What Evidence Says About Reading Recovery

This report is written by members of the North American Trainers Group, an organization which includes researchers and academics from Reading Recovery's 23 university training centers in the United States. It was published by the Reading Recovery Council of North America, a not-for-profit organization with the mission of making Reading Recovery available to every first-grade child who needs its support to learn to read and write.

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EXECUTIVE SUMMARY

In May 2002, a letter criticizing Reading Recovery was widely distributed to members of Congress and the education community via the Internet. Although the letter purports to be an academic debate, its motivation appears to be political. The letter was released as states and local school districts were developing budgets and federal grant applications. The letter builds a distorted case based on flawed research and selective reporting of Reading Recovery studies (Appendix A).

In the national debate about scientifically based research and accountability, Reading Recovery is a surprising target because no program is more accountable and has a stronger scientific base than Reading Recovery. Reading Recovery is a short-term intervention for the lowest-achieving children in first grade. Children meet individually with a specially trained teacher for 30 minutes daily for 12 to 20 weeks. Children are tested before entering Reading Recovery to assure that they are the lowest-achieving readers in their class. They are also tested after their lessons are discontinued and at the end of first grade. The outcome of their lessons is compared with a random sample of their peers. Results are reported on school, district, and national levels.

Cumulative 17-year results show that in the United States, 60% of all children served can read at class average after their lessons, and 81% of children who have the full series of lessons can read at class average. No other intervention in the United States has such an extensive database and such strong accountability. More than one million children have been served in Reading Recovery since it came to the United States in 1984 through a team of researchers at The Ohio State University. Reading Recovery's not-for-profit network connects 23 universities, 3,293 school districts, Department of Defense Schools, and 10,622 elementary schools in the United States alone (National Data Evaluation Center [NDEC], 2002; see Appendix B for a complete list of Reading Recovery university training centers). Reading Recovery is not only available for children struggling to learn to read in English: it has been reconstructed in Spanish, French, and Maori and is currently being reconstructed in other languages.

In Reading Recovery, children meet individually with a specially trained teacher for 30 minutes daily for 12 to 20 weeks.

The Internet letter chooses to ignore all of this easily available information in an attempt to undermine public confidence in Reading Recovery. In addition, the Internet letter reflects a broader public debate about the nature of scientific evidence in reading research and the relationship of federal policy to local school decision making. These issues are discussed more fully in a response letter signed by more than 200 academic leaders and researchers outside Reading Recovery. The

signers represent an international group of independent scholars and researchers who have studied language, literacy, and learning in many contexts (Appendix C). This letter, entitled "A Broader View of Evidence: Reading Recovery as an Example," makes the following key points:

- Public education dollars belong to citizens, not to a small group of researchers who have a particular point of view.
- A scientific stance requires a complete, evidence-based analysis of any educational program.
- Policy makers have the responsibility to consider evidence from a wide range of perspectives and validated research models.
- Responsibly and rigorously collected evaluation data provide legitimate evidence of program success.
- An early intervention program like Reading Recovery is part of a comprehensive literacy effort.

This report is written by Reading Recovery researchers and academics from Reading Recovery's university training centers in the United States and is a response to the four criticisms in the Internet letter.

1. Reading Recovery is highly successful with the lowest-performing first-grade students.

Research in peer-reviewed journals documents Reading Recovery's effectiveness (Center, Wheldall, Freeman, Outhred, & McNaught, 1995; Iversen & Tunmer, 1993; Pinnell, 1997; Pinnell, Lyons, DeFord, Bryk, & Seltzer, 1994; Sylva & Hurry, 1996; Wasik & Slavin, 1993). Objective critics acknowledge that Reading Recovery works: "Evidence firmly supports the conclusion that Reading Recovery does bring the learning of many children up to that of their average-achieving peers….It is clear that many children leave the program with well-developed reading strategies, including phonemic awareness and knowledge of spelling" (Shanahan & Barr, 1995, p. 989).

Many evaluation studies demonstrate that the majority of Reading Recovery students maintain and improve their gains in later grades. Several studies using widely accepted standardized measures or state assessment measures show strong results for Reading Recovery students (Askew et al., 2002; Brown, Denton, Kelly, & Neal, 1999; Pinnell, 1989; Rowe, 1995; Schmitt & Gregory, 2001).

Former Reading Recovery students, like all students, need good classroom teaching to continue their progress. Reading Recovery is a short-term safety net, an essential component in a school's comprehensive literacy program. Two studies in refereed journals reveal that Reading Recovery students experience gains in self-concept (Cohen, McDonnell, & Osborn, 1989; Rumbaugh & Brown, 2000).

Evidence supporting Reading Recovery's effectiveness not only appears in peer-reviewed journals. It is also evident in the evaluation data collected and reported annually by the National Data Evaluation Center located in the College of Education at The Ohio State University. The data allow local administrators and school boards to monitor children's results and to examine implementation data such as the number of lessons missed, reasons for missed lessons, and level of implementation in a school.

To advance their political agenda, the authors of the Internet letter selectively report and distort the limited set of experimental studies they present to their colleagues, politicians, and the public. The

clearest instance of this distortion is in their use of the Elbaum, Vaughn, and Moody (2000) meta-analysis. The letter states, "In fact, for the poorest readers, empirical synthesis of 'in-house' and independent studies indicates that Reading Recovery is not effective. In Elbaum et al. (2000), the gains for the poorest readers instructed by Reading Recovery were almost zero" (paragraph 3).

Why is this a distortion? It ignores the major finding of this meta-analysis that the effect of Reading Recovery on student performance was large and significant. The Elbaum et al. (2000) study states, "For Reading Recovery interventions, effects for students identified as discontinued were substantial, whereas effects for students identified as not discontinued were not significantly different from zero" (p. 605). The Internet letter emphasizes the small number of students who did not make progress while it ignores the fact that the majority of students made substantial progress. It also implies that the not-discontinued students were the ones with the lowest scores. This is not true. The interpretation of this information in the Internet letter seems biased.

2. Cost-effectiveness is a complex concept in education.

The Internet letter states that "Reading Recovery is not cost-effective because the developers require one-to-one interventions by highly trained teachers" (paragraph 4). It is inappropriate to label a program as expensive or not cost-effective without extensive research comparison with other programs that target the same student population and seek to achieve the same results. Both long- and short-term benefits must be considered in this type of research. Such studies are rare in medical research and almost nonexistent in educational studies.

By intervening early, Reading Recovery reduces referrals and placements in special education (NDEC, 2002), limits retention, and has demonstrated lasting effects. Retention and special education referral each have a substantial price tag. The local costs of providing Reading Recovery services for 12 to 20 weeks are substantially less than special education and retention costs, particularly when the majority of Reading Recovery children sustain and improve their literacy learning gains in subsequent years of primary education (Brown et al., 1999; Schmitt & Gregory, 2001).

Authors of the Internet letter base their recommendations on inadequate research. The 2000 meta-analysis by Elbaum, Vaughn, and Moody is again cited. A closer look at the meta-analysis reveals that evidence is based on an unpublished doctoral

By intervening early, Reading Recovery reduces referrals and placements in special education.

dissertation (Evans, 1996) and an unpublished master's thesis (Acalin, 1995). Evans' doctoral dissertation supporting the effectiveness of group instruction is based on a very small sample of eight children: four randomly assigned to Reading Recovery and four assigned to a small group intervention. The Reading Recovery teacher studied in the dissertation was in the first months of the training year and had not recently taught primary-grade students. Evidence of equivalence for the two groups was lacking at pre-test.

Evidence from the Acalin master's thesis is even more suspect. Reading Recovery lessons were not even delivered by a Reading Recovery teacher, but by special education teachers who had not participated in Reading Recovery training. Furthermore, although Reading Recovery is a first-grade

intervention, Acalin provided instruction to 66 subjects in first through fourth grades. Only eight of the children were in first grade, with four assigned to Reading Recovery and four to Project Read.

In addition to the two studies in Elbaum, the Internet letter cites another unpublished doctoral dissertation (Iversen, 1997) as support for group intervention. Iversen claims to compare Reading Recovery with an instructional intervention for groups of two. The Reading Recovery program, however, was not standard with regard to training, screening and selection procedures, or teaching procedures. Design and methodological issues also raise numerous questions. Therefore, it would be inappropriate to draw any conclusions about Reading Recovery from the data presented.

Even casual consumers of scientific research would wonder why the Evans and Acalin studies were considered to have met criteria for inclusion in a meta-analysis that purports to follow, in the authors' own words, "best practices for research synthesis" (Elbaum et al., 2000, p. 606).

Studies cited by Elbaum and her colleagues provide virtually no evidence to support a change from one-to-one to small group instruction for the lowest-achieving first graders. The suggestions for Reading Recovery to change from one-to-one instruction is especially weak because there is documented evidence of success with hundreds of thousands of the lowest-performing first-grade students. Reading Recovery has also developed a design for dissemination and teacher training that allow these results to be replicated in diverse contexts across the United States and the world.

One-to-one tutoring is a central aspect of both the theory and design of Reading Recovery, and there is a body of research to support it. Extensive research would be needed to demonstrate the implications of a change from individual to small group instruction; however, researchers within and outside Reading Recovery should continue to study all possibilities. Research supports one-to-one tutoring and indicates that it may be essential for children who are at high risk (Bloom, 1984; Juel, 1991; Wasik & Slavin, 1993). The systematic nature of Reading Recovery instruction is based on a teacher's detailed assessment and analysis of a child's knowledge base and skills. The teaching is highly efficient because the teacher has this precise inventory of skills and strategies and is able to teach exactly what the child needs to know next.

3. Reading Recovery uses standard assessment measures.

Reading Recovery pre-tests and post-tests students using the measures published in *An Observation of Early Literacy Achievement* (Clay, 1993a/2002). The survey is a standard set of measures developed in research studies with qualities of sound assessment instruments having reliability, validity, and discrimination indices. It was developed to meet the unique need to assess emergent literacy in young children. The survey is comprised of six literacy tasks with established validity and reliability: letter identification, word test, concepts about print, writing vocabulary, hearing and recording sounds in words, and text reading. The Internet letter suggests a preference for norm-referenced tests that are widely available and commonly used in reading intervention research. Although these tests may yield valid comparisons for students who are already reading, they are not sensitive to variability in emerging knowledge and are not useful as baseline measures to assess change in early literacy. Some studies, however, have used standardized measures and state assessments to explore subsequent performance of former

In Reading Recovery, children are shown how to use letter-sound relationships to solve words in reading and writing and how to use structural analysis of words and to learn spelling patterns.

Reading Recovery children (Askew et al., 2002; Brown et al., 1999; Schmitt & Gregory, 2001); they show that Reading Recovery children do in fact maintain and improve their gains.

4. Change is an integral part of the Reading Recovery design.

Reading Recovery has built-in mechanisms for change. The central program document is *Reading Recovery: A Guidebook for Teachers in Training* (Clay, 1993b). Originally published as *Early Detection of Reading Difficulties* (1979/1985), it was thoroughly revised and retitled in 1993. The *Guidebook* reveals significant additions over years of development including:

- more intensive attention to and detailed description of the role of phonemic awareness;
- explicit directions for teachers in helping children use letter-sound relationships and phonics;
- more deliberate focus on comprehension strategies during the reading of a new book;
- differentiation between the way the teacher supports children during the reading of a new text and the role of familiar reading; and
- more information on how to teach for fluency and phrasing.

In addition to changes reflected in the *Guidebook*, Reading Recovery uses results from the National Data Evaluation Center to analyze and guide changes in implementation at the local, state, and national levels. Reading Recovery's extensive and continuing training for all personnel supports changes. Change is also evident in the standards and guidelines of the Reading Recovery Council of North America. All schools must adhere to these standards in order to be in compliance with the royalty-free trademark granted annually to participating schools by The Ohio State University. This trademark helps to ensure quality and consistency in Reading Recovery. Reading Recovery is a not-for-profit partnership of universities and local school districts.

The Internet letter recommends explicit instruction in phonics and phonemic awareness and suggests that Reading Recovery ignores these important instructional components. Any astute observer of a Reading Recovery lesson would recognize the explicit teaching of letters, sounds, and words. In Reading Recovery, children are shown how to use letter-sound relationships to solve words in reading and writing and how to use structural analysis of words and to learn spelling patterns (Pinnell, 2000). A study by Stahl, Stahl, and McKenna (1999) demonstrates that Reading Recovery students do in fact perform well on standardized tests of phonemic awareness and phonological coding.

One academic researcher studying a wide range of programs made the following observation about Reading Recovery: "The

importance of phonological and linguistic awareness is also explicitly recognized" (Adams, 1990, p. 420) and went on to describe Reading Recovery as one of several programs that "are designed to develop thorough appreciation of phonics.…On the other hand, none of these programs treats phonics in a vacuum" (p. 421).

The Internet letter cites two studies to support its contention that Reading Recovery would improve with more explicit phonics. The first, a 1993 study by Iversen and Tunmer, recommended that Reading Recovery add explicit phonics and phonemic awareness. In fact, the modifications had already been made before this study was carried out. Iversen herself had been trained as a teacher leader in the early years of Reading Recovery training in New Zealand, but at the time of the study, she was no longer teaching Reading Recovery and was not attending continuing professional development to receive program updates. Thus, the Reading Recovery instruction provided in the study was out of date, even in 1993. Despite this shortcoming, results of the Iversen and Tunmer study indicated that both the traditional Reading Recovery group and the phonics-enhanced group outperformed a control group on all measures of phoneme deletion and phoneme segmentation. The group with increased emphasis on phonemic awareness had programs that were shorter than Iversen's *traditional* group. Interestingly, the increase in phonemic awareness and phonics that Iversen included in training of her *experimental* group had already been included in Reading Recovery programs around the world.

One academic researcher studying a wide range of programs made the following observation about Reading Recovery: "The importance of phonological and linguistic awareness is also explicitly recognized." *(Adams, 1990)*

The second study cited in the Internet letter in support of explicit phonics is by Morris, Tyner, and Perney (2000). This study looked at some alternative staffing, training, and instructional approaches to early intervention. Morris and his colleagues did place a greater emphasis on isolated word study, but they also modeled more than three-quarters of the lesson format on Reading Recovery. The results indicated that students who participated in their First Steps program made better progress than a matched group of low students in non-participating comparison schools. This study was not designed to compare results against Reading Recovery or to isolate the contribution of a particular form of word study in relation to other program components. The claim in the Internet letter that "the addition of an explicit component addressing spelling-to-sound patterns was highly effective" (paragraph 7) seems questionable given that First Steps students received tutoring for the entire school year, averaging 91 lessons per student.

In the debate about how to teach phonics, the authors of the Internet letter draw on a 1999 report of the Literacy Experts Group in New Zealand. The group recommended "greater emphasis on explicit instruction in phonological awareness and the use of spelling-to-sound patterns in recognizing unfamiliar words in text" (as quoted in Internet letter, paragraph 9). In response to the Internet letter and this recommendation, a member of the Literacy Experts Group wrote:

> It would be regrettable if…[any of the] recommendations from the 1999 Literacy Experts Group was construed as meaning that this group was among those attacking Reading Recovery. Because it

> wasn't…Most striking however, is the clear message that most of this debate is about some researchers talking to some other researchers, with very little buy-in from the teachers who implement Reading Recovery, or those with experience of translating research findings into effective classroom programmes. And, there is a huge gulf between a research study and a programme that works in a classroom. This is one area where the four New Zealand signatories of the U.S. [Internet] letter are out-of-step with many other reading researchers and literacy educators in New Zealand. (Croft, 2002, pp. 2–3)

In summary, there is substantial scientific evidence to support Reading Recovery's effectiveness with lowest-performing first-grade students. Reading Recovery does not claim to be the only solution to the nation's reading problems, nor does it seek preferential treatment for funding under the No Child Left Behind Act. Rather, Reading Recovery seeks the right to be considered as an early intervention option for state and local educational authorities.

INTRODUCTION

A. Background on the Internet letter

In May 2002, a letter criticizing Reading Recovery was widely distributed to members of Congress and the education community via the Internet. The letter identified the signers as "an international group of researchers who study reading development and interventions with struggling readers" (paragraph 1; see Appendix A for the complete text of the letter).

Although the Internet letter purports to be an academic debate, its motivation appears to be political. The letter was released as states and local school districts were developing budgets and federal grant applications.

While the signers of the Internet letter say their goal is "not to discredit Reading Recovery" (paragraph 2), it appears that Reading Recovery was singled out because in February 2002, local school supporters had effectively advocated to change draft Guidance issued by the U.S. Department of Education. The draft Guidance contradicted the statute (PL 107-110, No Child Left Behind Act of 2001) and undermined local control over educational decisions. Among other provisions, the draft Guidance

- limited use of funds to classroom instruction only
- required 90 minutes of uninterrupted instructional time for reading lessons
- omitted use of funds for professional development in early intervention

At a Senate hearing in April 2002 for the No Child Left Behind Act, three Senators spoke in favor of local control and specifically inquired about Reading Recovery's eligibility. It is important to note that Reading Recovery has never asked for preferential treatment in the use of public funds. Rather, Reading Recovery sought the right to be considered as an early intervention option for state and local educational authorities.

In a 1995 independent evaluation of Reading Recovery, Shanahan and Barr argued for local choice:

> It is appropriate, in our opinion, to continue to expend public funds in support of Reading Recovery. It would be wrong to accept it as the only appropriate intervention for

"It is appropriate, in our opinion, to continue to expend public funds in support of Reading Recovery. It would be wrong to accept it as the only appropriate intervention for children at risk. Public policy should permit local education agencies to adopt Reading Recovery or other proven approaches, and should encourage local experimentation and innovation to identify even better approaches."

(Shanahan and Barr, 1995)

children at risk. Public policy should permit local education agencies to adopt Reading Recovery or other proven approaches, and should encourage local experimentation and innovation to identify even better approaches. (p. 992)

Reading Recovery is now in about 20% of public elementary schools with first-grade classrooms, and it works well with a variety of good classroom literacy programs. As one part of a school's comprehensive literacy program, Reading Recovery does not claim to be the solution for all students. The Reading Recovery community believes there are many paths to literacy and that no single program will make readers of all children. What Reading Recovery does provide is the most expert teaching for the most vulnerable, low-performing first-grade students. And, it provides a dynamic model of professional development.

The question has been asked: Why is the Internet letter considered a political attack and not an academic debate? The answer lies in the tone of the letter, in the choice of language, and in the lack of balance and civility that characterizes true academic exchange.

Reading Recovery is now in about 20% of public elementary schools with first-grade classrooms, and it works well with a variety of good classroom literacy programs.

The Internet letter begins by stating, "the findings here are summaries of several peer-reviewed studies and syntheses of research on Reading Recovery. However, it is not our goal to discredit Reading Recovery, but as with any other program, outline its weaknesses to suggest how it can be improved" (paragraph 2).

Unfortunately, after this reasoned opening, the letter drops any pretense of balance by refusing to acknowledge Reading Recovery's documented success with hundreds of thousands of lowest-performing beginning readers in the United States, as well as thousands more in New Zealand, Australia, Canada, and the United Kingdom.

The Internet letter has a number of biases and omits important findings. Among them,

- The letter fails to mention the experimental random-assignment study funded by the MacArthur Foundation establishing Reading Recovery effectiveness (Pinnell et al., 1994). While the authors of the Internet letter might argue that the MacArthur Foundation researchers were supporters of Reading Recovery, the world of peer-reviewed articles would be quite limited if researchers who were testing programs did not publish articles about their results. In fact, external research review was built in at the design and audit of data. The MacArthur Foundation appointed a review team of literacy experts from outside the Reading Recovery community. In addition, a University of Chicago team provided

input into the study design and conducted a separate and independent audit of the data. The report of the study was published in the premiere peer-reviewed journal of reading research, *Reading Research Quarterly,* and met all criteria to be included in the National Reading Panel report (2000).

- The letter cites two unpublished doctoral dissertations (Evans, 1996; Iversen, 1997) as evidence that group interventions are as effective as one-to-one interventions. Yet these studies provide weak support for their argument. The Evans study included a very small sample, just four children who received lessons from a teacher who was in her first months of Reading Recovery training. The Iversen dissertation did not use groups, but matched pairs of students. At the same time, the Internet letter ignores studies by researchers that document the effectiveness of one-to-one interventions for lowest-performing students (Dorn & Allen, 1995; Pinnell et al., 1994; Wasik & Slavin, 1993).
- The letter bases conclusions on a meta-analysis by Elbaum et al. (2000) that ignored one of its own major findings: that Reading Recovery had a significant effect on results (d = 0.66; p. 615). Elbaum and her colleagues also included studies that do not meet criteria for inclusion in a meta-analysis (for example, Evans, 1996; Acalin, 1995). The insufficient parameters in the Evans study have already been discussed. The Acalin study included 66 treatment subjects, only eight of whom were in first grade, and of those eight, four were in Reading Recovery. Treatment descriptions provided in the Acalin study reveal wide discrepancies from standard Reading Recovery procedures.
- The letter charges that Reading Recovery does not report data on all children, even though data and the explanation of procedures are publicly available from the National Data Evaluation Center Web site verifying that data are reported on every child who ever enrolled in Reading Recovery.

Reading Recovery serves as a safety net providing one-to-one instruction for first-grade children having difficulty with literacy.

Clearly, the Internet letter is not an unbiased review of evidence. It represents a narrow but vocal minority opinion. In response, researchers and practitioners prepared a letter entitled "A Broader View of the Evidence: Reading Recovery as an Example" (see Appendix C). Within four weeks of its initial circulation, over 200 reading researchers and educators from outside Reading Recovery had signed the letter honoring a broader view of research and using Reading Recovery as an example.

Following the release of the response letter, Reading Recovery researchers and practitioners prepared this more detailed report, "What Evidence Says About Reading Recovery." Before reviewing the four charges in the Internet letter, the following section provides a brief overview of Reading Recovery and the role it plays as a part of a school's comprehensive literacy program.

B. Reading Recovery overview

Reading Recovery is a short-term intervention that supports classroom instruction for the lowest-achieving children in first grade. Children meet individually with a specially trained teacher for 30 minutes daily for 12 to 20 weeks. Reading Recovery serves as a safety net for children having difficulty with literacy learning in any good classroom program. Results indicate that Reading Recovery meets the challenge of closing the gap early, before a cycle of failure begins. Components contributing to Reading Recovery's effectiveness within a school system are teaching, professional development, evaluation and accountability, and implementation in schools. These components are briefly described in the following sections.

Reading Recovery is a short-term intervention that supports classroom instruction for the lowest-achieving children in first grade. Children meet individually with a specially trained teacher for 30 minutes daily for 12 to 20 weeks.

Teaching

Reading Recovery supplies one-to-one instruction to the most at-risk children from highly skilled teachers. Through Reading Recovery professional development, these teachers develop an understanding of literacy processes and literacy acquisition. They learn how to observe children closely and decide when it is most effective to introduce new learnings as well as when and how to scaffold learning support. Reading Recovery "brings hardest-to-teach children to a level where they can be full participants in the classroom program" (Clay, 1993b, precedes p. 1, paragraph 2).

The lowest-performing children need individually designed lessons that follow each child's unique path to literacy learning. Lessons include explicit attention to the five essential components of reading instruction: phonics, phonemic awareness, fluency, comprehension, and vocabulary. "To get results with the lowest achievers the teacher must work with the particular (and very limited) response repertoire of a particular child using what he knows as the context within which to introduce him to novel things" (Clay, 1993b, p. 8). One-to-one tutoring has repeatedly been found to be the most effective approach to prevent reading failure (Dorn & Allen, 1995; Pinnell et al., 1994; Slavin, Karweit, & Wasik, 1992).

Reading Recovery epitomizes the model of prevention of reading failure as articulated by Pianta (1990). It represents a secondary prevention strategy for children who do not respond fully to a pri-

mary prevention strategy such as good classroom teaching. The effectiveness of Reading Recovery for struggling readers in the context of a comprehensive school approach to prevention is well documented (see Allington & Walmsley, 1995; Crevola & Hill, 1998; Pikulski, 1994; Wasik & Slavin, 1993).

Professional development

Extensive training and ongoing professional development are hallmarks of Reading Recovery and are the reasons that Reading Recovery teachers can bring 60% of all lowest-performing first-grade children served up to class average in just 12 to 20 weeks of individual lessons. Reading Recovery has a three-tiered structure of university training centers, training sites, and schools to support teacher training and implementation.

In the United States, 23 university training centers provide the yearlong graduate program to train Reading Recovery teacher leaders[1] (Appendix B). The university trainers are faculty members at these centers. They teach children, engage in research, support implementation at affiliated teacher training sites, and provide ongoing professional development for Reading Recovery personnel at all levels.

At the training site level, 723 teacher leaders provide yearlong initial training for Reading Recovery teachers who receive university credit. Teachers not only attend weekly classes to discuss theory and practice, but they also apply their learning every day through teaching Reading Recovery children.

Reading Recovery teachers at 10,622 elementary schools are supported by their teacher leaders. Teacher leaders visit schools to observe lessons and consult on hard-to-teach children. They also provide ongoing professional development for trained Reading Recovery teachers to continue building teaching skills and to provide information about changes in Reading Recovery.

Evaluation and accountability

Evaluation data that are responsibly and rigorously collected provide legitimate and strong evidence of program success. Each Reading Recovery school is required to report its data to a national center annually in exchange for royalty-free use of the trademark. Data reporting is used for decision making and is integral to quality assurance.

The evaluation methodology is standardized nationally and follows accepted principles of evaluation research. Methodology docu-

[1] For the Reading Recovery overview discussion, figures given for staff levels reflect those of the 2000–2001 school year.

ments and research reports are available on NDEC's Web site (http://ndec.reading-recovery.org).

Implementation in schools

Positive results for Reading Recovery students depend not only on instruction, but also upon a school environment that supports efficient operations. Among the factors that affect results are

- daily lessons for students
- scheduling for students and teachers
- personnel to supply adequate teaching time
- collaboration with classroom teachers
- teacher selection
- adequate space and materials
- administrative support
- shared ownership and understandings in the school and community

C. Organization of "What Evidence Says About Reading Recovery"

This report responds to the four criticisms of Reading Recovery highlighted in the Internet letter: effectiveness, cost-effectiveness, assessment measures, and change in response to research.

Effectiveness: Section I reviews research and evaluation on Reading Recovery effectiveness for children and provides a closer look at the nature of evidence cited by the Internet letter.

Cost-effectiveness: Section II discusses a broader view of cost-effectiveness, long-term versus short-term gains, and research documenting superior results for one-to-one interventions for lowest-performing first graders. This section also provides more detail on the evidence cited by the Internet letter.

Assessment Measures: Section III provides background on the assessment measures used by Reading Recovery and reviews research documenting subsequent success of Reading Recovery students on norm-referenced tests.

Change in response to research: Section IV reports on Reading Recovery's built-in mechanisms for change and responds to the false accusation that Reading Recovery does not teach phonemic awareness and phonics.

SECTION I

READING RECOVERY IS HIGHLY SUCCESSFUL WITH THE LOWEST-PERFORMING FIRST-GRADE STUDENTS.

Of all charges leveled against Reading Recovery, the question of effectiveness is most serious. The Internet letter authors limited the kind of evidence examined and excluded research studies that did not support their claims. If a research study cited in the Internet letter included evidence that balanced criticisms with favorable findings for Reading Recovery, the positive findings were not reported. In addition, the Internet letter ignored large amounts of evaluation data supporting Reading Recovery. This section

A. provides a more complete review of research on Reading Recovery's effectiveness and subsequent literacy gains,

B. describes Reading Recovery's internal evaluation system, and

C. analyzes biases in the evidence cited by the Internet letter.

The information presented here represents a broader view of the research such as that recently outlined by Michael Pressley in his Oscar Causey Research Address to the National Reading Conference (2001).

Substantial evidence documents Reading Recovery's success with the lowest-performing first-grade students in a wide range of educational settings.

A. Research demonstrates Reading Recovery effectiveness.

Substantial evidence documents Reading Recovery's success with the lowest-performing first-grade students in a wide range of educational settings. This evidence is provided by a variety of study designs, including experimental and control group studies both by researchers associated with Reading Recovery and by independent researchers.

1. Research in peer-reviewed journals

The following research published in peer-reviewed journals documents Reading Recovery's effectiveness with first-grade children.

a. Wasik and Slavin (1993) considered the effectiveness of five tutorial programs from two perspectives: empirical and pragmatic. The authors reviewed quantitative and qualitative research on Reading Recovery, Success for All, Prevention of Learning Disabilities, Wallach Tutoring Program, and Programmed Tutorial Reading. The authors' general conclusions across programs were

- Programs with the most comprehensive models of reading—the most complete instructional interventions—have greater impact than programs addressing only a few components of the reading process, and Reading Recovery and Success for All include several components.
- Using tutors is not enough; the content of the program and the instructional delivery may be important variables.
- Using certified teachers obtains substantially better results than using paraprofessionals.

Programs with the most comprehensive models of reading—the most complete instructional interventions—have greater impact than programs addressing only a few components of the reading process, and Reading Recovery and Success for All include several components.

(Finding of a 1993 study by Wasik and Slavin)

The authors' specific conclusions about Reading Recovery included

- Reading Recovery brings the learning of many of the lowest-achieving students up to average-achieving peers.
- Effects of Reading Recovery are impressive at the end of the implementation year, and effects are maintained for at least two years.
- Evaluation results on lasting effects are positive but complex.
- Only Reading Recovery has attempted to assess implementation and its effect on outcome data.

Although the authors raised some methodological issues about Reading Recovery research and about students served, they concluded that the rapidly expanding use of Reading Recovery throughout the United States shows that the program is practical to use.

b. Center, Wheldall, Freeman, Outhred, and McNaught (1995) evaluated the effectiveness of Reading Recovery schools in New South Wales. Low-achieving children were randomly assigned to either Reading Recovery (n=31) or a control group (n=39) of low-progress students who had not entered Reading Recovery by November. A third group (n=39) consisted of students from five matched schools. By the end of the study, sample sizes were 23, 16, and 32 respectively. Measures used were Clay's Diagnostic Survey, Burt Word Reading Test, Neale Analysis of Reading Ability, Waddington Diagnostic Spelling Test,

Phonemic Awareness Test, Cloze Test, Word Attack Skills Test, and Woodcock Reading Mastery.

At post-test evaluation (15 weeks after the pre-test) an independent assessment showed that Reading Recovery students scored significantly higher on all tests measuring reading in context and in isolation. Of the eight measures reported, the only ones that did not differ significantly were a cloze test and a phonemic awareness measure. At short-term maintenance (15 weeks after the post-test) the Reading Recovery control group still scored significantly higher than the control group on six of the eight measures, including Clay's text reading measure and several standardized measures of text and word reading. At this point the Reading Recovery group also scored significantly higher than the control group on phonemic awareness.

The study's published results for medium-term maintenance (12 months after the post-test) appear to have errors. The authors report "no overall significant group effect, $F(8,30) = 0.262$, $p = .0268$)" (p. 253). There appear to be several typos and errors in this statistical statement beyond the inclusion of an additional closing parenthesis. An F value of 2.62 would match the probability level of .0268. Since the authors state that "significant multivariate results (alpha = 0.05) were followed up by univariate pairwise multiple comparisons (alpha = 0.01)" (p. 250), the conclusion should be that the MANOVA revealed an overall significant group effect in favor of Reading Recovery. Still, the only univariate result was for text reading. The authors point out that the reduced difference between the Reading Recovery and control groups found in the 12-month follow-up could be due to the fact that 15 of the 31 control group students (probably those with the lowest scores) had been eliminated from the control group to receive Reading Recovery instruction.

The study provides strong, independent replication of the pattern of results found in other research and in the U.S. national evaluation data for all participating students. The authors state that their "results clearly indicate that low-progress students, exposed to 15 weeks of Reading Recovery, outperformed control students on Clay book-level and Burt Word Reading tests and on all Set 2 tests which measure reading and writing words in context and isolation" (p. 256). Despite a number of qualifications related to metalinguistic measures, the article reports independently measured and extremely large effect size for text reading, 3.05 and 1.55 for post-test and short-term maintenance respectively (p. 253).

c. Iversen and Tunmer (1993) conducted a study to determine whether the Reading Recovery program would be more effective if systematic instruction in phonological recoding skills were incorporated into the program. Three matched groups of 32 at-risk readers were compared:

- children taught by teachers who received Reading Recovery training,
- children taught by teachers who received Reading Recovery training that included phonological recoding skills as part of the lesson, and
- children who received a standard intervention (not Reading Recovery).

Measures included all six tasks of the Diagnostic Survey, Dolch Word Recognition Test, Yopp-Singer Phoneme Segmentation Test, Phoneme Deletion Test, and Pseudoword Decoding Task.

The critical finding in this study was that the two Reading Recovery groups performed at very similar levels when Reading Recovery lessons were successfully completed (discontinued). Both groups performed much better on all measures than children in the standard intervention group, and they often performed significantly better than classroom controls (especially on phonological segmentation and phoneme deletion). Results revealed that the modified Reading Recovery group reached levels of performance required for discontinuing more quickly than the standard Reading Recovery group. Authors acknowledged that both the standard and modified Reading Recovery programs included explicit instruction in phonological awareness.

d. Sylva and Hurry (1996) evaluated the effectiveness of two different interventions (Reading Recovery and Phonological Training). Their study included almost 400 children from seven English local authorities. Although the sample was diverse, inner city children were over-represented. The schools included 22 Reading Recovery schools, 23 Phonological Intervention schools, and 18 control schools. The measures used included the British Ability Scale Word Reading, Neale Analysis of Reading, Clay's Diagnostic Survey (five tasks), Assessment of Phonological Awareness, British Ability Scale Spelling, and background information on each child.

During the intervention year, the effect of the phonological intervention was more specific than Reading Recovery, enhancing children's phonological awareness and influencing their letter identification, dictation, and writing vocab-

ulary, but not their text reading skills. Reading Recovery children made significantly more progress than the control groups on every measure of reading. At the end of the second year, the effects of phonological intervention were still evident in enhanced word reading scores, but there was no effect on comprehension. In comparison, the Reading Recovery children were still six months ahead of the control children on word and text reading.

In their long-term follow-up four years later, Hurry and Sylva (1998) concluded that Reading Recovery was still effective because almost 70% of the children who had received Reading Recovery were still within the average band of their class in Grade 6, while only 55% of those who received the phonological intervention were within the average class band. Reading Recovery was particularly effective at helping children who were most socially disadvantaged and who were the weakest readers at age 6. While Reading Recovery was more expensive than the phonological intervention in the year of delivery, over the pupils' whole elementary school career it cost only 10% more than the general remedial support provided in control schools. The authors concluded that time-limited intervention is not so expensive in the longer term.

e. **Pinnell, Lyons, DeFord, Bryk, and Seltzer's** (1994) study systematically compared Reading Recovery to three other instructional models of early intervention. In this study (N=324) the lowest-achieving first-grade students from 40 different schools in 10 different school districts were randomly assigned within schools to one of five groups:

- Reading Recovery,
- a Reading Recovery-like intervention with partially trained teachers,
- a skills-based individual intervention,
- small group instruction offered by Reading Recovery teachers, or
- a control group.

Measures included those used in Reading Recovery as well as generally known reading tests (Gates-MacGinitie Reading Test and Woodcock Reading Mastery). The study employed a formal experimental design that used split plots to control effects that may result from differing cultures among school districts or individual schools. The difficulty of small standard errors in analysis of data at the student level was addressed by using the Hierarchical Linear Model for data analysis. The results of the study

Reading Recovery subjects performed significantly better than any other treatment and comparison group on all measures. Essential differences were related to individual instruction, the lesson framework (combination of techniques), and teacher training.

(Findings of 1994 study by Pinnell, Lyons, DeFord, Bryk, and Seltzer)

were definitive: Reading Recovery subjects performed significantly better than any other treatment and comparison group on all measures. Essential differences were related to individual instruction, the lesson framework (combination of techniques), and teacher training.

f. Pinnell (1997) reviewed quantitative and qualitative research studies performed by Reading Recovery practitioners that have demonstrated positive effects of Reading Recovery on reading outcomes (including generally recognized measures), successful replicability in diverse settings, positive effects on home relations, improved teacher behaviors and teacher learning, and maintenance of learning gains over time.

g. Shanahan and Barr (1995) published a comprehensive and independent evaluation of Reading Recovery. Although the Internet letter cites this evaluation as evidence of the ineffectiveness of Reading Recovery, it in fact offers substantial support for Reading Recovery's effectiveness.

> Evidence firmly supports the conclusion that Reading Recovery does bring the learning of many children up to that of their average-achieving peers. Thus, in answer to the question "Does Reading Recovery work?," we must respond in the affirmative. It is clear that many children leave the program with well-developed reading strategies, including phonemic awareness and knowledge of spelling. Although some initially low-achieving students will succeed without Reading Recovery, evidence indicates that many who would not succeed do so as a result of this intervention. (p. 989)
>
> That Reading Recovery has been so successful is laudatory. It has proven to be a robust program, both in terms of its consequences for student learning and in replicability across sites. Further, it has been a significant force in shaping the way we view early literacy development. (p. 992)

"Thus, in answer to the question 'Does Reading Recovery work?,' we must respond in the affirmative. It is clear that many children leave the program with well-developed reading strategies, including phonemic awareness and knowledge of spelling. Although some initially low-achieving students will succeed without Reading Recovery, evidence indicates that many who would not succeed do so as a result of this intervention."

(Shanahan and Barr, 1995)

In summary, many research studies published in peer-reviewed journals document Reading Recovery's effectiveness with first-grade children. Independent researcher Elfreida Hiebert (1994) wrote that "a high percentage of Reading Recovery tutees can orally read at least a first grade text at the end of Grade 1.…Once a program is in place, there appears to be considerable fidelity in the results" (p. 21). This is high praise when one considers that Reading Recovery children are the lowest literacy achievers at the beginning of first grade.

2. Research and evaluation studies on improved gains in later grades

Many research and evaluation studies demonstrate that Reading Recovery students maintain and improve their gains in later grades. The ones listed here have used widely accepted standardized measures or state assessment measures, or both.

a. Rowe (1995), an Australian researcher, studied the progress made in reading by children from school entry to Grade 6 in Victoria, Australia. The sample included 5,092 students and 256 classes in 92 schools. The researcher's intent was not specifically to study Reading Recovery, but information on Reading Recovery's effectiveness emerged as an outcome. The longitudinal design involved repeated measures nested within classes and schools and repeated measures on schools. The second design involved cross sections of students nested within schools that were changing over time. Rowe used several measures to gather student information: Reading Achievement, Primary Reading Survey Test, Test of Reading Comprehension, English Profile, and Reading Bands.

Rowe found that Reading Recovery children benefited notably from participation in the intervention. Reading Recovery appeared to be meeting its intended purpose for those children involved. By Grades 5 and 6, Reading Recovery students were distributed across the same score range as the general school population, but with fewer low scores. Rowe's analysis provided evidence that Reading Recovery had removed the tail-end of the achievement distribution.

b. Brown, Denton, Kelly, and Neal (1999) used two standardized tests to assess California students' continuing achievement through fifth grade. Researchers measured achievement of 760 students who were served in Reading Recovery between 1993 and 1998. Student performance in second through fifth grades was assessed using the Iowa Tests of Basic Skills and Stanford Achievement Test, Ninth Edition. The authors reported that "more than three-fourths of the children who successfully completed Reading Recovery achieved standardized test scores in the average or above average range" (p. 10). Considering that these Reading Recovery students began at the bottom of their class in first grade, their subsequent progress through fifth grade was impressive.

c. Askew, Kaye, Frasier, Mobasher, Anderson, and Rodríguez (2002) collected longitudinal data on former Reading Recovery children in 45 randomly selected

"A high percentage of Reading Recovery tutees can orally read at least a first grade text at the end of Grade 1.…Once a program is in place, there appears to be considerable fidelity in the results."

(Heibert, 1994)

schools through fourth grade. The study focused on discontinued children (those students who met the rigorous criteria for success) in order to see if children who reached average performance in Grade 1 continued to score within average ranges in subsequent years. At the end of fourth grade, a large majority of these children had scores considered to be average or meeting passing criteria on standardized (Gates-MacGinitie Reading Test) and state assessment measures, a very satisfactory outcome in their school settings. They were generally perceived by their fourth-grade teachers as performing within average ranges of their classrooms. Relatively few were placed in tertiary or remedial settings. Findings match Juel's (1988) conclusions that children who are average readers in Grade 1 remain average readers in Grade 4, supporting the need for intervention in first grade.

d. Schmitt and Gregory (2001) conducted a statewide follow-up study in Indiana to examine subsequent performance of former successful Reading Recovery children in Grades 2, 3, and 4. The study demonstrated that the majority of the 271 randomly selected Reading Recovery children were performing as well as a random sample of 277 of their grade-level peers on the vocabulary and comprehension subtests of the Gates-MacGinitie Reading Test. Similarly, third-grade student results on the Comprehensive Test of Basic Skills-5/Terra Nova Form B reflected a normal distribution with a mean at the 45th percentile for these students who had been the lowest-achieving first graders.

e. Pinnell (1989) evaluated two cohorts of students. The purposes of the study were to explore whether Reading Recovery could succeed with low-achieving children and to determine whether those children maintained their gains. The lowest-achieving children were randomly assigned either to Reading Recovery or to a control group served daily in individual lessons taught by a trained paraprofessional (not a Reading Recovery teacher). Both groups were compared with a random sample of average and high-progress first graders as an indication of average progress. The study used all six tasks of Clay's Diagnostic Survey,[2] a writing sample, and the Comprehensive Test of Basic Skills (two subtests). Pinnell found that in the full Reading Recovery program, Reading Recovery children scored significantly better than control children on seven of the nine

[2] Until the Observation Survey was published in 1993, it was known as the Diagnostic Survey (Clay, 1985).

diagnostic measures at the end of first grade. They compared well with the random sample group. Reading Recovery children were followed in second and third grade to determine their performance in text reading in subsequent years. Reading Recovery children remained superior in comparison with the control group.

In addition to these studies, many school districts and teacher training sites conduct their own independent analyses through their research departments. Typically these analyses use the standardized measures that the districts use with all children. One such study (Quay, Steele, Johnson, & Hortman, 2001) in a Georgia school district compared Reading Recovery children with a control group who were equivalent in gender, ethnicity, and achievement. "At the end of the school year, multivariate and univariate analyses of variance indicated that the Reading Recovery children were significantly superior to the control group children on: (a) The Iowa Test of Basic Skills Language Tests; The Gates MacGinitie Reading Test; (c) the six tests of An Observation Survey of Early Literacy Achievement; (d) classroom teachers' assessments of achievement in mathematics, oral communication, reading comprehension, and written expression; (e) classroom teachers' ratings of personal and social growth in work habits, following directions, self-confidence, social interaction with adults, and social interaction with peers; and (f) promotion rates" (p. 7). These results are especially significant considering that all teachers in this study were in their initial training year.

3. Studies on improved student self-esteem

Two studies published in refereed journals have revealed that Reading Recovery students experience gains in self-concept.

a. **Cohen, McDonnell, and Osborn** (1989) studied the impact of Reading Recovery on students' beliefs regarding their competence and capacity to direct their own learning activities. They used causal attribution (Weiner, 1972) and self-efficacy (Bandura, 1977) to support the theoretical framework. Participants included 138 first graders divided among the following groups: 50 were in Reading Recovery, 48 were in remedial reading groups of five or six students each, and 40 were randomly selected from their higher-achieving classmates.

   After the interventions, children were tested on two scales to measure attributions and self-efficacy. Results demonstrated that successful Reading Recovery children had profiles similar to high-achieving students, and they more readily attributed their success in school to ability, effort, and mood than did the students in the remedial groups.

The Reading Recovery students also judged themselves to be more competent on school-related tasks (self-efficacy) than the other low-achieving students. These results support the notion that children have positive self-esteem when they leave Reading Recovery.

b. **Rumbaugh and Brown** (2000) studied the effects of Reading Recovery participation on students' self-concept. The treatment group was comprised of 57 students from nine elementary schools who were selected for Reading Recovery instruction in the first week of school. The 46 students in the control group had diverse reading and writing abilities and were not enrolled in any reading intervention or in special education. The control group came from a single elementary school.

   All participants were administered the Joseph Pre-School and Primary Self-Concept Screening Test in early September prior to the treatment and again in mid-December.

   There were statistically significant differences between Reading Recovery students and control students on the Global Self-Concept and Significance domain scores. Hence, the authors concluded

   - Reading Recovery participation does affect positively students' Global Self-Concept scores.
   - The meaningful effect of Reading Recovery participation on students' self-concept is related to the additional attention, or Significance domain, that students receive during several months of Reading Recovery.
   - The initial positive effect on students' self-concept cannot be attributed to increased growth in independence or cognitive factors.

   Based on their results, Rumbaugh and Brown concluded:

   > School districts that choose to implement and maintain a Reading Recovery program would reap considerable benefits. One of the systemic advantages could be that the districts gain students who experience improved self-concepts due to enhanced feelings of significance. Not only will the Reading Recovery participants most likely become independent readers, they will also most likely become more confident, positive, self-accepting, proud, adaptable, and eager to complete tasks. (p. 28)

"School districts that choose to implement and maintain a Reading Recovery program would reap considerable benefits.… Not only will the Reading Recovery participants most likely become independent readers, they will also most likely become more confident, positive, self-accepting, proud, adaptable, and eager to complete tasks."

(Rumbaugh and Brown, 2000)

As in any program or in any classroom, children who are failing are likely to have self-esteem difficulties. Yet one of the first reports from both parents and first-grade classroom teachers is about the change in Reading Recovery students' self-esteem when they are making progress in Reading Recovery.

B. Evaluation evidence supports Reading Recovery effectiveness.

Reading Recovery is very successful with its targeted population, first-grade students having most difficulty with early literacy acquisition—the lowest achievers in the class. This success has been carefully documented for 17 years in data gathered and analyzed on every single U.S. student enrolled in Reading Recovery. All data are reported to the National Data Evaluation Center located at The Ohio State University.

Findings are reported in national, state, and district-level technical reports that are designed to present annual evaluations of systematic, simultaneous replications of Reading Recovery. These reports are widely disseminated to state legislators, state boards of education, local school boards, superintendents, and principals.

Since 1984, Reading Recovery in the United States has collected and analyzed data and reported results for more than one million children. Results confirm Reading Recovery's success with the lowest-performing first graders, as detailed in the table below.

Since 1984, Reading Recovery in the United States has collected and analyzed data and reported results for more than one million children.

Facts About Reading Recovery Student Success in 2000–2001*

149,009	students served
112,814	received a full series of lessons
86,009	discontinued lessons (successful completion)
36,195	did not receive a full series of lessons

Percentage of Students Who Successfully Completed Lessons

78%	of students who received a full series of lessons successfully met discontinued criteria
59%	of students served, even for one lesson, successfully met discontinued criteria

Notes:

Full series of lessons: Those who received at least 20 weeks of the 30-minute daily lessons or successfully completed lessons before 20 weeks.

Did not receive a full series of lessons: Most often those students who do not begin lessons until late in the year.

Discontinued: Those who successfully meet the rigorous criteria to be discontinued (released) from Reading Recovery during the school year or at the time of year-end testing.

* Does not include Descubriendo la Lectura students. Results for the 3,232 Descubriendo la Lectura students served in 2000–2001 are comparable to Reading Recovery.

These percentages translate into powerful realities. For example, of the 86,009 students scoring at or above grade-level expectations on post-treatment measures of literacy skills, only 113 (0.13%) were placed in special education settings for reading support, and only 23 were assigned to special education settings for writing instruction at the end of first grade. At the same time, only 194 (0.26%) were retained in Grade 1 due to reading performance. In fact, placement in special education or retention in Grade 1 for reading difficulties was found to occur more frequently in the randomly selected, non-treatment group representing average performance than in the group of children successfully served by Reading Recovery.

The children who are not discontinued and are recommended for further evaluation also make progress in Reading Recovery. A review of scores on measures that exhibit a ceiling effect is informative. Measures with a ceiling effect can be treated as criterion measures, that is, performance levels that all first-grade children should reach some time during the first grade. For example, during fall testing for the phonemic awareness measure (Hearing and Recording Sounds in Words), recommended students accurately recorded only 6.6 sounds on average compared to 23.9 on average for the random sample children. In the spring testing, the recommended students recorded 31.8 sounds and the random sample 35.1 sounds. Although this group of recommended students did not meet Reading Recovery's rigorous criteria for being discontinued, the evidence suggests that these children met the criterion level on several measures (NDEC, 2002).

Every child served in Reading Recovery, even if for only one day, is counted and reported in data from the National Data Evaluation Center.

1. Reading Recovery counts every child.

Authors of the Internet letter claim that "studies conducted by researchers associated with Reading Recovery typically exclude 25–40% of the poorest performing students from the data analysis" (paragraph 3). Two possible origins of this argument are hypothesized. First, a 1995 article (Center et al.) asserted that Clay's studies had excluded about 30% of children who were either removed or not discontinued from the program. However, Clay's 1979 data clearly negate this claim: No children were dropped from her analyses. Clay responded to this claim in a published letter in *Reading Research Quarterly* (1997). Yet the Center et al. accusation has been carried forward on an ongoing and inaccurate basis by other researchers.

A second possibility is that the Internet letter authors were referring to studies which have included only discontinued children, those who have successfully completed Reading Recovery lessons. For some research, it is very appropriate to study specific groups of Reading Recovery children to answer identified research questions.

For example, some researchers have studied children who successfully completed lessons in order to determine if children who reach average performance at the end of Grade 1 maintain that average status in subsequent years. This is a very legitimate research question. To answer this question, no researcher would include every child; some children would have received few lessons and comparisons would be inappropriate.

Regardless of the confusion leading to the claim that Reading Recovery excludes poorest-performing students from data analysis, it is important to acknowledge that every child served in Reading Recovery, even if for only one day, is counted and reported in data from the National Data Evaluation Center. All evaluation data are inclusive of all children, regardless of outcome status. The broad accusation made in the Internet letter is misleading at best.

2. Reading Recovery serves first-grade children with the greatest literacy need.

The Internet letter confuses the description of the target population that Reading Recovery serves. No prerequisite skills are required for being served by Reading Recovery. Reading Recovery is a safety net intervention for first graders who are having difficulty with early reading and writing. It is an important component of a school's comprehensive literacy program. Reading Recovery provides instruction for the lowest-achieving children first. Annual Reading Recovery data clearly demonstrate that those served first in the school year have the lowest scores on literacy measures at the beginning of the first-grade year.

All students with the lowest scores for their school enter the program and represent the target population (Clay & Tuck, 1991). Outcomes cannot be predicted reliably by any measure at entry. Any attempt to restrict access to Reading Recovery service based on low entry test scores would deny service to children most in need and many who later successfully complete Reading Recovery lessons.

Reading Recovery has two positive outcomes. First, Reading Recovery students successfully complete lessons (discontinue) when they are judged to have met the criteria to participate in their classroom literacy instruction at an average level and to effectively apply strategies that will support future literacy learning. Second, those students who have not achieved these rigorous criteria after 20 weeks of lessons have still received an intensive period of diagnostic teaching. Recommendation for further evaluation is a positive step because evaluators have much more information about student strengths and weaknesses than was available before Reading Recovery. In addition, students have learned many new

skills and strategies even though they did not meet criteria for successful completion of lessons.

Many Reading Recovery studies disaggregate the data by these categories (discontinued and not discontinued) to provide an indication of the proportion of children returned to average levels of performances versus those identified as needing additional evaluation or alternative support.

3. Reading Recovery methodology follows rigorous standards for evaluation research.

The criticism that Reading Recovery does not follow intent to treat methodology is misplaced (paragraph 3). The intent to treat methodology is used in experiments or trials where research subjects are randomly assigned to one of several treatments. In contrast, Reading Recovery serves children identified by the school as the lowest-achieving first-grade students and reports on the total population served in Reading Recovery. Reading Recovery lessons are not clinical trials with random assignment but rather services delivered to an entire population.

An important aspect of intent to treat, however, is to account for every study subject, and Reading Recovery does meet that criterion. The only students excluded from National Data Evaluation Center reports are those for whom outcome status is missing, and that fact is clearly reported. In the 2000–2001 year, the annual data accounted for 99.93% of children served. Outcome data were missing for only 90 of the 152,241 children served by Reading Recovery and Descubriendo la Lectura (NDEC, 2002).

Data are reported for every child enrolled in Reading Recovery. Students are tested pre- and post-treatment (before and after being served) as well as at year-end. At the end of each child's series of Reading Recovery lessons, a status category is assigned. The five status categories are

- **Discontinued:** The child has successfully completed the program and is able to benefit from classroom instruction.
- **Recommended action after a full program of 20 weeks:** The child was recommended for further evaluation and consideration of other support services.
- **Incomplete program at year-end:** The school year ended before the child had time to complete the program.
- **Moved while being served.**
- **None of the above:** This category is used only in special

circumstances when the child has to be removed from the program for very unusual reasons (such as return to kindergarten).

In 2000–2001, of all 149,009 Reading Recovery students (excluding students in Descubriendo la Lectura) served, regardless of the number of lessons received, 59% discontinued their lessons successfully, 17% were recommended for further evaluation, 16% had incomplete lessons at the end of the school year, 5% moved before lessons could be completed, and 3% were classified as none of the above. Of the children with the full series of Reading Recovery lessons, 78% successfully discontinued their programs. Results for the 3,232 children served in Descubriendo la Lectura were comparable to Reading Recovery results.

C. Bias in the Internet letter is analyzed.

Given all the evidence for the effectiveness of Reading Recovery, how do the authors of the Internet letter conclude that the program doesn't work for the lowest-performing students? First, they limit their view of acceptable evidence to experimental, random control group experiments. This allows them to ignore the extensive data collected annually and publicly reported on the progress of every single student enrolled in the program. To advance their political agenda, the authors of the Internet letter selectively report and distort the limited set of experimental studies they present to their colleagues, politicians, and the public for their support.

The clearest instance of this distortion is in their use of the Elbaum et al. (2000) meta-analysis. They state, "In fact, for the poorest readers, empirical synthesis of 'in-house' and independent studies indicates that Reading Recovery is not effective. In Elbaum et al. (2000), the gains for the poorest readers instructed by Reading Recovery were almost zero" (paragraph 3). Why is this a distortion? First, it ignores the major finding of this meta-analysis that the effect of Reading Recovery on student performance was large and significant.

Second, it confuses a post-treatment outcome variable, discontinued versus not discontinued, with a pre-treatment aptitude variable. Students are discontinued from Reading Recovery service when they are judged to have met the criteria to participate in their classroom literacy instruction at an average level and have a set of strategies judged to be sufficient to support future literacy learning. Students who are not discontinued have not achieved these criteria with 20 weeks of lessons and are judged not likely to meet these criteria with an additional week or two of lessons. Many Reading Recovery studies disaggregate the data by these cat-

egories to provide an indication of the proportion of children returned to average levels of performances versus those identified as needing long-term literacy support. Both of these outcomes have positive implications for the efficient use of future educational funds.

The authors of the Internet letter imply that these not-discontinued students were those who entered the program with the lowest scores. This is not the case. All students enter the program with low scores and represent the target population. Again, the Elbaum et al. (2000) study indicates that for the total group the effects of Reading Recovery are large and significant. The outcome category cannot be reliably predicted by any measure at entry. Any attempt to restrict access to Reading Recovery service based on entry tests would deny service to those children most in need of service, many who show substantial benefit from that service.

Elbaum et al. (2000) state, "For Reading Recovery interventions, effects for students identified as discontinued were substantial, whereas effects for students identified as not discontinued were not significantly different from zero" (p. 605). The Internet letter emphasizes the small number of students who did not make progress while it ignores the fact that the majority of students made substantial progress. It also implies that the not-discontinued students were the ones with the lowest scores. This is not true. The interpretation of this information in the Internet letter seems biased.

Authors of the Internet letter limit their view of acceptable evidence to experimental, random control group experiments. Then they selectively report and distort the limited set of experimental studies they present.

D. Summary

Studies and research reviews in peer-reviewed journals document the effectiveness of Reading Recovery for the lowest-performing first graders. In addition, evidence of subsequent gains is substantial. Moreover, self-esteem studies reveal that Reading Recovery children improve self-efficacy scores as a result of the treatment.

Authors of the Internet letter limit their view of acceptable evidence to experimental, random control group experiments. This allows them to ignore the extensive data collected annually and publicly reported on the progress of every single student enrolled in the program. Then they selectively report and distort the limited set of experimental studies they present.

The National Data Evaluation Center collects, analyzes, and reports data on every child served each year. Results are impressive for these children who initially have the most difficulty with literacy learning. What other program provides such external and internal evidence of success with the lowest-achieving first graders?

SECTION II

COST-EFFECTIVENESS IS A COMPLEX CONCEPT IN EDUCATION.

Given the competing demands on education budgets at federal, state, and local levels, it is important to address literacy learning in cost-effective ways. To date, however, no cost-effectiveness analysis comparing alternative early literacy interventions has been conducted (for example, small group instruction compared with one-to-one instruction). This is not surprising since cost-effectiveness analysis is not a widely used evaluation tool in education decision making, although it is often discussed (Hummel-Rossi & Ashdown, 2002; Levin & McEwan, 2001).

The Internet letter states that "Reading Recovery is not cost-effective because the developers require one-to-one interventions by highly trained teachers" (paragraph 4). This assertion could be true only if working with low-achieving children in groups was as effective as working with them one-to-one.

This section

A. reviews cost-effectiveness issues and the long-term benefits of Reading Recovery,

B. documents research demonstrating the efficacy of one-to-one interventions for the lowest-performing first-grade students, and

C. analyzes the quality of research that the Internet letter cites to support claims for superior results of group interventions.

To describe any program as expensive or not cost-effective is misleading without providing crucial information such as which students the programs target and what results are sought relative to the performance of other students.

A. Cost-effectiveness cannot be oversimplified.

1. Long-term versus short-term benefits and the population served

To describe any program as expensive or not cost-effective is misleading without providing crucial information such as which students the programs target and what results are sought relative to the performance of other students. Another important

consideration in cost-effectiveness is the longer-term benefit of the intervention.

In the case of Reading Recovery, the long-term benefits of literacy achievement may significantly outweigh the short-term cost of instruction and teacher preparation. Reading failure is a predictor of academic underachievement. As the achievement gap widens, the potential for future economic, social, and psychological problems increases for this group of children (Pikulski, 1994). The significant number of children—estimated to be 20%—who experience early reading failure are at risk of not reaching acceptable standards throughout their academic careers (Hill & Crevola, 1997). The price of achieving literacy for all students should be weighed against the social ills associated with literacy failure and drop-out rates.

The role of prevention (Pianta, 1990) is essential when considering long-term costs associated with literacy failure. Reading Recovery is a secondary prevention that targets an identified group of the first-grade population (lowest-performing) with the highest likelihood of experiencing literacy failure, even within good primary prevention efforts (classroom instruction). By targeting the lowest-achieving first graders, two positive outcomes are possible: a child achieves successful literacy performance or is identified for further assessment and possibly for an appropriate alternative instructional program known as tertiary prevention.

In the case of Reading Recovery, the long-term benefits of literacy achievement may significantly outweigh the short-term cost of instruction and teacher preparation.

By intervening early, Reading Recovery reduces referrals and placements in special education (NDEC, 2002), limits retention, and has demonstrated lasting effects. Retention and special education referral also have substantial price tags. The local costs of providing Reading Recovery services for 12 to 20 weeks will be substantially less than these costs, particularly when the majority of Reading Recovery children sustain their literacy learning gains.

The Indiana Education Policy Center at Indiana University conducted an independent study of Reading Recovery in the state and reported that the program's impact resulted in reduced grade-retention rates in all schools and larger gains in passing rates on the Comprehensive Test of Basic Skills-5/Terra Nova Form B two years after the intervention in high-poverty schools (Manset, St. John, & Simmons, 2000).

Other outcomes associated with literacy achievement, although not so easily measured or valued, must be considered when evaluating costs. Barnett (1993), in an economic evaluation of human service interventions, called these variables "qualitative residual outcomes" (p. 95). Within the context of Reading

Recovery, a qualitative residual outcome is the investment in teaching skill: teachers can apply their additional skill level in instructional contexts other than Reading Recovery.

Cunningham and Allington (1994) address the complexity of cost-effectiveness analysis.

> The criticism most often made of Reading Recovery is that it is too expensive and that it requires too much teacher training. However, getting these results with the hardest-to-teach children leads us to conclude that the teacher training is providing the teacher with extraordinary insight and skills. It does cost money to hire and train Reading Recovery teachers but it also costs money to employ transitional-grade teachers (e.g., pre-first classes), resource room teachers, and remedial teachers, too. It costs money to retain children.…When you compare the success rate of Reading Recovery with other programs that keep children for years and never get them reading on grade level, Reading Recovery is a bargain! (p. 255)

"When you compare the success rate of Reading Recovery with other programs that keep children for years and never get them reading on grade level, Reading Recovery is a bargain!"

(Cunningham and Allington, 1994)

2. The difficulty of assessing prevention costs

Costs in any prevention program are difficult to assess because so many factors must be considered:

- regional cost variables affecting salaries, overhead, and more
- level of need for the service and level of coverage provided
- quality of training for teacher leaders and teachers
- efficiency and effectiveness factors in program delivery
- acceptance of program as an integral part of the system
- sustained gains for children resulting in reducing referrals to special education and lower rates of retention at the end of first grade

Most school districts expect that there will be personnel costs and costs for training and materials for every program implemented in the system, particularly programs targeted to the lowest achievers. As Levin and McEwan (2001) point out, decision makers have to realize that some children will cost more to educate. Many districts consider in-service training of teachers to be an ongoing responsibility of a school district and do not consider Reading Recovery training an additional expense.

3. Prevention costs in Reading Recovery

The investment in Reading Recovery reduces the number of children who need ongoing, expensive services. Two school districts have calculated the relative costs of Reading Recovery versus the costs of first-grade retention, Title I remedial instruction, and special education for children classified as learning disabled. These analyses have used district teacher salary figures to calculate both the annual and the cumulative amounts of time that a single child would be likely to spend in each of the programs.

a. Lyons and Beaver (1995) conducted a cost comparison analysis for first-grade retention in Lancaster, Ohio four years after Reading Recovery was implemented systemwide. The study revealed that the first-grade retention rate dropped from 4.3% (76 of 1,772 students) in the three years prior to implementation of Reading Recovery to 2.9% (63 of 2,123 students) four years after systemwide implementation. Using teachers' salaries and students' time in the program, these figures represented a cost savings of $163,020. In addition, the Lancaster district looked at special education placements. In the three years prior to full implementation of Reading Recovery, 32 students were placed in learning disabilities classrooms at the end of Grade 1 or during the first few months of Grade 2. In the three years after Reading Recovery implementation, 10 children were classified as learning disabled. The cost of educating one learning disabled student at the time was conservatively estimated at $9,100 across four years of service compared with the per pupil cost of $1,708 for Reading Recovery. The authors found that considerable savings were realized after the district established Reading Recovery as a prevention program.

b. Assad and Condon (1996) conducted another cost-effectiveness study of Reading Recovery in Fall River, Massachusetts. During a 2-year period (1993–1994 and 1994–1995), the Fall River Reading Recovery program served 186 students at an annual per pupil cost of $2,363. Added to this was the cost of additional interventions for several referred or retained children, for a total implementation cost of $483,271. Using the data collected on retention, special education, and Title I placement in years prior to Reading Recovery implementation, district administrators estimated that without Reading Recovery, 50% of the Reading Recovery students would have been referred to special education and 50% would have been referred for Title I services. Administrators also estimated that approximately 5.7% would have been retained. Using these figures, district administrators estimated a 5-year cost of

$1,746,145 if Reading Recovery had not been implemented in the district, for a net savings of $1,262,874. This dollar amount, however, does not translate directly into a reduction of school department spending. It is an estimate of the resources that because of Reading Recovery will not be needed for teaching basic literacy skills, thus allowing funds to be shifted to meet other important needs.

B. One-to-one interventions are essential for accelerated learning of the lowest-performing first graders.

1. Evidence supports one-to-one intervention for the lowest-achieving first graders.

One-to-one intervention is more reliable than group programs. Solid scientific evidence supports the effectiveness of Reading Recovery's one-to-one tutoring model versus small group instruction for the lowest-performing first graders (Dorn & Allen, 1995; Pinnell et al., 1994). The individualized tutoring enables the highly trained Reading Recovery teacher to tailor each lesson to the unique needs of each struggling student. This individual tutoring, in contrast to rigidly scripted programs for all children, is efficient because the teacher does not waste time on what the child already knows. The Reading Recovery framework is qualitatively different for every child because the teacher makes decisions based on individual needs within each lesson component. The teacher is always pushing the boundaries of the learning of the particular child. This explicit and intensive instruction would be weakened if teacher time was divided among several other children.

The assertion of superior cost-effectiveness of small group instruction goes against years of research documenting failure of traditional small group remedial instruction and ability grouping to close the gap for children from poor and minority backgrounds.

Evidence that small group instruction is just as effective with this challenging group of young learners is seriously suspect. For example, the Elbaum meta-analysis cites only two studies that compared a one-to-one intervention with a small group intervention (Acalin, 1995; Evans, 1996). Neither study justified the claim made for small group instruction in the Internet letter (see comments on both studies on pages 39 and 40 of this report).

The assertion of superior cost-effectiveness of small group instruction goes against years of research documenting failure of traditional small group remedial instruction and ability grouping to close the gap for children from poor and minority backgrounds (Allington, 2001; Allington & Cunningham, 2002; Shepard, 1991). One-to-one tutoring of primary-grade students has been demonstrated to be a successful strategy (Wasik & Slavin, 1993).

Arguments related to one-to-one instruction versus group instruction must acknowledge the difficulties of comparing effects of

these two delivery systems. For example, many factors could influence the outcomes in both one-to-one and small group settings, including age of subjects, initial performance of subjects, measures used, criteria for success, size and design of the study, duration of the intervention, curriculum content, quality of training and pedagogy, length of intervention, subsequent performance, and more.

Hurry's (2000) review of intervention research states, "The available evidence on the effectiveness of one-to-one tuition [teaching] is very positive, but the curriculum content and pedagogy are also important" (p. 20). Pinnell and her colleagues (1994) make a similar argument: One-to-one setting, a lesson framework with intensive literacy experiences, and long-term teacher training are all necessary but not sufficient to explain the success of Reading Recovery.

We know that not all one-to-one interventions and not all small group programs yield positive outcomes for children; therefore, consideration of complex factors contributing to success in both delivery systems merits attention. It is not simply a question of one-to-one versus small group instruction.

2. The MacArthur Foundation-funded study (Pinnell et al., 1994) supports one-to-one intervention.

This well-designed, large scale experimental field study (40 schools) was designed in response to challenges about the delivery system of Reading Recovery. Reading Recovery was systematically compared with (1) another one-to-one intervention, (2) a one-to-one intervention with teachers who had limited training in Reading Recovery, and (3) group instruction based on Reading Recovery principles with trained Reading Recovery teachers.

The lowest children (N=324) in the 40 schools were randomly assigned within schools to either one of the four treatments or a control group. Researchers at the University of Chicago independently analyzed the data. In addition, a renowned national panel of researchers not involved in Reading Recovery provided oversight for analyzing the results.

Results were definitive. Reading Recovery subjects performed significantly better than any other treatment and comparison groups on all measures. Essential differences were related to individual instruction, the lesson framework (combination of techniques), and teacher training. (See pages 19–20 for further description of results.)

3. An Arkansas study (Dorn & Allen, 1995) supports one-to-one intervention.

Dorn and Allen reported the simultaneous implementation of Reading Recovery and a specially designed small group model. Extensive staff development was provided to Reading Recovery teachers who taught Reading Recovery (30-minute sessions) for part of the day and small groups (45-minute sessions) for part of the day.

The lowest children were served first in Reading Recovery; others were placed in groups of five. When a child exited Reading Recovery, the lowest child in a small group or the lowest child from a classroom was placed in Reading Recovery. Priority was given to offering the individual tutoring for children who needed it most.

Data for 231 children were analyzed: 95 received Reading Recovery tutoring only, 93 received group services only, and 43 received a combination of group service and Reading Recovery. Of the children receiving Reading Recovery only, 76% were successfully discontinued from service. These were initially the lowest children in the study. Of the children receiving only group service, 30% reached successful levels of reading achievement. These children were initially higher than the Reading Recovery group in reading performance. Dorn and Allen concluded that Reading Recovery was the most effective program for the lowest children who must have individually tailored lessons.

Of the children receiving Reading Recovery only, 76% were successfully discontinued from service. These were initially the lowest children in the study. Of the children receiving only group service, 30% reached successful levels of reading achievement.

(Results of 1995 study by Dorn and Allen)

C. Research cited by the Internet letter is flawed.

To support its recommendation for change in Reading Recovery group size, the Internet letter cites a meta-analysis (Elbaum et al., 2000) and two unpublished doctoral dissertations (Evans, 1996; Iversen, 1997). Although the previous section reviews some aspects of the Elbaum meta-analysis, this section focuses on problematic findings related to group size, group composition, and fidelity of treatments included in the meta-analysis.

1. Elbaum meta-analysis

Elbaum, Vaughn, and Moody (2000) attempted a synthesis of 31 different studies. The goal was to explore relative effects of various features of intervention programs. These features included, among others, small group versus individual instruction and Reading Recovery versus other types of interventions. Of the 31 studies

included in the analysis, 10 purported to include Reading Recovery, but at least two of them (McCarthy, Newby, & Recht, 1995; Iversen & Tunmer, 1993) did not deliver services meeting national Reading Recovery standards.

A significant flaw exists in the Elbaum et al. meta-analysis design. In order for meta-analysis results to be fair and effective, studies must include substantially similar constructs (Wortman, 1992). According to the writers, 31 studies included "adult-delivered one-to-one instructional interventions in reading for elementary school children identified as being at risk for reading failure" (p. 606). Fourteen of these studies examined tutoring of children beyond first grade. Reading Recovery includes only first-grade children. Within the 29 treatment-control studies in the meta-analysis database, Elbaum and colleagues identified 14 different constructs with a total of 54 different variations. For example,

- At-risk was variously defined as lowest 20th–30th percentile or learning disabled.
- Instruction was delivered by teachers, college students, or volunteers.
- Five different foci of instruction were defined across the various studies.
- Multiple and complex outcome measures were used in the various studies.
- One-to-one instruction was variously compared to classroom instruction and other one-to-one comparison groups.
- Except for the Reading Recovery feature, the authors did not separate the studies of first-grade interventions from those that looked at older children.

Another problem area in the Elbaum et al. meta-analysis is the treatment of the study by Pinnell et al. (1994). This large-scale field study compared three one-to-one treatments (Reading Recovery, Reading Recovery-like tutoring with a partially trained teacher, and a skills tutoring model) to one group treatment (a small group taught by a Reading Recovery teacher). Elbaum inappropriately averaged the effects of the three experimental one-to-one treatments. These three one-to-one treatments were very different approaches and had different outcomes; therefore, averaging was inappropriate.

As evidence that Reading Recovery as a one-to-one tutorial had no advantage over small groups, Elbaum et al. cite an unpublished doctoral dissertation by Evans (1996) and an unpublished master's

thesis by Acalin (1995), although the reference list in Elbaum et al. mistakenly describes Acalin's work as an unpublished doctoral dissertation. Even a casual reading of these two studies reveals that they do not qualify as investigations of Reading Recovery interventions. In fact, a closer reading of these two studies identifies serious problems.

2. Evans unpublished doctoral dissertation

Both the Internet letter and the Elbaum et al. meta-analysis use Evans' unpublished doctoral dissertation (1996) as evidence that Reading Recovery provides no advantage over small group instruction. Yet the Evans study is an unpublished qualitative doctoral dissertation designed to explore literacy acquisition and peer interaction based on eight case study descriptions. The entire study consisted of eight children: four randomly assigned to Reading Recovery and four assigned to a small group intervention. The researcher was also the teacher of the small group intervention, and the Reading Recovery teacher was in the first months of her Reading Recovery training year. The researcher-small group leader "had taught young children in public elementary schools for seven years" (p. 29), while the Reading Recovery teacher's experience "had primarily been in third through fifth grades" (p. 29–30) before beginning Reading Recovery training. The study was conducted between August and December, at the beginning of the Reading Recovery teacher's training.

Evans stated that the eight children had similar entry scores but did not provide data for selection or matching subjects. The summary table of average pre- and post-test scores (p. 129) listed lower pre-test scores and larger standard deviations for the Reading Recovery treatment group across all six subtests (with the exception of an equivalent pre-test score for text reading level, at 1.25). Yet Elbaum and colleagues reported a mean effect size for Evans' study despite the lack of evidence of equivalence at pre-test.

3. Acalin unpublished master's thesis

The stated purpose of Acalin's (1995) study was to compare the effectiveness of Reading Recovery to Project Read. Project Read is a remedial reading program "originally designed to be used in kindergarten through eighth grade" (p. 20). The results of this study are suspect because of the training provided. The specialists who provided the Project Read instruction "had received the full training in this program and were following the manuals, lesson by lesson, with minimal program adaptations" (p. 35). Yet the Reading Recovery treatment was not delivered by Reading Recovery teachers, but by special education teachers who had not

participated in the required Reading Recovery training. Descriptions of the instructional methods used for Reading Recovery in this study indicate wide discrepancies from published Reading Recovery procedures.

Further, although Reading Recovery is a first-grade intervention, Acalin provided instruction to 66 subjects ranging from kindergarten through fourth grade and included students who were already placed in a resource specialist program and identified as learning disabled. Only 8 of the 66 children were in the first grade, and four of these children were assigned to each approach.

Even casual consumers of scientific research would wonder why the Evans and Acalin studies were considered to have met criteria for inclusion in a meta-analysis that purports to follow, in the words of Elbaum et al., "best practices for research synthesis" (2000, p. 606).

4. Iversen study

A body of research supports one-to-one tutoring and indicates that it may be essential for children who are at high risk.

The Internet letter cites Iversen's (1997) study to claim no advantage of one-to-one instruction over small group instruction. In this study, 75 first graders were grouped in triads (without random assignment). Each trio was taught by the same teacher, one individually and the others in a group of two, for a maximum of 60 lessons. Iversen concluded there was no advantage of individual over small group instruction. Yet the Reading Recovery intervention in this study was far from standard Reading Recovery. There were major differences in the training model, the procedures related to selection of children, teaching procedures, and issues of implementation and evaluation practices. In addition, there are questions about design and methodology.

Because Iversen's study used a modified version of Reading Recovery, it seems the Internet letter authors are mixing two very different researchable issues: (1) standard Reading Recovery versus a small group intervention and (2) any one-to-one intervention versus a small group intervention. To examine Reading Recovery versus small group instruction, the standard program deserves to be studied. Therefore, the design of this study does not allow any comparisons of group instruction to standard Reading Recovery.

D. Summary

Cost-effectiveness is a complex concept that cannot be oversimplified. It is misleading to describe any program as expensive or not cost-effective without first identifying crucial information such as

which students the program targets and what results are sought relative to the performance of other students. Both long- and short-term benefits must be considered.

In the Internet letter, concerns about Reading Recovery costs focus primarily on one-to-one instruction and the highly trained teachers Reading Recovery requires versus group instruction. Solid evidence (Dorn & Allen, 1995; Pinnell et al., 1994) supports the effectiveness of Reading Recovery versus small groups for lowest-performing first graders. Evidence that small group instruction is as effective with this group of learners is seriously suspect.

Studies cited by Elbaum et al. provide virtually no evidence to support a change from one-to-one to small group instruction for the lowest-achieving first graders. The suggestion for Reading Recovery to change from one-to-one instruction is especially weak because there is documented evidence of effectiveness with hundreds of thousands of children. Certainly, researchers within and outside Reading Recovery should continue to study all possibilities, but the idea of change in group size needs a much stronger research base. A body of research supports one-to-one tutoring and indicates that it may be essential for children who are at high risk (Bloom, 1984; Juel, 1991; Wasik & Slavin, 1993). The systematic nature of Reading Recovery instruction is based on a teacher's detailed assessment and analysis of a child's knowledge base and skills. The teaching is highly efficient because the teacher has this precise inventory of skills and strategies and is able to teach exactly what the child needs to know next.

To use their own words, Elbaum and colleagues conclude, "In sum, the findings of this meta-analysis support the argument that well-designed, reliably implemented, one-to-one interventions can make a significant contribution to improved reading outcomes for many students whose poor reading skills place them at risk for academic failure" (2000, p. 617).

SECTION III

READING RECOVERY USES STANDARD ASSESSMENT MEASURES.

This section first describes *An Observation Survey of Early Literacy Achievement* (Clay, 1993a/2002) and its history and use in early literacy settings as well as in Reading Recovery. Second, Reading Recovery students' performance in follow-up studies using norm-referenced tests is reported.

A. Reading Recovery uses *An Observation Survey of Early Literacy Achievement,* a standard measure developed in research studies, with qualities of sound assessment instruments with reliabilities and validities and discrimination indices.

1. The Observation Survey was developed to meet the unique need to assess emergent literacy in young children.

In the 1960s there were few studies of literacy acquisition or credible theories of literacy development using close observation over time during the first year of school. Marie Clay was committed to rationality and scientific methodology; the research designs she used and the standard measures she developed followed rigorous standards of research. Since the 1960s, Clay has engaged in more than 40 years of in-depth research and analysis of evidence to construct her theory and validate measures that describe the range of differences and change over time among the lowest-achieving students (Clay, 2001). These studies, discussed in *Observing Young Readers* (Clay, 1982), extend or verify elements of her theory.

Clay sought to understand why children fail to realize their learning potential and to describe the course of literacy development and the different paths students might take. The research methods she used produced assessment tools that have high construct and face validity and high reliability measured in large-scale studies. Measurement error within these tasks is greatly reduced with individual administration and with standardized administration procedures (see *An Observation Survey of Early Literacy Achievement,* Clay, 1993a/2002).[3]

[3] Until the Observation Survey was published in 1993, it was known as the Diagnostic Survey (Clay, 1985).

Tasks included in the Observation Survey incorporate both open and closed tasks. They allow for observation of emerging, tentative behaviors to detect the variability of individual paths to literacy achievement. "Powerful statistical analyses have shown that these procedures, which permit more detailed recording of individual responses than a normative test, nevertheless have proved to be sound measurement devices" (Clay, 1982, p. 6).

A particular strength for Reading Recovery in the United States is that parallel instruments have been developed for the Spanish language, and they have been subjected to the same rigorous analyses for reliability and validity (see Escamilla, Andrade, Basurto, & Ruiz, 1996).

2. The Observation Survey comprises systematic and controlled observation measures to assess young children's literacy knowledge and to detect evidence of progress in the early stages of literacy learning.

The Observation Survey adheres to characteristics of good measurement instruments, namely, a standard task, a standard way of administering the task, ways of knowing about reliability of observations, and a real-world task that establishes validity of the observation.

The six tasks of the Observation Survey have been widely used with the five- to seven-year-old age group; they are not in-house instruments used only for Reading Recovery assessments. Users of the Observation Survey include classroom teachers, teachers working individually with children having temporary difficulties with literacy learning, administrators who want accounts of individual progress of children across time, and researchers probing how young children learn about literacy.

These controlled observation tasks have been widely used in literacy research. They

> can feed data into analyses of researchers, and best of all, they can provide evidence of learning on repeated measurements of tasks the child is actually undertaking in the classroom. *In every way the information that is gathered in systematic observation reduces our uncertainties and improves our instruction.* (Clay, 1993a/2002, p. 2)

The Observation Survey adheres to characteristics of good measurement instruments, namely, a standard task, a standard way of administering the task, ways of knowing about reliability of observations, and a real-world task that establishes validity of the observation.

The Observation Survey is comprised of six literacy tasks with established validity and reliability (see Clay, 1993a/2002).

- Letter Identification (to identify known letters and preferred mode of identification)

- Word Test (to determine whether the child is building reading vocabulary)
- Concepts About Print (to find out what the child has learned about the way spoken language is put into print)
- Writing Vocabulary (to find out whether the child is building a writing vocabulary)
- Hearing and Recording Sounds in Words (to assess phonemic awareness by responses to sound-letter associations)
- Text Reading (to determine appropriate level of text difficulty and to record, using a running record, what the child does when reading continuous text)

The six tasks can be justified by theories of measurement, and they take other theories into account (from the psychology of learning, developmental psychology, studies of individual differences, and theories about social factors and the influences of contexts on learning). Stanines and reliability/validity data are provided for five of the tasks within the Observation Survey.

In the 2002 edition of the Observation Survey, new norming data are provided. New norms will be established for the United States during the 2002–2003 academic year.

Many of the tasks in the Observation Survey are similar to tasks in other widely used standardized and norm-referenced tests. Informal reading inventories are used to determine the appropriate text level for a student's instruction, to monitor progress of individual students, and to obtain pre- and post-test scores in the primary grades. The tasks of the informal reading inventories (word lists and text reading) are similar to the Word Test and Running Records of Text Reading in the Observation Survey.

Word identification tasks are common in both standardized and norm-referenced tests (Woodcock-Johnson III, Slosson Oral Reading Test, Qualitative Reading Inventory-3, Iowa Test of Basic Skills, and others). Reading passages organized along a gradient of difficulty are also prevalent in many tests (Basic Reading Inventory, Qualitative Reading Inventory-3, Gates-MacGinite Reading Tests, and Iowa Test of Basic Skills among others).

Many tests assess beginning readers' phonemic awareness. The Hearing and Recording Sounds in Words task of the Observation Survey requires the student to articulate words slowly, supplying the letter or letters associated with the phonemes within each word of the dictated sentences.

3. Reading Recovery analyses of text reading levels provide descriptive data of behavior on a scale of relative difficulty and provide data about change across time.

The text reading measure used within the Reading Recovery program uses texts from the Scott Foresman Reading Systems Special Practice Books (1979). To standardize the administration of the text reading measure, brief story introductions were produced and a standard format of administration was established. In a 1987–1988 study, Ohio State University researchers piloted texts and procedures. Changes were made and a larger-scale sampling and comparison was completed to test these materials against a previously used testing program, with resulting .85 reliability.

In 1990–1991, a random sample of 155 urban kindergarten and first-grade children were sampled using the Diagnostic Survey tasks[4] (Clay, 1985) and the Reading Recovery text reading materials. An analysis of the text reading materials was completed on the first graders in the study (n=96) to determine the reliability of the scale using a Rasch rating scale analysis (Wright, Linacre, & Schulz, 1989). This analysis showed that the text reading scale had a reliability of .83 (person) and .98 (item). When the text reading measure was combined with two other tasks (a measure of print concepts and phonemic representation), the power of the assessment increased. It verified that while the text reading measure does not provide an equal interval scale, the item difficulty scale itself across these three measures is robust and highly reliable (scale formula r=.99).

Reading Recovery analyses of text reading levels provide descriptive data of behavior on a scale of relative difficulty, and they provide data about change across time. These analyses are appropriate assessment and measurement techniques commonly used in the educational measurement field to validate such observation data as ordinal information, time series samples, and more. These techniques to transform observations into measures date back to the turn of the century (Thorndike, 1904; Thurstone, 1925; Wright & Linacre, 1989) and have since been perfected by advanced statistical procedures (Rasch, 1960, 1980).

4. Reading Recovery appropriately uses the Observation Survey in pre-treatment and post-treatment analyses of children's progress.

With the exception of the Letter Identification task and the

[4] The Diagnostic Survey (1985) was published as part of *The Early Detection of Reading Difficulties: A Diagnostic Survey With Reading Recovery Procedures.* It was later renamed The Observation Survey of Early Literacy Achievement and published separately in 1993 and 2002.

Writing Vocabulary tasks, all sub-tests of the Observation Survey have three or more alternate forms. Data collected annually using the standard assessment measures offer a variety of ways to verify the quality of decisions made about selection of students and outcomes achieved. The standard measures of the Observation Survey are used to select the lowest literacy achievers for service and to make reliable decisions about student progress.

Reading Recovery children begin first grade with much lower scores than their peers; yet children who meet discontinuing criteria reach approximate parity by the end of first grade. Discontinuing decisions are also corroborated by external factors such as classroom teacher perceptions and low rates of retention and placement in special education. The methodology must fit the research questions and issues being addressed. The goal remains the same: select the lowest-achieving students, provide early intervention that reduces the need for further remediation, and monitor change over time using standard measures appropriate for the beginning reader.

B. Reading Recovery students perform well on norm-referenced tests.

The Internet letter suggests use of norm-referenced tests that are widely available and commonly used in reading intervention research. Although traditional standardized tests may yield valid comparisons of mean scores derived from groups of students who are already reading, they are not sensitive to variability in emerging knowledge. These tests are not useful as baseline measures for assessing change over time in individual young learners. For this reason, such tests are not used for selection into Reading Recovery.

Some studies, however, have examined Reading Recovery children in Grade 1 (see for example Pinnell et al., 1994) using such assessments as the Slosson Oral Reading Test and the Woodcock-Johnson III. Many more studies have used standardized independent measures and state assessments to explore Reading Recovery children's performance in subsequent grades.

In California, a study of four cohorts of former Reading Recovery students (760 students in Grades 2, 3, 4, and 5) revealed that 68–85% (percentages varied by year and by group) scored at Stanine 4 or above on both of two high-profile standardized tests, the Iowa Test of Basic Skills and Stanford Achievement Test 9 (Brown et al., 1999).

Two longitudinal studies in Texas used the Gates-MacGinitie Reading Test and the Texas Assessment of Academic Skills to

explore subsequent performance of Reading Recovery children compared with a random sample of their classroom peers (Askew et al., 2002). Findings showed that 80–85% of the former discontinued Reading Recovery children passed the fourth-grade Texas Assessment of Academic Skills reading test and 90–93% passed the writing test. Annual progress on the Gates-MacGinitie Reading Test closely paralleled the progress of the random sample.

An Indiana study of the performance of former successful Reading Recovery children on the Gates-MacGinitie Reading Test found that 86% of those children currently in second grade scored within the average range of scores as established by a random sample group; 84% currently in third grade and 80% in fourth grade scored within the average range (Schmitt & Gregory, 2001). Scores on the third-grade Comprehensive Test of Basic Skills-5/ Terra Nova Form B assessments administered statewide approximated a normal distribution for former Reading Recovery children with a mean at the 45th percentile.

Although the Internet letter suggests use of norm-referenced tests instead of the Observation Survey, these traditional standardized tests are not useful as baseline measures for assessing change over time in individual young learners.

C. Summary

Reading Recovery uses the measurements published in *An Observation Survey of Early Literacy Achievement* (Clay, 1993a/2002), a standard measure developed in research studies with qualities of sound assessment instruments with reliabilities and validities and discrimination indices. The survey adheres to characteristics of good measurement instruments: namely, it is a standard task, there is a standard way of administering the task, there are ways of knowing about reliability of observations, and it is a real-world task that establishes validity of the observation.

Reading Recovery appropriately uses the Observation Survey in pre-treatment and post-treatment of children's progress. Although the Internet letter suggests use of norm-referenced tests instead of the Observation Survey, these traditional standardized tests are not useful as baseline measures for assessing change over time in *young* learners. For this reason, these tests are not used for selection of children for Reading Recovery. When children have developed more literacy skills by the end of Grade 1 and in later grades, standardized measures are often used to examine subsequent literacy achievement for Reading Recovery students (Askew et al., 2002; Brown et al., 1999; Pinnell et al., 1994; Schmitt & Gregory, 2001).

SECTION IV

CHANGE IS AN INTEGRAL PART OF THE READING RECOVERY DESIGN.

Change is an integral part of the Reading Recovery design. Nobel Prize winner Kenneth Wilson wrote, "Reading Recovery offers U.S. education its first real demonstration of the power of a process combining research, development (including ongoing teacher education), marketing, and technical support in an orchestrated system of change" (Wilson & Daviss, 1994, p. 76).

Reading Recovery is a dynamic program that changes in response to ongoing research. Theoretical constructs, teaching practices, and implementation are constantly examined in search of the most effective procedures (Jones & Smith-Burke, 1999). An examination of the evolving works of Marie Clay provides evidence of change over time.

This section highlights issues of change and constancy that provide both flexibility and stability for Reading Recovery at the national, school district, and local school levels. This section is organized into two parts:

A. Reading Recovery's built-in mechanisms for change including the central document for theory and practice, the internal processes of data collection and reporting, the ongoing professional development process, the standards and guidelines, and the international network

B. Areas of change recommended by the Internet letter, especially the inclusion of explicit instruction in phonics and phonemic awareness

"Reading Recovery offers U.S. education its first real demonstration of the power of a process combining research, development (including ongoing teacher education), marketing, and technical support in an orchestrated system of change."

(Wilson and Daviss, 1994)

A. Reading Recovery has built-in mechanisms for change.

Change in Reading Recovery is not left to chance. Several systems ensure careful and responsible responses to patterns of change and constancy.

1. The *Guidebook* reflects changes in theory and practice.

Patterns of change are evident in the evolving editions of Reading Recovery's central program document, *Reading Recovery: A*

Guidebook for Teachers in Training (Clay, 1993b). Originally published as *Early Detection of Reading Difficulties* (1979/1985), it was thoroughly revised and retitled in 1993. An examination of these books reveals significant additions over years of development, including the following:

- more intensive attention to and detailed description of the role of phonemic awareness;
- explicit directions for teachers in helping children use letter-sound relationships, more phonemic awareness, and phonics;
- more deliberate focus on comprehending strategies during the reading of a new book;
- differentiation between the way the teacher supports children during the reading of a new text and the role of familiar reading; and,
- more information on how to teach for fluency and phrasing.

The *Guidebook* is a central and constant resource for teachers not only during professional development sessions but as they do their daily teaching.

The *Guidebook* is a central and constant resource for teachers not only during professional development sessions but also as they do their daily teaching. Changes in the *Guidebook* result from a careful examination of current research across a wide range of disciplines and perspectives and are carefully examined and acted upon each year by all persons involved in Reading Recovery. Professional development for purposes of increasing teacher skill and updating practice is a requirement for Reading Recovery teachers as long as they are involved in Reading Recovery.

2. Data collection and analysis guide changes.

Internal Reading Recovery processes use data collection and analysis to inform changes in implementation at local, state, and national levels. Reading Recovery teachers, teacher leaders, and administrators at every training site systematically collect and report data on every child to the National Data Evaluation Center located at The Ohio State University. The center reports aggregated data at the school level, the school system level, the training site level, and the university training center level. Data collected allow school personnel to analyze results and improve implementation efficiency and effectiveness at all levels.

A partial list of data collected follows:

- status (outcome) categories of children: discontinued, recommended, incomplete, moved, none of the above
- number of lessons for individual children

- number of weeks for individual children
- reasons for missed lessons for individual children
- years of experience for teachers
- number of retentions in first grade
- number of special education referrals and placements in first grade
- level of Reading Recovery coverage in the school (percent of lowest-achieving children served)

Analysis of these data has revealed important findings about Reading Recovery implementation at the national level. Among the findings,

- The level of Reading Recovery teacher coverage in schools is correlated with program success.
- Time is an important factor in program efficiency. Data are available for examination of time related to length of programs, missed lessons, and more.
- Teacher factors are also related to program outcomes. For example, trained and experienced teachers on average have more successful student outcomes than teachers-in-training.

Local schools, districts, and university training centers use outcome data and implementation data to address program questions. In addition, observational and anecdotal data often lead to increased emphasis on implementation issues at the national level. For example, national conferences and publications focus on the key role local administrators play in creating an effective and efficient implementation.

Ongoing professional development ensures incorporation of new research and understanding of its applicability to the Reading Recovery lesson. A one-way mirror, a required part of Reading Recovery professional development, enables teachers to observe, reflect on, and discuss Reading Recovery lessons with a teacher leader or university trainer.

3. Ongoing professional development disseminates changes.

Ongoing professional development ensures incorporation of new research and understanding of its applicability to the Reading Recovery lesson. Reading Recovery's professional development builds teacher skills and provides continuous updating so that trained Reading Recovery teachers incorporate changes as they occur. In fact, Hermann and Stringfield (1997) noted Reading Recovery's high-quality professional development: "As schools systematize and create more opportunities for serious staff devel-

opment, the thoroughness of the Reading Recovery model seems to be well worth emulating."

Ongoing professional development occurs at three levels: university trainers, site-based teacher leaders, and school-based teachers. Ongoing development is required for all Reading Recovery professionals throughout their involvement in Reading Recovery.

This continuing professional development across the entire Reading Recovery network is an important mechanism in the change process. Reading Recovery professionals receive up-to-date knowledge of new developments in the program. This self-renewal system accommodates changes that result from sound research and from carefully monitored developments.

4. Published standards and guidelines reflect changes.

"As schools systematize and create more opportunities for serious staff development, the thoroughness of the Reading Recovery model seems to be well worth emulating."

(Hermann and Stringfield, 1997)

Patterns of change and constancy are also evident in the *Standards and Guidelines of the Reading Recovery Council of North America.* It is well known that the effectiveness and efficiency of any intervention are tied directly to issues of implementation within a school or system. Most recently revised in 2001, the standards and guidelines are intended to protect the investment of adopters who are responsible for the establishment and maintenance of Reading Recovery.

Standards and guidelines are not arbitrary: they are based on underlying rationales supported by research on effective practices, national data evaluation, and research and observational data from the field. Changes are made as needed. Since 1993 there have been three editions of the standards and guidelines.

5. An international network of Reading Recovery trainers works to ensure the dynamic nature of the intervention.

An international network of Reading Recovery trainers (including faculty members from 23 universities in the United States) is responsible for guiding ongoing development and research efforts in Reading Recovery. The university trainer must have knowledge of what it means to bring about cycles of change in practice, but in ways that are consistent with the academic theories which support the program. Trainers bring several areas of expertise together in an ongoing way as Reading Recovery is problem-solved into educational settings. The university trainer's role is to think integratively about theory, bringing diverse areas of current theoretical and practical knowledge together into working relationships.

B. Reading Recovery responds to Internet letter change recommendations.

The Internet letter recommends three areas of change for Reading Recovery: increased group size, use of standardized outcome measures, and explicit instruction in phonics and phonemic awareness.

1. Increased group size

Internet letter arguments for change in group size are weak: To deny children effective one-to-one intervention based on research cited in the Internet letter would be irresponsible. The cost-effectiveness section of this report reviews substantial research evidence on the efficacy of one-to-one tutoring with the lowest-performing students (see pages 31 to 41).

2. Use of standardized outcome measures and continuous progress monitoring

Section III on assessment measures reviews the *Observation Survey of Early Literacy Achievement* (Clay, 1993a/2002), a standard measure developed in research studies and used by Reading Recovery professionals. The Observation Survey includes the quality of sound assessment instruments with reliabilities, validities, and discrimination indices. In addition, research reviewed in Sections I and III demonstrates that Reading Recovery students perform well on norm-referenced tests after the intervention year (Askew et al., 2002; Brown et. al., 1999; Pinnell et al., 1994; Schmitt & Gregory, 2001).

Children are shown how to use letter-sound relationships to solve words in reading and writing and how to use structural analysis of words and learn spelling patterns.

3. Explicit instruction in phonics and phonemic awareness

The Internet letter claims that Reading Recovery does not include explicit instruction in phonics and phonemic awareness. Yet any astute observer of a Reading Recovery lesson would recognize the explicit teaching of letters, sounds, and words. Children are shown how to use letter-sound relationships to solve words in reading and writing and how to use structural analysis of words and learn spelling patterns. (For a detailed description of instruction in phonics and phonemic awareness within the Reading Recovery lesson, see Pinnell, 2000).

The Internet letter uses two studies (Iversen & Tunmer, 1993; Morris et al., 1990) to support this claim. The analyses that follow demonstrate the difficulties associated with using these studies as evidence.

a. Iversen and Tunmer (1993). Iversen conducted a study that included two groups of Reading Recovery teachers-in-training. As the sole staff developer, she taught both groups, giving to one group the charge to implement an extra few minutes of phonological awareness training. (See page 18 for additional information regarding this study.)

Iversen herself had been trained as a teacher leader during the early years of Reading Recovery in New Zealand but was no longer teaching Reading Recovery and was not attending continuing professional development to receive program updates. Therefore, she was unaware that important changes to increase emphasis on phonemic awareness and phonics had already been incorporated in Reading Recovery. Thus, the Reading Recovery training provided to the traditional Reading Recovery group in effect deprived them of information about newer teaching practices.

Even so, results indicated that both Reading Recovery groups outperformed the control group on all measures—including measures of phoneme deletion and phoneme segmentation. The group with increased emphasis on phonemic awareness had programs that were shorter than Iversen's *traditional* group. Interestingly, the increase in phonemic awareness and phonics that Iversen included in training of her *experimental* group had already been included in Reading Recovery programs around the world.

Interestingly, the increase in phonemic awareness and phonics that Iversen included in training of her experimental group had already been included in Reading Recovery programs around the world.

b. Morris, Tyner, and Perney (2000). This is the second study cited in the Internet letter in support of explicit phonics. This study looked at some alternative staffing, training, and instructional approaches to early intervention. Morris and his colleagues did place a greater emphasis on isolated approaches to early intervention, but they also modeled more than three-quarters of the lesson format on Reading Recovery. The results indicated that students who participated in their First Steps program made better progress than a matched group of low students in nonparticipating comparison schools. This study was not designed to compare results against Reading Recovery or to isolate the contribution of a particular form of word study in relation to other program components. The claim in the Internet letter that "the addition of an explicit component addressing spelling-to-sound patterns was highly effective" (paragraph 7) seems questionable given that First Steps students received tutoring for the entire school year, averaging 91 lessons per student. The Morris, Tyner, and Perney study provides no demonstrated evidence that components should be added to Reading Recovery lessons.

C. Evidence shows that Reading Recovery teaches phonemic awareness and phonics.

A study by Stahl et al. (1999) demonstrates that Reading Recovery students do, in fact, perform well on tests of phonemic awareness and phonological coding. The study was conducted to determine whether techniques used in Reading Recovery lessons promoted progress in the metalinguistic areas of phonemic awareness and phonological recoding. A total of 30 at-risk first-grade students were rank ordered. The lowest-achieving children (n=11) were entered into Reading Recovery. A control group of 19 subjects eligible for Reading Recovery was formed. Measures used included the Observation Survey, particularly the Letter Identification and Hearing and Recording Sounds in Words tests; the Pseudoword Learning Test; and Yopp-Singer Test of Phoneme Segmentation, a test that measures students' ability to hear and articulate sequentially the separate sounds in 22 words.

Reading Recovery students made significantly greater improvement than the control group on measures of phonological processing. Students who successfully completed Reading Recovery lessons demonstrated strategies similar to children in the alphabetic stage by the 16th week of Grade 1. These students were using strategies that were similar to those used by normally achieving first graders. This study suggested that Reading Recovery children acquire phonological awareness and phonological recoding with Reading Recovery lessons without additional lesson components in phonological processing. The inclusion of all Reading Recovery participants and the utilization of measures other than Clay's responded to methodological concerns raised in other reports.

Other researchers have also stressed that Reading Recovery teaches phonics. Writing in 1990 about her observation of Reading Recovery, Marilyn Adams said, "The importance of phonological and linguistic awareness is also explicitly recognized" (p. 420). Adams describes Reading Recovery as one of several programs that "are designed to develop thorough appreciation of phonics.…On the other hand, none of these programs treats phonics in a vacuum" (p. 421).

D. New Zealand researcher responds to the Internet letter.

Authors of the Internet letter point to concerns about Reading Recovery in New Zealand where Reading Recovery is a widely used program for lowest-performing beginning readers. As evidence of dissatisfaction, the letter cites a unanimous recommendation from a report of the Literacy Experts Group. Two signatories

of the Internet letter were from the 10-member group. In response to an article in the New Zealand newspaper *Education Weekly,* Cedric Croft, chief researcher from the New Zealand Council for Educational Research, wrote

> It would be regrettable if…recommendations from the 1999 Literacy Experts Group, was construed as meaning that this group was among those attacking Reading Recovery. Because it wasn't, even though two of its 10 members are among a group of 32 predominantly American reading researchers reported as having 'recently circulated a letter criticizing Reading Recovery to members of Congress and through the media.'…
>
> One recommendation [that Reading Recovery place greater emphasis on explicit instruction in phonological awareness] from the Literacy Experts Group was reported as being unanimous but so were the other 17!
>
> Another recommendation from the Literacy Experts Group is worth quoting too. 'We recommend continued government funding of Reading Recovery as a national systematic programme, providing New Zealand research is carried out to determine whether it is as effective as it could be'…
>
> Most striking, however, is the clear message that most of this debate is about some researchers talking to some other researchers, with very little buy in from the teachers who implement Reading Recovery, or those with experience of translating research findings into effective classroom programmes. And, there is a huge gulf between a research study and a programme that works in a classroom. This is one area where the four New Zealand signatories of the U.S. [Internet] letter are out-of-step with many other reading researchers and literacy educators in New Zealand. (2002, p. 2–3)

"Most of this debate is about some researchers talking to some other researchers, with very little buy in from the teachers who implement Reading Recovery, or those with experience of translating research findings into effective classroom programmes. And, there is a huge gulf between a research study and a programme that works in a classroom."

(Croft, 2002)

E. Summary

The change process in Reading Recovery is ongoing and based on careful testing of components over time. Changes are not made in response to one or two studies or to insufficient evidence. But changes have been documented in the past and are expected to be part of the future. The Internet letter has not provided compelling evidence for change, nor has it proven that Reading Recovery does not change or incorporate independent research results.

One of the key changes recommended by the Internet letter is explicit instruction in phonics and phonemic awareness. Reading

Recovery has a strong phonemic awareness component including the explicit teaching of letters, sounds, and words, Reading Recovery also shows children how to use letter-sound relationships to solve words in reading and writing, how to use structural analysis of words, and how to learn spelling patterns (Pinnell, 2000). A study by Stahl et al. (1999) demonstrated that Reading Recovery students do in fact perform well on standardized tests of phonemic awareness and phonological coding. Researcher Marilyn Adams wrote this about Reading Recovery: "The importance of phonological and linguistic awareness is also explicitly recognized" (1990, p. 420).

Programs that focus on items of knowledge in prepared curricular sequences may teach the targeted objectives effectively, but they have provided no evidence of successfully closing the gap between at-risk learners and their classmates, nor have they provided evidence of developing abilities to learn that continue beyond the life of the programs. Reading Recovery's power lies in the fact that it is preventative in nature. Children's learning accelerates while they are being tutored in Reading Recovery, and they develop a system for learning that is self-extending. They continue to learn more about reading and writing as they engage in meaningful literacy activities in classrooms.

Change is integral in Reading Recovery. Mechanisms for change are built into the Reading Recovery design and are reflected in the *Guidebook*, the internal processes of data collection and reporting, the ongoing professional development process, the standards and guidelines, and the international network.

Reading Recovery is one of the few highly dynamic programs in existence. Across the United States, 23 universities participate in the implementation and further development of Reading Recovery. Worldwide, university faculty members collaborate to examine research evidence and suggest research priorities.

One of the difficulties of United States school reform is the constant swing as we trade and discard various approaches. Successful approaches like Reading Recovery need to be secure so they can continue to develop deliberately and in slow increments supported by research. Only with this kind of thoughtful approach will we build successful programs that really work for our students.

One of the difficulties of United States school reform is the constant swing as we trade and discard various approaches. Successful approaches like Reading Recovery need to be secure so they can continue to develop deliberately and in slow increments supported by research.

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Author: D. Young
Publisher: Hodder & Stoughton Educational [England]

Comprehensive Test of Basic Skills
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Publisher: CTB McGraw-Hill

CTBS-5/Terra Nova Form B or **CTBS-5/Terra Nova Form B assessments**
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Gates-MacGinitie Reading Test
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Waddington Diagnostic Spelling Test (listed in Center et al., 1995)

Yopp-Singer Phoneme Segmentation Test or Yopp-Singer Test of Phoneme Segmentation (cited in Stahl et al., 1999)

APPENDIX A

INTERNET LETTER

EVIDENCE- BASED RESEARCH
ON READING RECOVERY

We are an international group of researchers who study reading development and interventions with struggling readers. This letter responds to a number of questions that have been raised by educators, policymakers, and parents about the effectiveness of Reading Recovery, a tutoring program designed for struggling first grade students. We hope the following summary analysis will be helpful to those who are considering the most effective ways to help struggling students become proficient readers.

These are not isolated opinions and the findings here are summaries of several peer-reviewed studies and syntheses of research on Reading Recovery. However, it is not our goal to discredit Reading Recovery, but as with any other program, outline its weaknesses to suggest how it can be improved. We believe this should be done for any program that is widely used to address reading difficulties.

Reading Recovery is not successful with its targeted student population, the lowest performing students. There is little evidence to show that Reading Recovery has proved successful with the lowest performing students. Reading Recovery targets the lowest 10-20 percent of first graders who have the prerequisite skills for Reading Recovery. While research distributed by the developers of Reading Recovery indicates a positive effect of the program, analyses by independent researchers have found serious problems with these conclusions. Studies conducted by researchers associated with Reading Recovery typically exclude 25-40% of the poorest performing students from the data analysis. In contrast, the studies funded by the National Institute for Child Health and Human Development (NICHD) and the Office of Special Education Programs (OSEP) in the Department of Education never purposely exclude a child. The data on efficacy is based on all those who are enrolled and available for follow- up. This is known as an "intent to treat" approach, which is standard for any evaluative research. Reading Recovery's "in-house research" does not follow an "intent to treat" approach. In fact, for the poorest readers, empirical syntheses of "in-house" and independent studies indicate that Reading Recovery is *not* effective. In Elbaum et al. (2000), the gains for the poorest readers instructed with Reading Recovery were almost zero. There is also evidence that students who do complete the Reading Recovery sequence in first grade lose much of their gains, even in the 65-75% of better students who finish the program (Hiebert, 1994; Shanahan & Barr, 1995; Snow, Burns, & Griffin, 1998; Tunmer & Chapman, in press b). A recent study by a group from New Zealand (Chapman, Tunmer, & Prochnow, 2001) shows that students in Reading Recovery may experience problems with self-esteem when they do not perform well. One of the authors, Chapman, stated in an interview with a New Zealand newspaper (The Press, November 1, 1999) "Students actually declined in self-esteem throughout the course of the program and continued to show no acceleration or improvement in the period following the programme."(See also Tunmer & Chapman, in press a).

Reading Recovery is not a cost effective solution. Even if it were maximally effective, Reading Recovery is not cost effective because the developers require one-to-one interventions by highly trained teachers. An analysis by Hiebert (1994) found that Reading Recovery was very expensive, costing over $8,000 per student, reflecting in part the costs of training. But Elbaum et al. (2000) found that students who participated in Reading Recovery did not outperform students who were provided one-on-one reading instruction by trained volunteers. At least two studies have compared Reading Recovery in a one-to-one grouping with a modified version of "Reading Recovery" administered to a small group (by definition this can't be Reading Recovery; Evans, 1996; Iversen, 1997). There was no advantage of one-to-one instruction over small group instruction. There are other first grade programs that are demonstrably efficacious, impact more students because they do not require 1:1 tutoring, are easier to implement, and do a better job

than Reading Recovery of improving student reading skills because they do not drop students (Snow et al., 1998; Torgesen, 2000).

Altogether, several studies indicate that teacher: student groupings of 1:3 work as well as groupings of 1:1 (Elbaum et al., 2000). Many of the current NICHD and OSEP pullout interventions utilize group sizes of 1:3 and higher. Thus, solely by virtue of the number of students who can be reached, Reading Recovery is at least 200% more expensive than other first grade interventions. Reading Recovery specifically states that it is not a program for groups, but provides little empirical support for this philosophy. This philosophy is inconsistent with the research on early intervention.

Reading Recovery efficacy studies do not use standard assessment measures. Most evaluations are restricted to the Reading Recovery developers' own, nonstandard measures. These same measures are used to determine which students will be considered as part of the sample (continued versus discontinued students). Thus, outcomes are inflated and unconvincing to the research community. The primary outcome measure used by Reading Recovery "in-house" researchers that has shown the largest effect is an assessment of "text reading" developed by the authors. However, even Reading Recovery specialists acknowledge that "The text reading measure is not an equal interval scale, that is, there are smaller differences in the beginning levels than at upper levels. For beginning readers, it is necessary to look at the reader's progress in more detail" (Askew et al., 1998, p.10). Obvious candidates would involve continuous progress monitoring as implemented in numerous research studies and norm referenced tests that are widely available and commonly used in reading intervention research. With use of standard measures like those implemented by independent researchers, student performance could be compared across studies, permitting calculation of response to instruction based on the number of hours of instruction across interventions (see Torgesen, 2000).

Reading Recovery does not change by capitalizing on research. Reading Recovery developers have been and continue to be resistant to integrating the findings of independent, scientifically based reading research into their program and making it more cost effective. The failure to attend to research in modifying the program is its major downfall. The lack of efficacy of Reading Recovery with the poorest readers is not surprising given the research base that highlights the importance of explicit teaching of phonics for this group. Reading Recovery teaches phonics, but the instruction is not sufficiently explicit. A common finding in research on Reading Recovery is that those students who do not respond are weak in phonological awareness (Snow et al., 1998; Tunmer & Chapman, in press b). In fact, research by New Zealand researchers Iverson and Tunmer (1993) in which an explicit phonics component was added to a standard Reading Recovery intervention reduced the time required to complete the program by about 30%. Morris, Tyner, and Perney (2000) found that a reading program constructed like Reading Recovery with the addition of an explicit component addressing spelling-to-sound patterns was highly effective, even with those students most at risk.

> Reading Recovery has been independently evaluated in New Zealand, the country in which it was developed. These researchers, who have cosigned this letter, asked that this summary be included:
>
> "In New Zealand, where Reading Recovery was developed, the programme has been independently examined on two occasions. Both studies found shortcomings. In essence, the programme is failing to meet the claims regarding its objectives and success. Senior Reading Recovery administrators have also overtly blocked attempts by graduate students to independently examine aspects of Reading Recovery. The New Zealand Ministry of Education has stated that because of copyright issues, the Ministry is unable to make changes to the program. Despite strong evidence in New Zealand, Australia, and the US that changes are needed to make Reading Recovery more effective, Reading Recovery leaders do not seem willing to incorporate the findings of such research to make the programme more effective. There is and has been considerable debate about the efficacy of Reading Recovery in New Zealand; this debate is indicative of an increasing dissatisfaction among researchers and some educators about the nature of the Reading Recovery programme. Finally, the Ministry of Education commissioned a report from the "Literacy Experts Group", released in 1999. Included in this report was a recommendation, unanimously agreed to by experts from the full spectrum of views on reading: "We recommend that Reading Recovery place greater emphasis on explicit instruction in phonological awareness and the use of spelling-

to-sound patterns in recognizing unfamiliar words in text." This recommendation has not been adopted by Reading Recovery."

There are three additions that would impact positively the number of students who benefit from Reading Recovery, their rate of progress, and reduce costs: (1) increased group size; (2) *explicit* instruction in phonics and phonemic awareness; and (3) use of standardized outcome measures and continuous progress monitoring. These additions have been ignored despite research summarized in the National Research Council report, *Preventing Reading Difficulties in Young Children*, which specifically outlined many of these concerns (Snow et al., 1998, pp. 255-258), the National Reading Panel report, the New Zealand Ministry of Education, and various reviews suggesting that such steps would greatly benefit students who are placed in Reading Recovery.

In summary, the Reading First initiative, recently enacted into law as part of the No Child Left Behind Act of 2002, requires the use of scientifically based classroom reading instruction for all students. Even with the best classroom instruction, there will still be some students who don't make adequate progress and need additional, more intensive instruction. Reading Recovery has not met the needs of these lowest performing students. Most significantly, its excessive costs can make it more difficult for a school to provide help for all students in need, especially those who are behind in the upper grades. Thus, Reading Recovery is not a productive investment of taxpayers' money or students' time and is a classic example of a "one size fits all" method. No single method works with all students. Methods like Reading Recovery that are rigidly implemented and limited in the number of components of effective reading instruction will not work with all students. Reading Recovery leaves too many students behind.

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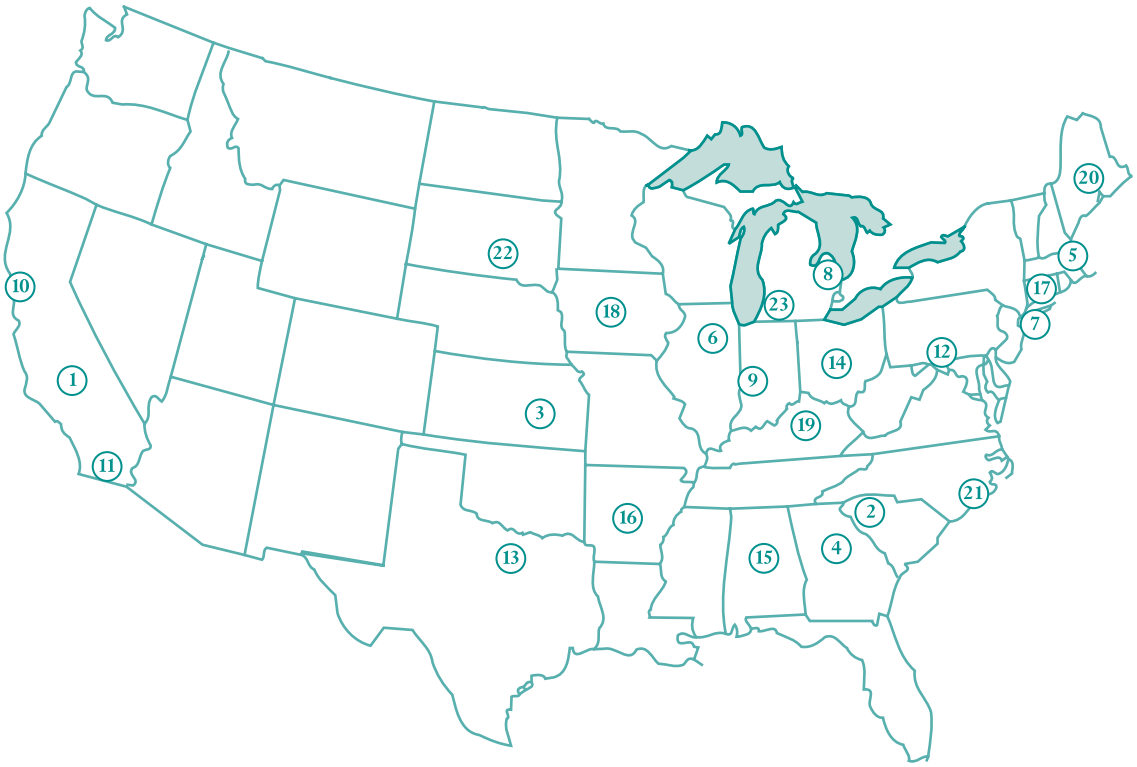
APPENDIX B

UNIVERSITY TRAINING CENTERS



1 California State University at Fresno
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Trainers: Jeanette Methven
Judith Neal

2 Clemson University
Dean: Lawrence Allen
Trainer: Diane DeFord

3 Emporia State University
Dean: Tes Mehring
Trainer: Connie Briggs

4 Georgia State University
Dean: Ronald Colarusso
Trainers: Sue Duncan
Clifford Johnson

5 Lesley University
Dean: William Dandridge
Trainers: Irene Fountas
Eva Konstantellou

6 National-Louis University
Dean: Elizabeth Hawthorne
Trainer: Tina Lozano

7 New York University
Dean: Ann Marcus
Trainers: M. Trika Smith-Burke
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Joe Yukish

8 Oakland University
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Trainers: Mary Lose
Robert Schwartz
Lee Skandalaris

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10 Saint Mary's College
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Barbara Schubert

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Trainer: Sharan Gibson
Patricia Kelly

12 Shippensburg University
Dean: Robert Bartos
Trainer: Janet Bufalino

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Billie Askew
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Gay Su Pinnell
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Trainer: Kathleen Martin

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17 University of Connecticut
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Trainer: Mary Anne Doyle

18 University of Iowa
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Trainer: Salli Forbes

19 University of Kentucky
Dean: James Cibulka
Trainer: Judy Embry

20 University of Maine
Dean: Robert Cobb
Trainer: Paula Moore

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APPENDIX C

RESPONSE LETTER

A BROADER VIEW OF THE EVIDENCE: READING RECOVERY AS AN EXAMPLE

We are an international group of scholars and researchers who have studied language, literacy, and learning in many contexts. We represent a wide variety of perspectives and a range of respected research methodologies.

On the national scene early intervention programs, specifically Reading Recovery, have recently encountered one-sided and biased attacks that have misrepresented the efficacy of these programs. We write this letter to provide accurate information for the policy decision makers who must protect the interests of children. Of particular concern are children who have extreme difficulty learning to read. Below are five points advocating a broad view of the relationships among education, research, and government.

1. Educational dollars belong to citizens, not to a small group of researchers who have a particular point of view.
Historically, local educational agencies have made decisions, based on their own examination of evidence, about the programs that will best serve children in their communities. Educational decision makers deserve access to a full body of evidence documenting the effectiveness of programs like Reading Recovery.

2. A scientific stance requires a complete, evidence-based analysis of any educational program.
Early intervention has been found to be effective in preventing literacy difficulties.[1] For example, for more than 20 years, Reading Recovery has been the subject of numerous studies using both quantitative and qualitative methodology. The preponderance of evidence suggests that this early intervention program has a positive and long-lasting effect on reading achievement in young children. Empirically controlled studies that are published in high level journals and fit the Department of Education's criteria for "scientifically based research" support the results of Reading Recovery.[2] Moreover, follow-up studies have documented the long-term effectiveness of Reading Recovery early intervention.[3] These studies have used nationally normed measures. Empirical studies as well as yearly evaluations document the fact that Reading Recovery children grow in self-esteem as they increase their literacy skills.[4] It is a mistake to deny children access to Reading Recovery based on selective and distorted reporting of a few studies, some unpublished or published without peer review, with flawed designs and/or with very small populations.

3. Policy makers have the responsibility to consider evidence from a wide range of perspectives and validated research models.
The attacks on Reading Recovery are based on a very narrow view of evidence that excludes a great many high quality and informative quantitative and qualitative studies. A variety of models of research have met rigorous criteria in the fields of education, sociology, psychology, anthropology, and other areas of social science. We need a range of perspectives in the search for educational improvement. For example, qualitative studies provide evidence of Reading Recovery's profound impact on teacher performance and development[5] and the dynamic nature of teaching in the program.[6] Qualitative research, carefully undertaken, represents accepted methodology in a broad number of fields and adds significantly to the body of knowledge we must consider in making educational decisions.

4. Responsibly and rigorously collected evaluation data provide legitimate and strong evidence of program success.
All programs serving children in education should collect and publicly report evaluation data. For

example, Reading Recovery's success has been carefully documented through systematic and simultaneous replications of the program for over one million children in 10,000 schools since its introduction into the United States. This documentation provides for public accountability for the progress of *every child served*. Reading Recovery has consistently reported results of program impact using accepted standard measures that are appropriate for young children. These results are available to the public.[7] When examining any program purporting to be "scientifically based," policy makers should ask for documentation of specific program outcomes for children.

5. An early intervention program like Reading Recovery is one part of a comprehensive literacy effort.

Early intervention programs serve as safety nets within comprehensive programs and insure that no child is left behind. Reading Recovery focuses on the lowest achieving first grade children and works in partnership with good classroom instruction, *but it is only one component of a comprehensive program.* Reading Recovery works as part of many different core instructional models for literacy education including basal approaches, Direct Instruction, Success for All, and other comprehensive programs.

We *do not* suggest that Reading Recovery or any other program be mandated or given preferential treatment. We *do* recommend that the federal government recognize the authority of local teachers, administrators, and board members to make educational decisions based on full and accurate disclosure of evidence.

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