

Research Regarding Direct Instruction

One of the biggest problems in teaching phonics is that a substantial amount of drill is required. In poorly designed phonics programs, young children are expected to sit through hours of dull repetition. This is unfortunate, since it is possible to turn drill into a highly engaging, exciting group activity through the use of Direct Instruction (DI). Direct Instruction is a specific teaching style originally developed at the University of Illinois and later at the University of Oregon. It has the following attributes:

- *Homogeneous Skill Grouping:* Children are grouped according to their levels of ability, rather than according to age or other factors. If you are going to teach the same material to a group of children, they clearly benefit most if they are all able to follow the material.
- *Scripted Class Sessions:* Teachers use pre-designed scripts when teaching. The scripts are based on extensive research regarding student retention, and every aspect of every script is based upon results that were demonstrated through research. The great advantage of this approach is that every teacher using the script becomes the beneficiary of that research and will probably teach much more effectively than if left to his or her own devices.
- *Intense, Constant Student Interaction:* The scripted sessions consist primarily of sequences of stimulus/response pairings, wherein the teacher stimulates the class with a description of a concept, an illustration of the concept through an example, and finally a request that the class repeat the example. The class responds orally, usually as a group.
- *Teaching to Mastery:* The group does not move on until everyone in the group understands the material.

There is a substantial body of research supporting the use of DI for early childhood instruction, although it is not nearly as voluminous as the research supporting phonics since DI is relatively new. If you are interested in more information about DI research, you can visit the web site of the [Association for Direct Instruction](#). This web site and its associated [University of Oregon ADI site](#) together contain samples of DI materials, including a sample DI script, samples of the *SRA Reading Mastery* curriculum, an extensive bibliography of research supporting the use of both phonics and DI, and a summary of the results of the largest and longest educational research study ever conducted - the U.S. Department of Education's "Project Follow Through".

Project Follow-Through

Project Follow-Through began in 1967 under president Lyndon Johnson. Its express purpose was to study instructional methods that would lead to a reduction in the disparity between low- and high-performing students by improving the performance of low-performing students. It was ultimately concluded in 1995 after consuming \$1 billion and conducting research on over 20,000 students nationwide. The reading portion of this study involved over 15,000 students and was designed to test the effectiveness of three major models of reading instruction. Three specific reading programs were studied under each of the three major models. The major models (and their associated specific programs) are:

1. Basic Skills Model

This model holds that the objective of education is to induce certain behaviors, all behaviors are learned, and that carefully designed instruction must be employed in order to induce those behaviors. The specific programs for this group were:

- *Behavior Reinforcement:* Social praise and tokens are given to children for correct responses and tokens are traded for desired activities. Teachers use scripts, and instruction is provided incrementally. Sponsored by the University of Kansas.

- **Direct Instruction:** This program emphasizes the teaching of phonemic awareness and phonics, using the DI techniques described above. The reading curriculum here is essentially the same *SRA Reading Mastery* curriculum that we are using. Sponsored by the University of Oregon.
- **Language Development:** is an eclectic approach emphasizing language development rather than explicit reading skills. Sponsored by the Southwest Educational Developmental Laboratory.

2. Cognitive/Conceptual Skills Model

This model holds that cognitive growth should be emphasized over the learning of specific content. A variety of instructional techniques are supported, with the common thread being an emphasis on self-guided activity and interaction with the environment. The specific programs for this group were:

- **Cognitively-Oriented Curriculum:** Based on Piaget's theories of underlying cognitive processes, this curriculum encourages children to schedule their own activities. Teaching emphasizes "labeling and explaining causal relationships". Sponsored by the High Scope Foundation.
- **Parent Education:** Parents of disadvantaged children are taught to teach their own children. Teaching emphasizes language instruction (precise nature not specified) and development of motor and cognitive skills. Sponsored by the University of Florida.
- **Self Directed Literature:** Students are exposed to literature relating to their own experiences and interest. Child-directed choices are emphasized, based in part on the assumption that student choice would enhance enjoyment and facilitate learning through each child's individual learning style. The specific curriculum here was the Tucson Early Education Model (TEEM), sponsored by the University of Arizona.

3. Affective Skills Model

The "psychodynamic approach" considers social and emotional goals to be essential for optimal development of the whole child. Learning presupposes the development of a healthy individual possessing a positive self-image, trust, emotional stability, and constructive peer relationships. Instruction emphasizes the quality of interpersonal relations and an environment which supports self-actualization, assuming that each child knows what is best for his personal growth. The specific programs for this group were:

- **Learning Center:** is based on the "Head Start" nursery school approach, extended into elementary school. Children select their own learning options at learning centers where they select their own options in a classroom structured to provide maximal learning opportunities. Sponsored by the Bank Street College of Education.
- **Open Education:** is based on the British Infant School model, extended into elementary school. Learning centers were used here also, and children were further assumed to be entirely responsible for their own learning, with no teacher-directed instruction provided. Sponsored by the Education Development Center.
- **Self Esteem:** is another program utilizing learning centers, but here the curriculum emphasis was on the development of self-esteem. The central philosophy is that the curriculum must respond dynamically to the individual needs of each child. The specific curriculum here was the Responsive Education Model, sponsored by the Far West Laboratory.

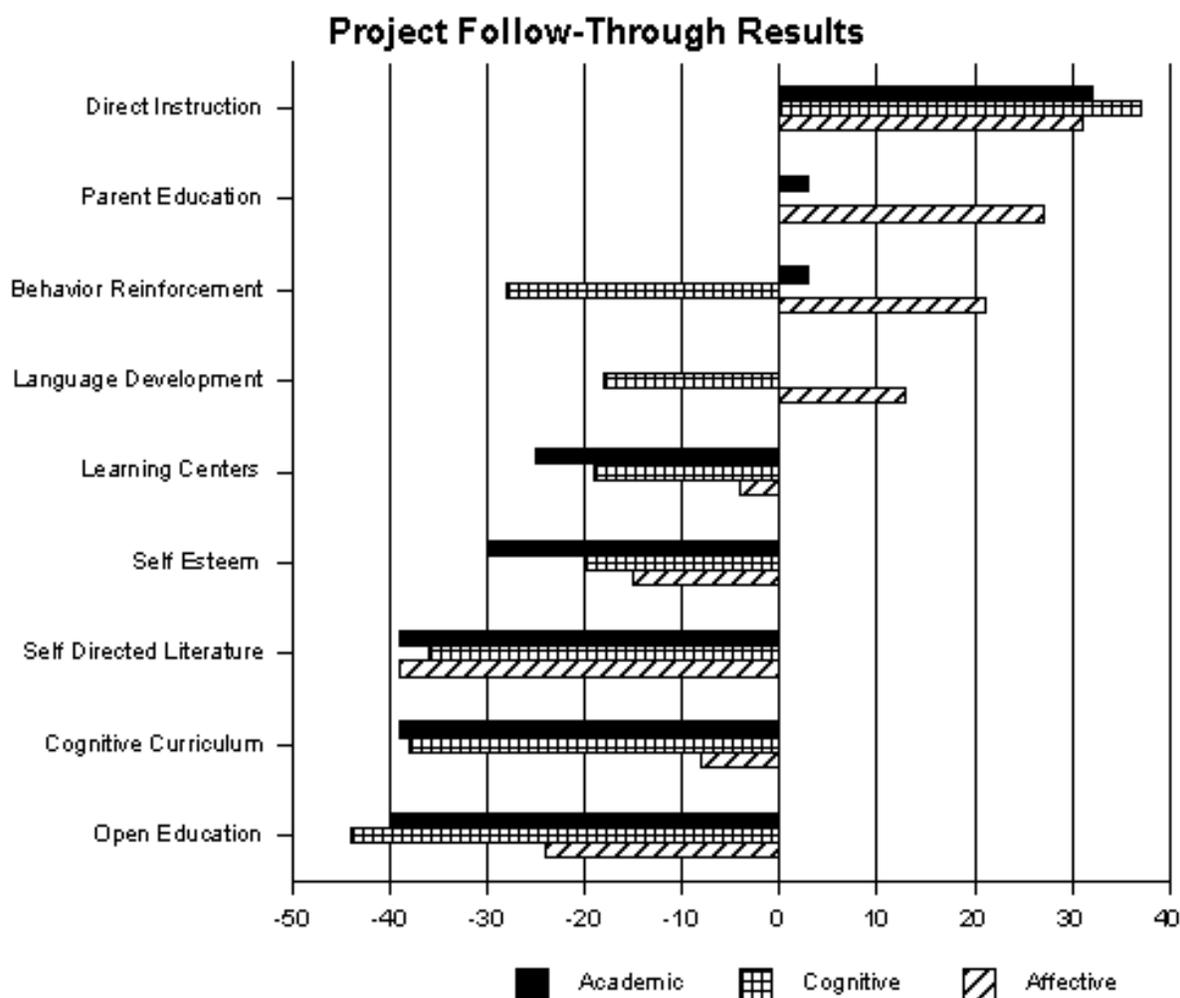
Evaluation

Each program had four to eight sites, with children starting in either kindergarten or first grade. Each Follow-Through (FT) school district identified a non-Follow-Through (NFT) district to act as a control group. A total of 9,255 FT and 6,485 NFT children were in the final analysis group. Students in each

school district were tested at entry and then each spring until third grade. Three types of assessments were conducted covering academic performance, cognitive development, and affective behavior. All FT program sponsors agreed in advance upon the assessments. The following five tests were used:

- **Metropolitan Achievement Test:** an achievement test that assess basic skills and cognitive and conceptual skills, including reading comprehension and math problem solving;
- **Wide Range Achievement Test:** measures number recognition, spelling, word reading, and oral and written math problems;
- **Raven's Colored Progressive Matrices:** measures cognitive skills through the use of visually oriented problems;
- **Intellectual Achievement Responsibility Scale:** measured affective skills by assessing whether children attribute their successes and failures to themselves or to external forces;
- **Coopersmith Self-Esteem Inventory:** assesses how children feel about themselves, the way they think other people feel about them, and their feelings about school.

The Department of Education hired two independent agencies to collect and analyze the data. Each model was compared to both its local control group and to the pooled control groups of the entire project. Each test variable was scored according to whether there was a statistically significant (0.25 standard deviation) difference between the FT and NFT scores. If there was such a difference between the FT group and either the pooled or local NFT group, the program received either a positive or a negative point, depending upon whether the difference was positive or negative. All scores were then normalized to fit on a scale of -100 to +100; i.e. an FT group scoring a statistically significant improvement over either the local or pooled NFT group on all test variables would have scored "+100". The chart here summarizes the results.



Note: A missing bar denotes a value of zero.

One of the reviewers of Project Follow Through (Gary Adams) summarized it this way:

"... increased amounts of money, people, materials, health and dental care, and hot lunches did not cause gains in achievement. Becker (1978) observed that most Follow-Through classrooms had two aides and an additional \$350 per student, but most models did not show significant achievement gains.

Popular educational theories of Piaget and others suggest that children should interact with their environment in a self-directed manner. The teacher's role is to be a facilitator and to provide a responsive environment. In contrast, the Direct Instruction model used thoroughly field-tested curricula that teachers should follow for maximum success.

The Follow Through models that were based on a self-directed learner model approach were at the bottom of academic and affective achievement. The cognitively-oriented approaches produced students who were relatively poor in higher-order thinking skills, and models that emphasized improving students' self-esteem produced students with the poorest self-esteem.

Educational reformers search for programs that produce superior outcomes with at-risk children, that are replicable and can therefore be implemented reliably in given settings, and that can be used as a basis for a whole school implementation that involves all students in a single program sequence, and that result in students feeling good about themselves. The Follow Through data confirm that Direct Instruction has these features. The program works across various sites and types of children (urban blacks, rural

populations, and non-English speaking students). It produces positive achievement benefits in all subject areas - reading, language, math, and spelling. It produces superior results for basic skills and for higher-order cognitive skills in reading and math. It produces the strongest positive self-esteem of the Follow Through programs."

For an extensive analysis of the data from Project Follow Through, call the [Association for Direct Instruction](#) in Eugene, Oregon at 800-995-2464 and order a copy of their journal, [Effective School Practices, Volume 15 Number 1 \(Winter 1996\)](#) or simply click on the link in this sentence to view it on the web. If you have limited time then we recommend that you read the article, "[Overview: The Story Behind Project Follow Through](#)" by Bonnie Grossen, which provides an overview of the program and its aftermath. If you intend to read the whole journal, including the research results, then the paper copy is definitely worth the cost and the wait because the graphs shown in the web version are almost illegibly small (they are quite readable in the paper version).

American Institutes for Research Study

The [National Education Association](#) (NEA) is the largest teacher's union in the world, with approximately 2.4 million dues-paying members. The [American Association of School Administrators](#) (AASA) is the nation's largest association of school superintendents and administrators. These two organizations commissioned a comprehensive review of all of the research regarding curricula that are commonly used in school-reform efforts, including Direct Instruction, which is the curriculum we use here at *I Can Read!* To ensure the credibility of the study, the two organizations hired an independent research organization (the [American Institutes for Research](#)). The results of the study were published in 1999. Here is an excerpt from the NEA's summary of the results:

What's in the guide?

The guide first provides a ratings snapshot of 25 approaches in a single table that's similar to comparisons readers find in Consumer Reports magazine. The ratings, compiled by the American Institutes for Research, are based on a review of studies, articles, books, and other published material about each approach. Additional information appears in profiles that explain the ratings each approach received, provide details on its key features, and include the name and address of its developer.

So which reform approach is "the best"?

That depends, in part, on what characteristics you're looking for. "This guide is about separating real solutions--or at least programs with a track record for improving student achievement--from solutions that might work," says Marcie Dianda of NEA's Teaching and Learning staff. Only three of the approaches examined--Direct Instruction, High Schools That Work, and Success for All--provide strong evidence that they positively impact student achievement. For many of the approaches, surprisingly, there's little evidence one way or another on whether they help students achieve. Some approaches are new and haven't yet conducted studies to establish a track record. Others haven't done so even though they've been used by schools for years.

You can check out the summary for yourself by visiting the [NEA Today Online](#), or you can read the [entire report](#), which has been published online by the AASA. Finally, you can read an [article](#) regarding this study in [Education Week](#) magazine.

Simply put. Direct Instruction has these properties:

- it uses a systematic, phonics-based approach in its reading curriculum
- it is one of only three methods that the AASA and NEA describe as showing clear evidence of producing higher student achievement, and it is one of only two that are applicable in primary school (K-8), where reading instruction is generally assumed to take place.