entire group and a comparison between Indigenous and non-Indigenous students in the larger group yielded a statistically significant difference (non-Indigenous mean gain = 11.4, Indigenous mean gain = 7.5; t = 2.33, df = 90, p = .02).

**Teacher Implementation Quality and Literacy Gains**

The LLANS total test gain scores for students who had high (1), medium (3) and low (1) implementing teachers were compared. The GRADE was not used as each test requires a separate analysis and not all teachers would be represented in each analysis. The average score of the high implementing teacher’s students was 8.7 (SD = 10.4), the average score of the medium implementing teachers’ students was 7.4 (SD = 8.0) and the average score of the low implementing teacher’s students was 10.1 (SD = 5.9). The difference between these means was not significant (F(2, 73) < 1, p = ns). These findings are limited by the small number of teachers in each of the categories and the subsequent conflation of teacher with classroom. While the differences were not significant, the low teacher’s students did gain, on average, more than the other medium or high implementing teachers. This is likely due to class composition; this teacher had a high proportion of non-Indigenous students more than the quality of implementation.

Yet the question of the link between the quality of implementation and student outcomes remains important and will continue to be addressed in the Phase II and III studies. By the end of 2010, 24 teachers will have implemented ABRA and their implementation quality assessed. At that point we hope to have sufficient numbers of teachers to compare the average class gains for the three types of implementers.

**DISCUSSION**

The pattern or results indicate, on average, students significantly improved their literacy skills over the course of the 10 week ABRA intervention. In particular, phonological and phonemic awareness skills increased, indicating that students had progressed in these critical areas of literacy development. This finding is a particularly encouraging one, considering the pivotal role that phonology plays in children’s early literacy development (see Ball & Blachman, 1991). A finding that children had made
significant gains in this area is an extremely positive outcome for teachers and students. It is also worth noting that gains were large (on the GRADE) for higher order tasks such as text comprehension and listening comprehension. This suggests that ABRA may be effective not just as a phonics tool, but as a language tool that delivers a balanced literacy curriculum.

The fact Indigenous students’ literacy gains were significantly less than non-Indigenous students is disappointing, but not surprising. In the Northern Territory (NT), Indigenous students’ literacy test scores are particularly low. Only 20% of Indigenous students in very remote areas achieve minimum literacy benchmarks by Year 3, compared to 85% of non-Indigenous students (DEET, 2006). Reasons for poor literacy outcomes among Indigenous students are complex, part of an entrenched socio-cultural dynamic that defies straightforward delineation (Collins & Lea, 1999). One likely explanation is Indigenous students’ poor attendance and/or participation rates at school. In our sample, Indigenous students attended an average of 62.6% of the time as compared to non-Indigenous students who attended an average of 84.3%. The significant correlation between GRADE K scores and student attendance suggests that, for the early literacy skills targeted by the GRADE K, student attendance may be especially important. But an analysis comparing Indigenous and non-Indigenous students who received 20 or more hours of ABRA instruction continued to show non-Indigenous students outperform Indigenous students. Linking back to ABRA, it may be that Indigenous students enter early childhood classrooms at a disadvantage and that, while ABRA may increase Indigenous students’ literacy, 20 hours of exposure is insufficient to cause increases similar to those of non-Indigenous students.

A word of caution is warranted. Due to the limitations of a single group pre-test, post-test design, the students’ gains cannot be casually linked to the ABRA intervention. In other words we have no way of knowing whether the students’ gains were caused by ABRA instruction, good teaching in general, and/or were simply developmental. There are two reasons to believe ABRA played at least a part in the students’ literacy gains. First, the students experienced the greatest gains in phonological awareness and phonemic awareness. According to the teachers, these were the skills they felt the least prepared to teach and the ones for which they most used ABRA. Second, and significantly, the GRADE is a norm referenced test and the gains for the GRADE P and K represented 7 and 4 months of learning; far above and beyond what would be expected over a 10 week period of regular instruction.

References


7. SUMMARY AND FUTURE RESEARCH

SUMMARY

The three year ABRA Project trial is driven by a pressing need to increase the literacy skills of Indigenous and struggling readers in the NT, especially at the critical early years of schooling. As an interactive computer software, ABRA shows particular promise to engage and motivate remedial students and sustain students’ learning in high teacher turnover conditions. Over the three years ABRA will be subjected to increasing standards of methodological proof to determine whether the software provides a ‘boost,’ above and beyond standard instruction, for struggling readers.

The Pilot Study evaluated the feasibility of using ABRA in NT classrooms including how teachers were trained and supported to use ABRA, the fidelity of implementation (or how well ABRA was used in the classrooms), teachers’ recommendation for improving ABRA and ABRA’s potential impact on student literacy outcomes.

The findings revealed teachers were adequately trained and supported to use the software, but were undertrained and less supported in developing lesson plans. Experienced teachers who took the initiative to develop lesson plans implemented ABRA more effectively, although this did not necessarily translate to student literacy gains.
Overall, implementation of ABRA was adequate, but not superb. All teachers met the minimum 20 hours of ABRA instruction and reported high student engagement, but student absenteeism meant many students did not receive the 20 hour recommended minimum exposure. This was especially true for Indigenous students whose attendance rate was 64%. Only one teacher consistently created lesson plans, demonstrated the lesson prior to having students use ABRA, brought in other classroom resources to support ABRA lessons, used the teaching assistants as tutors, and employed differentiated instruction.

ABRA helped teachers learn to explicitly teach phonics, an identified gap in the AL methodology yet some teachers expressed reservations that ABRA activities were out of context from the stories, and that explicit instruction had to be scaffolded and contextualised, which to their minds was in conflict with AL philosophies. Phase II will explicitly explain that a good literacy program contains instruction that is both in and out of context.

Most teachers said ABRA could be improved by adding Australian stories and characters, but only one teacher felt these improvements were essential to student learning. A revision request was sent to the CSLP and all revisions have been enacted.

Across all schools and classrooms, students gained significantly from pretest to posttest, especially on measures of phonological awareness and phonemic awareness. However, non-Indigenous students gained significantly more than Indigenous students. It is possible this is attributable to non-Indigenous students’ higher absenteeism, especially as attendance was significantly related to performance on one of the fundamental literacy assessments.

There are two reasons to believe ABRA played at least a part in the students’ literacy gains. First, the students experienced the greatest gains in phonological awareness and phonemic awareness. According to the teachers, these were the skills they felt the least prepared to teach and the ones for which they most used ABRA. Second, and significantly, the GRADE is a norm-referenced test and the gains for the GRADE P and K represented 7 and 4 months of learning; far above and beyond what would be expected over a 10 week period of regular instruction.

FUTURE RESEARCH

We believe the Pilot Study results demonstrate the feasibility of using ABRA in NT schools and justify moving to the Phase II quasi-experimental study. Alongside a continuing investigation of implementation fidelity, this study will focus on whether ABRA causes increases in student literacy with the inclusion of a control group for comparison. The Phase II study will see several revisions to the teacher training and support based on the Pilot Study results— including developing lesson plans and emphasising the importance of teaching literacy in and out of context and the addition of data collection tools and activities. A teacher support instrument will gather teachers’ perceptions of the support provided and interviews with AIEWs and students will collect their impressions of the ABRA software.
The Phase II study will contribute to the growing body of evidence that ABRA in particular, and computer based instruction in general, are a particularly effective means of redressing the literacy disparity between Indigenous and non-Indigenous students, between struggling and adept readers.

8. APPENDIXES
APPENDIX A

**ABRA Literacy Lesson**

Teacher Log

*Please record in this log every day.*

<table>
<thead>
<tr>
<th>Date:</th>
<th>Length of the lesson:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of lesson:</td>
<td>Time required to introduce the activity:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ABRA Activity</th>
<th>Number of students participating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Reflection Questions**

How do you feel the ABRA progressed today? (Were all the children engaged? What aspects were you particularly pleased / displeased?)

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

Did you experience any technical difficulties? How did you handle this? Please explain.

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

How is your comfort level with the ABRA program and the activities you were using during this session?

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________
How did today’s ABRA session align with your AL work? (Was the material contradictory, additional, supplementary and/or complementary to AL?)

___________________________________________________
___________________________________________________
___________________________________________________
___________________________________________________

Did you experience any eureka moments? Please describe in detail

___________________________________________________
___________________________________________________
___________________________________________________
___________________________________________________

Did any of your students experience any eureka moments? Please describe in detail.

___________________________________________________
___________________________________________________
___________________________________________________
___________________________________________________

Were there any school activities or emergencies that interrupted your session with ABRA? Please describe.

___________________________________________________

Other thoughts or comments that will help us gain insight into the learning / teaching experience using ABRA.

___________________________________________________
___________________________________________________
___________________________________________________
___________________________________________________
APPENDIX B

Implementation Fidelity Measure

Observer’s Name: ____________________________________________

Date: ___________________                           Time of Day: ________________

Teacher: ________________________________________________________

Length of Lesson: _____ mins.      Lesson interrupted: Yes □   No □

Boys: ______   Girls: ______   Control Class □   Experimental Class □

Physical Context

<table>
<thead>
<tr>
<th>Upstairs □</th>
<th>Downstairs □</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Lab □</td>
<td>Whole Class □</td>
</tr>
</tbody>
</table>

Physical Environment

<table>
<thead>
<tr>
<th>Room Temperature</th>
<th>Appropriate □</th>
<th>Children can work comfortably.</th>
<th>Inappropriate □</th>
<th>Children appear either too hot or too cold.</th>
<th>comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lighting</td>
<td>Appropriate □</td>
<td>All areas of the room are well lit.</td>
<td>Inappropriate □</td>
<td>The room has dark areas that are poorly lit.</td>
<td></td>
</tr>
<tr>
<td>Space</td>
<td>Appropriate □</td>
<td>Students / Teacher can easily move about the room. Everything has easy access.</td>
<td>Inappropriate □</td>
<td>The room has a cluttered feel. Too much furniture / students for the size of the room.</td>
<td></td>
</tr>
<tr>
<td>Background Noise</td>
<td>Appropriate □</td>
<td>Minimal noise</td>
<td>Inappropriate □</td>
<td>Noise that may distract student concentration.</td>
<td></td>
</tr>
<tr>
<td>Unobstructed view of the teacher</td>
<td>Appropriate □</td>
<td>All students can view the teacher during the delivery of the lesson.</td>
<td>Inappropriate □</td>
<td>Not all students can clearly view the teacher during the delivery of the lesson.</td>
<td></td>
</tr>
<tr>
<td>Unobstructed view of the tools</td>
<td>Appropriate □</td>
<td>All students can clearly view demonstration tools.</td>
<td>Inappropriate □</td>
<td>Students have only a partial view of presentation tools. May be viewing from an awkward angle.</td>
<td></td>
</tr>
</tbody>
</table>
## Classroom Management

<table>
<thead>
<tr>
<th>Organisation of Classroom</th>
<th>Appropriate □ Classroom is organised by subjects / themes. Everything has a place.</th>
<th>Inappropriate □ Nothing appears to have place. Appears disorganised.</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tone / Approachability of Teacher</td>
<td>Appropriate □ Teacher uses a friendly tone of voice. Encourages questions.</td>
<td>Inappropriate □ Very little interaction between teacher students. Appears impatient with queries.</td>
<td></td>
</tr>
<tr>
<td>Teacher’s Voice Projection</td>
<td>Appropriate □ Uses a clear voice and words are properly enunciated.</td>
<td>Inappropriate □ At times the teacher is difficult to hear or understand.</td>
<td></td>
</tr>
<tr>
<td>Clarity of Expectations</td>
<td>Appropriate Teacher uses both visual and auditory means.</td>
<td>Inappropriate Teacher is not clear and students seem unsure as to how to proceed.</td>
<td></td>
</tr>
</tbody>
</table>

## Quality of Teaching

<table>
<thead>
<tr>
<th>Clear Instructions</th>
<th>Yes □ Detailed and logically sequenced instructions with time for student questions.</th>
<th>No □ Instructions are not logically sequenced or steps may be missing.</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logical Activity Sequence</td>
<td>Yes □ Lesson follows an understandable order with activities linking from one to another.</td>
<td>No □ The activities do not follow any particular sequence. One activity does not appear to be connected to another.</td>
<td></td>
</tr>
<tr>
<td>Appropriate Feedback</td>
<td>Yes □ Immediate constructive feedback is provided</td>
<td>No □ Feedback is not constructive of positive.</td>
<td></td>
</tr>
<tr>
<td>Ability Level Differentiation</td>
<td>Yes □ Children are working on a variety of activities based on their individual needs.</td>
<td>No □ Everyone is working on the same activity despite individual needs.</td>
<td></td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Effective Scaffolding</td>
<td>Yes □ Teacher has provided enough direct instruction, modelling and examples to allow for student independence</td>
<td>No □ Not enough direction instruction, modelling or examples were provided. Students are unable to complete task.</td>
<td></td>
</tr>
</tbody>
</table>

**Quality of Learning**

<table>
<thead>
<tr>
<th>Students are on task</th>
<th>Yes □ The majority of the class is engaged in their assigned activity.</th>
<th>No □ Several students are talking amongst themselves or not following the assigned task.</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students complete the activity.</td>
<td>Yes □ The activity is completed</td>
<td>No □ Students are unable to finish the activity</td>
<td></td>
</tr>
</tbody>
</table>

**Affects of Technology**

<table>
<thead>
<tr>
<th>Software Loading Time</th>
<th>Appropriate □ Software is loaded and ready to go within 2-3 minutes.</th>
<th>Inappropriate □ Children are becoming restless because of wait time to use software (&gt;2-3 mins).</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher’s Comfort Level</td>
<td>Appropriate □ Teacher is able to demonstrate lesson with confidence and competence.</td>
<td>Inappropriate □ Teacher appears nervous and unsure of how to correctly use software</td>
<td></td>
</tr>
</tbody>
</table>
Students’ Comfort Level

| Appropriate □ Students can work independently with little or no teacher assistance. | Inappropriate □ Students need continued monitoring and additional instruction. |

Engagement of Teacher

| Appropriate □ Teacher is constantly moving around to check on children and offer comments. | Inappropriate □ Teacher does not offer feedback or monitor activity. |

Engagement of Students

| Appropriate □ Most students are focused on the task. | Inappropriate □ Several students are inattentive and not focused on the assigned task. |

Time taken before actual teaching began: _______ minutes.
Actual time used on teaching / learning activities: _______ minutes.

ABRA-Specific Activities Structure

I. Word Level Activities (all alphabet or phonics based activities i.e. blending, segmenting, etc.)

a. How much time is spent on word level activities?
   - □ 1-5 minutes
   - □ 6-10 minutes
   - □ 11-15 minutes
   - □ More than 15 minutes

   Technology Used: Y N
   Type of Technology
   Computers □ How many? ___
   Projector □
   Other □

   ________________________________

b. What type of word level activities did you observe?
   - □ Blending
   - □ Decoding
   - □ Rhyming
   - □ Other (please describe)____________________________

   ________________________________
II. Text Level Activities (all fluency / comprehension types of activities)

a. How much time is spent on text level activities?

- [ ] 1-5 minutes
- [ ] 6-10 minutes
- [ ] 11-15 minutes
- [ ] More than 15 minutes

Technology Used: Y  N
Type of Technology
Computers □ How many? ___
Projector □
Other □ ________________

b. What type of text level activities did you see?

- [ ] Individual reading with teacher
- [ ] Choral reading (whole class)
- [ ] Flash card work
- [ ] Tracking
- [ ] Summarising
- [ ] Comprehension Monitoring
- [ ] Story response
- [ ] Group reading
- [ ] Think aloud
- [ ] Reading with expression
- [ ] Prediction
- [ ] Sequence
- [ ] Vocabulary development
- [ ] Story elements
- [ ] Other (please describe)

III. Writing Activities

a. How much time is spent on writing activities?

- [ ] 1-5 minutes
- [ ] 6-10 minutes
- [ ] 11-15 minutes
- [ ] More than 15 minutes

Technology Used: Y  N
Type of Technology
Computers □ How many? ___
Projector □
Other □ ________________

b. What type of activities did you see?

- [ ] Comprehension and / or question response
- [ ] Worksheets
- [ ] Creative Writing
- [ ] Reflection or journal writing
- [ ] Other (please describe)
IV. Extension Activities (activities that relate or expand from a core literacy activity)

a. What type of extension activities did you see?

☐ Dramatic play (skit, play, improve)
☐ Additional writing (creative writing, ex. Write your own story / ending)
☐ Creative arts (drawing a picture, painting, music, dance, etc…)
☐ Homework

Types of homework assigned:
☐ Word Level
☐ Assigned Reading
☐ Writing
☐ Worksheets

Technology Used:  Y  N

Type of Technology:
Computers ☐ How many?
Projectors ☐
Others ☐ ______________

ABRA-Specific Classroom Management

I. Collaborative Work

a. How much time is spent on collaborative work?

☐ None
☐ 1-5 minutes
☐ 6-10 minutes
☐ 11-15 minutes
☐ More than 15 minutes
☐ The students always work in collaborative groups

b. Types of collaboration:
☐ Dyads
☐ Triads
☐ Small groups (4-5 students)
☐ Split class

Deviations: ___________________________________________________________
c. Types of activities:

☐ Text level  
☐ Word level  
☐ Writing  
☐ Other (please describe)  

II. Facilitation and Instruction

☐ Teacher provides clear instructions  
☐ Teacher groups students appropriately, of applicable (e.g. ability level, behavioural, etc.)  
☐ Teacher provides constructive feedback  
☐ Teacher takes the initiative to check on student understanding during instructional time.  
☐ Teacher takes the initiative to check on progress during work time.  
☐ Teacher encourages student dialogue and discussion during activities.  

Notes:  

__________________________________________________________
**Student Engagement**

“When observing this classroom, I see the following happening…”

(Circle the appropriate response)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>Occasionally</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Somewhat</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Mostly</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Adequately</td>
</tr>
</tbody>
</table>

1. **Not at all**
   - Students are not attending to the task at hand. They are distracted and off-task.

2. **Occasionally**
   - Students occasionally attend to the given task.
   - There is occasional disruption and movement not related to the activity.
   - Occasionally, when the students are off task the teacher is able to refocus the group with some effort.

3. **Somewhat**
   - Some students are attending to the given task.
   - There is little off task behaviour.
   - The teacher is able to guide students through the lesson with minimal diversions from the task.

4. **Mostly**
   - Most students are attending to the given task.
   - There is minimal or no off-task behaviour.
   - The teacher is able to guide students through activities effectively.

5. **Adequately**
   - All students are involved in the given task.
   - There is no off task behaviour.
   - The children are discussing the task on their own with little or no prompting from the teacher.
   - The students are providing the teacher with new directions in which to go by actively participating in the discussions and are providing the teacher with feedback.

**Inter-rater reliability**: How often did my colleague and I score or note similar activities while watching the same lesson?
0-20% of the time □ 20-40% □ 40-60% □ 60-80% □ 80-100%

APPENDIX C

ABRA Literacy Lesson
Researcher Log

Teacher’s Name: Year Level:

Date: ABRA Activity:

Number of children participating: Length of lesson:

Location of lesson: Time taken to introduce the activity:

Please check the specific activities you observed during this lesson.

<table>
<thead>
<tr>
<th>Word Level Activities</th>
<th>Text Level Activities</th>
<th>Writing Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Blending</td>
<td>□ Individual reading with teacher</td>
<td>□ Comprehension and / or question response</td>
</tr>
<tr>
<td>□ Decoding</td>
<td>□ Choral reading (whole class)</td>
<td>□ Worksheets</td>
</tr>
<tr>
<td>□ Rhyming</td>
<td>□ Flash card work</td>
<td>□ Creative Writing</td>
</tr>
<tr>
<td>□ Other (please describe)</td>
<td>□ Tracking</td>
<td>□ Reflection or journal writing</td>
</tr>
<tr>
<td></td>
<td>□ Summarising</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Comprehension Monitoring</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Story response</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Group reading</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Think aloud</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Reading with expression</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Prediction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Sequence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Vocabulary development</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Story elements</td>
<td></td>
</tr>
</tbody>
</table>

Observation Probes

How do you feel the ABRA lesson progressed today? (Were all the children engaged? What aspects were you particularly pleased / displeased with?)
Did the teacher experience any technical difficulties? How was this handled? How much time was taken to resolve the difficulties?

What is the teacher’s comfort level with the ABRA program and activities that were being used during this session? Did the teacher appear prepared?

Please share any other observations you may have had regarding both the teacher and the children in regards to using ABRA, i.e. class management, organisation, teaching style, unforeseen interruptions, ability level differentiation.
## Effective ABRA Teacher Rubric

<table>
<thead>
<tr>
<th>A. Planning and preparation</th>
<th>LOW</th>
<th>MEDIUM</th>
<th>HIGH</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Researching activities</td>
<td>No evidence of researching activities prior to implementation</td>
<td>Some sporadic evidence of research prior to implementation.</td>
<td>Thoroughly researched to develop plan prior to implementation. Draws upon literacy knowledge when developing lessons.</td>
</tr>
<tr>
<td>2. Developing a plan for lesson delivery</td>
<td>Rarely appears prepared. Does not seem to have any planned lesson</td>
<td>Usually has a plan to execute lessons although this may not always be logically sequenced and well researched.</td>
<td>Writes lesson plan consistently. Sequencing of lesson is apparent. Word and text level activities are included in each lesson. Extension activities are included often. Themes incorporated in other curriculum areas e.g. science, social studies and also using additional resources to support phonics, reading and writing activities.</td>
</tr>
<tr>
<td>3. Differentiation in planning activities</td>
<td>Everyone always does the same activity. Individual needs of children are not considered.</td>
<td>Needs of children are sometimes taken into consideration and activities are chosen to meet these needs.</td>
<td>Rationale for choice of activities is obvious and is based on needs of children. Children are working on different activities to meet these needs.</td>
</tr>
</tbody>
</table>
4. Development of additional resources e.g. icon flash cards, word level games.

| Uses ABRA in isolation without the support of additional resources. | Sporadically develops and uses additional resources to support the skills being presented through ABRA. | Understands the importance of developing additional resources to support the skills being presented through ABRA |

5. Evaluation

| No reflection evident | Some evidence of reflection although this may be sporadic. This may not necessarily be acted upon. | Reflects upon lessons and teaching practice for future improvement. Acts upon reflections for improvement. |

6. Learning environment is well prepared.

| No prior preparation evident. E.g. children have to wait whilst teacher turns on computers. | Some parts of the learning environment have been prepared ahead of time, but there are still areas where improvement could occur. | All aspects of environment have been prepared prior to lesson and children do not have to wait to proceed. |

### B. Implementation

<table>
<thead>
<tr>
<th>LOW</th>
<th>MEDIUM</th>
<th>HIGH</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABRA lessons are not regular and duration and frequency of lessons is insufficient.</td>
<td>Generally lessons are sufficient in terms of duration and frequency although sometimes lessons are cut in time or cancelled altogether due to other experiences that take priority.</td>
<td>Lessons are almost always the required length and frequency. Clearly ABRA has been given a high priority</td>
</tr>
<tr>
<td>2. Well paced, logically sequenced lesson.</td>
<td>Lessons appear to be progressing with no clear plan. Timing is such that the engagement of the children is sometimes lost. Teacher does not veer from plan despite needs of children. Introduction, middle and closing are weak. Teacher is not clear with instructions and children seem unsure as how to proceed.</td>
<td>Teachers plan is generally logical and the pace is usually responsive to the children’s needs. May be a strong introduction and middle, but closing may be weak. Clarity of expectations is sometimes lacking.</td>
</tr>
<tr>
<td>3. Clear evidence of scaffolding</td>
<td>No or minimal scaffolding.</td>
<td>Scaffolding of children is inconsistent. Teacher attempts to scaffold children, but will miss opportunities to extend children’s thinking. Teacher has done some scaffolding but this is not thorough or consistent.</td>
</tr>
<tr>
<td>4. Appropriate feedback</td>
<td>Little or no feedback is provided.</td>
<td>Feedback is given but this is inconsistent and lacks meaning for child.</td>
</tr>
<tr>
<td>5. Consolidates learning</td>
<td>Teacher rarely takes opportunity or time to consolidate learning.</td>
<td>At times teacher takes opportunities to consolidate learning, but this is not carried out on a consistent basis.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>6. Differentiation is evident during teaching.</strong></td>
<td>No differentiation apparent. Children always do the same activities despite their varying needs.</td>
<td>Teacher recognises differing needs of children and may sometimes attempt to differentiate.</td>
</tr>
<tr>
<td><strong>7. Teacher circulates between children throughout the lesson.</strong></td>
<td>Teacher does not circulate between a range of children and may only offer support to one or two children.</td>
<td>Teacher may circulate for part of lesson, but this is often only to respond to a child’s request for assistance.</td>
</tr>
<tr>
<td><strong>8. Teacher assistant has been appropriately trained to take an active role in the lesson.</strong></td>
<td>Teacher assistant knows little about ABRA and is unable to support the children during ABRA lessons.</td>
<td>Teacher assistant has some limited knowledge of ABRA and intermittently supports children.</td>
</tr>
<tr>
<td><strong>9. Manages class effectively</strong></td>
<td>Children are highly distracted and there are a number of behavioural issues not being addressed. There is excessive, unnecessary waiting time while teacher refocusses the class.</td>
<td>Teacher addresses behavioural issues but this can be inconsistent and as a result is ineffective. Children do not have a clear understanding of expectations during ABRA classes. There are times when children have to wait excessive amounts of time during ABRA lessons.</td>
</tr>
<tr>
<td>10. Student engagement</td>
<td>Students are not attending to the task at hand. They are distracted. There is a lot of disruption and movement not related to the task.</td>
<td>There is occasional disruption and movement not related to the activity. Several children are consistently not focusing on the assigned task.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C. Evaluation</th>
<th>LOW</th>
<th>MEDIUM</th>
<th>HIGH</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Uses records of children’s progress for planning differentiation</td>
<td>No evidence of recording individual children’s progress is apparent and teaching does not appear differentiated.</td>
<td>Some attempt has been made to keep records of student’s on-going progress although this is sporadic and is not necessarily used to plan and differentiate teaching.</td>
<td>Regularly enters information onto individual progress rubric and uses this information for on-going planning for each child.</td>
</tr>
<tr>
<td>D. Professional development</td>
<td>LOW</td>
<td>MEDIUM</td>
<td>HIGH</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----</td>
<td>--------</td>
<td>------</td>
</tr>
<tr>
<td>1. Acts on advice of ABRA coach</td>
<td>Fails to act upon any advice given by ABRA coach</td>
<td>At times will act on ABRA coach’s feedback; however this is not on a consistent basis.</td>
<td>Consistently acts upon ABRA coach’s feedback and works to raise their delivery of ABRA to a higher level.</td>
</tr>
<tr>
<td>2. Collaborates with colleagues</td>
<td>Does not collaborate with colleagues to resource self and develop plans.</td>
<td>Sporadically liaises with colleagues to share ideas and plan, but does not necessarily understand the importance of doing this.</td>
<td>Consistently discusses ideas with colleagues to resource self and plan sessions</td>
</tr>
<tr>
<td>3. Challenges self</td>
<td>Delivers ABRA lessons in a ritualised way and does not reflect upon work or attempt to vary from daily routine to enrich ABRA delivery.</td>
<td>Occasionally, develops and/or implements strategies to enrich ABRA lesson to better meet needs of children. May be hesitant to vary from comfortable delivery style to try something innovative.</td>
<td>Frequently reviews practice to work toward continual improvement to meet children’s needs. Understands the importance of challenging/changing teaching practices to develop professionally.</td>
</tr>
</tbody>
</table>
APPENDIX E

Training session evaluation

<table>
<thead>
<tr>
<th>1. Did the training sufficiently...</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>...explain the background of ABRA?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>...explain the research activities?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>...provide time for you to explore ABRA?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>...give you ideas for using ABRA?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>...give you ideas for using ABRA with AL?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>...give you ideas for ABRA lesson plans?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments:

2. Did the training help you feel prepared to begin using ABRA in your classroom? Why or why not?

3. What concerns/struggles do you forsee encountering when using ABRA in your classroom?

4. What questions do you have that were not addressed during the training?

5. What suggestions do you have for future ABRA training sessions?
APPENDIX F

Stage 1 Revision Requests Response (Delivery date: December 2008)

<table>
<thead>
<tr>
<th>Change</th>
<th>Details</th>
<th>Rationale</th>
<th>Concordia’s Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make all the alphabets activities available without having to choose a book.</td>
<td>At present a concern by teachers has been that activities do not include the words from the chosen book. Teachers are currently assuming that when they click on the books they are only going to find words from that story. They are concerned when other words are used beyond the selected story.</td>
<td>What we’ve developed is a balanced reading tool that tries not to teach skills in isolation. That is, we want students to practice skills in the context of the texts they are reading. Because the texts are often short and the skill-level in each activity dictates the content to which the children will be exposed, we use the texts’ words as a base then build on them. For example, Level 2 of Auditory Blending practices 3-phoneme words with short vowel sounds. If we used the story “How a bean sprouts”, there are about 8 words fitting the aforementioned criterion. To build the content, we include words that rhyme with those from the story or those that follow a similar spelling pattern. To help teachers, maybe we will have to stress this point when we do training so that they won’t be rattled when they see words “out of context”.</td>
<td></td>
</tr>
<tr>
<td>Eliminate the example wrath and bath in the rhyming activity.</td>
<td>In Australia, we pronounce wrath differently and thus these two words do not rhyme.</td>
<td>We will get rid of the word “wrath” in this activity.</td>
<td></td>
</tr>
<tr>
<td>Make the sounds ‘m’ and ‘n’ more distinct. (Feel free to do this by not having ‘m’ and ‘n’ in the same sound recognition activities).</td>
<td>‘m’ and ‘n’ are hard to discriminate. This may be due to audio issues. Children have had a difficult time in all 3 schools discriminating these 2 sounds when doing the letter sound search.</td>
<td>We will leave M and S in Level 1 and take N and C from level 1 and put them in level 2. N and C will be replaced with F and L from level 2. (We’ve decided to move the C because more proficient readers are presently penalised when they press S for its soft sound.)</td>
<td></td>
</tr>
<tr>
<td>Replace story sound files with ones produced by Australian readers.</td>
<td>We will investigate the possibility of recording at CDU and, if that isn’t possible, will record. This seems to be a relatively easy first step to creating an Australian version of ABRA, one that will be appreciated.</td>
<td>It is hoped that you can send us clean and crisp audio files of the stories included in the “Student stories” section of ABRA. These files will be placed in that section where teachers and students can opt to click the Australian or</td>
<td></td>
</tr>
</tbody>
</table>
during our visit to Concordia in November.  

by teachers and education policy makers.  

Canadian sound files. (FYI, the phonetic breakdown of the words will not be available in these texts. The audio files in the rest of the software will remain as is due to the expansiveness of this undertaking.)  

If you cannot record the audio recording at CDU, let us know at least 3 weeks in advance so that we could book our audio room and technician. (NB. To get good quality files, you would need to add an extra 3-4 days to your stay.)

## Miscellaneous Recommendations

Table 2  

<table>
<thead>
<tr>
<th>Suggestion</th>
<th>Details</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>We would like to see the list at the end of the word family activity remain static.</td>
<td>In this way children can re-read the list without the constraint of time.</td>
<td>Many of the children are ESL children and require longer to sound out words.</td>
</tr>
</tbody>
</table>

We will change the activity to include the speeds *walk* and *run*. We do not want to use the words *slow* or *fast* due to possible negative connotations with the word “slow”. In *walk*, the character, Julie’s algorithm will be 5 seconds per word and with *run*, Leo, the cat’s algorithm will be 2 seconds per word. This should give all students the time needed. Please note that students can restart the timer if they have not finished or need more time with the listed words.