

Direct Instruction

news

ADI Effective School Practices

DON CRAWFORD and RANDI SAULTER, Editors

Packed for Summer

Summer: [suhm-er]: the season between spring and autumn, in the Northern Hemisphere from the summer solstice to the autumnal equinox, and in the Southern Hemisphere from the winter solstice to the vernal equinox.

For us summer is a time to run through the sprinklers, plan bulletin boards, eat popsicles, write and rewrite syllabi, bask in the sun, tape together correcting pens, ride your bike for as long as you want, practice lesson delivery...

Welcome to the summer issue of the DI News. We are going to keep this introduction short as you are holding in your hands the biggest edition of the News that we can remember and we are old!

We hope you are reading this as you sit at the National Association for Direct Instruction conference. If you are not in Eugene, Oregon with us, start planning for next year. Really. Start. Now. Ok. You can wait until after you have read this issue.

One of the best things about editing the News is having opportunities to bring you success stories from the field. This issue contains reports of success from the Florida Keys, Singapore, Kansas City, MO and Troutdale, OR. We know that you will enjoy reading about the incredible student outcomes brought on by many of your dedicated and hardworking colleagues.

Kase Wickman has contributed a very exciting article about the *Connecting Math Concepts* revision. Read on to learn the enormity of the project and hear from authors, field test teachers and others involved in the revision.

From the National Institute of Direct Instruction we bring you a very clear description of Direct Instruction as a core curriculum. Additionally, learn about NIFDI's search for researchers.

We are pleased to present a very thought provoking article by Dr. Martin Kozloff. In this issue he brings an interesting point of view to the concept of teacher evaluation.

So, in an effort to keep to our word and keep this introduction short, we close by wishing you a restorative summer. Grab a beverage. Sit back. Enjoy this "mega-issue" of the DI News. **ADI**

SUMMER 2012, Volume 12 Number 2

In this issue

- 1 *Connecting Math Concepts* Revised
- 5 ADI News
- 5 *Reading Mastery* Aligns Closely with Common Core Standards
- 6 Amanda's Amazing Story Continued
- 8 Gold Standard Research and Direct Instruction
- 9 Teachers at Troutdale Charter School Win Cash Bonuses for Student Gains
- 11 DI as Core Instructional Programs
- 14 Putting Students on the Path to Learning
- 20 NIFDI is Looking for Researchers
- 21 Della Lamb Charter School Makes Great Strides
- 22 The Singapore Implementation
- 26 Martin's Musings

KASE WICKMAN

Connecting Math Concepts Revised for New School Year

A new top-to-bottom rewrite of *Connecting Math Concepts*, the premier Direct Instruction math program for students from kindergarten to sixth grade, will soon be completed and available for use in all schools. A total rewrite of the twenty-year old program, the curriculum is aligned with state benchmarks, and integrates tech-

nology both in the classroom and at home to enhance students' learning experiences.

The revamped editions of the program for kindergarten through third grade are already available for purchase through publisher McGraw-Hill. The

continued on page 3

Editors

Randi Saulter

Educational Consultant

Don Crawford

Arthur Academics Charter Schools
Portland, Oregon

Editorial Board

Kerry Hempenstall

Royal Melbourne Institute
of Technology
Victoria, Australia

Martin Kozloff

University of North Carolina,
Wilmington

Vicki Snider

University of Wisconsin, Eau Claire

ADI Board of Directors

Anne Berchtold

Lee County School District
Cape Coral, Florida

Timothy Slocum

Utah State University
Logan, Utah

Karen Sorrentino

Columbus, Ohio

Don Steely

iLearn
Eugene, Oregon

Rose Wanken

Chico Unified School District
Chico, California

Cathy Watkins

California State University, Stanislaus
Turlock, California

The DI News is published in the fall, spring, and summer by the Association for Direct Instruction. The Association for Direct Instruction is a professional organization dedicated to the development and dissemination of information and training for users of Direct Instruction.

The Association for Direct Instruction was incorporated in 1981 in the state of Oregon for educational purposes. ADI is a non-profit, tax-exempt corporation under Section 501(c)(3) of the Internal Revenue Code and is a publicly supported organization as defined in Sections 170(b)(1)(A)(ii) and 509(a)(1). Donations are tax-deductible.

A copy or summary of the current financial statement, or annual report, and registration filed by ADI may be obtained by contacting: ADI, P.O. BOX 10252, Eugene, OR 97440 (541-485-1293). ADI is registered with the state of Oregon, Department of Justice, #79-16751. Copyright © 2011 Association for Direct Instruction.

ANNUAL SUBSCRIPTION RATES: \$25 U. S.; \$30 (U. S. currency) Canada; \$40 Europe; \$60 airmail to Europe.
(ISSN 1540-0026).

Managing Editor: Lynda Rucker

Publisher: The Association for Direct Instruction

<http://www.adihome.org>

Layout and Design:

Beneda Design, Eugene, Oregon

Contribute to *DI News*:

DI News provides practitioners, ADI members, the DI community, and those new to DI with stories of successful implementations of DI, reports of ADI awards, tips regarding the effective delivery of DI, articles focused on particular types of instruction, reprints of articles on timely topics, and position papers that address current issues. *The News'* focus is to provide newsworthy events that help us reach the goals of teaching children more effectively and efficiently and communicating that a powerful technology for teaching exists but is not being utilized in most American schools. Readers are invited to contribute personal accounts of success as well as relevant topics deemed useful to the DI community. General areas of submission follow:

From the field: Submit letters describing your thrills and frustrations, problems and successes, and so on. A number of experts are available who may be able to offer helpful solutions and recommendations to persons seeking advice.

News: Report news of interest to ADI's members.

Success stories: Send your stories about successful instruction. These can be short, anecdotal pieces.

Perspectives: Submit critiques and perspective essays about a theme of current interest, such as: school restructuring, the ungraded classroom, cooperative learning, site-based management, learning styles, heterogeneous grouping, Regular Ed Initiative and the law, and so on.

Book notes: Review a book of interest to members.

New products: Descriptions of new products that are available are welcome. Send the description with a sample of the product or a research report validating its effectiveness. Space will be given only to products that have been field-tested and empirically validated.

Tips for teachers: Practical, short products that a teacher can copy and use immediately. This might be advice for solving a specific but pervasive problem, a data-keeping form, a single format that would successfully teach something meaningful and impress teachers with the effectiveness and cleverness of Direct Instruction.

Submission Format: Send an electronic copy with a hard copy of the manuscript. Indicate the name of the word-processing program you use. Save drawings and figures in separate files. Include an address and email address for each author.

Illustrations and Figures: Please send drawings or figures in a camera-ready form, even though you may also include them in electronic form.

Completed manuscripts should be sent to:

ADI Publications

P.O. Box 10252

Eugene, OR 97440

Acknowledgement of receipt of the manuscript will be sent by email. Articles are initially screened by the editors for placement in the correct ADI publication. If appropriate, the article will be sent out for review by peers in the field. These reviewers may recommend acceptance as is, revision without further review, revision with a subsequent review, or rejection. The author is usually notified about the status of the article within a 6- to 8-week period. If the article is published, the author will receive five complimentary copies of the issue in which his or her article appears.

Math Concepts... continued from page 1
fourth and fifth grade editions, currently undergoing field testing, will be finalized soon, with a sixth grade edition to follow.

Initially designed and released in the mid 1980s, there was plenty in the CMC program to update: state standards have changed, understanding of effective teaching methods and student participation has evolved and, most obviously, technology has advanced to change the face of interactive learning. Authors Siegfried Engelmann, Douglas Carnine, Bernadette Kelly and Owen Engelmann aimed for a streamlined learning experience for students, with tangible evidence of the program's effectiveness in the form of state test results.

The full series, now marketed as *Connecting Math Concepts: Comprehensive Edition 2012, Levels A-E*, is expected to be ready for use in the 2012 school year.

Co-author Owen Engelmann said that the program, implemented correctly, essentially guarantees student mastery of the concepts taught, and that mastery will be confirmed by standardized test scores.

Lyndsay Root, the marketing manager for McGraw-Hill's School Education Group, which publishes the series, emphasized the total makeover CMC has undergone.

"The authors basically took the strong foundation that we have from the existing program and they enhanced the track skill sequences to meet the new content grade level benchmarks for the common core," she said. "It's a complete rewrite, built ground up for the common core."

Engelmann agreed that the changing standards by which schools are measured were important to take into account during the revision. "The landscape for what kids need to learn has changed," he said. "The covenant we have when we work with schools is that if you appropriately place a kid, the result you'll get is that 100 percent of the kids will be able to score

90 percent or better on everything taught in the program."

What's Different

Math concepts included in the original program that are now outdated or rarely used—for example, Roman numerals—were de-emphasized in the revision.

"As pragmatic instructional developers, we don't want to teach anything that's inert," Engelmann said. "Inert things are dead ends that you don't use all the time. Later on we can teach it, but it doesn't have a huge number of applications."

It's not only the focus of the content that has changed with the revision, but the technique used to ensure mastery. The program uses heavy repetition to ensure mastery of newly learned skills and concepts so they can be utilized in concrete applications. According to Engelmann, a combination of displays and oral instruction are helpful in making sure students fully understand concepts. In the previous version of the program, students were pushed from one idea to the next hastily.

"The key is that we make sure we give students enough practice to apply their strategies and discrimination to apply the strategies," he said. "Even for first graders—they might stumble the first time or two, but after three days they'll be able to read and write numbers from dictation. That's a key change between the old version and the new version: in the new version they get 20 examples, whereas in the old version it would maybe be four or five."

The integration of projected slides and power point presentations was meant to maximize classroom time by reducing time students and teachers have to spend copying problems and questions onto the chalkboard or into a practice book. When the problems are pre-made and projected on a screen, teaching time is streamlined.

"You can present three to four times as many examples in a display format as in a written format," Engelmann said.

"In a written format, you have to wait for the kids to write it, and it takes three or four times as long as it would to respond to them. Initially, when things come in, we want to give them a hot series where they're able to respond to things quickly, orally, and get a lot more practice."

Instead of the write-first emphasis of the previous incarnation of the program, Engelmann said, "We're changing from a write-first emphasis to say, then do, then write. Now we're using hot series."

Additionally, parents will have the opportunity to help their students get extra practice at home via an online supplement.

"The practice software for students, which includes additional practice opportunities and math facts practice is all new," Root said. "It's online and available for that home and parent connection."

Field Test

Of course, revamping the entire program wasn't as simple as getting the authors together to make a few changes. After extensive research and planning, each level of the program needed to be tested extensively on actual students in real classrooms.

In winter 2012, for example, levels D and E of the program were being

Help us out!

Contribute your story of success with DI! We want to hear from you!

You all have stories and it is time to share them. This is *your journal*—let it reflect your stories!

See the directions on page 2 on how to make a contribution. You'll be glad you did.

taught in two schools near Portland, one in Baltimore, three in Guam, a school in Illinois and a school in Texas. Teachers scanned PDFs of their own notes and student work, filled out questionnaires and communicated directly with the program's authors about questions and problems they ran into in the course of the lessons.

Mary Massey, a fifth grade teacher at Reynolds Arthur Academy in the Portland suburb of Troutdale, Ore., participated in field testing and said she cherished the direct collaboration with the program's authors.

"[Bernie Kelly] is so open and receptive to anything," she said. "Any concern I have, she and I email back and forth and back and forth. On Presidents Day, I contacted her at 6 a.m. and there was a massive fix in place by 8 that night.

"That's another part of this whole experience, being part of a team and on the field team. They get these oopsies corrected right then and there."

Additionally, field test teachers actually recorded their classroom sessions on audio tapes so that the authors could tweak timing and wording for quick, efficient lessons. The audio is transcribed and analyzed along with the PDFs and individual teachers' feedback, and changes can be emailed to the teachers for implementation, sometimes before the bell even rings for class the next day.

Jared Austin, a fifth grade teacher at Gresham Arthur Academy in Gresham, Oregon, also participated in the field test.

"It's been a very smooth process," he said. "The authors are definitely very

interested in the performance of our kids and how it's going."

The program, in a teacher's hands, is meant to be able to mold any student to mastery of the math concepts. The program is especially popular in classrooms serving at-risk students for this reason.

"We want to enable average teachers to be exemplary technicians," Engelmann said.

Root backed Engelmann's confidence in the rewritten material, saying that the thought put into precise explanations of concepts and practice would assure success for students.

"Between the instructional sequences for the teacher and the routines that students can follow, the program is built in with the remedies," she said. "Nothing's left for chance."

The schools and organizations listed below are institutional members of the Association for Direct Instruction. We appreciate their continued support of quality education for students.

American Horse School
Allen, SD

American Preparatory Academy
Draper, UT

Awsaj Institute for Education
Qatar

Baltimore Curriculum Project Inc.
Baltimore, MD

Bear River Charter School
Logan, UT

Cape York Aboriginal Australian Academy
Cairns, Australia

Centennial Public School
Utica, NE

City Springs School
Baltimore, MD

CUSD300
Carpentersville, IL

Clarendon School District District Two
Manning, SC

David Douglas Arthur Academy
Portland, OR

Dreamcatcher Direct Instruction Centers
Berthoud, CO

Educational Resources Inc.
Ocala, FL

Foundations for the Future Charter Academy
Calgary, AB

Gering Public Schools
Gering, NE

Gresham Arthur Academy
Gresham, OR

Hinckley - Finlayson Sch Dist
Hinckley, MN

Keystone AEA Instructional Services
Elkader, IA

KRESA
Portage, MI

Legacy Academy of Excellence
Rockford, IL

Leigh Brouger, McGraw-Hill School Education Group
Dewitt, MI

Minitare Public School
Minitare, NE

Mescalero Apache School
Mescalero, NM

Morningside Academy
Seattle, WA

Nay Ah Shing Abinoojiyag
Onamia, MN

NIFDI
Eugene, OR

Portland Arthur Academy
Portland, OR

Ramah Navajo School Board
Pine Hill, NM

Reynolds Arthur Academy
Troutdale, OR

San Carlos USD #20
San Carlos, AZ

Santee Community School
Niobrara, NE

St. Helens Arthur Academy
t. Helens, OR

Standing Rock
Bismark, ND

Standing Rock Community School
Fort Yates, ND

USD #428
Great Bend, KS

Woodburn Arthur Academy
Woodburn, OR

Teacher Praise

Parent and teacher feedback about CMC's new iteration has been overwhelmingly positive. Austin recounted that another teacher spotted him grading students' work at a basketball game and asked him what grade he taught.

"He was stunned at the level that they were already at being able to do this level of math," Austin said. "It's pretty impressive."

Parents and older siblings also marveled at the leaps students were making, he said.

"It covers standards so perfectly and so well," Austin said.

Root said that parents and teachers alike had sent "really positive" feedback at every level.

"They really like the new technology and added features," she said. More than ease of use and technology, how-

ever, parents and teachers loved that the program didn't only teach with an eye to performing well on state standard tests. Concepts are taught thoroughly so that students don't just parrot facts—they have a solid understanding and firm foundation to build from.

"Overall, they're really seeing the standards have more rigor and the programs have more rigor and go above and beyond," Root said. "We don't just stop at the standards. We go above and beyond that as well."

Massey said that three students she taught two years in a row, first as fourth graders and then as fifth graders, learned concepts at a much faster pace as fifth graders, using the new program, than they had the year prior under the old version.

"This new version is extremely interactive," she said. "There's less teacher talk, which is amazing. You become management and people get glassy-eyed if you talk too much."

Additionally, Austin noted that with academic conference comes social confidence, which is especially important in the crucial transition between elementary school and middle school.

"These kids are so well-prepared for middle school and high school math in the future," he said. "There's a lot of parents and kids who are worried about switching schools and meeting new people and new teachers, and to know that they're strong academically in that area is a big plus and a comfort for them."

Massey enthusiastically endorsed the program as well. "In comparison with all the other math programs I've seen, the CMC revision is an A+," she responded when asked what grade she would give the rewrite. "I'd say it's tops."

Massey put it simply, and all involved seemed to agree: "I am in love with the program." [ADI](#)

AMY JOHNSTON, Executive Director, Association for Direct Instruction

ADI News

This month marks my first year at ADI. I would like to thank ADI's members, staff, board of directors and supporters for a wonderful first year.

ADI continues to be a leading source of DI training and news from the field. We know, however, that there is much

more that needs to be done.

This year was one of change and transition for our organization. The road to building a sustainable, effective organization has had its share of bumps and roadblocks, but you can be sure that despite the challenges we

will push forward.

The year to come promises to be both exciting and busy and I look forward to sharing it with you. Until then, thank you again for a wonderful first year and for your continued support of ADI.

All the best,
Amy Johnston [ADI](#)

CHRISTINA COX, Public Relations and Marketing Manager National Institute for Direct Instruction

Reading Mastery Aligns Closely with Common Core State Standards

Standards, accountability and curriculum weigh heavily on the minds of today's administrators and educational decision-makers. In recent years, the Common Core State Standards have

become a universal language for schools across our nation and play a significant role in instructional decisions made in schools, including curriculum selections. An evaluation of

Reading Mastery Signature Edition (RMSE), a well-known and commonly used Direct Instruction (DI) program, has been conducted by McGraw-Hill to determine the alignment of the program's content with the English Language Arts common core standards.

The Common Core State Standards (CCSS) were developed with the

intent to provide a clear framework of what students are expected to learn and to ensure consistent standards, regardless of where students attend school. The standards are organized by grade level into two categories: English Language Arts (ELA) and Mathematics. In ELA, there are five strands: Reading, Writing, Speaking and Listening, Language and Media and Technology.

Overall, *RMSE* met 95% of the ELA Standards prescribed in the CCSS. Only 23 out of 427 standards are not covered by the program. Schools using *RMSE* can be assured the coverage in each of those standards addressed is superior to traditional basal texts. In

RMSE, students are expected to master the concepts presented to them and are routinely tracked on their performance to ensure mastery. As a result, students don't just cover the standards that *RMSE* addresses – they master them!

Moreover, the standards that are not covered by *RMSE* can be met through lessons and activities teachers regularly promote in their classrooms. For example, the following kindergarten standard is not met through *RMSE*: “With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including in collaboration with peers.” Teachers routinely introduce digital tools, such as comput-

ers and word processing, to their students within other subject areas and contexts during the school day.

To see the correlations by grade level, visit McGraw-Hill's website at <https://www.mhonline.com/programMHID/view/0076181936> and click on the “Learn More” button found on the right hand side of the screen.

For more information on how to implement Reading Mastery and other DI programs so that they are effective with *ALL* students, contact the National Institute for Direct Instruction (NIFDI) at info@nifdi.org or 877.485.1973. **ADI**

LINDA CARNINE

Amanda's Amazing Story Continued

Over a decade ago, Amanda Bhirdo received the Wayne Carnine Most Improved Student Award showing the greatest improvement in Direct Instruction learning for that year. Amanda flew from the Florida Keys with her mother, Marsha Rodman, to the Eugene, Oregon's 2001 Direct Instruction Conference to receive it. Amanda was born with significant developmental delays and worked very hard with her mother for six to eight hours a day starting in kindergarten. She entered kindergarten for the fourth year, which is equivalent to special education third grade, and she went on to progress through Reading Mastery, Language for Learning and Thinking, Spelling Mastery, Reasoning and Writing, Connecting Math Concepts, levels 1-6 and later Corrective Reading, Decoding and Comprehensive series with a host of other DI Material. Although some of the initial instruction was delivered with resistance under the kitchen table of the home school room, Amanda soon became successful in learning to learn, appreciating the positive attention and other rewards she earned for her hard work and academic progress.

(An article in the DI News, Spring, 2003, volume 3, number 1, details the

extensive intervention Amanda's mother, Marsha, implemented with Amanda. <http://www.adihome.org/>)

This spring, 2012, Amanda will graduate with honors from high school and college with an Associate's Degree from Florida Keys Community College. In three years, she has completed over 77 semester-long courses in both high school and college with a weighted high school GPA of 4.56 and a college GPA of 3.9. Many dual enrolled students take college courses to substitute for their high school courses. However, Amanda's mother wanted her to maximize her learning, and so she made Amanda take all her high school courses, plus another 115 credit hours of college courses, despite the fact that she only needed 60 credit hours to graduate with her AA degree. Amanda was unable to absorb the environment like other students because of her disability, so her mother encouraged her to learn through her studies. Beyond the general education courses, Amanda took many electives to make her a well-rounded person such as courses in music appreciation, art history, anthropology and psychology. For an AA degree, two courses in English, science, and math are required. Marsha made

her take three. Since she wants to be a graphic designer, Amanda took all the courses available in the applied arts, such as graphic design, photography, web design, ceramics, and other art classes to prepare her for her career in graphic design. For the easier courses, Amanda would attend classes by herself. For the tougher courses, her mother would attend classes with her to take notes and tutor her through her course work, coordinating all assignments with all her professors. Most significantly, Amanda recently was accepted to Miami International University of Arts and Design. In July, she



will move near campus and share a condo with a friend to continue her studies independently in graphic design as a junior. Another milestone Amanda recently achieved is passing the Florida State Department of Motor Vehicles test for her driver's permit.

At the beginning of this journey, a school psychiatrist conducted an extensive intellectual and psychological evaluation of Amanda when she was 7 years old. Her IQ was estimated at 63, and he labeled her as developmentally delayed. He told Marsha, "She may never learn to read, write, spell, or do math. She is mildly mentally retarded and will probably peak at a third grade level. She will never be a rocket scientist and will grow up living in a group home!" Those words did not sit well with Marsha, yet she had already noted that Amanda did not reach any of the milestones that often parents brag about: She did not walk, talk or sing at the age other children did, nor did she question what occurred around her. Amanda was always at least two to four years behind her peers. Marsha's thinking about this was, "When she turns 18, no one will know or care how old she was when she took her first steps or learned to talk. Delays are nothing in the larger scheme of things."

Through diligent effort with daily tutoring primarily using Direct Instruction curriculum, Marsha succeeded in teaching Amanda basic academic skills as well as ensuring Amanda acquired necessary social and physical skills. Over these years, Amanda excelled in her visual art instruction program and was soon drawing beautiful pictures of animals and landscapes. (Years ago, Amanda sent a great picture of a raccoon to Siegfried Engelmann in appreciation for all the carefully designed instructional programs he wrote that allowed her to learn far more than most children with her level of developmental disability.) According to Marsha, "After Direct Instruction somehow rewired her brain for language, it also kicked into gear her sensory integration, allowing her to learn."

The psychiatrist who evaluated Amanda and diagnosed her with Infantile Autism completed evaluations every two years to mark her progress through her grade and middle school years while being immersed in Direct Instruction. Marsha reported he was "speechless" after completing each evaluation, saying, "I've been in the practice for over 30 years, and I've never seen anything like it! Whatever you are doing, keep doing it!" Testing after testing from educators, psychologists, occupational therapists all said the same thing, that her scores were no longer in the range of other clients with autism. Years before, testing had indicated that she might peak at a third grade level, if that. But interestingly enough, she never peaked and Amanda is still growing. Who would ever have thought that she could function independently, let alone graduate with honors?

Marsha followed that advice of the psychologist and continued to support Amanda's learning over this past decade. There were, of course, many challenges, but each challenge was taken in stride and Amanda overcame each obstacle. The Occupational therapist thought she would never be able to ride a bike, and now she can. The Speech Therapist never thought she could sequence her ideas into words; now she can. Educators never thought she could learn, and she did. And when Amanda passed her driver's test

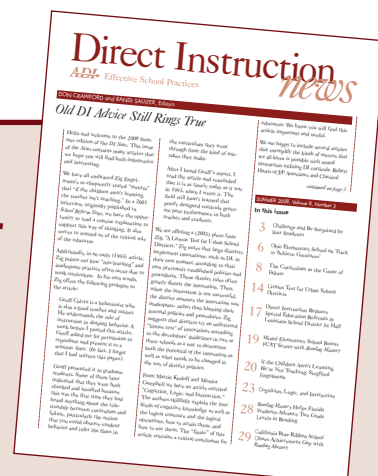
on her own efforts, her mother knew then that all limitations were gone. Amanda could do anything she set her mind too. Even though Amanda was already in college and did not need to take the College Placement Test, Amanda's mother would periodically make her take the test to measure her reading ability. What her mother found was that comprehension was high on known material, but weak on subjects that required background knowledge, like questions on political affairs. Most recently after taking a high school course on Reading for College Success, on the College Placement Test, the PERT, she scored 94. For college entrance, those without disabilities need a 104 to pass. With a few more trials, she should be able to get a passing score. On a positive note, college professors who have known her for her duration in college have commented on how she has blossomed socially with her peers. Amanda smiles and talks to everyone, making friends with other college students. It seems that everyone loves Amanda because of her sweet disposition and her kind heart. But the beauty of Amanda is how she has grown into a responsible, caring adult. She is self-motivated and takes learning as an adventure. One month away from high school graduation, Amanda signed up

Dear friends in the DI community,

What do you remember most about your first experience seeing or using DI?

You no doubt have plenty of stories to share about your first time with Direct Instruction, whether it was 30 years ago or last month. We hope to hear these stories—and learn from them—in upcoming issues of the DI News.

Send us your responses—short answers are fine—to Randi Saulter, itsrandi@aol.com. Let us know your name and your affiliation (school, organization, synagogue, rifle club, political party, etc.). Have a good idea for a future question? Let us know that, too! —Don & Randi, editors



for yet another high school course, this time in guitar. She realized she will still be in the course long after she graduates, but it is something she wanted to do and will give her something to do during the summer.

Yet her passion continues. Despite her weakness in oral communication, she excels in written language and enjoys writing stories. Not only does she want to be a graphic designer, she wants to become a Christian Fiction writer as well. Ever since middle school, Amanda would sit at the computer for hours and write and write. This passion to be a writer began with the fun assignments in Reasoning and Writing and later with Expressive Writing, and Adventures in Writing.

No DI program has passed the eyes of Amanda; DI is what created her to be all that she was created to be—an independent, responsible person. And Amanda made a very profound statement about her education. She said, “Mom, when it comes to technology, I do not have a disability.” With all general education courses completed for her bachelor’s degree, the only courses left are graphic design courses, all of which are project based. It is with this method of learning that she works well independently.

Although Amanda’s future seemed set in stone at an early age with little hope of even having a career, the persistence of her mother’s teaching efforts and the right curriculum have set Amanda on an

entirely different path than anyone could have envisioned when she was first diagnosed. In grade school, she was held back two years, and now with her AA degree, she has caught up and gone beyond her peers. As her mother had envisioned, she could get caught up on the “tail end of things.” And the “miracle” continues: this spring Amanda will not only graduate from high school and community college, but she will be living on her own as a junior, only two years away from her bachelor’s degree.

(For details of Amanda’s course of study, see “A Study of Intensive, Systematic Direct Instruction for an Autistic Child” – Dissertation by Marsha Rodman.) [ADI](#)

NATIONAL INSTITUTE FOR DIRECT INSTRUCTION

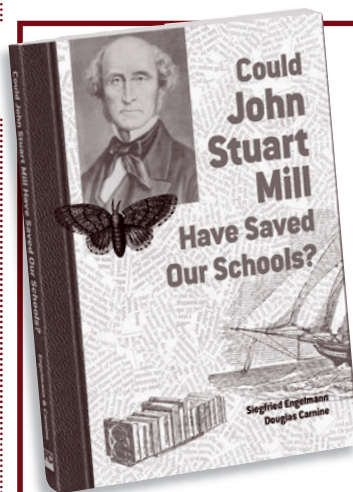
Gold Standard Research and Direct Instruction

The latest fad in the educational research community is randomized control trials (RCTs), sometimes described as the “gold standard” of research. The Office of Research and Evaluation at the National Institute for Direct Instruction (NIFDI) has identified over forty studies of Direct Instruction that use randomized control trial designs. The studies have examined all parts of the Direct Instruction (DI) curriculum, including reading, mathematics, and language. The earliest RCTs were published in 1975, and more than ten have appeared since the turn of the 21st century. The most recent RCTs have occurred throughout the country with various populations. Topics have included areas such as the impact of the FUNNIX reading curriculum on Head Start students in the Atlanta region, Reading Mastery with K-2 students in Florida, and high achieving middle class students in the Midwest.

In a presentation at the 2011 meetings of the Association for Behavior Analysis International, Cristy Coughlin, former Assistant Director of Research at

NIFDI, reported results of a meta-analysis of these RCTs. Her analysis, which included 95 different comparisons, found strong, positive results. Using the “effect size” metric that is common in educational research she found that the DI programs had effects that were, on average, more

than twice as high as the level commonly thought to be educationally significant. These strong effects appeared in reading, language and mathematics. They were virtually identical for studies involving general education and special education students. There were also no differences in effect sizes across time. That is, the strong effects of DI on student achievement have appeared from the 1970s through the turn of the new century. [ADI](#)



Cost:
\$25.00 list
\$20.00 member price

Could John Stuart Mill Have Saved Our Schools?

Siegfried Engelmann & Douglas Carnine

This book is a fascinating read, with many examples and interesting historical asides. It postulates an instructional methodology that could have been ours a century ago had Mill included education as a science and not an art. More importantly, it shows that if today’s educators adopt instruction that is consistent with Mill’s methods, education could still become a science resulting in our schools improving dramatically.

To order: Toll Free: 1-800-995-2464
Online: www.adihome.org

Teachers at Troutdale Charter School Win Cash Bonuses for Student Gains

Introduction

By Don Crawford, Arthur Academies, Portland, Oregon

The Arthur Academies are six small (one class per grade) all-Direct Instruction elementary charter schools in and around Portland, Oregon. Founded by Chuck Arthur between six and ten years ago, they are currently led by your editors, Don Crawford and Randi Sauter. As with all charter schools we take all comers, using a lottery to fill any spots in our kindergarten classes that are not filled by siblings of current students.

We use *Reading Mastery Signatures* in Grades 1 and 2, *Classic* in kindergarten, and *Reading Mastery Plus* in the upper grades. We use *Language For Learning* in kindergarten (for those students who don't test out of it), *Signatures Language* in Grades 1-3, *Expressive Writing II* in fourth grade and *REWARDS Writing: Sentence Refinement* in fifth grade, and in our two schools with middle grades we use *Essentials for Writing*. The spelling curriculum built into *Reading Mastery Signatures* is used where we have it and *Spelling Mastery* is used in the grades where we don't. (We are gradually replacing *Plus* with *Signatures* as we can afford it.) We used the prepublication version of the new *Connecting Math Concepts* (CMC), having helped in the kindergarten and fifth grade field tests, and we are thrilled with it. We are pleased to be purchasing the new *CMC* as it becomes available. [See the article "Connecting Math Concepts Revised for New School Year" in this edition]. Where we have middle grades we use *Essentials for Algebra*, and in the one school with eighth graders,

those who have mastered *Essentials for Algebra* go on to *Saxon Algebra*.

We are working very hard to refine our practices. Lesson progress and mastery data is reviewed weekly for every group. We respond to any test or independent work assignment in which less than three fourths of the students are at mastery (90%) or better. Systematizing our behavior management has been a priority this year. A minimum 3:1 ratio of positive interactions guides our management plans. There is also part of the plan that includes mild consequence and the use of timeout. We use jet evaluations (www.jetevaluations.com) for evaluations of all of our teachers and principals, which ties well into our professional development and our systematic coaching. Everyone who works in Arthur Academies is striving to get better and to promote higher achievement by our students. Between 85% to 95% of our tests (depending on the school) show over three fourths of the group at mastery and over 90% of our students are in the Direct Instruction level expected for their grade. We submitted three years of state test scores to a grant competition for charter schools across the nation sponsored by New Leaders for New Schools. The grant, called Effective Practice Incentive Community, used value-added analysis of each school's test scores to identify charter schools creating the highest gains in student achievement over the past three years. We are very proud of the Reynolds Arthur Academy who came out ahead of all other charter schools in the United States. The following article was on the front page of *The Oregonian*, the premier newspaper in Oregon.

Teachers at Reynolds Arthur Academy in Troutdale spurred the biggest gains in individual students' reading and math scores of any elementary charter school in the nation the past two years. For that, a national charter group soon will hand each of them and their principal bonuses of \$4,000 or more.

Many teacher unions, including the one in Oregon City that turned away millions of dollars in federally funded bonuses last fall, oppose rewarding teachers for raising student test scores.

But not Reynolds Arthur Academy's non-union teachers. They express only mild discomfort, if any, at having their professional effectiveness judged by how much their students improve on multiple-choice tests.

"I think it's a fair assessment," says fifth-grade teacher Mary Massey, who notes that schools and students in every state face pressure to do well on standardized state tests.

Whether and how to use student achievement gains to evaluate and reward teachers is one of the hottest topics in education these days. The Obama administration helped fuel the controversy by requiring some schools and states to institute test score-based bonuses for teachers to win millions of dollars in federal grants.

One such pot of money, called the Teacher Incentive Fund, was eventually turned down in Oregon City but will fund the bonuses at Reynolds Arthur Academy. Sixty-six schools in seven Oregon districts also accepted the grants and are preparing to reward some of their faculty for student gains.

Still, the national obsession with test scores makes many educators squirm.

A score is a crude snapshot of what a student knows and may reflect

The Oregonian Copyright 2012 by OREGONIAN PUBG CO. Reproduced with permission of OREGONIAN PUBG CO via Copyright Clearance Center.

poverty, health or other conditions that schools can't control, they say.

But Reynolds Arthur Academy teachers and students show no aversion to tests. Helping students do well on exams—including state tests, but primarily the ones teachers give week in and week out to monitor learning—is at the heart of Arthur Academies' mission.

Drill by Drill

The Troutdale charter school uses a highly scripted teaching method developed decades ago at the University of Oregon and since fine-tuned. Teachers constantly measure how well students do—and most of the time, all perform at least 90 percent of their math, spelling, reading and writing tasks correctly. On 2011 state tests, for example, 95 percent of students met—and nearly half exceeded—reading standards.

That's largely because the school uses explicit, well-tested step-by-step instruction with lots of oral repetition and a huge emphasis on reading, math, writing, vocabulary and spelling.

"Touch in your book and follow along," teacher Julie Leabo tells her second-graders during a weekly review. "What underlined word means hard to believe?"

"Amazing," the appointed student answers.

"Everybody, what word?" Leabo asks the class.

"Amazing!" 29 young voices respond.

When students don't master a concept as expected, teachers accept full responsibility and reteach the material until the student gets it.

Step by step, drill by drill, repetition by repetition, Massey, Leabo and the other teachers ensure that nearly all students master everything they're taught, even when it's demanding—such as finding Turkey on a map (grade two), multiplying fractions (grade 4) or dissecting the poetry of Walt Whitman and knowing fine points of grammar (grade 5).

Given that teachers at this charter school and the five others in the Arthur Academy network accept that it's the teacher's job to make sure students learn, why wouldn't the students' improvement on tests be a fair way to evaluate—and give cash awards—to teachers?

Potential Flaws

Yet the schools' retired founder and current board chairman, Charles Arthur, sees several potential flaws.

Helping students do well on exams—including state tests, but primarily the ones teachers give week in and week out to monitor learning—is at the heart of Arthur Academies' mission.

Students with profound learning challenges, such as unfamiliarity with English or health problems, might not make large gains even with excellent teaching.

And because Oregon measures improvement starting only in fourth grade—excluding gains made in the first four years of elementary school—some of educators' most significant work isn't measured. Arthur Academy teachers make gigantic gains with students in kindergarten and first grade, Arthur says, so most students don't have room to make similar strides in grades three and four.

Finally, he sees teachers at his schools as working on the same team and does not wish to pit one against another.

Still, he is giddy that Reynolds Arthur Academy's success has been recognized and wouldn't think of asking teachers to turn down the bonuses.

Neither would fourth-grade teacher Julie Maes, who thinks the reward rec-

ognizes exactly what she and her colleagues strive to accomplish.

"One of the things I like best about this school—we teach rules, we teach procedures, so our kids find it easy," she says. "It's not just me, it's the whole academy. If there is an area our students aren't getting, we know what to do and we reteach it. We make sure our students learn, and I'm tickled pink" to get cash because test scores showed it's working.

Similar to the golden tickets she hands out and the pizza parties she holds when students do well, "the reward makes you want to work hard," she says.

Cheers for a Test

In Maes' classroom, fun, compliments, smiles and silliness abound. But student achievement, as measured by classwork and quizzes many times a day, is paramount.

Today, students can't wait to read poems they've written, one praising Maes as a beautiful, excellent teacher, another rhyming roses with "ugly noses."

The students also drill on how to multiply fractions and where to place commas; they take timed tests on subtraction and long division; and they solve for angles that would confound some adults.

Chandler Hill, 10, describes the class as "fun." A spelling "game" in which the class divides in two and races to spell words is a favorite. Why is that fun? "Because we practice, and it sees how well we've learned."

Indeed, when Maes announces that it's time for a spelling test, nearly every hand in the class rises and shakes back and forth—the way Maes has taught them to give a silent cheer.

Cheering for a spelling test?

Gaby Abac, who flawlessly spells every word from "government" to "their," explains: "They practice a lot and they really want to see if they got 100 percent or if they improved."

Gaby was new to Arthur Academy as a third-grader and found the lessons hard at first, particularly in math. Now, she says, “it’s so easy.”

“Show Me”

Reynolds Arthur Academy was chosen as the nation’s Gold Gain School among elementary charters this year by Effective Practice Incentive Community, a program of the national non-profit principal training group New Leaders. The program aims to identify medium- and high-poverty charter

schools creating the biggest student achievement gains, then figure out what to do to get great results and share those techniques.

To compare year-to-year gains among students taking different state tests, the group turned to the Princeton-based firm Mathematica Policy Research, well known for its measurement expertise in education and health care.

In all, 88 charter schools in 25 states nominated themselves as high-gain

elementary schools, including all six Arthur Academies. From them, Mathematica found Reynolds Arthur Academy made the biggest gains.

“We’re super teachers because we have a super program,” Massey says. “These kids learn things at a very advanced level. The way we teach has been tested over time, and we know it’s going to produce mastery. And I love it. Every day, 100 percent. We check them every day—show me—and everything’s right.” **ADI**

KURT ENGELMANN, President and CHRISTINA COX, Public Relations Manager, National Institute for Direct Instruction

Direct Instruction as Core Instructional Programs

There is a common misconception that Direct Instruction (DI) programs were not developed or intended for core instruction. Often, DI is relegated to the role of intervention for low-performing students. However, as described below, DI was designed from the beginning to provide core instructional programming in reading, math and language arts. DI has been widely used and validated to be effective as core instruction for a wide range of learners. In fact, the developers of DI advocate for a comprehensive, full-immersion model using DI as the core instructional curriculum for all students—with all interventions conducted within the DI core.

DI Designed as Core Programs

Direct Instruction programs have been designed as core programs that can accommodate the full range of student learners. DI offers a unique, step-by-step approach to learning that requires placing students in the program matching their current skill level and teaching students to a high level of mastery daily. Students are provided with carefully designed, clear instruction that teaches skills at the point where students place. Students with fewer skills are placed at a lower point

in the program with additional practice on critical skills as needed. Students with more skills are placed at a higher point in the program. Students can be provided with instruction on a Fast Cycle/Skip Schedule to accommodate an accelerated pace after their original placement as their rate of mastery indicates. In the DI math program, *Connecting Math Concepts: Comprehensive Edition (CMCCE)*, additional “parallel” lessons are provided for students who could benefit from extra practice.

Direct Instruction programs are not designed to be used in conjunction with other programs. Mixing other instructional approaches in the same subject matter with DI can confuse students because of the specific strategies used in the DI programs. For example, *Reading Mastery (RM)* initially teaches students the sounds letters make, rather than the names of the letters. Students learn letter names later in the program after students have mastered the sounds. Many students, especially at-risk students, may become confused if they receive instruction in *RM* for part of the day and then receive instruction in another program that teaches letter names. This ultimately slows students’ overall progress in learning to read.

Because of its design and proven effectiveness with a wide range of students (discussed below) many educational organizations agree that DI programs are appropriate as core instructional programs. From the Florida Center on Reading Research: “Direct instruction is appropriate instruction for all learners, all five components of reading, and in all settings (whole group, small group, and one-on-one).” (See <http://www.fcrr.org/Curriculum/curriculumInstructionFaq1.shtm>) Read more about the design of using DI as a core program at <http://www.nifdi.org/15/model-components/single-program>.

DI and the Common Core State Standards

In recent years, the Common Core State Standards have become a universal language for schools across our nation and play a significant role in instructional decisions made in schools, including curriculum selections. The Common Core State Standards (CCSS) were developed with the intent to provide a clear framework of what students are expected to learn and to ensure consistent standards, regardless of where students attend school. The standards are organized by grade level into two categories: English Language Arts (ELA) and Mathematics.

An evaluation of *Reading Mastery Signature Edition (RMSE)*, a well-known and commonly used DI program, has been

conducted by McGraw-Hill to determine the alignment of the program's content with the English Language Arts common core standards. Overall, *RMSE* met 95% of the ELA Standards prescribed in the CCSS. Only 23 out of 427 standards are not covered by the program. Moreover, the standards that are not covered by *RMSE* can be met through lessons and activities teachers regularly promote in their classrooms. For example, the following kindergarten standard is not met through *RMSE*: "With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including in collaboration with peers." Teachers routinely introduce digital tools, such as computers and word processing, to their students within other subject areas and contexts during the school day.

The newest addition to the DI math family of programs—the 2012 edition of *Connecting Math Concepts: Comprehensive Edition (CMCCE)*—was specifically designed to meet the Common Core State Standards and has a 100% alignment. The first three levels of the program are available now and the remaining three levels will be available for the 2012-13 school year. This program not only meets the CCSS, but also provides a number of improvements to the previous edition, including extensive oral practice on problem types before students work them independently.

Schools using *RMSE*, *CMCCE* and other DI programs can be assured the coverage in each of those standards addressed is superior than with traditional texts. In DI, students are expected to master the concepts presented to them and are routinely tracked on their performance to ensure mastery. As a result, students don't just cover the standards that DI programs address – they master them!

DI Core Programs as Part of the Comprehensive DI Reform Model

Since the late 1960s, DI programs have been incorporated into an integrated approach to reforming schools—the comprehensive Direct Instruction

reform model (also called the full immersion Direct Instruction model). Schools adopting the comprehensive DI model implement DI programs as the core programs in most or all major subject areas (reading, language arts and mathematics). This allows for students to receive effective instruction with Direct Instruction throughout the day as a means for accelerating their performance in all major subject areas. For a description of the comprehensive Direct Instruction model, see the Developer's Guidelines: http://www.nifdi.org/15/images/stories/documents/developer_guidelines.pdf

Students who received Direct Instruction had significantly higher academic achievement than students in any of the other programs. They also had higher self-esteem and self-confidence.

The comprehensive Direct Instruction model has been recognized by such organizations as the American Association of School Administrators (AASA), the American Federation of Teachers (AFT), the National Association of Elementary School Principals (NAESP), the National Education Association (NEA), New American Schools (NAS) and the Coalition for Comprehensive School Improvement (CCSI). Federal funds have been used to implement the comprehensive Direct Instruction model for decades. Hundreds of schools implemented the Direct Instruction model for literacy as part of Reading First, a federally funded program focused on implementing proven early reading instructional methods in classrooms. Currently, the comprehensive DI model is being implemented in approximately 300 schools in the U.S. Over the years, thousands of schools have implemented the Direct Instruc-

tion model with DI programs used as the core programs for instruction.

To find out more about the comprehensive DI model, you can attend a session that is part of the annual National Direct Instruction conference in Eugene, Oregon: A Full Immersion Model for Implementing DI (session D5, on page 13 of the hard copy of this year's conference brochure at <http://adihome.org/training-and-events/2012-national-conference>). This session provides an overview of how to implement DI successfully schoolwide.

DI Validated as Core Programs

The effectiveness of DI as the core program has been validated in numerous large-scale studies. One such study was the most extensive educational experiment *ever* conducted: Project Follow Through. Beginning in 1968 under the sponsorship of the federal government, Follow Through was charged with determining the most effective way of teaching at-risk children from kindergarten through grade 3. Over 200,000 children in 178 communities were included in the study. Twenty-two different models of instruction—including Direct Instruction—were compared for their effectiveness in improving student achievement. The communities that implemented the different approaches spanned the full range of demographic variables (geographic distribution and community size), ethnic composition (white, black, Hispanic, Native American) and poverty level (economically disadvantaged and economically advantaged).

Evaluation of the project occurred in 1977, nine years after it began. The results were strong and clear. *Students who received Direct Instruction had significantly higher academic achievement than students in any of the other programs.* They also had higher self-esteem and self-confidence. No other program had results that approached the positive impact of Direct Instruction. For more information on Project Follow Through, visit <http://darkwing.uoregon.edu/~adiiep/ft/151toc.htm>

Since Project Follow Through, a vast body of research on the efficacy of DI has developed. In *An Educator's Guide to Schoolwide Reform* (1999), a review of 24 instructional models of comprehensive schoolwide reform sponsored by five national associations of educators (the American Association of School Administrators, the American Federation of Teachers, the National Association of Elementary School Principals and the National Education Association), Direct Instruction was only one of two models for elementary and middle schools that received a "strong" rating for evidence of positive effects on student achievement.

A more recent meta-analysis of research on the achievement effects of widely implemented comprehensive school reforms found similar support for Direct Instruction. The meta-analysis, conducted by Borman, Hewes, Overman in 2003, examined studies of 29 comprehensive school reform models, including the comprehensive Direct Instruction model. The authors found significantly more evidence available for the Direct Instruction model than for other models, with 49 studies and 182 different comparisons for the DI studies. Of the 29 reform models researchers evaluated, only three models were identified as having "clearly established, across varying contexts and varying study designs, that their effects are relatively robust and that the models, in general, can be expected to improve test scores." Direct Instruction was one of these three models. For the full text of the report, see: <http://www.csos.jhu.edu/CRESPAR/techReports/Report59.pdf>

Examples of DI Used as the Core Reading Program

Two examples of large-scale use of Direct Instruction's *Reading Mastery* as the core reading program took place in Texas and Florida. In 1997, the Rodeo Institute for Teacher Excellence (RITE) began the implementation of DI in six Houston area schools in an effort to provide explicit instruction for severely at-risk K-2 students. In four years, the program expanded to 20 schools. An external assessment of the program found that students in the

program outperformed their peers in comparison schools and were significantly more likely to score above the 50th percentile on standardized assessments than below the 25th percentile. They also noted an increase of 14% of students passing the 3rd grade Texas Assessment of Academic Skills by the third year of the program implementation.

Another large-scale implementation of DI was an \$8 million project employing DI as the core program funded by

The cost of two programs adds unnecessary expense to school budgets because DI programs contain all of the components teachers need to be successful with students representing the full range of learners.

the State of Florida, including schools in Miami, where performance indicators were collected. The Annenberg Institute for School Reform reported in 2011 that the gains by students in Miami's schools clearly indicated DI's superiority to other programs used in the district. From annenberginstitute.org/pdf/Mott_Miami.pdf:

"In Miami, gains in the percentage of students meeting standards in schools using the Direct Instruction literacy program and receiving intensive support from People Acting for Community Together (PACT) outpaced gains in the district and in a demographically similar set of schools in third and fourth grades. The schools targeted by PACT's organizing also outpaced the district and comparison group in moving students out of the lowest achievement level."

A study conducted by researchers at the Florida Center for Reading Research and Florida State University

compared *Reading Mastery* and several other core reading programs. In the study "Examining the Core: Relations Among Reading Curricula, Poverty, and First Through Third Grade Reading Achievement" (2009), the authors tracked the performance of 30,000 Florida students in first through third grades. The authors found very favorable results for *Reading Mastery*:

"Overall, students in the Reading Mastery curriculum demonstrated generally greater overall oral reading fluency (ORF) growth than students in other curricula. Also, they more frequently met or exceeded benchmarks for adequate achievement in first, second, and third grade."

Using DI Effectively as an Intervention Only

Quite often, schools implement DI to support students who are struggling in the core program. Unfortunately, this usually requires students to utilize competing strategies, which is difficult for students, especially at-risk children. Dual-program instruction also presents problems for teachers, who must learn two different programs, two different instructional approaches and two different assessments. Administrators must monitor and provide support for the two programs. And they must develop a system developed for determining when the second program is to be used, for how long, and with which students.

Teachers and administrators may have difficulty determining when and how a second program should be used, especially when the two programs are not designed to be taught together. The cost of two programs adds unnecessary expense to school budgets because DI programs contain all of the components teachers need to be successful with students representing the full range of learners. Any diversion from the DI programs will lead to less spectacular results than a full, undiluted, comprehensive DI implementation.

For DI to be utilized successfully with struggling students, schools need to implement DI as a replacement core so that the students receive instruc-

tion in DI exclusively until they complete the DI program sequence. For example, if a student is placed into Reading Mastery, he or she needs to complete the program through the highest level, Grade 5, before returning to the regular program. Students are often not successful if they are returned to the regular program before completing the DI series, which can cause students, teachers and administrators to become frustrated. Early identification is critical to meeting the needs of struggling students with Direct Instruction as a replacement core. Students should be identified for Direct Instruction as early as possible in the school year. If possible, students should be identified for DI in the summer before school starts. If students receive DI only after they fail to keep up in the regular program for several weeks or months once school has

started, their learning will be delayed in comparison to those students who are placed directly into DI. This represents lost instructional time— instructional time students and teachers will never get back. **ADI**

Suggested Reading on DI

- Adams, G. L., & Engelmann, S. (1996). *Research on Direct Instruction: 25 years beyond DISTAR*. Seattle, WA: Educational Achievement Systems.
- Barbash, Shepard. "Clear Teaching: With Direct Instruction, Siegfried Engelmann Discovered a Better Way of Teaching." *The Education Consumers Foundation*. Education Consumers Foundation. Web. 09 Mar. 2012. <<http://www.education-consumers.org/ClearTeaching.htm>>.
- Borman, Geoffrey D., Gina M. Hewes, Laura T. Overman, and Shelly Brown. (2003) "Comprehensive School Reform and Achievement: A Meta-Analysis." *Review of Educational Research*.

- Carlson, Coleen D., and David J. Francis. "Increasing the Reading Achievement of At-Risk Children Through Direct Instruction: Evaluation of the Rodeo Institute for Teacher Excellence (RITE)." *Journal of Education for Students Placed at Risk* 7.2 (2002): 141-66.
- Crowe, Elizabeth C., Carol M. Connor, and Yaacov Petscher. "Examining the Core: Relations among Reading Curricula, Poverty, and First through Third Grade Reading Achievement." *Journal of School Psychology* 47 (2009): 187-214.
- Engelmann, Siegfried. "For Readers Not Familiar with Project Follow Through." *Zig Site Home*. Web. 09 Mar. 2012. <http://zigsite.com/for_readers_not_familiar_with_project_follow_through.html>.
- Herman, R. *An Educators' Guide to Schoolwide Reform*. Arlington, VA: Educational Research Service, 1999.
- Marchand-Martella, Nancy E. Timothy A. Slocum, Ronald C. Martella. (2003) *Introduction to Direct Instruction*. Boston, MA: Allyn & Bacon

RICHARD E. CLARK, University of Southern California; PAUL A. KIRSCHNER, Open University of the Netherlands; JOHN SWELLER, University of New South Wales

Putting Students on the Path to Learning: The Case for Fully Guided Instruction

Disputes about the impact of instructional guidance during teaching have been ongoing for more than a half century.¹ On one side of this argument are those who believe that all people—novices and experts alike—learn best when provided with instruction that contains unguided or partly guided segments. This is generally defined as instruction in which learners, rather than being presented with all essential information and asked to practice using it, must discover or construct some or all of the essential information for themselves.² On the other side are those who believe that ideal learning environments for experts and novices differ: while experts often thrive without much guidance, nearly everyone else thrives when provided with full, explicit instructional guidance (and should not be asked to discover any essential content or skills).³

Our goal in this article is to put an end to this debate. Decades of research clearly demonstrate that for *novices* (comprising virtually all students), direct, explicit instruction is more effective and more efficient than partial guidance.⁴ So, when teaching new content and skills to novices, teachers are more effective when they provide explicit guidance accompanied by practice and feedback, not when they require students to discover many aspects of what they must learn. As we will discuss, this does not mean direct, expository instruction all day every day. Small group and independent problems and projects can be effective—not as vehicles for making discoveries, but as a means of *practicing* recently learned content and skills.

Before we describe this research, let's clarify some terms. Teachers providing explicit instructional guidance *fully*

explain the concepts and skills that students are required to learn. Guidance can be provided through a variety of media, such as lectures, modeling, videos, computer-based presentations, and realistic demonstrations. It can also include class discussions and activities—if the teacher ensures that through the discussion or activity, the relevant information is explicitly provided and practiced. In a math class, for example, when teaching students how to solve a new type of problem, the teacher may begin by showing students how to solve the problem and fully explaining the how and why of the mathematics involved. Often, in following problems, step-by-step explanations may gradually be faded or withdrawn until, through practice and feedback, the students can solve the problem themselves. In this way, before trying to

Reprinted with permission from the Spring 2012 issue of *American Educator*, the quarterly journal of the American Federation of Teachers, AFL-CIO.

solve the problem on their own, students would already have been walked through both the procedure and the concepts behind the procedure.

In contrast, those teachers whose lessons are designed to offer partial or minimal instructional guidance expect students to discover on their own some or all of the concepts and skills they are supposed to learn. The partially guided approach has been given various names, including discovery learning,⁵ problem-based learning,⁶ inquiry learning,⁷ experiential learning,⁸ and constructivist learning.⁹ Continuing the math example, students receiving partial instructional guidance may be given a new type of problem and asked to brainstorm possible solutions in small groups with or without prompts or hints. Then there may be a class discussion of the various groups' solutions, and it could be quite some time before the teacher indicates which solution is correct. Through the process of trying to solve the problem and discussing different students' solutions, each student is supposed to discover the relevant mathematics. (In some minimal guidance classrooms, teachers use explicit instruction of the solution as a backup method for those students who did not make the necessary discoveries and who were confused during the class discussion.) Additional examples of minimally guided approaches include (1) inquiry-oriented science instruction in which students are expected to discover fundamental principles by mimicking the investigatory activities of professional researchers,¹⁰ and (2) medical students being expected to discover well-established solutions for common patient problems.¹¹

Two bodies of research reveal the weakness of partially and minimally guided approaches: research comparing pedagogies, and research on how people learn. The past half century of empirical research has provided overwhelming and unambiguous evidence that, for everyone but experts, partial guidance during instruction is significantly less effective and efficient than full guidance. And, based on our current knowledge of how people learn, there is no reason to expect that par-

tially guided instruction in K-12 classrooms would be as effective as explicit, full guidance.

Research Comparing Fully Guided and Partially Guided Instruction

Controlled experiments almost uniformly indicate that when dealing with novel information (i.e., information that is new to learners), students should be explicitly shown what to do and how to do it, and then have an opportunity to practice doing it while receiving corrective feedback.¹² A number of reviews of empirical studies on teaching novel information have established a solid research-based case against the use of instruction with minimal guidance. Although an exten-

Each new set of advocates for unguided approaches seemed unaware of, or uninterested in, previous evidence that unguided approaches had not been validated.

sive discussion of those studies is outside the scope of this article, one recent review is worth noting: Richard Mayer (a cognitive scientist at the University of California, Santa Barbara) examined evidence from studies conducted from 1950 to the late 1980s comparing pure discovery learning (defined as unguided, problem-based instruction) with guided forms of instruction.¹³ He suggested that in each decade since the mid-1950s, after empirical studies provided solid evidence that the then-popular unguided approach did not work, a similar approach soon popped up under a different name with the cycle repeating itself. Each new set of advocates for unguided approaches seemed unaware of, or uninterested in, previous evidence that unguided approaches had not been validated. This pattern produced discovery learning, which gave way to experiential learning, which

gave way to problem-based and inquiry learning, which has recently given way to constructivist instructional techniques. Mayer concluded that the "debate about discovery has been replayed many times in education, but each time, the research evidence has favored a guided approach to learning."¹⁴ (More about these effective guided approaches are available in "Principles of Instruction: Research-Based Strategies that All Teachers Should Know" by Barak Rosenshine, also in the Spring 2012 issue of *American Educator* and scheduled for reprint in the Fall 2012 *Direct Instruction News*.)

Evidence from well-designed, properly controlled experimental studies from the 1980s to today also supports direct instructional guidance.¹⁵ Some researchers¹⁶ have noted that when students learn science in classrooms with pure-discovery methods or with minimal feedback, they often become lost and frustrated, and their confusion can lead to misconceptions. Others¹⁷ found that because false starts (in which students pursue misguided hypotheses) are common in such learning situations, unguided discovery is most often inefficient. In a very important study, researchers not only tested whether science learners learned more via discovery, compared with explicit instruction, but also, once learning had occurred, whether the quality of learning differed.¹⁸ Specifically, they tested whether those who had learned through discovery were better able to transfer their learning to new contexts (as advocates for minimally guided approaches often claim). The findings were unambiguous. Direct instruction involving considerable guidance, including examples, resulted in vastly more learning than discovery. Those relatively few students who learned via discovery showed no signs of superior quality of learning.

In real classrooms, several problems occur when different kinds of minimally guided instruction are used. First, often only the brightest and most well-prepared students make the discovery. Second, many students, as noted above, simply become frustrated.

Some may disengage, others may copy whatever the brightest students are doing—either way, they are not actually discovering anything. Third, some students believe they have discovered the correct information or solution, but they are mistaken and so they learn a misconception that can interfere with later learning and problem solving.¹⁹ Even after being shown the right answer, a student is likely to recall his or her discovery—not the correction. Fourth, even in the unlikely event that a problem or project is devised that all students succeed in completing, minimally guided instruction is much less efficient than explicit guidance. What can be taught directly in a 25-minute demonstration and discussion, followed by 15 minutes of independent practice with corrective feedback by a teacher, may take several class periods to learn via minimally guided projects and/or problem solving.

As if these four problems were not enough cause for concern, there is one more problem that we must highlight: *minimally guided instruction can increase the achievement gap*. A review²⁰ of approximately 70 studies, which had a range of more- and less-skilled students as well as a range of more- and less-guided instruction, found the following: more-skilled learners tend to learn more with less-guided instruction, but less-skilled learners tend to learn more with more-guided instruction. Worse, a number of experiments found that less-skilled students who chose or were assigned to less-guided instruction received significantly *lower* scores on posttests than on pretest measures. For these relatively weak students, the failure to provide strong instructional support produced a *measurable loss of learning*. The implication of these results is that teachers should provide explicit instruction when introducing a new topic, but gradually fade it out as knowledge and skill increase.

Even more distressing is evidence²¹ that when learners are asked to select between a more-guided or less-guided version of the same course, less-skilled learners who choose the less-guided approach tend to like it even though they learn less from it. It appears that

guided instruction helps less-skilled learners by providing task-specific learning strategies. However, these strategies require learners to engage in explicit, attention-driven effort and so tend not to be liked, even though they are helpful to learning.

Similarly, more-skilled learners who choose the more-guided version of a course tend to like it even though they too have selected the environment in which they learn less. The reason more guidance tends to be less effective with these learners is that, in most cases, they have already acquired task-specific learning strategies that are more effective for them than those embedded in the more-guided version of the course. And some evidence suggests that they

Learning requires the construction of knowledge. Withholding information from students does not facilitate the construction of knowledge.

like more guidance because they believe they will achieve the required learning with minimal effort.

If the evidence against minimally guided approaches is so strong, why is this debate still alive? We cannot say with any certainty, but one major reason seems to be that many educators mistakenly believe partially and minimally guided instructional approaches are based on solid cognitive science. Turning again to Mayer's review of the literature, many educators confuse "constructivism," which is a theory of how one learns and sees the world, with a prescription for how to teach.²² In the field of cognitive science, constructivism is a widely accepted theory of learning; it claims that learners must construct mental representations of the world by engaging in active cognitive processing. Many educators (especially teacher education professors in colleges of education) have latched on to this notion of students

having to "construct" their own knowledge, and have *assumed* that the best way to promote such construction is to have students try to discover new knowledge or solve new problems without explicit guidance from the teacher. Unfortunately, this assumption is both widespread and incorrect. Mayer calls it the "constructivist teaching fallacy." Simply put, cognitive activity can happen with or without behavioral activity, and behavioral activity does not in any way guarantee cognitive activity. In fact, the type of active cognitive processing that students need to engage in to "construct" knowledge can happen through reading a book, listening to a lecture, watching a teacher conduct an experiment while simultaneously describing what he or she is doing, etc. Learning requires the construction of knowledge. Withholding information from students does not facilitate the construction of knowledge.

The Human Brain: Learning 101

In order to really comprehend why full instructional guidance is more effective and efficient than partial or minimal guidance for novices, we need to know how human brains learn. There are two essential components: long-term memory and working memory (often called short-term memory). Long-term memory is that big mental warehouse of things (be they words, people, grand philosophical ideas, or skateboard tricks) we know. Working memory is a limited mental "space" in which we think. The relations between working and long-term memory, in conjunction with the cognitive processes that support learning, are of critical importance to developing effective instruction.

Our understanding of the role of long-term memory in human cognition has altered dramatically over the last few decades. It is no longer seen as a passive repository of discrete, isolated fragments of information that permit us to repeat what we have learned. Nor is it seen as having only peripheral influence on complex cognitive

processes such as critical thinking and problem solving. Rather, long-term memory is now viewed as the central, dominant structure of human cognition. Everything we see, hear, and think about is dependent on and influenced by our long-term memory.

A seminal series of studies²³ on chess players, for example, demonstrated that expert players perform well even in “blitz” games (which are played in five minutes) because they are not actually puzzling through each move. They have tens of thousands of board configurations, and the best move for each configuration, stored in long-term memory. Those configurations are learned by studying previous games for 10 years or more. Expert players can play well at a fast pace because all they are doing is recalling the best move—not figuring it out. Similar studies of how experts function have been conducted in a variety of other areas.²⁴ Altogether, the results suggest that expert problem solvers derive their skill by drawing on the extensive experience stored in their long-term memory in the form of concepts and procedures, known as mental schemas. They retrieve memories of past procedures and solutions, and then quickly select and apply the best ones for solving problems. We are skillful in an area if our long-term memory contains huge amounts of information or knowledge concerning the area. That information permits us to quickly recognize the characteristics of a situation and indicates to us, often immediately and unconsciously, what to do and when to do it. (For instance, think about how much easier managing student behavior was in your fifth year of teaching than in your first year of teaching.) Without our huge store of information in long-term memory, we would be largely incapable of everything from simple acts such as avoiding traffic while crossing a street (information many other animals are unable to store in their long-term memory), to complex activities such as playing chess, solving mathematical problems, or keeping students’ attention. In short, our long-term memory incorporates a massive knowledge base that is central to all of our cognitively based activities.

What are the instructional consequences of long-term memory? First and foremost, long-term memory provides us with the ultimate justification for instruction: the aim of all instruction is to add knowledge and skills to long-term memory. If nothing has been added to long-term memory, nothing has been learned.

Working memory is the cognitive structure in which conscious processing occurs. We are only conscious of the information currently being processed in working memory and are more or less oblivious to the far larger amount of information stored in long-term memory. When processing novel information, working memory is very limited in duration and capacity. We

First and foremost, long-term memory provides us with the ultimate justification for instruction: the aim of all instruction is to add knowledge and skills to long-term memory.

have known at least since the 1950s that almost all information stored in working memory is lost within 30 seconds²⁵ if it is not rehearsed and that the capacity of working memory is limited to only a very small number of elements.²⁶ That number is usually estimated at about seven, but may be as low as four, plus or minus one.²⁷ Furthermore, when processing (rather than merely storing) information, it may be reasonable to conjecture that the number of items that can be processed may only be two or three, depending on the nature of the processing required.

For instruction, the interactions between working memory and long-term memory may be even more important than the processing limitations.²⁸ The limitations of working memory only apply to new, to-be-learned information (that has not yet

been stored in long-term memory). When dealing with previously learned, organized information stored in long-term memory, these limitations disappear. Since information can be brought back from long-term memory to working memory as needed, the 30-second limit of working memory becomes irrelevant. Similarly, there are no known limits to the amount of such information that can be brought into working memory from long-term memory.

These two facts—that working memory is very limited when dealing with novel information, but that it is not limited when dealing with organized information stored in long-term memory—explain why partially or minimally guided instruction typically is ineffective for novices, but can be effective for experts. When given a problem to solve, novices’ only resource is their very constrained working memory. But experts have both their working memory and all the relevant knowledge and skill stored in long-term memory.

One of the best examples of an instructional approach that takes into account how our working and long-term memories interact is the “worked-example effect.” A worked example is just what it sounds like: a problem that has already been solved (or “worked out”) for which every step is fully explained and clearly shown; it constitutes the epitome of direct, explicit instruction.ⁱ The “worked-example effect” is the name given to the widely replicated finding that novice learners who try to learn by being required to solve problems perform worse on subsequent test problems, including transfer problems different from the ones seen previously, than comparable learners who learn by studying equivalent worked examples.

The worked-example effect was first demonstrated in the 1980s.²⁹ Researchers found that algebra students learned more by studying worked examples than by solving equivalent problems. Since those early demonstrations of the effect, it has been replicated on numerous occasions using a large variety of learners studying an equally large variety of materials—from

mathematics and science to English literature and world history.³⁰ For novices, studying worked examples seems invariably superior to discovering or constructing a solution to a problem.

Why does the worked-example effect occur? The limitations of working memory and the relations between working memory and long-term memory discussed earlier can explain it. Solving a problem requires searching for a solution, which must occur using our limited working memory. If the learner has no relevant concepts or procedures in long-term memory, the only thing to do is blindly search for possible solution steps that bridge the gap between the problem and its solution. This process places a great burden on working-memory capacity because the problem solver has to continually hold and process the current problem state in working memory (e.g., Where am I right now in the problem-solving process? How far have I come toward finding a solution?) along with the goal state (e.g., Where do I have to go? What is the solution?), the relations between the goal state and the problem state (e.g., Is this a good step toward solving the problem? Has what I've done helped me get nearer to where I need to go?), the solution steps that could further reduce the differences between the two states (e.g., What should the next step be? Will that step bring me closer to the solution? Is there another solution strategy I can use that might be better?), and any subgoals along the way. Thus, searching for a solution overburdens limited working memory and diverts working-memory resources away from storing information in long-term memory. As a consequence, novices can engage in problem-solving activities for extended periods and learn almost nothing.³¹

In contrast, studying a worked exampleⁱⁱ reduces the burden on working memory (because the solution only has to be comprehended, not discovered) and directs attention (i.e., directs working-memory resources) toward storing the essential relations between problem-solving moves in long-term memory. Students learn to recognize

which moves are required for particular problems, which is the basis for developing knowledge and skill as a problem solver.³³

It is important to note that this discussion of worked examples applies to novices—not experts. In fact, the worked-example effect first disappears and then *reverses* as the learners' expertise increases. That is, for experts, solving a problem is more effective than studying a worked example. When learners are sufficiently experienced, studying a worked example is a redundant activity that places a greater burden on working

Why does the worked-example effect occur? The limitations of working memory and the relations between working memory and long-term memory discussed earlier can explain it.

memory than retrieving a known solution from long-term memory.³⁴ This reversal in effectiveness is not limited to worked examples; it's true of many explicit, fully guided instructional approaches and is known as the "expertise reversal effect."³⁵ In general, the expertise reversal effect states that "instructional techniques that are highly effective with inexperienced learners can lose their effectiveness and even have negative consequences when used with more experienced learners."³⁶ This is why, from the very beginning of this article, we have emphasized that guidance is best for teaching *novel* information and skills. This shows the wisdom of instructional techniques that begin with lots of guidance and then fade that guidance as students gain mastery. It also shows the wisdom of using minimal guidance techniques to reinforce or practice previously learned material.

Recommending partial or minimal guidance for novices was understandable back in the early 1960s, when the acclaimed psychologist Jerome Bruner³⁷ proposed discovery learning as an instructional tool. At that time, researchers knew little about working memory, long-term memory, and how they interact. We now are in a quite different environment; we know much more about the structures, functions, and characteristics of working memory and long-term memory, the relations between them, and their consequences for learning, problem solving, and critical thinking. We also have a good deal more experimental evidence as to what constitutes effective instruction: controlled experiments almost uniformly indicate that when dealing with novel information, learners should be explicitly shown all relevant information, including what to do and how to do it. We wonder why many teacher educators who are committed to scholarship and research ignore the evidence and continue to encourage minimal guidance when they train new teachers.

After a half century of advocacy associated with instruction using minimal guidance, it appears that there is no body of sound research that supports using the technique with anyone other than the most expert students. Evidence from controlled, experimental (a.k.a. "gold standard") studies almost uniformly supports full and explicit instructional guidance rather than partial or minimal guidance for novice to intermediate learners. These findings and their associated theories suggest teachers should provide their students with clear, explicit instruction rather than merely assisting students in attempting to discover knowledge themselves. **ADP**

Endnotes

1. David P. Ausubel, "Some Psychological and Educational Limitations of Learning by Discovery," *The Arithmetic Teacher* 11 (1964): 290–302; Robert C. Craig, "Directed versus Independent Discovery of Established Relations," *Journal of Educational Psychology* 47, no. 4 (1956): 223–234; Richard E. Mayer, "Should There Be a Three-Strikes Rule against Pure Discovery Learning? The Case for

- Guided Methods of Instruction," *American Psychologist* 59, no. 1 (2004): 14–19; and Lee S. Shulman and Evan R. Keislar, eds., *Learning by Discovery: A Critical Appraisal* (Chicago: Rand McNally, 1966).
2. See, for example, Jerome S. Bruner, "The Art of Discovery," *Harvard Educational Review* 31 (1961): 21–32; Seymour Papert, *Mindstorms: Children, Computers, and Powerful Ideas* (New York: Basic Books, 1980); and Leslie P. Steffe and Jerry Gale, eds., *Constructivism in Education* (Hillsdale, NJ: Lawrence Erlbaum Associates, 1995).
 3. See, for example, Lee J. Cronbach and Richard E. Snow, *Aptitudes and Instructional Methods: A Handbook for Research on Interactions* (New York: Irvington, 1977); David Klahr and Milena Nigam, "The Equivalence of Learning Paths in Early Science Instruction: Effects of Direct Instruction and Discovery Learning," *Psychological Science* 15 (2004): 661–667; Mayer, "Three-Strikes Rule"; Shulman and Keislar, *Learning by Discovery*; and John Sweller, "Evolution of Human Cognitive Architecture," in *The Psychology of Learning and Motivation*, ed. Brian Ross, vol. 43 (San Diego: Academic, 2003), 215–266.
 4. John Sweller, Paul Ayres, and Slava Kalyuga, *Cognitive Load Theory* (New York: Springer, 2011).
 5. W. S. Anthony, "Learning to Discover Rules by Discovery," *Journal of Educational Psychology* 64, no. 3 (1973): 325–328; and Bruner, "The Art of Discovery."
 6. Howard S. Barrows and Robyn M. Tamblyn, *Problem-Based Learning: An Approach to Medical Education* (New York: Springer, 1980); and Henk G. Schmidt, "Problem-Based Learning: Rationale and Description," *Medical Education* 17, no. 1 (1983): 11–16.
 7. Papert, *Mindstorms*; and F. James Rutherford, "The Role of Inquiry in Science Teaching," *Journal of Research in Science Teaching* 2, no. 2 (1964): 80–84.
 8. David Boud, Rosemary Keogh, and David Walker, eds., *Reflection: Turning Experience into Learning* (London: Kogan Page, 1985); and David A. Kolb and Ronald E. Fry, "Toward an Applied Theory of Experiential Learning," in *Studies Theories of Group Processes*, ed. Cary L. Cooper (New York: Wiley, 1975), 33–57.
 9. David Jonassen, "Objectivism vs. Constructivism," *Educational Technology Research and Development* 39, no. 3 (1991): 5–14; and Leslie P. Steffe and Jerry Gale, eds., *Constructivism in Education* (Hillsdale, NJ: Lawrence Erlbaum Associates, 1995).
 10. Wouter R. van Joolingen, Ton de Jong, Ard W. Lazonder, Elwin R. Savelsbergh, and Sarah Manlove, "Co-Lab: Research and Development of an Online Learning Environment for Collaborative Scientific Discovery Learning," *Computers in Human Behavior* 21, no. 4 (2005): 671–688.
 11. Henk G. Schmidt, "Problem-Based Learning: Does It Prepare Medical Students to Become Better Doctors?" *Medical Journal of Australia* 168, no. 9 (May 4, 1998): 429–430; and Henk G. Schmidt, "Assumptions Underlying Self-Directed Learning May Be False," *Medical Education* 34, no. 4 (2000): 243–245.
 12. Jeroen J. G. van Merriënboer and Paul A. Kirschner, *Ten Steps to Complex Learning* (Mahwah, NJ: Lawrence Erlbaum Associates, 2007).
 13. Mayer, "Three-Strikes Rule."
 14. Mayer, "Three-Strikes Rule," 18.
 15. See, for example, Roxana Moreno, "Decreasing Cognitive Load in Novice Students: Effects of Explanatory versus Corrective Feedback in Discovery-Based Multimedia," *Instructional Science* 32, nos. 1–2 (2004): 99–113; and Juhani E. Tuovinen and John Sweller, "A Comparison of Cognitive Load Associated with Discovery Learning and Worked Examples," *Journal of Educational Psychology* 91, no. 2 (1999): 334–341.
 16. Ann L. Brown and Joseph C. Campione, "Guided Discovery in a Community of Learners," in *Classroom Lessons: Integrating Cognitive Theory and Classroom Practice*, ed. Kate McGilly (Cambridge, MA: MIT Press, 1994), 229–270; and Pamela Thibodeau Hardiman, Alexander Pollatsek, and Arnold D. Well, "Learning to Understand the Balance Beam," *Cognition and Instruction* 3, no. 1 (1986): 63–86.
 17. See, for example, Richard A. Carlson, David H. Lundy, and Walter Schneider, "Strategy Guidance and Memory Aiding in Learning a Problem-Solving Skill," *Human Factors* 34, no. 2 (1992): 129–145; and Leona Schauble, "Belief Revision in Children: The Role of Prior Knowledge and Strategies for Generating Evidence," *Journal of Experimental Child Psychology* 49, no. 1 (1990): 31–57.
 18. Klahr and Nigam, "The Equivalence of Learning Paths."
 19. Eve Kikas, "Teachers' Conceptions and Misconceptions Concerning Three Natural Phenomena," *Journal of Research in Science Teaching* 41, no. 5 (2004): 432–448.
 20. Richard E. Clark, "When Teaching Kills Learning: Research on Mathematics," in *Learning and Instruction: European Research in an International Context*, ed. Heinz Mandl, Neville Bennett, Erik De Corte, and Helmut Friedrich, vol. 2 (London: Pergamon, 1989), 1–22.
 21. Richard E. Clark, "Antagonism between Achievement and Enjoyment in ATI Studies," *Educational Psychologist* 17, no. 2 (1982): 92–101.
 22. Mayer, "Three-Strikes Rule"; and Richard E. Mayer, "Constructivism as a Theory of Learning versus Constructivism as a Prescription for Instruction," in *Constructivist Instruction: Success or Failure?* ed. Sigmund Tobias and Thomas M. Duffy (New York: Taylor and Francis, 2009), 184–200.
 23. See Adriaan D. de Groot, *Thought and Choice in Chess* (The Hague, Netherlands: Mouton Publishers, 1965) (original work published in 1946); followed by William G. Chase and Herbert A. Simon, "Perception in Chess," *Cognitive Psychology* 4, no. 1 (1973): 55–81; and Bruce D. Burns, "The Effects of Speed on Skilled Chess Performance," *Psychological Science* 15, no. 7 (2004): 442–447.
 24. See, for example, Dennis E. Egan and Barry J. Schwartz, "Chunking in Recall of Symbolic Drawings," *Memory and Cognition* 7, no. 2 (1979): 149–158; Robin Jeffries, Althea A. Turner, Peter G. Polson, and Michael E. Atwood, "The Processes Involved in Designing Software," in *Cognitive Skills and Their Acquisition*, ed. John R. Anderson (Hillsdale, NJ: Lawrence Erlbaum Associates, 1981), 255–283; and John Sweller and Graham A. Cooper, "The Use of Worked Examples as a Substitute for Problem Solving in Learning Algebra," *Cognition and Instruction* 2, no. 1 (1985): 59–89.
 25. Lloyd Peterson and Margaret Jean Peterson, "Short-Term Retention of Individual Verbal Items," *Journal of Experimental Psychology: General* 58, no. 3 (1959): 193–198.
 26. George A. Miller, "The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information," *Psychological Review* 63, no. 2 (1956): 81–97.
 27. See, for example, Nelson Cowan, "The Magical Number 4 in Short-Term Mem-

Help us out!

Contribute your story of success with DI! We want to hear from you!

You all have stories and it is time to share them. This is your journal—let it reflect your stories!

See the directions on page 2 on how to make a contribution. You'll be glad you did.

- ory: A Reconsideration of Mental Storage Capacity," *Behavioral and Brain Sciences* 24, no. 1 (2001): 87–114.
28. Sweller, "Evolution of Human Cognitive Architecture"; and John Sweller, "Instructional Design Consequences of an Analogy between Evolution by Natural Selection and Human Cognitive Architecture," *Instructional Science* 32, no. 1–2 (2004): 9–31.
29. Sweller and Cooper, "The Use of Worked Examples"; and Graham Cooper and John Sweller, "Effects of Schema Acquisition and Rule Automation on Mathematical Problem Solving Transfer," *Journal of Educational Psychology* 79, no. 4 (1987): 347–362.
30. William M. Carroll, "Using Worked Examples as an Instructional Support in the Algebra Classroom," *Journal of Educational Psychology* 86, no. 3 (1994): 360–367; Craig S. Miller, Jill Fain Lehman, and Kenneth R. Koedinger, "Goals and Learning in Microworlds," *Cognitive Science* 23, no. 3 (1999): 305–336; Fred Paas, "Training Strategies for Attaining Transfer of Problem-Solving Skill in Statistics: A Cognitive-Load Approach," *Journal of Educational Psychology* 84, no. 4 (1992): 429–434; Fred Paas and Jeroen J. G. van Merriënboer, "Variability of Worked Examples and Transfer of Geometrical Problem-Solving Skills: A Cognitive-Load Approach," *Journal of Educational Psychology* 86, no. 1 (1994): 122–133; Hitendra K. Pillay, "Cognitive Load and Mental Rotation: Structuring Orthographic Projection for Learning and Problem Solving," *Instructional Science* 22, no. 2 (1994): 91–113; Jill L. Quilici and Richard E. Mayer, "Role of Examples in How Students Learn to Categorize Statistics Word Problems," *Journal of Educational Psychology* 88, no. 1 (1996): 144–161; Arianne Rourke and John Sweller, "The Worked-Example Effect Using Ill-Defined Problems: Learning to Recognize Designers' Styles," *Learning and Instruction* 19, no. 2 (2009): 185–199; and J. Gregory Trafton and Brian J. Reiser, "The Contributions of Studying Examples and Solving Problems to Skill Acquisition," in *Proceedings of the Fifteenth Annual Conference of the Cognitive Science Society* (Hillsdale, NJ: Lawrence Erlbaum Associates, 1993), 1017–1022.
31. John Sweller, Robert F. Mawer, and Walter Howe, "Consequences of History-Cued and Means-End Strategies in Problem Solving," *American Journal of Psychology* 95, no. 3 (1982): 455–483.
32. Rohani A. Tarmizi and John Sweller, "Guidance during Mathematical Problem Solving," *Journal of Educational Psychology* 80, no. 4 (1988): 424–436; and Mark Ward and John Sweller, "Structuring Effective Worked Examples," *Cognition and Instruction* 7, no. 1 (1990): 1–39.
33. Michelene T. H. Chi, Robert Glaser, and Ernest Rees, "Expertise in Problem Solving," in *Advances in the Psychology of Human Intelligence*, ed. Robert J. Sternberg, vol. 1 (Hillsdale, NJ: Lawrence Erlbaum Associates, 1982), 7–75.
34. Slava Kalyuga, Paul Chandler, Juhani Tuovinen, and John Sweller, "When Problem Solving Is Superior to Studying

Worked Examples," *Journal of Educational Psychology* 93, no. 3 (2001): 579–588.

35. Kalyuga et al., "When Problem Solving Is Superior."
36. Slava Kalyuga, Paul Ayres, Paul Chandler, and John Sweller, "Expertise Reversal Effect," *Educational Psychologist* 38, no. 1 (2003): 23.
37. Bruner, "The Art of Discovery."

i For a short YouTube video of a worked example, go to <http://bit.ly/xa0TYQ> and see Shaun Errichiello, who teaches seventh-grade math at the Salk School of Science (M.S. 225) in New York City, work through a word problem with fractions.

ii This assumes the worked example is well designed. It is possible, if one is not careful, to structure a worked example in a manner that places a large burden on working memory. Indeed, it is possible to structure worked examples that impose as heavy a cognitive load as the problem-solving search required to learn via discovery.³

This article summarizes sections of "Why Minimal Guidance During Instruction Does Not Work: An Analysis of the Failure of Constructivist, Discovery, Problem-Based, Experiential, and Inquiry-Based Teachings," by Paul A. Kirschner, John Sweller, and Richard E. Clark, which was originally published in *Educational Psychologist* 41, no. 2 (2006): 75–86.

JEAN STOCKARD, Director of Research

National Institute For Direct Instruction (NIFDI) is Looking For Researchers

The National Institute for Direct Instruction (NIFDI) recently compiled a bibliography of research related to Direct Instruction (DI) and is working to connect with researchers in the field to ensure the bibliography is as comprehensive as possible. NIFDI is asking scholars in the field to check their listings in the material for accuracy and to inform them about studies that are missing, errors in classification, or any other changes that could be appropriate. Many of the studies in

the bibliography are in NIFDI's searchable database of DI research, and more are continually being added. The bibliography and the searchable data base may be found at <http://www.nifdi.org/15/research>.

More than two dozen active scholars are currently on the list. They are doing work in all areas related to Direct Instruction, from early childhood to adult education; special education to talented and gifted students; whole school reform; and in all types of curric-

ular areas. Four-fifths of the members work at colleges or universities, while the others are employed by individual school districts or consulting firms.

If you are a researcher working with Direct Instruction, you can still join our list! Simply visit our website at www.nifdi.org/15/research and follow the link on the right hand side of the page to complete our Researcher Survey. Individuals who might not be researchers themselves, but know of researchers in the field are encouraged to contact NIFDI's Office of Research and Evaluation at research@nifdi.org. Send us any information you have – contact information, names of articles, etc. and we will get in touch! **ADI**

Success Stories

Della Lamb Charter School Makes Great Strides with Language for Writing

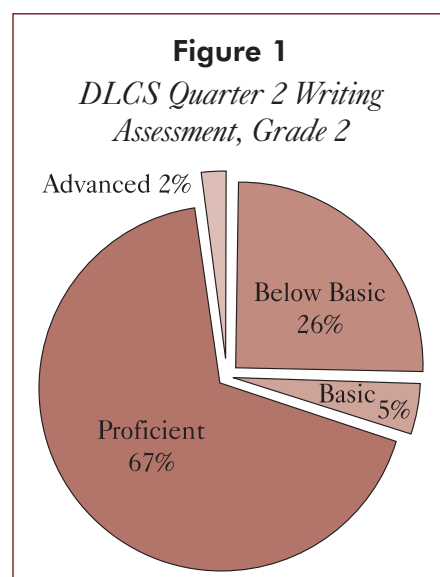
Kansas City, MO School Principal, Jennifer Wilson, Explains School's Success

Here's something to celebrate—Della Lamb Charter School has observed amazing progress in their second graders' writing skills! Principal Jennifer Wilson shared the following information with us [JP Associates] in a recent email:

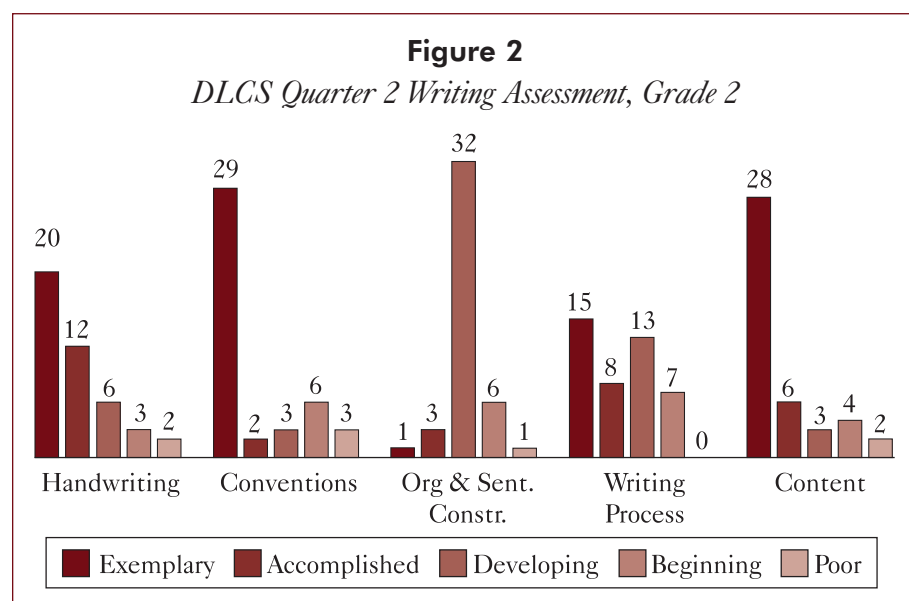
"During the 2010-2011 school year, Della Lamb Charter School began implementing the Language for Writing program for all second grade students. All second grade students were placed at Lesson 1 in Language for Writing at the beginning of the school year."

During the 2011-2012 school year, significant growth in its second grade students was observed, as measured by a Quarterly Writing Assessment. The

school-level writing assessment is directly aligned to the Missouri Grade Level Expectations and the Common Core State Standards. The school expects to see similar gains reflected on the annual state assessment for students who have completed the Language for Writing program. **ADI**



Reprinted with permission from the May 15, 2012 issue of "Responsive School Network News," published by JP Associates Inc.



Everyone likes getting mail...

ADI maintains a listserv discussion group called DI. This free service allows you to send a message out to all subscribers to the list just by sending one message. By subscribing to the DI list, you will be able to participate in discussions of topics of interest to DI users around the world. There are currently 500+ subscribers. You will automatically receive in your email box all messages that are sent to the list. This is a great place to ask for technical assistance, opinions on curricula, and hear about successes and pitfalls related to DI.

To subscribe to the list, send the following message from your email account:

To: majordomo@lists.uoregon.edu

In the message portion of the email simply type:

subscribe di

(Don't add *Please* or any other words to your message. It will only cause errors. majordomo is a computer, not a person. No one reads your subscription request.)

You send your news and views out to the list subscribers, like this:

To: di@lists.uoregon.edu

Subject: *Whatever describes your topic.*

Message: *Whatever you want to say.*

The list is retro-moderated, which means that some messages may not be posted if they are inappropriate. For the most part inappropriate messages are ones that contain offensive language or are off-topic solicitations.

The Singapore Implementation— JP Associates

JP Associates has partnered with the Singapore Ministry of Education Special Education Branch starting in 2008. The collaboration started with a cohort of 25 teachers from seven schools that served students with special needs and has grown to train and coach over 400 teachers in approximately 20 schools.

The goal of the implementation is to improve literacy rates and change cultural expectations about the potential of students with intellectual disabilities. Data indicate that these goals are being met. Progress both for teachers (instructional skills and awareness) and students (reading and language) has been significant.

The initial program chosen was Reading Mastery. As a result of the success teachers experienced with Direct Instruction, training and support is now offered in Language for Learning, Corrective Reading and JP's Responsive Coaching, as well.

JP has provided training/continuing support in an array of areas that

include increasing teachers' use of data to drive instruction, assisting in the development of training for their data managers, and introduction to the basics of coaching.

Singapore students with disabilities in classrooms supported by JP Associates improved dramatically compared to typically developing peers according to data collected and disseminated by the Singapore Ministry of Education Special Education Branch. Professional Development has taken the form of onsite training (at the start of the school year and again later in the school year), coaching, phone support, webinars and emails.

Future Plans in Singapore

As the implementation moves forward plans have been discussed to provide additional program training and onsite coaching visits to support teachers and instructional leaders in the schools. There are also plans to hold a Symposium for School Improvement for all of the Special Education school. Two areas identified so far include training

on how to apply Direct Instruction/ Explicit Instruction across the content areas and Leadership Development addressing supportive supervision.

Singapore Ministry of Education – Special Education Branch Schools – Year 1

The following data demonstrate the effects of Direct Instruction reading programs coupled with Responsive Professional Development™ support from JP Associates on 148 students with intellectual disability and 25 teachers in 7 Special Education schools in Singapore.

The study included students with mild intellectual disability (MID) with I.Q.s measured between 55 and 75 as well as students with moderate to

The following figures illustrate student progress and growth with measure that include, but are not limited to:

Quantitative

– DIBELS-based subtests (localized for language and normative sample):

- LNF
- NSF

Teacher Perception

Survey

- One of the primary goals of this project was to change perceived capabilities of students with disabilities; this survey quantified teacher expectations.

Qualitative

- Teacher Interviews
- Focus Group Discussions

Fidelity

Table 1

Mean Pre-Post Literacy Scores of MID and MSID Students

	Pre-test mean (SD)	Post-test mean (SD)	Gain	<i>t</i> (<i>df</i>)	Effect size# (Cohen's <i>d</i>)
MID students					
Letter Naming Fluency	35.34 (22.49)	38.0 (23.20)	2.66	1.68 (74)*	.13
Initial Sound Fluency	11.89 (10.78)	18.01 (18.25)	6.12	3.78 (74)*	.30
MSID students					
Letter Naming Fluency	23.73 (13.33)	26.05 (17.25)	2.32	2.59 (60)*	.42
Initial Sound Fluency	7.07 (7.14)	9.66 (8.78)	2.59	2.21 (59)*	.37

severe intellectual disability (MSID) with I.Q.s measured below 55. (See Table 1.)

Increased confidence in reading: Teachers noted that students showed “more interest”, and “self-confidence” in reading as a result of *Reading Mastery*. Students were observed to “pick up

reading very fast”, and, before receiving explicit instruction on how to read whole sentences were doing so. Several teachers expressed their surprise at the benefit students with severe needs were receiving from the instruction. Previously, the feeling had been that these students would not be

responsive. One teacher notes that students who were previously soft spoken and shy were “speaking up more.”

Increased interest and anticipation of activities: Teachers noted that students were livelier, more enthusiastic and enjoyed the lessons. They felt that the programs “made learning fun” for

Figure 1
Results

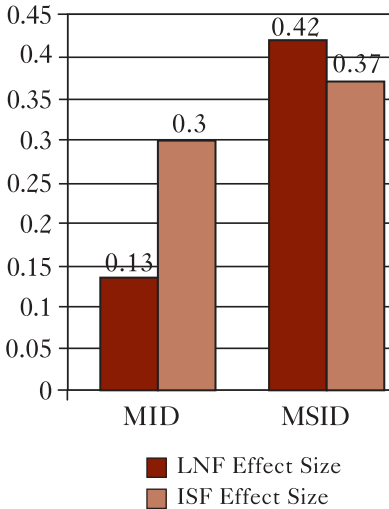


Figure 2

Teacher’s estimates of % of students in post-school employment status

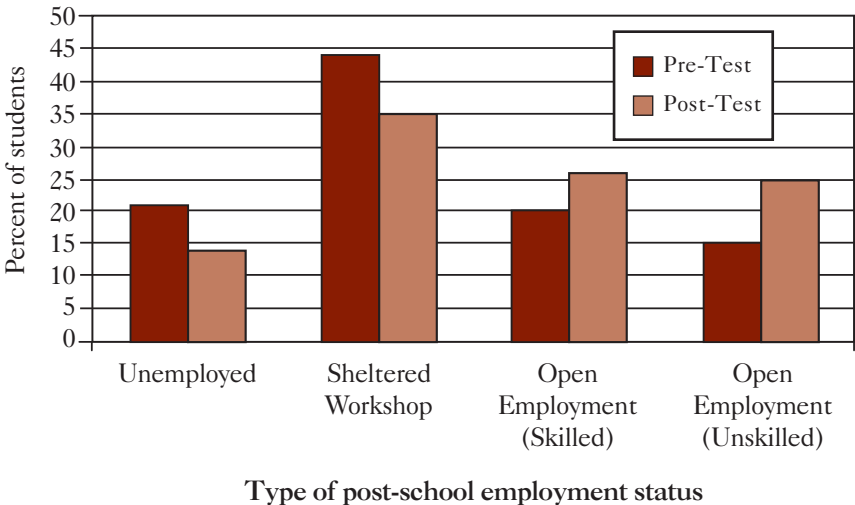
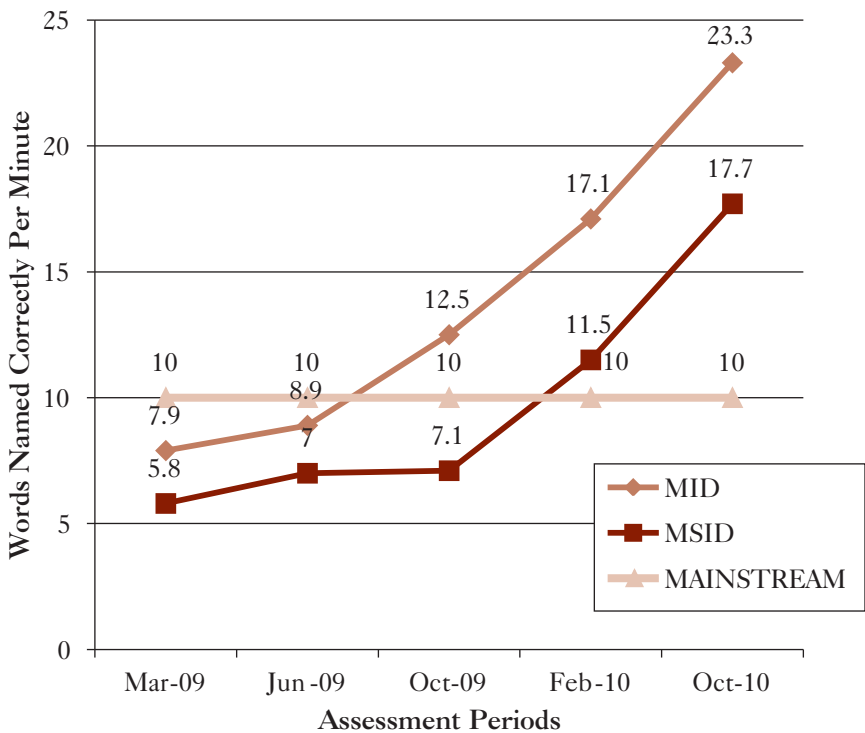


Figure 3

Collaborative for Great Schools



Singapore Ministry of Education Special Education Branch

2008 – present

Service model included

- project design
- evaluation design
initial training for leaders, teachers, and support staff
- side by side coaching for leaders and support staff

Students with disabilities improved dramatically compared to typically developing peers

the children. Some children were so excited by the lessons that they started to teach their peers. Students were eager to participate in the lessons as it “provided them with an opportunity to show what they could do.”

Increased attention span: Students became more attentive and focused as a result of the structure of the lessons and this extended beyond *Reading Mastery* lessons. “Fidgety” students now “responded promptly” to teachers, and “showed improvement in their sitting postures.” Students were more able to “self-correct” and “able to point out mistakes their friends made.”

A teacher commented that the *Reading Mastery* programs “changed her view on how children could learn fundamentals and equipped her with the techniques on teaching the sounding and reading of words.” Another said that the approach helped her “sharpen [their] skills.” Many reported that they incorporated the techniques into teaching other subjects.

The “Word Fluency” figure shows the dramatic increase in word identification fluency for two groups of special educa-

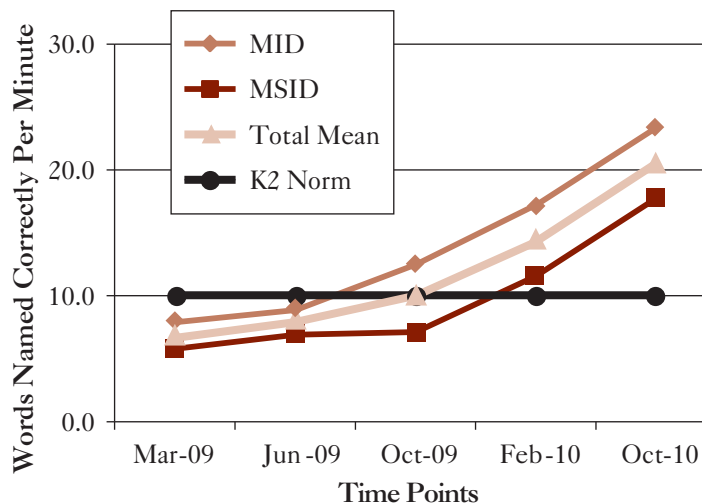
tion students in Singapore compared to their typically developing peers.

The line labeled MID represents the growth for students identified as Mildly Intellectually Disabled. These are students with measured IQ scores between 50 and 70.

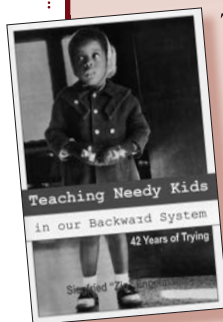
The line labeled MSID represents the growth for students with Most Severe Intellectual Disabilities. These are students with measured IQ scores below 50.

The Mainstream represents typically developing students at a second grade (U.S.) level. *ADI*

Figure 4
Word Fluency



Teaching Needy Kids in Our Backward System



The Association for Direct Instruction is proud to publish Siegfried “Zig” Engelmann’s newest book, *Teaching Needy Kids in Our Backward System*. This book chronicles Zig’s history in education.

More than just a memoir, the book details how our educational system has failed to embrace solutions to problems the establishment claims it wants to solve. You will find this a fascinating read as well as shockingly revealing.

\$32.00 list / \$25.00 member

To order, see page 36

Figure 5
Letter Naming

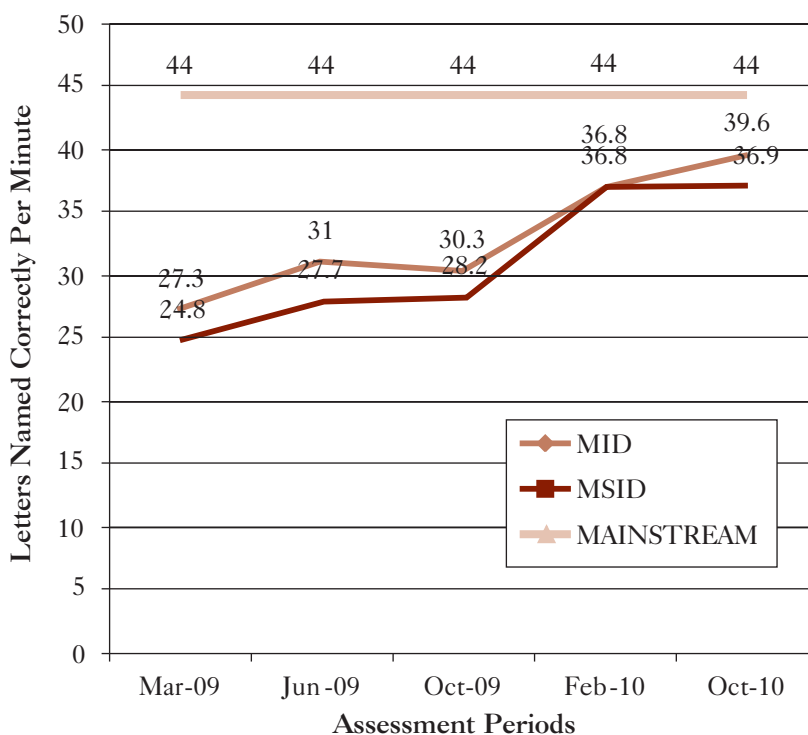


Figure 6
Sound Fluency

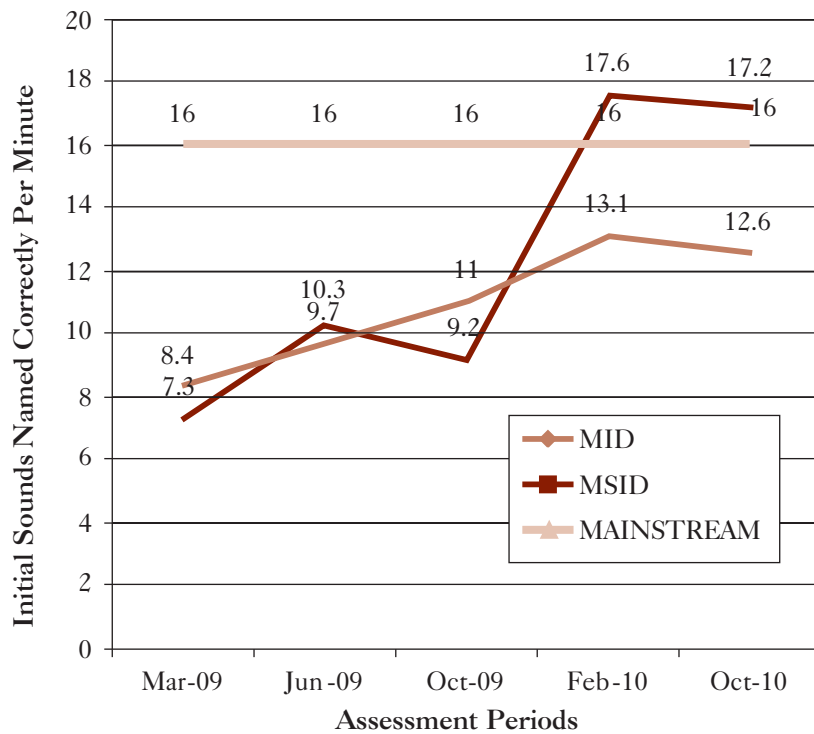
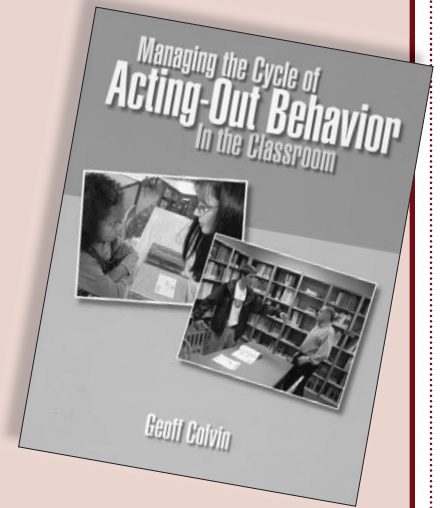
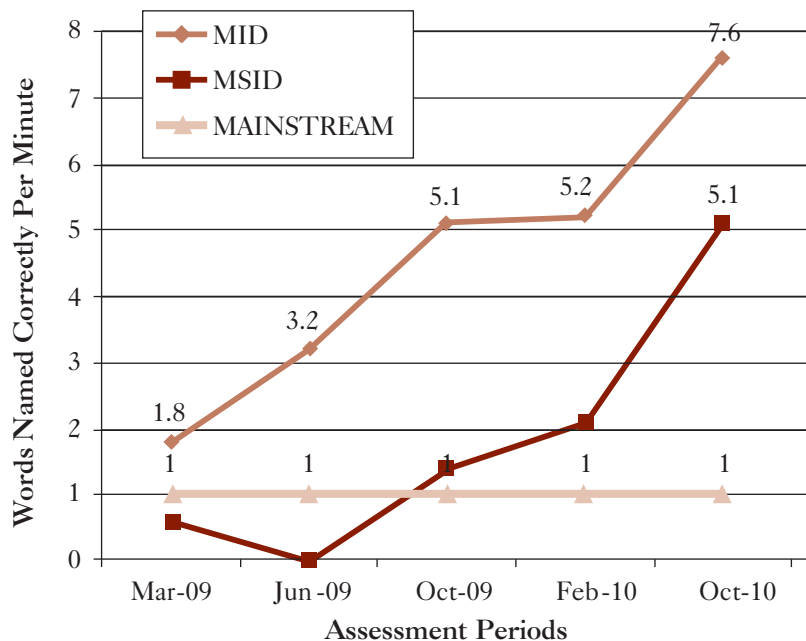


Figure 7
Nonsense Word Fluency



Now available from ADI

Managing the Cycle of Acting-Out Behavior in the Classroom

Geoff Colvin

This text is based on Dr. Colvin's 25 years of experience and research in working with the full range of problem behavior. He presents a model for describing acting-out behavior in terms of seven phases.

A graph is used to illustrate these phases of escalating conflict. The information will enable the teacher or staff member to place the student in the acting-out sequence and respond appropriately. Well-tested, effective, and practical strategies are described in detail for managing student behavior during each phase of the cycle. The book also contains many helpful references as well as an extensive set of reproducible forms.

Cost:

\$28.00 list

\$24.00 member price

To order, see page 36

Martin's Musings

The Last School Reform

(Because if this doesn't do the trick, nothing will.)

Teacher accountability is a current passion, driven by public dissatisfaction with education—high expense, promises not fulfilled (e.g., chronic achievement gap), faddish enthusiasms (globalism, 21st century skills), cronyism, high teacher turnover, student dropout, low achievement. *Teacher assessment is the main response of the education establishment* to the diagnosis (presumption?) that too many teachers are not proficient. This focus on teachers raises interesting questions.

1. Who is threatened by the problems in public education?
2. Why target teachers? Who benefits from this?

Teacher proficiency is the outcome of a process that begins with teacher preparation programs that are guided by curriculum organizations, state departments of public instruction, organizations that certify schools of education, the “philosophies” of education professors, and the topics of education research (e.g., useful for designing instruction vs. useful merely for getting professors tenure by publishing on politically “in” issues such as diversity and social justice). Teacher proficiency is also influenced by the quality of an in-service professional development at district and school levels.

3. Why, then, are teachers the main target of assessment and accountability, but not schools of education, certifying organizations, state departments of public instruction, researchers, districts, and schools? After all, if you want to improve water quality, isn't it smarter to focus upstream, where the water

comes from, rather than on households? Perhaps teachers are the focus because:

- a. Proficiency is solely the teacher's responsibility. Ed schools, DPIs, districts, curriculum organizations, certifying organizations, researchers, and schools have nothing whatever to do with teacher proficiency. [Sarcasm.] Or,
- b. Teachers (and their students) are the most vulnerable social class in the education system. Teachers are more easily blamed, harassed, and fired than all of the other players.

In our view, it's likely that the education establishment focuses narrowly on teachers because *they are the easiest to blame for system failure*. Teachers are easily seen in the classroom, while DPIs, schools of education, central offices, curriculum organizations, certifying organizations, and researchers are out of sight and in the past. In addition, they can claim, “We don't DO the teaching. So if the kids don't learn, don't blame us.” The issue of teachers as targets aside, let's look at the current enthusiasm for teacher assessment.

Assessment of Teacher Assessment

The education establishment assumes that teacher assessment (via some kind of inventory set of instruments, and procedures) is a good thing, and that teacher assessments are valid, spotlight the problem, and will improve teacher proficiency and student outcomes. However, as honest researchers, we don't look for data to

support our beliefs. Instead, we test the null hypothesis.

Null hypothesis. *Teacher assessment is poor.*

We tested the null hypothesis by examining a sample of teacher assessment instruments and methods. We asked

1. Do they cover enough of the repertoire of a proficient teacher?
2. Are items concretely and clearly worded?
3. Are measures valid—do they measure what they are supposed to?
4. Is the measurement process valid; is measurement itself accountable = triangulation, reliability?
5. Does teacher assessment directly foster professional development and the improvement of a school's stock of knowledge?

These questions should be answered BEFORE a state, district, or school uses teacher assessment instruments and methods. These should be pilot tests (one school), replications (same kind of sample to assess reproducibility, then samples with different characteristics to assess generalizability), then one district, etc.

We examined 10 states, two foreign countries, and four privately developed systems.

So, how good are teacher assessments? Most assessment systems are poor. How so?

1. Too little that directly affects student interest, attention, and learning is covered, especially designing and improving curriculum and instruction—the most important set of teacher proficiencies.
2. Inventories are rarely developed by experts, and appear instead to reflect cronyism, stakeholder interests, and current education enthusi-

asms (environment, 21st century skills, globalism).

3. Proficiency terms are poorly worded.
 - a. Vague, equivocal, grandiose. "Teacher demonstrates knowledge of effective instruction for all students." [What does that mean? Surely it includes a score of proficiencies.]
 - b. No conceptual definitions, such as "A well-designed lesson is a sequence of tasks that integrates earlier and newer taught knowledge."
 - c. No operational definitions, such as "A well-designed lesson consists, in order, of review and firming background knowledge; framing instruction; presenting and testing new information; integrating earlier and new information into a larger whole (e.g. how to solve problems, essays, experiments); work on fluency and generalization; review and firming before the next lesson."

Such poorly worded proficiency items (that is, most items) do not clearly signify or point to observable events, which means that (1) measures and measurements are not developed to access anything that can be seen, which means that (2) inter-observer reliability and teacher observer reliability are likely to be weak, and that (3) measures and measurement are not likely to be valid (i.e., measure what they are supposed to measure, and predict what it is assumed they will predict).

4. Validation of item selection by experts and research is rare. Instead, "validation" is by consensus in focus groups.
5. Validation of instruments (predictive validity—scores should predict teachers with high vs. low achieving students) is rare. That is, there is no reason to believe that the assessment provides valid and useful information.

6. Triangulation of measurement via multiple measures (lesson plans, observation, discussion) is rare. Therefore, it's impossible to say how reliable (and therefore valid) measurement is.
7. Assessment is more of a threat (one shot and high stakes for teachers) than part of long-term professional development.
8. Inventories list pieces of the repertoire of a proficient teacher, but don't assess the routine activities (in which elementary proficiencies are embedded) which define the role of teacher. Assessment of teachers is similar to assessing a pianist by having him or her play notes, but not having him or her play music. Therefore, even if a teacher's profile (of isolated proficiencies) is good, one can't tell if the teacher actually teaches well (integrates skills into routine activities). Therefore, assisting teachers by focusing on specific skill items may do nothing to improve teaching and its outcomes.
9. Scoring is often done via contrived pseudo-ordinal scales.

Quality of Lesson Plans

1 - Developing

2 - Proficient

3 - Accomplished

4 - Distinguished

These scales are not based on prior empirical research showing that teacher performance falls into these four levels. The levels are fictions that make scoring easier but not more valid. In addition, these are not truly ordinal (such that the next level has more of something than preceding levels) because (1) "higher" levels are sometimes missing descriptors from "lower" levels; (2) often, "higher" levels are merely more specific statements of lower levels; and (3) there is often no reason to believe that "higher" levels actually are better or more advanced.

10. Validation of the whole assessment system—including an inventory of proficiency items, assessments methods or protocol, interpretation, use of the information to assist teachers—is rare. We do not know THAT teachers with certain profiles did have (retrospective), do have (concurrent), or will have (predictive) students with concomitant levels of achievement. Yet, these systems are used before they are pilot tested and field tested broadly.

Table 1
Teacher Assessments

States	Foreign Countries	Private Developers
Massachusetts	Australia	Danielson Group
New York	England	CLASS
Wisconsin		Teach for America
Texas		Teaching Performance Assessment
California		
Oregon		
West Virginia		
Florida		
Colorado		
North Carolina		

In view of the above problems, maybe we can do a little better. At first, we thought that teacher assessment might work like in Table 3.

We asked ourselves if this model of teacher assessment would be any more likely to effect beneficial change in public education than previous efforts. And so, we examined previous efforts. Consider earlier education reforms.

1. **Project Follow Through** – A 25-year study showing Direct Instruction was the most effective. Yet states, districts, and schools of education and curriculum organizations rejected it in favor of progressive methods, which had the WORST outcomes for students.
2. **State accountability programs** – Focus on test scores but not first on teacher skills and curriculum materials. Ed schools and state DPIs remain untouched.
3. **No Child Left Behind** – Focus on qualifications of teachers and test scores. Ed schools and DPIs are untouched.
4. **Reading First** – Focused on DPI (curriculum, in service training), districts, and schools. Ed schools are untouched.
5. **Kansas City** – Millions of dollars spent on schools (technology, in-service) over a decade. No change in achievement. Ed schools are untouched. No change in core curriculum.

So, what do we learn? We learn that all recent education reforms have been

- expensive
- time-consuming
- stress-producing
- teacher-burdening
- FLOPS.

Logically, all these reform flops must have had something in common. And the one-time good reform (Reading First) must have had features that the flops did not have. But what? Comparing and contrasting the reforms, our inductive generalization was that

The flops focused narrowly on very few components of education as a system: they focused on teachers, textbooks, machines. However, factors that influence teachers and textbooks, and the use of machines, were generally ignored. For example, in the reform flops,

1. The stock of knowledge (fragmented, with gaps, with excessive attention to current enthusiasms, and too little on what science says about curriculum and instruction and learning) was untouched.
2. Ed schools were untouched. No substantial change in objectives; no shift from ill-designed “progressive” methods to well-designed systematic, focused, direct instruction; no exit assessment of graduates.
3. DPIs and boards of education did not develop definitions of proficient teaching that they could require ed schools, districts, schools, and

teachers to learn and use for certification, hiring, and tenure.

4. Legislatures remained ignorant of the system and of what was needed to change it.

In contrast, the one effective reform—Reading First—focused on (1) changing the stock of knowledge for teaching reading (and changing state standard courses of study to reflect this); (2) changing reading materials so they were consistent with the stock of knowledge; (3) retraining teachers; (4) providing for pre-service training of new teachers in schools; and (5) frequent monitoring to modify instruction based on student progress. But Reading First was anathema to the dominant “pedagogy” (it involved direct and focused instruction of basic reading skills, rather than students “constructing” knowledge by “discovering” how to read, with the teacher serving as a “guide on the side” or “facilitator”), and it was finally killed.

How to Do a Better (Nonflop) Job

Helpful Hints

- If the rear wheels aren’t turning, don’t focus on solely on the wheels. Focus on what drives the wheels, too.
- If the river is filled with sludge, don’t clean up only the basin where the sludge collects. Focus ALSO upstream where the sludge comes from.

Table 3
First Model of Improved Teacher Assessment

Independent variables in sequence →

Valid inventory
based on scientific
research

→

Valid instruments
and methods of
assessment

→

Friendly,
comprehensive,
continual
assessment

→

Dependent
variable 1

Long-term
improvement of
teacher proficiency
(individual and
school)

Dependent
variable 2

Increased student
achievement

- If the keyboard is not producing letters on the screen, stop hitting the keyboard. Check to see if the computer is plugged in—the source.

In other words, to change the outcomes of a system of relationships, you have to:

1. Understand that in a weak system, changing one element, or one element at a time, has little effect. The rest of the weak components will undo any desirable change.
2. Identify and change the elements of the system which, when changed, will affect all the rest (the core element); and
3. Change the rest of the elements that need a hard push to make them line up with (build upon) change in the core element.

The core element is the stock of technical teaching knowledge, organized as routine activities that define the role of proficient teacher. What routine activities? What do proficient teachers do? They

1. Assess and improve programs (that is, pre-planned and fully presented sequences of lessons) in reading, math, etc.
2. Design instruction from textbooks and other materials.
3. Design curriculum and instruction for elementary school.
4. Organize and run a class as social system.

In light of the common deficiencies in past reforms (narrow focus, downstream), and the several ways that Reading First (which did work when used properly) differed from the flops, *assessing and improving teacher proficiency must be part of a system-wide reform that begins with establishing a foundation of shared knowledge that influences all other components of the system.* Figure 1 shows how we envision serious education reform.

What the Model Says

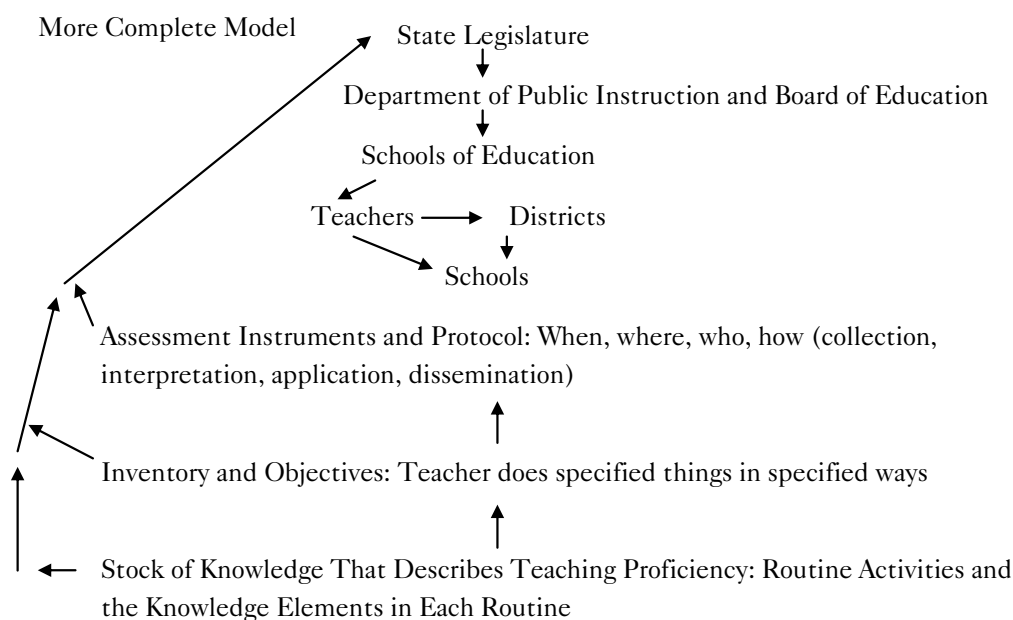
1. Do a knowledge analysis of the four main activities that define the role

of a proficient teacher: (a) assessing and improving programs (e.g., for teaching reading and math); (b) improving, designing, and delivering instructions from textbooks and supplementary materials; (c) developing a curriculum and delivering instruction for daily lessons for a school year in elementary grades; (d) designing and running the social organization of the class.

Identify the steps and the knowledge elements needed proficiently to perform, evaluate, and improve these routines; e.g. forms of knowledge (e.g., concepts, rules, routines) and procedures for teaching; teaching the four phases of learning (acquisition, generalization, fluency, retention); designing logical sequences in tasks and lessons and across lessons; developing objectives and assessments; and many more.

2. Develop inventories that turn #1 into a set of proficiencies and associated objectives that can be measured concretely. These inventories opera-

Figure 1
Education Reform



tionalize the core of education—the stock of technical knowledge.

3. Develop teacher assessments that are collaborative, continual, and school wide, to foster both individual and school-system development.

Pilot test feasibility, user patterns, and predictive validity in schools; replicate; field test at the district level.

4. Work to establish #2 and #3 in state legislatures, then Departments of Public Instruction, then districts and schools, and teacher preparation programs. Accreditation should be based on teacher preparation programs using numbers 2 and 3 to train and certify teachers and districts using numbers 2 and 3 to provide professional development.

The Biggest Obstacle

A common stock of technical knowledge—how to design curriculum, how to teach, how to organize and run a class—is the core or foundation of education. Everything else should rest on that foundation.

- Teacher preparation, certification, and assessment
- Certification of schools of education
- Department of Public Instruction standards for teacher, superintendent, and principal licensure

However, the field of education has no shared stock of technical knowledge, no core, no foundation that generates effective and efficient curricula (what is taught and in what sequence), materials (that contain knowledge), and instructional methods. Instead, the field is divided into “pedagogic” adversaries:

1. The dominant pedagogy that calls itself “progressive,” and advocates “best practices” (which it defines) and “developmentally appropriate practices” (which it defines), in which students “construct” knowledge with teacher facilitation.
2. The minority “pedagogy” that considers itself traditional, and advo-

cates carefully planned instruction (sequences, examples, precise wording), lots of practice to build fluency and retention, and teacher directness until students have so mastered the material that they can acquire and apply knowledge more independently.

Aside from the intransigence of progressives, born of their dominant social position and strong belief, there is no reason, theoretically or technically, for the oppositions. Experimental research shows that systematic, focused, teacher-directed instruction is more effective when the skill elements of a knowledge system are highly interdependent (tightly coupled), such

A common stock of technical knowledge—how to design curriculum, how to teach, how to organize and run a class—is the core or foundation of education. Everything else should rest on that foundation.

as in reading and math. Once students have acquired basic skills, instruction can be more independent and the teacher can be more of a guide. Likewise, instruction can be less focused and less direct when knowledge systems consist of skill elements that are more loosely coupled, such as literature and history. Still, it would be more effective and efficient to teach main concepts in a more direct fashion. In our opinion, there will be no significant, useful, or lasting improvement in education until

- a. Educators develop a coherent and comprehensive stock of technical knowledge,

- b. That is turned into an inventory of measureable teaching proficiency objectives,
- c. That colleges of education are required to teach in full in order to maintain certification.

At that time, education can call itself a mature profession.

A Sample of Sources

California

- Teacher Evaluation Rubric

<http://people.uncw.edu/kozloffm/CATeacher%20Evaluation%20Rubrics.pdf>

North Carolina

- Form-Ready Rubric for Teacher Evaluation

<http://www.dpi.state.nc.us/docs/profdev/training/teacher/individual/form-ready-rubric.pdf>

Texas

- Texas Appraisal Framework

<http://people.uncw.edu/kozloffm/Texas%20Appraisal%20Framework.pdf>

- Texas Appraisal Documentation Form

<http://people.uncw.edu/kozloffm/Texas%20Appraisal%20Documentation%20Form.pdf>

- Texas Teacher Observation

<http://people.uncw.edu/kozloffm/TexasTeacherObservation.pdf>

- Texas Appraisal Timeline

<http://people.uncw.edu/kozloffm/TexasAppraisalTimeline.pdf>

Wisconsin

- Teacher Evaluation

<http://people.uncw.edu/kozloffm/Teacher-Evaluation-Oct10F.pdf>

- Wisconsin Field Study

<http://people.uncw.edu/kozloffm/WIFieldStudyFinal.pdf>

- Wisconsin CCP What WI Teachers Evaluated

<http://people.uncw.edu/kozloffm/WISCpp%20what%20WI%20teachers%20evaluated.ppt>

- Wisconsin Trip Booklet

<http://people.uncw.edu/kozloffm/WI-Trip-Booklet-2010%20Milwaukee.pdf>

- Wisconsin Powerpoint Teacher Evaluations

<http://people.uncw.edu/kozloffm/WISCpp presentation teacher evaluations.pdf>

Massachusetts

- Massachusetts Teacher Evaluation

<http://people.uncw.edu/kozloffm/MA-Teacher-Eval-summary.pdf>

New York

- New York Teaching Standards

<http://people.uncw.edu/kozloffm/New-York-State-Teaching-Standards.doc>

<http://people.uncw.edu/kozloffm/Newyorkteachingstandards.pdf>

- New York Teacher Evaluation and Development Handbook

<http://people.uncw.edu/kozloffm/NYTEDHandbook.pdf>

Oregon

- Overview of Teacher Evaluation

<http://people.uncw.edu/kozloffm/OREGONOverviewofteachereval.doc>

- Evaluation Report

<http://people.uncw.edu/kozloffm/oregonevaluationreport.pdf>

- Assistant Evaluation

<http://people.uncw.edu/kozloffm/oregonassistantobservation.pdf>

- Teacher Classroom Observations

<http://people.uncw.edu/kozloffm/oregonteacherclassobservation.pdf>

- Teacher Evaluation Handbook

<http://people.uncw.edu/kozloffm/oregonTeacher-Evaluation-Handbook-V10.pdf>

- Framework for Teaching

<http://people.uncw.edu/kozloffm/oregonFrameworkforTeaching-FinalDraft.pdf>

- Note-taking Form

<http://people.uncw.edu/kozloffm/oregonObservationNoteForm.pdf>

West Virginia

- Professional Teaching Standards

<http://people.uncw.edu/kozloffm/WVA-teachingstandardstraining.pdf>

Colorado

- Colorado Teaching Evaluation

<http://people.uncw.edu/kozloffm/coloradoteachingeval.pdf>

Florida

- Florida Schools Teaching Evaluation

<http://people.uncw.edu/kozloffm/Florida%20Schools%20Teaching%20Evaluation.doc>

Australia

- Teacher Evaluation Australia

<http://people.uncw.edu/kozloffm/MereydeTeacherEvalAustralia.doc>

- Certification Goals

<http://people.uncw.edu/kozloffm/australiacertificationgoals.pdf>

- Overview from Australia

<http://people.uncw.edu/kozloffm/australiaoverview.doc>

- How Australia Developed Standards

<http://people.uncw.edu/kozloffm/australiaConsultationReport.pdf>

- How Australia Validated Standards

<http://people.uncw.edu/kozloffm/australiavalidation.pdf>

England

- Ofsted Evaluation Schedule for Schools

<http://people.uncw.edu/kozloffm/Ofsted%20Evaluation%20Schedule%20for%20Schools.doc>

- Ofsted Lesson Criteria

<http://people.uncw.edu/kozloffm/Ofsted%20Lesson%20Criteria%202009.doc>

- Ofsted Lesson Observation Checklist

<http://people.uncw.edu/kozloffm/Ofsted%20Lesson%20Observation%20Checklist%202009.doc>

- Ofsted Presentation Primary

<http://people.uncw.edu/kozloffm/Ofsted%20Presentation%20Primary.pdf>

- England School Observation

<http://people.uncw.edu/kozloffm/England%20School%20Observation%20Outline.pdf>

Danielson

- The Danielson Group

<http://www.danielsongroup.org/>

<http://whitebear.k12.mn.us/teachereval.html>

http://usny.nysed.gov/rttt/teachers-leaders/practicerrubrics/Docs/Teachscape_Rubric.pdf

Class

<http://www.teachstone.org/about-the-class/>


<http://www.brookespublishing.com/store/books/pianta-class/index.htm>

- Teaching Performance Assessment (TPA)

<http://ed.fullerton.edu/SecEd/tpa/>

<http://www.ctc.ca.gov/educator-prep/TPA-files/CandidateHandbook.pdf>

Teach for America

<http://www.teachingasleadership.org/sites/default/files/TAL.Comprehensive.Rubric.FINAL.pdf> 

Now Available from ADI...

Keynotes From the 2011 National Direct Instruction Conference Available

Couldn't make it the National Direct Instruction Conference in July, or were you there and want to share part of your experience with others?

Copies of the opening remarks by Zig Engelmann, the opening keynote by Cary Andrews, and Zig's closing keynote are available from ADI on DVD.

Cary Andrews is the Associate Superintendent for Curriculum Implementation and Development in Reading and Language Arts at the Roger Bacon Academy, an Educational Management Company based in North Carolina. He has worked as a National Educational Consultant for many years as well as taught at all levels in general and special education. His presentation is lively, informative and inspiring.

To order, fill out the form below or order online.

ADI *Association for Direct Instruction*

P.O. Box 10252, Eugene, Oregon 97440 • www.adihome.org
541.485.1293 (voice) • 541.868.1397 (fax)

Title	Price	Quantity	Total
National Direct Instruction Conference Keynotes	\$30.00		
<i>Make payment or purchase orders payable to the Association for Direct Instruction.</i>	<i>Subtotal</i>		
	<i>Postage & Handling (\$3.50)</i>		
	<i>Total (U.S. Funds)</i>		

Please charge my ☐ Visa ☐ Mastercard ☐ Discover in the amount of \$ _____

Card # _____ Exp Date _____

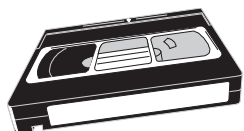
Signed _____

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____



Videotapes on the Direct Instruction Model

ADI has an extensive collection of videos on Direct Instruction. These videos are categorized as informational, training, or motivational in nature. The informational tapes are either of historical interest or were produced to describe Direct Instruction. The training tapes have been designed to be either stand-alone training or used to supplement and reinforce live training. The motivational tapes are keynote presentations from past years of the National Direct Instruction Conference.

Informational Tapes

Where It All Started—45 minutes. Zig teaching kindergarten children for the Engelmann-Bereiter pre-school in the 60s. These minority children demonstrate mathematical understanding far beyond normal developmental expectations. This acceleration came through expert teaching from the man who is now regarded as the “Father of Direct Instruction,” Zig Engelmann. Price: \$10.00 (includes copying costs only).

Challenge of the 90s: Higher-Order thinking—45 minutes, 1990. Overview and rationale for Direct Instruction strategies. Includes home-video footage and Follow Through. Price: \$10.00 (includes copying costs only).

Follow Through: A Bridge to the Future—22 minutes, 1992. Direct Instruction Dissemination Center, Wesley Elementary School in Houston, Texas, demonstrates approach. Principal, Thaddeus Lott, and teachers are interviewed and classroom footage is shown. Created by Houston Independent School District in collaborative partnership with Project Follow Through. Price: \$10.00 (includes copying costs only).

Direct Instruction—black and white, 1 hour, 1978. Overview and rationale for Direct Instruction compiled by Haddox for University of Oregon College of Education from footage of Project Follow Through and Eugene Classrooms. Price: \$10.00 (includes copying costs only).

Training DVDs

The Elements of Effective Coaching—3 hours, 1998. Content in *The Elements of Effective Coaching* was developed by Ed Schaefer and Molly Blakely. The video includes scenarios showing 27 common teaching problems, with demonstrations of coaching interventions for each problem. A common intervention format is utilized in all scenarios. Print material that details each teaching problem and the rationale for correcting the problem is provided. This product should be used to supplement live DI coaching training and is ideal for Coaches, Teachers, Trainers. Price...\$395.00 Member Price...\$316.00

Reading Mastery 1, 2, 3 and Fast-Cycle Preservice and Inservice Training—The first videos of the Level I and Level II series present intensive preservice training on basic Direct Instruction teaching techniques and classroom management strategies used in *Reading Mastery* and the equivalent lesson in *Fast-Cycle*. Rationale is explained. Critical techniques are presented and demonstrated. Participants are led through practical exercises. Classroom teaching demonstrations with students are shown. The remaining videos are designed to be used during the school year as inservice training. The DVDs are divided into segments, which present teaching techniques for a set of upcoming lessons. Price: \$229.00.

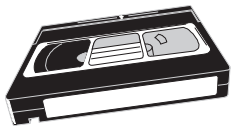
Conference Keynotes

These videos are keynotes from the National Direct Instruction Conference in Eugene. These videos are professional quality, two-camera productions suitable for use in meetings and trainings.

Keynotes From the 2005 National DI Conference, July 2005, Eugene, Oregon

Carefully Designed Curriculum: A Key to Success. For the past 31 years Zig Engelmann has delivered the opening keynote of the National DI Conference, and this year was no exception. Zig focuses on the careful design of the Direct Instruction programs that make them effective in the classroom versus other programs that have some of the component design elements, but not all and are therefore less effective than DI. Pioneering author Doug Carnine describes some of the challenges we face in educating our children to compete on a world class level. Doug also goes into detail of how to create a school improvement plan and how to implement it. As a bonus, the conference closing is included. Price: Videotape \$30.00, DVD \$40.00

continued on next page



Videotapes on the Direct Instruction Model...continued

Keynotes From the 2004 National DI Conference, July 2004, Eugene, Oregon—Conference attendees rated the keynotes from the 30th National Direct Instruction Conference and Institutes as one of the best features of the 2004 conference. Chris Doherty, Director of Reading First from the U.S. Office of Elementary and Secondary Education in Washington, DC, delivered a humorous, informative, and motivating presentation. Chris has been an advocate of Direct Instruction for many years. In his capacity with the federal government he has pushed for rules that insist on states following through with the mandate to use programs with a proven track record. The way he relates his role as a spouse and parent to his professional life would make this an ideal video for those both new to DI as well as veteran users. In the second opening keynote, Zig Engelmann outlines common misconceptions that teachers have about teaching and learning. Once made aware of common pitfalls, it is easier to avoid them, thereby increasing teacher effectiveness and student performance. Price: \$30.00

To the Top of the Mountain—Giving Kids the Education They Deserve—75 minutes. Milt Thompson, Principal of 21st Century Preparatory School in Racine, Wisconsin gives a very motivational presentation of his quest to dramatically change the lives of all children and give them the education they deserve. Starting with a clear vision of his goal, Thompson describes his journey that turned the lowest performing school in Kenosha, Wisconsin into a model of excellence. In his keynote, Senior Direct Instruction developer Zig Engelmann focuses on the four things you have to do to have an effective Direct Instruction implementation. These are: work hard, pay attention to detail, treat problems as information, and recognize that it takes time. He provides concrete examples of the ingredients that go into Direct Instruction implementations as well as an interesting historical perspective. Price: \$30.00

No Excuses in Portland Elementary, The Right Choice Isn't Always the Easiest, and Where Does the Buck Stop? 2 tapes, 1 hour, 30 minutes total. Ernest Smith is Principal of Portland Elementary in Portland, Arkansas. The February 2002 issue of *Reader's Digest* featured Portland Elementary in an article about schools that outperformed expectations. Smith gives huge credit to the implementation of DI as the key to his student's and teacher's success. In his opening remarks, Zig Engelmann gives a summary of the Project Follow Through results and how these results translate into current educational practices. Also included are Zig's closing remarks. Price: \$30.00

Lesson Learned...The Story of City Springs, Reaching for Effective Teaching, and Which Path to Success? 2 tapes, 2 hours total. In the fall of 2000 a documentary was aired on PBS showing the journey of City Springs Elementary in Baltimore from a place of hopelessness to a place of hope. The principal of City Springs, Bernice Whelchel, addressed the 2001 National DI Conference with an update on her school and delivered a truly inspiring keynote. She describes the determination of her staff and students to reach the excellence she knew they were capable of. Through this hard work City Springs went from being one of the 20 lowest schools in the Baltimore City Schools system to one of the top 20 schools. This keynote also includes a 10-minute video updating viewers on the progress at City

Springs in the 2000–2001 school year. In the second keynote Zig Engelmann elaborates on the features of successful implementations such as City Springs. Also included are Zig's closing remarks. Price: \$30.00

Successful Schools...How We Do It—35 minutes. Eric Mahmoud, Co-founder and CEO of Seed Academy/Harvest Preparatory School in Minneapolis, Minnesota presented the lead keynote for the 1998 National Direct Instruction Conference. His talk was rated as one of the best features of the conference. Eric focused on the challenges of educating our inner city youth and the high expectations we must communicate to our children and teachers if we are to succeed in raising student performance in our schools. Also included on this video is a welcome by Siegfried Engelmann, Senior Author and Developer of Direct Instruction Programs. Price: \$15.00

Commitment to Children—Commitment to Excellence and How Did We Get Here...Where are We Going?—95 minutes. These keynotes bring two of the biggest names in Direct Instruction together. The first presentation is by Thaddeus Lott, Senior. Dr. Lott was principal at Wesley Elementary in Houston, Texas from 1974 until 1995. During that time he turned the school into one of the best in the nation, despite demographics that would predict failure. He is an inspiration to thousands across the country. The second presentation by Siegfried Engelmann continues on the theme that we know all we need to know about how to teach—we just need to get out there and do it. This tape also includes Engelmann's closing remarks. Price: \$30.00

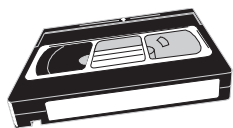
State of the Art & Science of Teaching and Higher Profile, Greater Risks—50 minutes. This tape is the opening addresses from the 1999 National Direct Instruction Conference at Eugene. In the first talk Steve Kukic, former Director of Special Education for the state of Utah, reflects on the trend towards using research based educational methods and research validated materials. In the second presentation, **Higher Profile, Greater Risks**, Siegfried Engelmann reflects on the past of Direct Instruction and what has to be done to ensure successful implementation of DI. Price: \$30.00

Fads, Fashions, & Follies—Linking Research to Practice—25 minutes. Dr. Kevin Feldman, Director of Reading and Early Intervention for the Sonoma County Office of Education in Santa Rosa, California presents on the need to apply research findings to educational practices. He supplies a definition of what research is and is not, with examples of each. His style is very entertaining and holds interest quite well. Price: \$15.00

Aren't You Special—25 minutes. Motivational talk by Linda Gibson, Principal at a school in Columbus, Ohio, successful with DI, in spite of minimal support. Keynote from 1997 National DI Conference. Price: \$15.00

Effective Teaching: It's in the Nature of the Task—25 minutes. Bob Stevens, expert in cooperative learning from Penn State University, describes how the type of task to be taught impacts the instructional delivery method. Keynote from 1997 National DI Conference. Price: \$15.00

continued on next page



Videotapes on the Direct Instruction Model...continued

Moving from Better to the Best—20 minutes. Closing keynote from the National DI Conference. Classic Zig Engelmann doing one of the many things he does well...motivating teaching professionals to go out into the field and work with kids in a sensible and sensitive manner, paying attention to the details of instruction, making sure that excellence instead of “pretty good” is the standard we strive for and other topics that have been the constant theme of his work over the years. Price \$15.00

One More Time—20 minutes. Closing from 1997 National DI Conference. One of Engelmann's best motivational talks. Good for those already using DI, this is sure to make them know what they are doing is the right choice for teachers, students, and our future. Price: \$15.00

An Evening of Tribute to Siegfried Engelmann—2.5 hours. On July 26, 1995, 400 of Zig Engelmann's friends, admirers, colleagues, and protégés assembled to pay tribute to the “Father of Direct Instruction.” The Tribute tape features Carl Bereiter, Wes Becker, Barbara Bateman, Cookie Bruner, Doug Carnine, and Jean Osborn—the pioneers of Direct Instruction—and many other program authors, paying tribute to Zig. Price: \$25.00

Keynotes from 22nd National DI Conference—2 hours. Ed Schaefer speaks on “DI—What It Is and Why It Works,” an excellent introductory talk on the efficiency of DI and the sensibility of research based programs. Doug Carnine's

talk “Get it Straight, Do it Right, and Keep it Straight” is a call for people to do what they already know works, and not to abandon sensible approaches in favor of “innovations” that are recycled fads. Siegfried Engelmann delivers the closing “Words vs. Deeds” in his usual inspirational manner, with a plea to teachers not to get worn down by the weight of a system that at times does not reward excellence as it should. Price: \$25.00

Keynotes from the 1995 Conference—2 hours. Titles and speakers include: Anita Archer, Professor Emeritus, San Diego State University, speaking on “The Time Is Now” (An overview of key features of DI); Rob Horner, Professor, University of Oregon, speaking on “Effective Instruction for All Learners”; Zig Engelmann, Professor, University of Oregon, speaking on “Truth or Consequences.” Price: \$25.00

Keynote Presentations from the 1994 20th Anniversary Conference—2 hours. Titles and speakers include: Jean Osborn, Associate Director for the Center for the Study of Reading, University of Illinois, speaking on “Direct Instruction: Past, Present & Future”; Sara Tarver, Professor, University of Wisconsin, Madison, speaking on “I Have a Dream That Someday We Will Teach All Children”; Zig Engelmann, Professor, University of Oregon, speaking on “So Who Needs Standards?” Price: \$25.00

Order Form: ADI Videos

Use this chart to figure your shipping and handling charges.

If your order is: Postage & Handling is:

\$0.00 to \$5.00	\$3.85
\$5.01 to \$10.00	\$4.50
\$10.01 to \$15.00	\$5.85
\$15.01 to \$20.99	\$7.85
\$21.00 to \$40.99	\$8.50
\$41.00 to \$60.99	\$9.85
\$61.00 to \$80.99	\$10.85
\$81.00 or more	10% of Subtotal

Outside the continental U.S., add \$8 more

Send form with Purchase order, check or charge card number to:



ADI, PO Box 10252, Eugene, OR 97440
You may also phone or fax your order.
Phone 1.800.995.2464 Fax 541.868.1397

Qty.	Item	Each	Total
	Shipping		
	Total		

Please charge my ☐ Visa ☐ Mastercard ☐ Discover in the amount of \$ _____

Card # _____ Exp Date _____

Signed _____

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____



Books Price List

The Association for Direct Instruction distributes the following Direct Instruction materials. Members of ADI receive a 20% discount on these materials. To join ADI and take advantage of this discount, simply fill out the form and include your annual dues with your order.

Title & Author	Member Price	List Price	Quantity	Total
Preventing Failure in the Primary Grades (1969 & 1997) Siegfried Engelmann	\$19.95	\$24.95		
Theory of Instruction (1991) Siegfried Engelmann & Douglas Carnine	\$32.00	\$40.00		
Teach Your Child to Read in 100 Easy Lessons (1983) Siegfried Engelmann, Phyllis Haddox, & Elaine Bruner	\$17.50	\$22.00		
Structuring Classrooms for Academic Success (1983) S. Paine, J. Radicchi, L. Rosellini, L. Deutchman, & C. Darch	\$14.50	\$18.00		
War Against the Schools' Academic Child Abuse (1992) Siegfried Engelmann	\$14.95	\$17.95		
Research on Direct Instruction (1996) Gary Adams & Siegfried Engelmann	\$24.95	\$29.95		
Managing the Cycle of Acting-Out Behavior in the Classroom Geoff Colvin	\$24.00	\$28.00		
Rubric for Identifying Authentic Direct Instruction Programs Siegfried Engelmann & Geoff Colvin	\$12.00	\$15.00		
Teaching Needy Kids in Our Backward System Siegfried Engelmann	\$25.00	\$32.00		
Corrective Reading Sounds DVD	\$5.00	\$7.00		
Use this chart to figure your shipping and handling charges. If your order is: Postage & Handling is: \$0.00 to \$5.00 \$3.85 \$5.01 to \$10.00 \$4.50 \$10.01 to \$15.00 \$5.85 \$15.01 to \$20.99 \$7.85 \$21.00 to \$40.99 \$8.50 \$41.00 to \$60.99 \$9.85 \$61.00 to \$80.99 \$10.85 \$81.00 or more 10% of Subtotal Outside the continental U.S., add \$8 more	<i>Subtotal</i>			
	<i>Postage & Handling</i>			
	<i>ADI Membership Dues</i>			
	<i>Total (U.S. Funds)</i>			
	<i>Make payment or purchase orders payable to the Association for Direct Instruction.</i>			

Please charge my __ Visa __ Mastercard __ Discover in the amount of \$ _____

Card # _____ Exp Date _____

Signed _____

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____

School District or Agency: _____

Position: _____

e-mail address: _____

Send to ADI, PO Box 10252, Eugene, OR 97440

You may also phone in your order with VISA or Mastercard. Phone 1.800.995.2464. Order online at www.adihome.org



Association for Direct Instruction

P.O. Box 10252, Eugene, Oregon 97440 • www.adihome.org • 541.485.1293 (voice) • 541.868.1397 (fax)

What is ADI, the Association for Direct Instruction?

ADI is a nonprofit organization dedicated primarily to providing support for teachers and other educators who use Direct Instruction programs. That support includes conferences on how to use Direct Instruction programs, publication of *The Journal of Direct Instruction (JODI)*, *Direct Instruction News (DI News)*, and the sale of various products of interest to our members.

Who Should Belong to ADI?

Most of our members use Direct Instruction programs, or have a strong interest in using those programs. Many people who do not use Direct Instruction programs have joined ADI due to their interest in receiving our semiannual publications, *The Journal of Direct Instruction* and *Direct Instruction News*. *JODI* is a peer-reviewed professional publication containing new and reprinted research related to effective instruction. *Direct Instruction News* focuses on success stories, news and reviews of new programs and materials and information on using DI more effectively.

Membership Options

- ☐ \$60.00 **Regular Membership** (includes one year subscription to ADI publications, a 20% discount on ADI sponsored events and on materials sold by ADI).
- ☐ \$40.00 **Student Membership** (includes one year subscription to ADI publications, and a 40% discount on ADI sponsored events and a 20% discount on materials sold by ADI).
- ☐ \$100.00 **Sustaining Membership** (includes Regular membership privileges and recognition of your support in *Direct Instruction News*).
- ☐ \$200.00 **Institutional Membership** (includes 5 subscriptions to ADI publications and regular membership privileges for 5 staff people).

- ✓ Canadian addresses add \$10.00 US to above prices.
- ✓ Outside of North America add \$20.00 for standard delivery or \$30.00 for airmail delivery.
- ✓ Contributions and dues to ADI are tax deductible to the fullest extent of the law.
- ✓ Please make checks payable to ADI.

Please charge my ___ Visa ___ Mastercard ___ Discover in the amount of \$ _____

Card # _____ Exp Date _____

Signed _____

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____

School District or Agency: _____

Position: _____

e-mail address: _____



Now Available from ADI...

COACHES TOOL KIT

These useful pre-printed Post-It® notes are used to help convey important teaching skills to users of the Direct Instruction Reading programs. Instead of having to write out the proper presentation of the correction or procedure, one simply peels a sheet off the pad and puts it in the next lesson or two where the correction/procedure would be used.

The primary set, for use primarily with *Reading Mastery I* and *II* and *Decoding A* contains correction procedures for

- Reading Vocabulary/Sounding Out (Words in Columns)
- Individual Turns
- Comprehension Questions
- Reading Vocabulary (Sound Identification Errors)
- Looping for Sound-It-Out Words
- Word Identification Errors (Group Reading)

The upper level set, for use primarily with *Reading Mastery III–VI* and *Corrective Reading* contains correction procedures for

- Individual Turns
- Comprehension Questions
- Word Identification Errors (Word Attack)
- Word Identification Errors (Group Reading)

The two come together as a kit and are priced at \$30.00 per kit (\$24.00 for ADI members). Contact ADI for quantity pricing.

Title	Member Price	List Price	Quantity	Total
Coaches Tool Kit	\$24.00	\$30.00		
<i>Make payment or purchase orders payable to the Association for Direct Instruction.</i>	<i>Subtotal</i>			
	<i>Postage & Handling (\$3.50 per kit)</i>			
	<i>Total (U.S. Funds)</i>			

Please charge my ☐ Visa ☐ Mastercard ☐ Discover in the amount of \$ _____

Card # _____ Exp Date _____

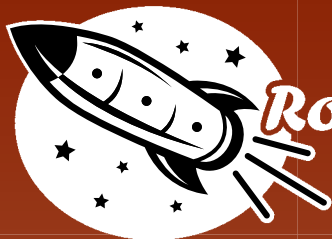
Signed _____

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____



Rocket Math

The Best Math Facts Curriculum Available Today!

Making a positive impact on kids

Rocket Math is a ten-minute, daily, paper and pencil, worksheet based, supplemental math facts fluency curriculum. It is a uniquely structured curriculum for the sequential practice and mastery of math facts.

Students are brought to fluency and automaticity in a carefully controlled sequence which enables mastery at an individualized pace.

Like Us on
Facebook!



Try Now at
RocketMath.com



jet

educator
evaluations



Equip your teachers
TO SUCCEED

Fly with jet

FREE for one year!

Try jet educator
evaluations for up to
12 teachers (or principals)
ONE YEAR for FREE!

Take jet for a test drive and
then you decide. We're sure
you'll be a customer for life.

efficient, fair, effective
jetevaluations.com

Thank you to our Sustaining Members

The ADI Board of Directors acknowledges the financial contributions made by the following individuals. Their generosity helps our organization continue to promote the use of effective, research-based methods and materials in our schools.

Anayezuka Ahidiana

Anita Archer

Jason Aronoff

Tamie Bebee

Anne Berchtold

Jim Berchtold

Almitra Berry

Elaine C. Bruner

Cathy Burner

Linda Carnine

Maria Collins

Jim Cowardin

Don Crawford

Mary Damer

Laura Doherty

Cindy Dosier

Donna Dressman

Janet Fender

Terri Getty

Richard Gifford

David Giguere

Dick Glatzmaier

Jane Greer

Ray Hall

Linda Haniford

Lee Hemenway

Meralee Hoffelt

Daniel Hursh

Debbie & Ken Jackson

Gary Johnson

Dr. Kent Johnson

Kathleen Jungohan

John & Pat Lloyd

Janet Lopez

Ann Moore

Lakysha Mosley

Steve Osborn

Jean Osborn

Cathy Redelberger

Jan Richardson

Patrice Riffin

Thomas Rollins

Randi Saulter

Ed Schaefer

Carolyn Schneider

Rhonda Schultz

Frank Smith

Pam Smith

Sara G Tarver

Mary Taylor

Judith Towns

Vicci Tucci

Maria Vanoni

Tricia Walsh-Coughlan

Rose Wanken

Charles Wood

Linda Youngmayr