Myths and Truths About Direct Instruction

Sara G. Tarver
University of Wisconsin-Madison

PERSPCETIVES

Myths are beliefs that permeate people's thinking to such an extent that they are generally accepted as truths even though they are not supported by reliable evidence. Although we tend to think of myths as legendary stories handed down from the distant past, strong but unsupportable beliefs of more recent origin can be detected within the field of education. Some of those beliefs or myths can, and I believe have, serve(d) to perpetuate the widespread use of ineffective educational practices and to limit the adoption of effective practices. The Direct Instruction (DI) approach developed by Siegfried Engelmann and his colleagues is a prime example of effective instruction that has been used too little because of such myths.

In 1996, Hugh Downs of ABC-TV began a 20/20 story on DI with these words:

> What if somebody could come up with a method of teaching children how to read that was simple and worked every time. That sounds like the impossible dream to parents and school kids. But we found such a method. And you may be shocked to find out that most schools refuse to try it.

Although we tend to think of myths as legendary stories handed down from the distant past, strong but unsupportable beliefs of more recent origin can be detected within the field of education.

Many who have witnessed the effectiveness of the DI programs have been shocked by the educational establishment's rejection of the approach. That rejection, at least in part, has been based on a number of persistent beliefs that are inconsistent with the growing body of empirical evidence in support of DI. Some of these myths are summarized briefly in this article. Empirically-based truths that correspond to the myths about DI are included, also, in an attempt to provide a more accurate picture of what DI is and to refute some of the myths about DI. For more detailed discussions of DI, myths about DI, and research that refutes those myths and documents the claims stated as truths in this article, the reader is referred to Adams and Engelmann (1996), Ellis and Fouts (1997), Carnine (1992; 1994), and Tarver (1995). The Adams and Engelmann (1996) book provides comprehensive coverage of studies on DI as well as a complete listing of DI programs.

Myth #1. DI may be effective at teaching very rudimentary academic skills, but it is not effective at teaching problem solving or promoting higher order cognitive learning.

Truth #1. DI is effective at teaching higher order content and problem solving, as well as basic academic skills and strategies.

DI programs differ from many traditional instructional programs in that they are designed to ensure that students first acquire a foundation of basic academic skills and strategies on which higher order learning can be built. Thus, the emphasis is on basic skills and strategies in the early levels of DI programs. The information and skills acquired in the early levels comes to constitute the student's body of "prior knowledge," without which the student would be unlikely to learn higher order content or acquire more complex problem solving strategies. To state it another way, direct teaching of prerequisite knowledge, skills, and strategies ensures that the student will be "ready" to learn higher order content by building on that basic foundation. Effective teaching of essential prerequisites eliminates the need to simply wait for the child to "emerge" or "get ready." To give just one example from the area of reading instruction: teaching phonemic awareness skills (e.g., rhyming, segmenting, blending) to kindergartners gets them "ready" to learn phonics (i.e., letter/sound correspondences). Mastery of letter-sound correspondences and a strategy for blending those sounds into words leads to "readiness" for word recognition. Automaticity in word recognition allows for "emergence" as a fluent reader of passages. The accurate and fluent decoder is likely to be a good comprehender if s(he) also has acquired a number of important reasoning skills and an adequate store of vocabulary knowledge.

Complex problem solving and reasoning skills are taught in nearly all of the DI programs (including language, reading, spelling, writing, mathematics, science and social studies programs) and are emphasized strongly in the upper levels of the two most widely-used DI reading and math basal se-

ries—*Reading Mastery I-VI* and *Connecting Math Concepts I-VI*—and the *Corrective Reading* program for students in grades four through adulthood. In addition, an emphasis on higher order learning and problem solving is evident in *Core Concepts in Mathematics and Science*, a series of math and science programs that employ the videodisc technology. Unfortunately, many educators who are unfamiliar with the design of DI programs have focused on the surface level features of the beginning levels of DI programs and, as a result, have drawn the mistaken conclusion that is reflected in Myth #1.

DI is effective at teaching higher order content and problem solving, as well as basic academic skills and strategies.

Myth #2. DI reading programs may be effective at teaching decoding and word recognition, but they are not effective at teaching reading comprehension.

Truth #2. DI reading programs have been used successfully to teach comprehension as well as decoding and word recognition.

Included among the reasoning skills taught in *Reading Mastery VI*, for example, are: distinguishing between relevant and irrelevant evidence; identifying contradictions; using deductive reasoning to draw conclusions; identifying logical fallacies; distinguishing between literal and inferential questions; and identifying cause and effect. Analogical and logical reasoning are emphasized throughout the *Corrective Reading* program.

DI reading programs have been used successfully to teach comprehension as well as decoding and word recognition.

Research evidence in support of DI's effectiveness at teaching word recognition skills and fluency of reading passages is irrefutable. Unfortunately, this strong support for DI decoding instruction has sometimes been interpreted erroneously as a lack of support for DI comprehension instruction. It is accurate to say that evidence of the effectiveness of DI comprehension instruction is not as extensive as that for DI decoding instruction. Nonetheless, the evidence supporting DI comprehension instruction is substantial.

DI is not a "rote" and "drill" approach. DI programs are designed to teach for generalization.

Myth #3. DI is a "rote" and "drill" approach to teaching.

Truth #3. DI is not a "rote" and "drill" approach. DI programs are designed to teach for generalization. As explained by Engelmann:

> The Direct Instruction orientation toward acceleration implies that the effort must focus heavily on the teaching of generalizations, not rote learning. Generalizations represent efficiency, whereas rote learning represents inefficiency. For example, during 15 minutes the teacher may be able to teach students three rote items or one generalization. The generalization permits the students to respond to many items. The work on rote items, in contrast, produces performance on only the three items the teacher taught. Therefore, the teaching of the generalization is far more efficient than the teaching of the rote items.

DI has a positive effect on students' self concept or self esteem and fosters positive attitudes toward learning.

Myth #4. DI has a detrimental effect on students' self concept or self esteem and on attitudes toward learning.

Truth #4. DI has a positive effect on students' self concept or self esteem and fosters positive attitudes toward learning.

The positive academic achievement results obtained with DI programs have not been at the expense of students' affective learning and/or feelings of self esteem. Although relatively few studies have measured affective variables along with academic achievement variables, those few have reported positive effects on self concept and affective learning (e.g., data from Project Follow Through) and on attitudes toward learning. The evidence suggests that academic success in school promotes positive feelings of self worth.

Myth #5. DI may be appropriate for disadvantaged students, but it is not appropriate for other students who are at risk of failure in school and it is not appropriate for average and above-average achievers.

Truth #5. DI has been used successfully to teach a variety of low performers labeled as students with learning disabilities (LD), behavioral/emotional disabilities (B/ED), cognitive disabilities (CD), or other mildly handicapping disabilities and it has been used successfully to teach average and above-average students.

Because the first large-scale study to show the effectiveness of DI was with disadvantaged students (Project Follow Through in the late 1960's and 1970's), many have mistakenly assumed that DI benefits disadvantaged students only. This unsupported assumption persists despite the large number of studies that support DI's effectiveness with a variety of low-performing students with and without disabilities. In addition, a growing number of studies of recent date show that DI is at least as effective with average- and above-average achievers as it is with low-achievers.

DI has been used successfully to teach a variety of low performers labeled as students with learning disabilities (LD), behavioral/emotional disabilities (B/ED), cognitive disabilities (CD), or other mildly handicapping disabilities and it has been used successfully to teach average and above-average students.

Two reasons have been offered to explain perpetuation of the belief that DI may be appropriate for disadvantaged students and students with disabilities, but not for average students. First, teachers of low performers are more likely to try DI because, in most cases, an array of other approaches have been tried and were found to fail with the students they teach. Secondly, the prevailing instructional philosophies of regular education during the last decade or two—holism, constructivism, social constructivism—are inconsistent with the principles and practices of DI. Thus, regular educators have been inclined to simply turn their hard-to-teach students over to remedial and/or special educators rather than to change their own instructional practices. However, two trends of relatively recent origin seem to be interacting to produce greater interest in classroom-wide and school-wide implementations of DI. Those two trends are growing dissatisfaction with academic achievement of students in regular education and increasing emphasis on inclusion of students with mild disabilities in regular classrooms. Inclusion cannot work to benefit all students unless the instruction provided in inclusive settings is the kind of instruction that increases the academic achievement of the full range of students, including high achievers as well as average and below average achievers.

Myth #6. DI is not appropriate for students with dyslexia because it is not multisensory.

Truth #6. DI reading programs have been used successfully to teach students labeled as "dyslexic".

DI reading programs have been used successfully to teach students labeled as "dyslexic".

Although the developers of DI programs have not described their programs as "multisensory," it is clear that many of the instructional features which others have described as multisensory are characteristic of DI. Striking similarities are apparent, for example, in the phonics exercises in *Reading Mastery I* and the spelling book that is a part of that program. In a typical spelling exercise, the teacher pronounces a word (e.g., "map") and students are instructed to respond by performing one or more of the following tasks: segment the word into it's component sounds, tell how many sounds in the word, spell the word orally, spell the word by writing the letters associated with the sound, read the word after having written it. To perform these tasks, the student must have processed the information through the visual, verbal (auditory) and kinesthetic modalities; furthermore, successful completion of the tasks demonstrates that the student has mastered the visual, auditory, and kinesthetic associations. This type of spelling instruction, as well as the phonemic awareness and phonics instruction in *Reading Mastery I*, is much like the spelling and reading exercises specified in the original Orton-Gillingham multisensory method and a number of variations on that method. Although developers and advocates of those methods tend to attribute success to the multisensory feature of their methods, there is no educational research to support that claim. It seems likely that success with those methods might be more accurately attributed to the fact that they, like DI programs, emphasize explicit and systematic teaching of phonics.

Myth #7. DI may be appropriate for students in the early grades, but it is not appropriate for middle school students, high school students, and adults.

Truth #7. DI is appropriate for preschool, elementary, middle school, high school, and postsecondary students.

Although DI programs provide more complete coverage of subjects taught at the preschool and elementary levels, the somewhat limited numbers of DI programs which have been developed for older students and adults have been used successfully with those populations. Particularly noteworthy are the success of a *Core Concepts in Math and Science* series presented on videodiscs and the *Corrective Reading* program for students in grades four through adulthood.

DI is appropriate for preschool, elementary, middle school, high school, and postsecondary students.

Myth #8. The rigid structure of DI lessons fosters dependence on the teacher; students taught with DI are not capable of functioning successfully in independent learning situations.

Truth #8. DI progresses from structured teacher-directed lessons to less and less structured independent seatwork; it teaches students to apply independently what they have learned in teacher-directed lessons.

DI progresses from structured teacher-directed lessons to less and less structured independent seatwork; it teaches students to apply independently what they have learned in teacher-directed lessons.

DI programs are designed such that new concepts, skills, and strategies are presented in teacher-directed instruction. In mathematics instruction, for example, the teacher explains or models a problem solving strategy, leads the students through the strategy step by step, and then tests to see if the students can apply the strategy to one or more examples. The students then apply that strategy to a range of examples in independent work. In addition, students work in groups to identify real-world problems and apply the strategies they have learned to solve those problems. This progression from acquisition to application ensures that students can be successful in independent work and in cooperative learning activities. Furthermore, because the student learns in teacher-directed instruction to detect and focus on the details that define a knowledge domain and to understand how those details are organized to form the whole, s(he) is in a position to "learn how to learn." Knowing how to learn is the essence of truly independent learning.

Myth #9. Although DI produces academic gains in the early grades, it has no lasting effects on students' success in school.

Truth #9. DI has positive lasting effects on students' success in school.

DI has positive lasting effects on students' success in school.

Follow-up studies of disadvantaged students who received DI in the early grades in Project Follow Through showed that disadvantaged students taught with DI dropped out of high school less often, applied to college more often, and were admitted to college more often than their disadvantaged peers who had not been taught with DI. Follow-up data from other DI projects in elementary schools indicate that disproportionately fewer of those students are referred to special education and disproportionately greater numbers go on to programs for the gifted.

Myth #10. DI's structure and scripted lessons stifle teachers' and students' creativity.

Truth #10. DI provides teachers and students with tools that will enable them to create and discover.

DI provides teachers and students with tools that will enable them to create and discover.

Although there is little research to enlighten the issue of how to teach creativity or discovery directly, the little that there is suggests that creative problem solving entails the application of or the reorganization of what one has already learned. In other words, creativity and discovery follow and are dependent upon the prior acquisition of prerequisite skills and knowledge (i.e. "prior knowledge").

It is not possible to create something new from nothing. Creations represent new ways of combining or organizing already-known elements. Discov-

eries are often based on the detection of sameness between something already understood and something that the discoverer seeks to understand. In the absence of a rich repertoire of knowledge and skills, the student is not in a position to create new ideas or to discover strategies that work.

When required to discover or create multiple strategies for solving a number problem, for example, students with inadequate prior knowledge of basic mathematical concepts often discover/create strategies that don't work across a range of problems. Not only do these flawed discoveries result in wrong answers on a given problem; they often result in more generalized "mislearnings" that interfere with higher learning and require a great deal of reteaching on the part of the teacher. This is not to say that discovery and creativity are not worthy goals. They are. It is to say that many so-called "discovery learning" approaches are unsuccessful because they fail to provide students with the tools they need to discover and create successfully. DI, in contrast, is designed to ensure that students understand prerequisite concepts and how those concepts are connected so that can discover successful applications of those understandings in independent and/or cooperative learning activities.

Like students, teachers must posses a repertoire of basic skills and knowledge so that they can apply that knowledge creatively to solve instructional problems as they arise in the classroom. The teachers' manuals for DI programs contain hundreds of "how to" tools that constitute a rich repertoire of teaching skills—how to group students for instructional purposes, pace lessons appropriately, keep students actively engaged throughout lessons, provide corrective feedback, record and monitor student progress. The teacher who has acquired these teaching skills is in a good position to apply that knowledge creatively to deliver the content of DI programs effectively.

It is no more reasonable to require the teacher to construct her own instructional programs than it is to require the musician to compose her own musical score or the actor to write his own script. The good musician seeks and welcomes good musical compositions; she applies her skills and creativity to interpret and perform the composition. The good actor seeks a good script; he applies his skill and creativity to interpret and perform the role portrayed in that script. The good teacher seeks and welcomes good teaching tools, including well-designed instructional programs; she applies her teaching skills and creativity to deliver those instructional programs effectively, to solve instructional problems when they arise, and to increase the academic achievement of all students. DI programs provide many of the tools that good teachers, in increasing numbers, are seeking in their efforts to improve the academic achievement of their students.

References

Adams, B. L., & Engelmann, S. (1996). *Research on Direct Instruction: 20 years beyond DISTAR.* Educational Achievement Systems: Seattle, WA.

Carnine, D. (1992). Introduction. In D. Carnine and E. J. Kameenui (Eds.),

Higher order thinking: Designing curriculum for mainstreamed students. Pro-ed: Austin, TX.

Carnine, D. (1994). Introduction to the mini-series: Educational tools for diverse learners. *School Psychology Review,* 23(3), 341-350.

Ellis, A. K., & Fouts, J. T. (1997). *Research on educational innovations.* Eye on Education, Inc.: Larchmont, NY.

Tarver, S. G. (1995). Direct Instruction. In W. Stainback & S. Stainback (Eds.), *Controversial issues confronting special education: Divergent perspectives.* 2nd ed. Boston: Allyn & Bacon Publishing Company.