Conducting early childhood research in remote Australia

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The trials and tribulations of conducting early childhood literacy research in remote Australia

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Abstract

A small exploratory study was conducted over a school term in three primary schools in the Northern Territory to determine the effectiveness of a web-based literacy intervention, ABRACADBRA. Our purpose is to inform others of the challenges encountered while implementing and evaluating the effectiveness this new literacy intervention. Researchers were confronted with several ongoing obstacles during the data collection process. Using standardised testing with children who had never been exposed to this type of assessment; working with teachers with very little teaching experience and poor attendance all added to the difficulty of conducting rigorous research. Tests that were designed for whole class administration had to be given one-on-one or to small groups of no more than three. Teacher turnover was an issue as was the fact that most teachers were early in their careers, still developing knowledge and skills. While many of the teachers were eager to learn and responsive to professional development, their overall lack of training in explicit early literacy instruction at times negatively impacted the program’s delivery. Greater teacher support is suggested to increase overall teacher effectiveness while providing much needed professional development. Sporadic attendance among many of the participants resulted in the study losing 22 of its original 97 students over a ten week period. Computer assisted learning programmes such as ABRACADABRA, which allows students to pick up where they left off is one way of addressing the issue of transient students. ABRACADABRA, with its multiple levels and variety of activities allows teachers to differentiate lessons according to student needs. Recommendations for other educational researchers working within this or a similar context are given throughout the article.
Background

For nearly a decade there has been intense pressure on governments and schools to lift literacy standards across Australia, ensuring “every child leaving primary school” can ‘read, write and spell at an appropriate level” (Meiers, Khoo, Rowe, et al., 2006, p.1). Despite continued interventions proposed by the various levels of government to raise educational outcomes and improve participation among indigenous Australians, the problems persist with Indigenous students having lower levels of achievement than non-Indigenous students (Bourke, Rigby & Burden, 2000). Indigenous students’ literacy scores are particularly low in the Northern Territory (NT) (Grey & Beresford, 2008). This paper describes our experiences implementing a literacy support program, which highlights the challenges facing Northern Territory education delivery, long term improvement and teacher development generally.

Distinctly different than most parts of Australia, the Northern Territory comprises 30 % Indigenous Australians within its population (NT DET, 2008). Thirty–nine percent of the student population registered in Territory Government schools are Indigenous with numbers as high as 70% living in remote communities (NT DET, 2008), where students are most vulnerable to educational underachievement. “Northern Territory data for 2004 showed that only two out of ten children in remote Territory communities passed the year 3 or 5 literacy benchmark” (Storry, 2007, p.5). 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). 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).

Despite well-intentioned efforts, Indigenous students continue to struggle to learn to read, especially in a context characterised by high teacher-turnover, student absenteeism and lack of opportunity for quality
education that is available in major urban centres (Gray & Beresford, 2008; Collins & Lea, 1999). Many marginalised students – particularly those from remote Indigenous schools in Australia – fail to learn even the most basic reading skills (Robinson, Lea, Rivilland, Bartlett, Tyler, Morrison, et al., 2008). Quality learning experiences in the early years can play a fundamental role in the child’s future learning, and the development of positive attitudes towards school and learning (Siraj-Blatchford & Clarke, 2000).

Implementing ABRACADABRA

To address these critical issues, a pilot study of an online early literacy intervention ABRACADABRA! (ABRA), targeting at-risk, Indigenous early childhood students was implemented by a school for social policy research in an Australian university. ABRA, an interactive computer literacy program, was designed by a team of literacy and classroom technology experts at the Centre for Study of Learning and Performance with faculty from both Concordia and McGill Universities in Montreal, Canada. The purpose of this exploratory study was to determine the feasibility of using ABRA as a tool to complement early childhood literacy instruction in an Australian and Indigenous context in Northern Territory schools.

Despite decades of educational research, what is actually known in comparison about the effectiveness of different programs, practices and policies remains small. The majority of studies to date have relied on measurement that does not have the rigor to prove or disprove the effectiveness of what is being researched (Dynarski, 2009). Hargreaves (1996) and Slavin (2002) believe that lack of rigorous research in education has resulted in its failure to develop or make continuous positive growth, in contrast with other professions such as medicine or agriculture. Changes in education “more resembles the pendulum swings of taste characteristics of art or fashion rather than the progressive impressive improvements characteristic of science and technology” (Slavin, 2002, p. 16). This pilot study is part of a three year trial with each year of research subjecting the
ABRA program to increasing levels of proof criteria. In 2008, to establish the feasibility of the program in an Australian context, we used a single group pre-test, post-test design, shifting to a quasi-experimental study in 2009. A randomised control trial is planned for 2010, a technique which has been described as an “exemplar” of scientifically based research as it controls for other factors that may influence students’ outcomes (Dynarski, 2009). Conducting this research over a three year period with multiple methods will enable us to collect a large body of data before making broad statements regarding the program’s positive or negative impact on student outcomes. As we proceed on this journey we have discovered that conducting rigorous high quality early childhood educational research is fraught with unforeseen challenges.

The purpose of this paper is to examine some of the trials and tribulations we encountered during the ABRA literacy pilot study, and how these were (or were not) addressed. We hope our analysis assists other educational researchers in conducting rigorous research in remote areas and under similar conditions; and opens the doors for debating why experimental research remains so rare in Indigenous education settings, where evidence based approaches are most sorely needed. The three main areas of discussion are the use of standardised tests with indigenous students, teacher effectiveness and student absenteeism.

Schools, Classrooms and Participants
To commence with, ABRA was piloted in three Northern Territory schools that had large Indigenous populations which also reflected the residency patterns of the larger indigenous community. Two early childhood classrooms in each of the three schools participated over the period of ten weeks. Four of the six participating classes were multi-level: Transition/Year 1, Year 1/2, Year 2/3, and a Year 1-3 Indigenous class. The two remaining classes were a Transition and a Year 1 class. The average number of students per class was 16. The total student population was 97
students from 3 schools and 6 classes participated in this research (see Table 1).

Table 1
Early Literacy Pilot Study Student Demographics.

<table>
<thead>
<tr>
<th>Grade</th>
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<tr>
<td>Transition</td>
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<table>
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<tr>
<td>Female</td>
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<td>65</td>
</tr>
<tr>
<td>Non-Indigenous</td>
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<table>
<thead>
<tr>
<th>Age</th>
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<tbody>
<tr>
<td>Mean age</td>
<td>6.8 years</td>
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The majority of the students were in Year 1 (n=66), there were 18 students in Year 2, 11 students in Transition and 3 students in Year 3. Sixty-four students’ literacy skills were assessed one week prior to and after using ABRA for 10 weeks to determine whether using ABRA was associated with improvements in reading. The instruments used were the GRADE (Group Reading and Diagnostic Evaluation), an internationally validated instrument measuring letter and letter sound recognition, rhyming, reading comprehension and sight word reading (Fugate, 2003; Waterman, 2003) and the LLANS (Longitudinal Literacy and Numeracy Study), an Australian-developed instrument assessing similar foundational reading skills such as phonemic awareness, concepts of print, and various aspects of the concept of text conventions (Meiers, Khoo, Rowe, Stephanou, Anderson & Nolan, 2006). Given individually, the LLANS aligns very well with the concepts and skills measured using the GRADE, which is designed for group administration. Both these instruments measure reading at various levels.
After consulting with participating classroom teachers, it was determined that only the first three levels would be used (GRADE P, K, and 1; and LLANS 1, 2, and 3).

The GRADE is a North American developed instrument and contained some items that needed to be translated to an Australian context. For example, in one of the GRADE booklets an item directed students to “circle the pennies.” This item was re-phrased and children were instructed to “circle the money.” Researchers carrying out the assessments attended a half-day training to ensure everyone was using a similar testing protocol. Initially, novice assessors worked with experienced people until the novice was more comfortable with the instrument and testing protocol.

There are many who argue that standardised testing with Indigenous children should not be done due to the possible cultural bias associated with it. Others argue this only further exacerbates the cycle of alienation and underachievement for Aboriginal students (Grey & Hunter, 2000); and represents a type of deficit thinking which removes both school and teacher accountability. Most believe that in order to truly embrace high standards it is necessary to include all students in the testing data. Assessment provides information so schools can determine an individual’s abilities and knowledge in order to provide him or her with an appropriate educational program, and it also allows comparison of academic outcomes between schools, regions and states. While there are challenges with assessing early childhood and primary children, it is of critical importance since the early years lay the foundation for future learning success (Friggo, Corrigan, Adams, Hughes, Stephens & Woods, 2003; Wildy & Styles, 2008).

1 In *Learning Lessons: An independent review of indigenous education in the Northern Territory* (Collins & Lea, 1999), Indigenous parents stated that they felt it was important to collect information on how well their children were progressing in comparison to both other indigenous students and non-indigenous students. Most realise the importance of their children being able to function in English and have the same educational opportunities as non-Indigenous Australian children (Hughes, 2008). Conducting rigorous research adds another layer to school accountability.
Educational research adds to a body of knowledge that is intended to enrich current understanding on how children best learn, under what circumstances and with what methods. Researchers must test children to find out where they are at before they can determine how well a particular intervention has impacted learning outcomes. However, testing very young children and particularly those who have never been subjected to standardised testing provided us with unanticipated challenges.

School readiness and student testing

While the GRADE instrument is meant to be administered to a whole class or in small groups, we discovered rather quickly that with children who have never been exposed to a standardised assessment, it was not possible to test more than two or three children at a time, and it often proved more efficient to test students individually. When we tried to do group testing, some children became very excited each time they knew an answer, shouting it out and not understanding the need to keep the answer to themselves, and quietly mark it in their test booklet. This meant considerably more time was required to complete the assessing. Coupled with this was the fact that the students in this trial were between the ages 4-8. This meant their attention wavered very quickly which necessitated administering the GRADE in multiple sessions. Once assessors recognised that students were becoming fatigued and attention was dwindling, they would stop testing, as they wanted the results to reflect what students truly knew. The LLANS, the more engaging and shorter of the two instruments, used books and flashcards enabling children to finish it in one sitting.

CDU researchers relied on the teachers’ knowledge of their students to determine which level of test to use as many of the students were not working at expected grade level benchmarks. The majority of this group would be considered pre-conventional to emerging readers, meaning they were in the very beginning stages of their literacy acquisition, and even then their skills were below that of a child coming from a print rich
culture. Testing revealed that many of the students did not know the front of a book from the back or a word from a letter or a number. We suspected that a large number of the students were coming from homes where literacy and reading is not part of their everyday home lives. While simply by living in modern Australia, all young children including Indigenous Australians have been exposed to print in some form, “the value, significance, quantity and quality” it has been given can greatly vary (Dunn, 2001).

In many remote Indigenous communities, literacy is not essential to the culture and lifestyle of the community (Kral & Falk, 2004). Authority comes from the wisdom of community leaders and family members, not necessarily the written word, as greater emphasis is placed on orality (Cohen & Somerville, 1990; Dunn, 2001; Harris, 1987). These cultural values explain why many Indigenous children have had little experience with the literacy activities that a similar aged child from a non-indigenous background has probably had. Another significant factor is that English may be an additional language and most Indigenous children start school as English language learners, whether from very remote areas, remote or urban areas. For this reason, many students enrolled in Year 1 and Year 2 classrooms were tested using a Pre-school or Kindergarten (Transition) level test. Students who only had a minimal understanding of English were excluded from the testing.

During the data collection we learned from teachers that many of the students, especially those in their first year of school, had very little, or no prior experience with the activities in the GRADE (that is, with any worksheets that required them to circle a picture based on whether it was different, the same, rhymed, or started with the same initial or final consonant sound). In addition, many students had yet to develop school readiness skills associated with standardised paper-pencil tests such as working quietly and listening to instructions over a sustained period of time (Ehrich, Wolgemuth, Helmer, Oteng, Lea, Bartlett, Smith & Emmett, 2009).
Researchers unexpectedly found themselves having to teach the children how to take the test\(^2\).

A further challenge reinforced the need to do individual testing. Hughes and More (1997) reported that indigenous children learn best by observation and imitation, rather than verbal instruction (see also Harris, 1987; Hughes, 1991). Watson (1991) found urban Aboriginal students need more discussion, talking and modelling at the start of a lesson. This could explain why group testing proved ineffective, as children were unable to work independently and two or three test items were taking up to 30 minutes time as individual student needs were addressed.

Testing small children means working with individual personalities, some who quickly get bored with the test as it is very challenging and often beyond their current skill level. One has to try to look at this through the eyes of the child. Being placed in a room with a stranger and asked to do an unfamiliar task can be quite intimidating. It is essential for researchers to introduce themselves and allow time for the child to become comfortable with them before beginning. Poor results can occur simply because the child refuses to interact with a stranger. Having someone else in the room that is familiar with the child, such as an assistant teacher, can help to alleviate any anxiety being experienced by the child. Researchers with the limited time schedules often underestimate the length of time needed for a task. Fortunately, these situations were few in number; nevertheless, this was still an important lesson to the research team.

\(^2\) However, administering the testing one-on-one was advantageous to ensuring that indigenous children who were afflicted with any hearing impairment correctly heard the questions. According to a 2005 survey many children from remote communities across North and Central Australia are affected by Otis Media resulting in conductive hearing loss (Morris, Leach, Silberberg, Mellon, Wilson, Hamilton, et al., 2005). Regular occurrences of Otis Media prior to starting school may result in difficulties in the development of auditory discrimination and processing skills, phonological awareness, short-term auditory memory skills and auditory sequential memory skills all of which are necessary to be successful in learning (Burrows, Galloway & Weissfer, 2008).
Lessons Learned: School Readiness and Student Testing

When working with very young students, testing sessions should be kept to 30 minutes or less. Stop immediately if you feel a child is fatigued. Testing students individually or in small groups of two or three students has proven most efficient. It is necessary to keep instructions simple, and ensure everyone understands by providing several examples before actually beginning the test. While the test itself provides one or two examples, we found it was necessary to provide an additional three of four examples to ensure children understood what they were being asked to do. Having someone from the school in the room can help relieve any anxiety felt by the child when placed in an unfamiliar situation.

It is important to provide feedback regarding the testing to school administration and teachers in the participating schools. Preparing an in-depth report describing individual student results gives teachers valuable information to guide them with their literacy planning and reporting to parents as they now have baseline data outlining individual strengths and weaknesses. Bi-weekly observations revealed that teachers were now using these results to guide them when choosing which skills to focus on when planning their ABRA lessons.

Teacher Effectiveness

Teaching, both an art and a science, and requires highly skilled professionals take advantage of professional development opportunities. Education outcomes in regional and remote Australia, particularly for Indigenous students, are worsening, to the point of constituting a national crisis. Skilled teachers are not consistently available in sufficient numbers to arrest this picture in the early years by giving the intensive expert instruction required. High teacher turnover and highly varied teacher quality only add to this crisis.

Teacher Training

Teacher effectiveness research is integral to this study. The ABRA web-based literacy tool may have the potential to help to improve teachers’ literacy practice as it provides teachers with an extensive range of foundational literacy activities, ideas and teacher support. However, no educational tool can deliver maximum results if there is not an effective teacher guiding its implementation.
One of the biggest challenges we encountered during this research was the varying levels of teacher experience and effectiveness. We used and refined a rigorous implementation fidelity instrument to measure teachers’ effectiveness in their efforts to implement the ABRA literacy web based literacy program. The implementation fidelity measure and a qualitative observational instrument gathered data on teacher effectiveness while delivering ABRA to their classes. Teachers were also asked to keep logbooks to record their impressions.

ABRA teachers in our study attended a full-day training session to familiarise themselves with the software. Implementation included a support component where a researcher/coach visited classrooms bi-weekly to observe ABRA lessons and provide technical and content support\(^3\). The researcher/coaches collected data while at the same time providing ongoing support to teachers as they implemented ABRA.

Most of the teacher participants would have been considered early career teachers, their teaching experience ranged from two to eight years. Four of the six teachers had less than 5 years of full-time classroom experience. Keeping this in mind, few of these teachers had been in their careers long enough to have developed extensive teaching skills, and a knowledge and understanding of what strategies are most effective. Several ABRA teachers required guidance in lesson planning and ideas for developing resources to complement the program. Observations revealed that while teachers happily used the ABRA online-literacy program they were not following up in class by using any type of activities to assess if the students’ work on the computer was applied beyond their computer practice or finding creative ways to link the computer learning to the rest of their literacy teaching.

An additional dilemma rests in the pedagogical knowledge of many young teachers coming to the Northern Territory. ABRA

\(^3\) One of ideas behind coaching is that it gives teachers purposeful support to assist them in raising their practice and helps to break the isolation that is often experienced by teachers as they are left to their own devices for providing to their students (Symonds, 2003).
researcher/coaches observed that there was virtually no explicit teaching of phonics. While this is of concern for all, the absence of explicit phonics for students whose first language is not English can spell failure (Leslie & Allen, 1999). Research studies reveal with great consistency that the teaching of explicit phonics is crucial to early reading success (Rowe et al., 2005; National Reading Panel, 2000). Data gathered from research and best practices observed in early childhood classrooms confirms the recommendations from consultants that “direct systematic instruction in phonics during the early years of schooling is an essential foundation for teaching children to read” (Rowe et al., 2005, p.31). The National Inquiry into Teaching Literacy found that a child’s growth in literacy is challenged when there is only random or no phonics instruction, which will further inhibit growth in acquiring foundational literacy skills.

Results from a focus group, conducted by Rowe and colleagues (2005), comprised of teacher educators from 34 teacher education schools, revealed that teacher preparation programs across Australia vary considerably in the number of days student teachers actually spend in schools, and some teachers had never experienced a placement with someone who would be considered a master teacher. A further area of concern is that teachers themselves lack the literacy skills that require them to be effective teachers of literacy. Fielding-Barnsley and Purdie (2005) concluded after surveying 340 pre-service, general and special education teachers that while teachers have a positive attitude, they possess “poor knowledge of meta-linguistics (awareness of language structure) in the process of learning to read” (p.1). One teacher in our pilot commented:

As a teacher, I have learned a lot from the program.... There are things like rhyming, letter sounds 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 (ABRA teacher, 2008).
One of the intentions of implementing the ABRA online literacy program was to address the reported gap in the lack of explicit phonics lessons in early childhood classrooms. The GRADE and LLANS testing confirmed this gap as many of the children showed a weakness in both phonemic awareness and phonics.

While training, support and regular conversation with ABRA researcher/coaches emphasised the need for structured lesson plans, there were teachers who had already developed the habit of using the computer as something of a babysitting device rather than an educational tool. Classroom computers can be a wonderful resource to teachers, but need to be effectively used by the teacher if they are to enhance effective classroom instruction. Observations revealed classes where children sat at their assigned computer and were permitted to play on one of several programs/games while teachers caught up on their grading or planning. While regular conversations with the researcher/coach provided the impetus for teachers to make the effort to provide direct instruction and planned lessons when using the computer, the students had already learned from previous experience that this was free time and changing these poor habits were challenging and required a determined and consistent approach. One teacher revealed in her ABRA logbook:

I am finding the supervision of all the students and making sure they are doing the assigned activities difficult (ABRA teacher, 2008).

**Affecting Teacher Change**

Lack of access to professional development for teachers in remote areas is a major factor that affects teacher growth and learning. Professional development is held in major cities, which requires expensive travel in order to access, compounded by the fact that there are often no relief teachers to fill in when teachers are out (Gibson, 1994). Affecting teacher change by offering one-shot workshops aimed at getting teachers to master a certain skill set has proven ineffective. Current research
reports that teachers learn best by providing ongoing professional
development backed by on-site coaching and support that gives teachers
confidence about their practice and their capacity to improve student
learning gains (Darling-Hammond, 2000).

Schools regularly measure growth in student knowledge, but forget
about doing the same for teacher transformation and often disregard the
connection between the two (Anders, Hoffman & Duffy, 2000; Kinnucan-
Welsh, 2006). A true test of successful professional development and
teacher change is when a new program has become embedded in their
teaching practice (Guskey, 2002; Ingvarson, 2005). Initially we found ABRA
classroom practices quite weak. In several cases, it was evident that the
lessons were not planned ahead, nor did they have any clear goals or
objectives. However, with continued support from the researcher/coaches
there were observable improvements by the end of the ABRA study.

Changing teacher behaviour is an ongoing process tied to teacher
learning, student learning and what is known as effective instruction with
the goal of developing teachers who are more reflective and meta-
cognitive; who regularly ask themselves “What am I doing and how can I do
it better?” (Kinnucan-Welsh, 2006, p. 4). Teachers need to be confident in
their knowledge of the teaching material and how students learn. Even for
experienced teachers this can be challenging and requires continuous
professional development with built in follow-up and expert support
(Guskey, 2003; Ingvarson, 2005; Meiers & Ingvarson, 2005).

In the ABRA research we encouraged teachers to take the extra time
to become more familiar with the program and its wide range of activities
while at the same time not taking on too much until they were confident
and felt ready to take on more. Researcher/coaches offered ongoing
support through newsletters describing best practices, individual meetings
and phone calls for those teachers who asked for extra support.

While on-going training can provide some of the desired changes in
implementation, individual commitment and openness to change is also a
factor. There were teachers who were excited and highly motivated, and those who became more engaged once they saw the excitement and growth in their students. Once some of the teachers saw improvements they showed greater belief in their ability to improve student outcomes and worked harder to improve their practice.

There were others who needed regular encouragement on the part of the researcher/coach to persuade them to raise their standards. But even with this support, in some classes it remained the disappointing case that there were no written lesson plans; no introduction prior to setting the children to work on the computer; no differentiation of children according to their ability and no evidence of on-going practice evaluation. Lack of teaching experience and training in a variety of strategies meant some of the teachers found it highly challenging to seamlessly integrate the on-line literacy program to complement their current literacy teaching. All of these concerns have been incorporated into a new, more detailed observation rubric, and will also be included in on-going training sessions upon the commencement of the second year of the ABRA study.

Teacher Turnover

Teacher turnover is another issue that plagues the remote schools in the Northern Territory. Attracting experienced teachers is a continuous issue for the remote areas which are known for a high turnover of both inexperienced and young teachers (Burke, Rigby & Burden, 2000; Gibson, 1994). The least experienced teachers often are the ones that are recruited. They cannot find jobs in more desirable locations, so they choose to do this in order to get that much needed experience so they can obtain jobs elsewhere (Gibson, 1994). While there are currently no reliable estimates of either remote or urban teaching staff, Young (1996) reported that data from 1985 revealed that non-indigenous teachers stayed in Indigenous communities in Central Australia an average of six months. Even teachers who are eager to work in remote communities are often quickly
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disheartened due to the isolation, loneliness, a dearth of social activities and challenging teaching (Gibson, 1994; Warren, Cooper & Baturo, 2004).

High turnover is debilitating, especially when it happens before the end of the school year which causes an even greater disruption to students’ learning. In some cases students may have multiple teachers within a single school year (Mellor & Corrigan, 2004). Its impact is devastating in both economic terms and on the ability to deliver a high quality educational program (Collins & Lea, 1999). Each time teachers leave mid-year learning time is lost as the new teacher has to learn what level the students are at. The impact of this is illustrated in the following quote between a principal and students whose teacher had recently left. When the Principal expressed his concern about a recently departed teacher, the student responded with “What do you care?...You won’t be here next year!” (Mellor & Corrigan, 2004, p.36). Teacher relationships have been cited as a strong indicator of student success (Frigo et al., 2003; Lewis, 2007). Evidence-based research has revealed that the teacher / class to which students are assigned is an important factor in determining school success regardless of social circumstances (Cuttance, 2001); while numerous other studies have argued that it is effective teachers who make the difference (Darling-Hammond, 2000; Rowe, 2003). If teachers are constantly leaving one has to question how much effort is being put into developing strong relationships.

During the 10 week duration of the ABRA pilot, one classroom had three different teachers. Immediately following the pilot (which happened to be the culmination of semester one), another teacher resigned and one other was assigned to a new grade level. While their classes had shown promising results in this short time frame, all these gains were jeopardised as the new teachers were unfamiliar with the program and thus it was not continued. This strengthens the case for providing greater training and participation for the assistant teachers who are in a better position to keep new initiatives afloat as they are generally local residents who are not
planning on leaving the school in the immediate future. In remote communities, the assistant teachers are often “Indigenous, older, more experienced, and have strong connections to the local community” (Warren et al., 2004, p.3).

### Lessons Learned: Improving Teacher Effectiveness

Through their observations, researcher/coaches concluded during the first year of this study that early career teachers need even greater support than had been anticipated. Due to the remoteness of some of the schools, researchers only saw teachers every second week. We have now determined that the researcher/coaches need to check in with teachers via telephone on the alternate weeks. Through coaching, teachers can internalise and put new learning into practice as they become more confident with the program (Fitzharris, Jones & Crawford, 2008). We also hope that our website and introduction of a blog phone forum for teacher feedback and problems will build a community of practice around the project by giving teachers contact with others who may also be geographically isolated. This is a real issue for teachers living and working in remote communities and is still a long ongoing process.

### Attendance

A real hindrance and what became an added variable while conducting this research was the poor attendance among many of the student participants. This is yet another factor that plays heavily not only on student outcomes but on educational research conducted in remote areas of Australia. During the ABRA literacy intervention attendance was a critical issue. Mean attendance for the Indigenous students in the three schools was only 62.6% while the non-Indigenous students attended 84.3% of the time. Again this is an average and there were several students who had been exposed to the program less than 10 times over the ten week implementation period.

We had hoped the use of an engaging computer based literacy program might be an incentive to improve attendance. Bourke, Rigby & Burdon (2000) have suggested that the problems associated with transient students could be addressed through the use of computer assisted learning, as computer based program can allow each student to work at
his/her own pace and level. ABRA holds much promise in this regard (see Abrami, Savage, Wade, Hipps, & Lopez, 2008; Savage & Abrami, 2007). It can monitor individual student progress -- and if another school was also using the program, this information could be easily transferred. Also, teachers can individualise learning so irregularly attending students can be working on different activities geared to their learning needs without disrupting the program of more regular attenders. During our ABRA literacy pilot, the most frequent comment from teachers was how engaging and motivating the children found the program as well as being an avenue for them to increase their computer skills. These results confirm that of Donoghue (1992) and Steen (1997) that Indigenous students find computers highly motivating. The computer, a highly visual tool, provides the students with instant feedback in addition to offering a break from the highly demanding language of school, which can be extremely exhausting for English language learners (Donoghue, 1992). The ABRA online literacy program allows teachers to easily fit transient students into learning that was geared to their current academic ability. However, despite all this, attendance was still problematic throughout this research.

Without regular attendance, educational outcomes are rarely at an optimal level (Collins & Lea, 1999; Grey & Hunter, 2000; Story, 2007). The collective pattern of learning is broken when a student has frequent absences (Gray & Beresford, 2008; Groome & Hamilton, 1995; Mellor & Corrigan, 2004). The number of absences many indigenous children experience each school year may add up to them actually having spent at least two fewer years in school than non-Indigenous students (Gray & Beresford, 2008). A reported attendance result for the average remote school is at around 70 to 80% (Story, 2007). However, case study evidence suggests that for many remote schools it may be considerably less. Indigenous students account for 5% of the student population in Australian government schools, but account for 30% of truant students (Gray & Hunter, 2000; Story, 2007).

The critical fact is that while Indigenous enrolments have increased over the last decade, attendance has been decreasing. According to the ACER
2007 Report: *Does Australia have a world class education system?* Many literacy specific skills are only acquired through in school instruction, leaving children who haven’t attended school on a regular basis at a severe disadvantage. When students do not attend school on a regular basis the gap in their achievement continues to widen, which then may elicit inappropriate behaviour as students seek to direct attention away from the fact they are so far behind their peers. The longer and more frequent the absences the more challenging it is for the children to cope with typical age appropriate educational expectations (Gray & Hunter, 2000).

This offers a possible explanation why many of students in the early childhood classes in this literacy intervention were already below the expected literacy benchmarks that would have been appropriate given their age. Consistent with current research, during the ABRA study we found that Indigenous students attended fewer days than their non-Indigenous peers and testing revealed they were significantly less able in their performance of phonological processing tasks (Ehrich, et al., 2009).

Students who were frequently absent would occasionally turn up for one or two days which caused additional problems. The newcomers often displayed very inappropriate school behaviours that made the day frustrating and disruptive for both the teacher and students who attended on a more regular basis as they tried to settle in these new children. Considerable time was spent on these ‘drop in’ students, only to have them disappear again within a few days.

Studies have listed various reasons for non-attendance which include attending funerals and other important cultural activities, frequent illness due to inadequate housing and poor nutrition, caring for family members, poor teacher/student relationships and no effort to involve the Indigenous parent community in the school decisions (Bourke, Rigby & Burdon, 2000; Gray & Hunter, 2000).
Lessons Learned: Low Student Attendance

As researchers we are not in a position to improve attendance. We can however estimate its effects on student outcomes by including attendance as a covariate in our analyses. Failing to do so could underestimate the impact of promising educational interventions. Further, we need to continue to test interventions such as ABRA to see if they have any impact that may, over a period of time, contribute to improved attendance or compensate for intermittent learning. If children become more confident in their own learning, they may be more excited about attending school on a regular basis or at least, still acquire skills when they attend.

Conclusion

While this was a short exploratory study to determine the feasibility of using a web based literacy program from Canada within the Australian and Indigenous context, we identified several ongoing challenges during the data collection and implementation phases that potentially compromised our ability to carry out rigorous scientific research in regional and remote Australia. Concurrent themes were the challenges of using standardised tests with a population of students very unaccustomed to this type of assessment, dealing with varying levels of teacher effectiveness and teacher turnover which ultimately influences teacher effectiveness, and low student attendance levels.

This research supported the evidence that early career teachers in the more remote areas of Australia need on-going support and regular professional development to assist them in their career development. Low school participation rates among some of students was also an inhibiting factor, revealing lower levels of literacy acquisition than those who had attended school on a more regular basis during the pilot. Our research supports other reports which contend that inability to attain critical literacy skills may be linked to irregular attendance (Burke, Rigby & Burdon, 2000; Gray & Hunter, 2000). Of course, these issues are not unique to research but match the challenges of teaching and education service delivery more broadly. Davidson (1998) has reported that often teachers hold ethnocentric beliefs that Aboriginal children are destined to failure thus
lowering their educational standards for this group of students. In Frigo et al. (2003) interviews revealed that while some teachers had high expectations of their indigenous students, others indicated that students were doing as well as could be expected given their backgrounds and innate academic potential. Given the challenges teachers face – their own inexperience, turbulent workplace turnover, mixed skills in behaviour management and reading techniques – such attitudes are understandable. They are not an argument for doing lesser quality or less resource intensive studies but rather, an argument in support of the necessity of more rigorous applied research targeting solutions to the ubiquitous challenges of regional and remote education. Learning to work with and around the obstacles associated with educational research in remote areas is crucial as is the need for continued research to find solutions and close the gaps between educational outcomes for Indigenous and non-Indigenous Australians. Nevertheless, what needs to be remembered is that despite all the challenges students responded positively to the ABRA intervention with post-tests revealing promising results which further reinforces the need for continued research.

Competence in foundational literacy in early childhood will set students on the road to continued success throughout their school careers, as well as adding to their emotional and behavioural well being which will in turn give them opportunities for occupational and economic success later in life (Frigo et al., 2003; Hunter, 1997). Greater attention needs to be paid to the solutions for these challenges to effective instruction, if the front line workforce society who will confront these issues is to be equipped and supported for their task.
Conducting early childhood research in remote Australia

References


