



Catholic Education Office
Archdiocese of Melbourne



EARLY READING INTERVENTION KNOWLEDGE (ERIK)

SUMMARY OF INTERVENTION DATA 2009

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Background Information

The Early Reading Intervention Knowledge (ERIK) initiative was an outcome of research jointly undertaken by the Catholic Education Office Melbourne (CEOM) and the University of Melbourne. The research funded by Commonwealth Government Grants was completed between 2000 and 2003 and involved over 700 Year 1 & 2 students attending Catholic Primary Schools. Dr John Munro (Associate Professor, Graduate School of Education: University of Melbourne) was the Principal Investigator while Mr Hugh McCusker, who at the time of the research project was an employee of the CEOM, was the Partner Investigator. The focus of this research was to develop an assessment profile that would identify students who were at-risk of not achieving expected early reading outcomes as well as to develop and trial instructional pathways to meet the learning needs of these students.

Three instructional pathways were developed for use with students involved in the research trial. One had a focus on enhancing competence in the applied use of phonological awareness when reading texts. The second option focused on strengthening students' orthographic processing and applying this knowledge in text reading while the third option focused on developing students' integrated use of two comprehension strategies (visualisation and paraphrasing).

In the original study, both 1:1 and small group options were trialled with the small groups consisting of two or three students. Similar gains were evident in both the 1:1 and small group formats when students accessed either the Phonological Awareness/Reading pathway or the Orthographic Processing/Reading pathway. Significantly stronger gains were evident in the small group format for students who accessed the Comprehension pathway with these students making over twice the progress of their peers who received 1:1 support (Munro & McCusker, 2005).

Since its development and initial trialling, the ERIK approach has been increasingly used by Catholic Primary Schools as a component of their literacy support program. The ERIK Initiative currently consists of two parts:

- assessment and student profiling; and
- a strategic intervention program targeting phonemic knowledge, orthographic processing and/or comprehension.

ERIK is introduced to students in schools where:

- the primary concern cited in the referral to Student Services staff is reading difficulty;
- the school indicates a willingness to become involved in the assessment and profiling cycle; and
- the school indicates a capacity to implement the strategic intervention and associated data collection.

The assessment profiles and teaching materials used in the research phase have been further developed and refined by the CEOM for implementation in schools.

CEOM school advisers have worked to support school personnel in conducting assessments, analysing the data and recommending one of the three targeted interventions. Schools interested in introducing ERIK have been encouraged to undertake a one-day professional learning activity which provides a summary of the background research as reported by Munro & McCusker (2005) and an introduction to the assessment profile and the teaching materials. Schools are provided with electronic copies of all materials or have the option of purchasing a print version from the CEOM.

It is recommended that schools implement an intervention option for a student who is experiencing early reading acquisition difficulties prior to making a referral for a diagnostic assessment. This practice is consistent with a converging body of evidence that supports the implementation of a systematic and appropriately sequenced intervention program prior to undertaking differential assessments in the early years (Vellutino et al, 2004). Evidence has shown that some students who appear to be at-risk subsequently achieve average abilities without targeted intervention while others who were judged not to be at-risk go on to experience reading difficulties (Scarborough, 1998; McCusker, 2007). A student's response to teaching that is characterised by an evidence-based approach will provide the most reliable measure to determine the need for comprehensive assessment and a more individualised intervention program.

Data collected anecdotally since initial implementation in 2006, indicates that the ERIK interventions continue to have positive results in many schools. During 2008, CEOM invited a selected number of schools to participate in further analysis of the program. This analysis involved the collection of pre- and post-intervention data in order to further evaluate the effectiveness of the intervention and isolate factors which may influence success across school settings. That data forms the current analysis.

Overview of ERIK Schools Data

Data was accessed from 13 schools in the Archdiocese of Melbourne with results gained from intervention involving 168 students. The student group comprised 52 girls and 116 boys with a spread across the Year Levels as can be seen from Table 1. In the current study, 75% of the students were in Years 1 to 3. Students in Years 1 & 2 were the focus of the research projects in which the ERIK Interventions were initially developed and trialled. While it was perceived that the instructional pathways developed may facilitate reading acquisition in older students this was not assessed in the earlier research.

Year Level	No. of Students	% of Group
1	8	5
2	52	31
3	66	40
4	28	16
5	12	7
6	2	1

Table 1: No of students per year level

The number of intervention sessions varied across the student group ranging from less than thirty sessions to sixty sessions. The instructional pathway in each of the three options has sixty prepared sessions with a recommendation that a minimum of three intervention sessions per week be conducted. Based on this, the intervention period would range from 12 weeks (3 months / 5 sessions per week) to 20 weeks (5.5 months / 3 sessions per week). Table 2 outlines the distribution of students and the numbers of intervention sessions accessed.

No of Sessions	No. of Students	% of Group
30 or less	8	5
31 – 40	8	5
41 – 50	34	20
51 or more	118	70

Table 2: No of students and number of sessions accessed

While thirty percent of the sample did not access the full intervention sequence, positive gains were evident in both students’ reading accuracy and reading comprehension as measured by pre- and post-program assessment using the Neale Analysis of Reading Ability (Third Edition). As can be seen in Table 3, accelerative progress was evident for both reading accuracy and reading comprehension with a lower level of gain apparent in students’ reading rate. It should be noted that the reading rate data contained a number of outlier scores which influenced the descriptive findings (mean: 1.63, sd.: 16.46).

	Mean Gain (months)
Reading Accuracy	10.13
Reading Comprehension	15.62
Reading Rate	1.63

Table 3: Reading gains achieved – Total student group

It should also be noted that some students did not experience gains with 6.5% (n= 11) of the student sample either making no progress or becoming progressively weaker in their reading accuracy. 10.7% (n= 18) of students either made no progress or became progressively weaker in their reading comprehension. With regard to reading rate, a significant number of students (n=107) either did not achieve any gain or in fact demonstrated weaker levels of ability.

While it may be assumed that there was an increased complexity in the text students were reading at the post-assessment time, we can only speculate as to impact on reading rate. However, this finding has implications for students achieving and sustaining appropriate levels of reading fluency. Reading rate is only one aspect of reading fluency but provides an indication of levels of ability in this critical area of reading competence given its importance in facilitating improved comprehension (Schwanenflugel et al, 2006; National Reading Panel, 2000; Stacey & Wheldall, 1999; Torgeson, 1998). The variation in outcomes achieved suggested that while ERIK can be viewed as a positive intervention option to enhance reading accuracy and comprehension, modifications to the intervention may be required to enhance students’ reading fluency competence.

Given that the students in the sample were those who had not responded positively to previous interventions or had not sustained gains (i.e. third wave students), the finding that a significant majority did experience accelerative gains in the areas of accuracy and comprehension was positive. It lends support to the position that analysing students' response to a systematic intervention is an effective approach rather than initially undertaking formal diagnostic assessments. Students who do not experience success in the intervention should then access an appropriate assessment. On the basis of the outcomes achieved, only the cohort of students who did not experience accelerative gains would require such an assessment (i.e. $n = 36 / 21\%$ of total group). The information gained from the student's response to the intervention will add to the data gained from any subsequent assessment that is undertaken.

While students who accessed 30 sessions or less achieved gains, greater progress was evident in the gains of those students who attended for an increased number of sessions. Table 4 compares the gains achieved for those students who accessed 30 sessions or less with the gains achieved by students who accessed over 50 sessions.

No of Sessions	Reading Accuracy Mean Gain (months)	Reading Comprehension Mean Gain (months)
30 or less	6.12	14.62
51-60	10.52	16.59

Table 4: Reading gains achieved based on no. of sessions attended

Given the differences in the number of students in each group (30 sessions or less: $n = 8 / 51 - 60$ sessions: $n = 118$), statistical comparison of the group outcomes was not undertaken.

Table 5 details the gains made based on the student's year level. As can be seen from these figures, improved accuracy and comprehension was achieved across all year levels. Given the small number of students in Years 1, 5 & 6, the gains achieved need to be considered with caution.

Year Level	No of Students	Reading Accuracy Mean Gain (months)	Reading Comprehension Mean Gain (months)
1	8	13.88	19.25
2	52	9.92	11.25
3	66	9.50	15.48
4	28	11.75	20.79
5	12	9.08	20.83
6	2	5.00	16.00

Table 5: Reading gains achieved across year levels

These results would suggest that the ERIK instructional pathways may have applicability across all year levels in both accuracy and comprehension.

As previously outlined, three instructional pathways were developed as part of the ERIK Initiative. On the basis of the students' assessed and perceived abilities, teachers allocated them into one of the three pathways. Outcomes based on the format of the intervention undertaken are detailed in Table 6.

	Accuracy (months)	Comprehension (months)	Rate (months)	Letter-Sound Decoding (# of words)
Phonological Awareness	8.15	16.77	3.7	3.03
Orthographic Processing	11.61	17.96	-0.98	2.28
Comprehension	9.64	16.09	2.75	1.84

Table 6: Gains achieved in the various instructional pathways

Positively, gains in both reading accuracy and reading comprehension were achieved in all three instructional pathways. Effect sizes were calculated for the three pathways using combined data for the total number of students who accessed each intervention option. When considering an effect size, a common interpretation is to view coefficients of 0.2 or less as small, coefficients approximating 0.5 as moderate and coefficients of 0.8 or greater as large (Durlack, 1998). Another interpretative approach was suggested by Wolf (1986) who viewed coefficients around 0.25 as being educationally significant on a systemic basis while coefficients of 0.5 or greater were seen as being practically significant from an intervention perspective.

Table 7 lists the effect sizes for each of the three instructional pathways for Reading Accuracy, Reading Comprehension, Reading Rate and Letter Sound Decoding. Positive effect sizes were achieved in each of the three pathways in the areas of accuracy, comprehension and letter-sound decoding (i.e. reading of phonically regular nonsense words). However, only mild effects were noted on reading rate in the phonological awareness and comprehension sequences and no significant effect was evident in the orthographic processing pathway for reading rate.

	Accuracy	Comprehension	Rate	Letter Sound Decoding
Phonological Awareness	1.15	1.15	0.37	1.15
Orthographic Processing	1.00	1.09	-0.05	1.5
Comprehension	0.80	0.96	0.15	0.90

Table 7: Effect Sizes achieved in the various instructional pathways

By considering the gains achieved across the total student sample and the number of sessions attended, an estimate of the expected gain per ERIK session can be attained. In relation to Reading Accuracy, the expected accelerative gain would be one month per week of intervention (i.e. 5 sessions). In relation to Reading Comprehension, the expected accelerative gain would be 1.5 months per week of intervention (i.e. 5 sessions). If a student consistently demonstrates a rate of growth below these expected levels over a specified period (e.g. six to eight weeks), this could be viewed as an indicator supporting referral for a comprehensive diagnostic assessment to assist identification of a more individualised intervention approach.

All students involved in the ERIK intervention were seen in small groups ranging from 2 to 5. The gains evident support the view that small group intervention is an effective alternative to 1:1 intervention when appropriately trained personnel are used (Erlbaum et al, 2000) and when appropriate instructional pathways are adopted (Foorman & Moats, 2004).

Comments from Teachers involved in School-based ERIK Implementation

- All students enjoyed the program and were very enthusiastic to have “special” time to help them with their reading
- The individual results have shown that the program has been effective especially in the area of comprehension for both orthographic and comprehension students
- I was extremely happy with the progress made during the year with this ERIK group especially XXX who made incredible gains in all areas. All other students made great improvements with their decoding, comprehension and fluency.
- Self-efficacy has risen “sky-high”
- We have found the program to be very effective with children transferring knowledge back into the classroom setting.
- It was effective with up to 5 children in a group providing the time allowance is 60 minutes

- Classroom teacher have noticed considerable improvement in student reading behaviours. Students are more confident and more positive towards reading.
- Program most effective when three or more sessions were delivered in one week
- I was happy with the progress of this group. All children made gains with their reading.
- The phonological program was very effective for these students.
- Phonological program was a great success for our Year 2 students.
- RIDER strategy was successful for the two students who participated. Great success was recorded throughout our 60 sessions.

- I found the comprehension pathway did not teach enough skills. RIDER and paraphrasing are not the only methods. I feel a variety of methods would be more beneficial.
- This particular ERIK group made limited success. All bar XXXX progressed slightly. XXXX made great improvements in all areas (accuracy, comprehension and rate).

- It would be fantastic to have ERIK stories suitable for students older than Grade 2
- Students lost interest in stories and became disengaged so we used other texts to support the comprehension pathway (Year 3)

- More PD or school-based support would have been helpful in the early stages of using the program
- I believe sound PD is essential for ERIK providers. It is not enough to be shown the program
- It would be great to have some kind of post-ERIK professional development that would assist in heading in the next direction for the students such as XXXX (Note : this student did not make satisfactory gains)
- Is there a possibility of “ongoing” contact for aides/parent helpers etc who run ERIK on a daily basis to attend one day a year to be updated and have the opportunity to revise some material or ask questions?

Summary & Recommendations

Overall, the presented data indicates that the ERIK Program is an effective intervention option for students continuing to experience reading difficulties when reading accuracy and reading comprehension are considered. While substantial gains and effect sizes were achieved, it should be noted that no control group sample was available which would support the view that other school based variables may also have influenced the achieved outcomes. However, the findings are consistent with the previous analysis of the instructional pathways undertaken when they were initially developed and trialled. At this time, a control group was used for comparative purposes and accelerative gains were again evident.

The following recommendations are raised for consideration:

1. Use of the ERIK Program as an intervention option should be continued with the main target group being students from Years 2 to Year 4. Analysis of the outcomes of larger student samples in other year levels (i.e.1, 5 & 6) needs to occur to determine the efficacy of ERIK for these year levels.
2. Monitoring of the ongoing progress of students who access the ERIK Program should occur to determine the sustained effect as well as to provide insight regarding required additional instruction.
3. Instructional tasks focused on achieving gains in reading fluency be identified and integrated within the current intervention sequences. Data should be collected about word reading automaticity, phrasing and reading rate to provide insight about changes being achieved in students’ reading fluency.
4. Application of a Response to Intervention model should be adopted for students with reading acquisition difficulties. When the rate of progress being achieved by a student over a six to eight week period is consistently below that expected, the student should then be referred for a comprehensive educational assessment to allow for the identification of a more effective instructional pathway.
5. In order to strengthen the intervention integrity, the implementation of ERIK should be strengthened to ensure that a minimum of three sessions per week occurs with the group size limited to between two and five students.
6. Ongoing professional development for ERIK providers in schools should be considered with one or two days per year being undertaken to facilitate continuing education.

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