Visible Learning
A Synthesis of Over 800 Meta-Analyses Relating to Achievement
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Direct Instruction
Every year I present lectures to teacher education students and find that they are already indoctrinated with the mantra "constructivism good, direct instruction bad". When I show them the results of these meta-analyses, they are stunned, and they often become angry at having been given an agreed set of truths and commandments against direct instruction. Too often, what the critics mean by direct instruction is didactic teacher-led talking from the front: this should *not* be confused with the very successful "Direct Instruction" method as first outline by Adams and Engelmann (1996). Direct Instruction has a bad name for the wrong reasons, especially when it is confused with didactic teaching, as the underlying principles of Direct Instruction place it among the most successful outcomes.

Direct Instruction involves seven major steps:

1. Before the lesson is prepared, the teacher should have a clear idea of what the *learning intentions* are. What, specifically, should the student be able to do, understand, care about as a result of the teaching?
2. The teacher needs to know what *success criteria* of performance are to be expected and when and what students will be held accountable for from the lesson/activity. The students need to be informed about the standards of performance.
3. There is a need to *build commitment and engagement* in the learning task. In the terminology of Direct Instruction, this is sometimes called a "hook" to grab the student's attention. The aim is to put students into a receptive frame of mind; to focus student attention on the lesson; to share the learning intentions.
4. There are guides to *how the teacher should present the lesson*-including notions such as input, modeling, and checking for understanding. Input refers to providing information needed for students to gain the knowledge or skill through lecture, film, tape, video, pictures, and so on. Modeling is where the teacher shows students examples of what is expected as an end product of their work. The critical aspects are explained through labeling, categorizing, and comparing to exemplars of what is desired. Checking for understanding involves monitoring whether students practice *doing it right*, so the teacher must know that students understand before they start to practice. If there is any doubt that the class has not understood, the concept or skill should be re-taught before practice begins.
5. There is the notion of *guided practice.* This involves an opportunity for each student to demonstrate his or her grasp of new learning by working through an activity or exercise under the teacher's direct supervision. The teacher moves around the room to determine the level of mastery and to provide feedback and individual remediation as needed.
6. There is the *closure* part of the lesson. Closure involves those actions or statements by a teacher that are designed to bring a lesson presentation to an appropriate conclusion; the part wherein students are helped to bring things

together in their own minds, to make sense out of what has just been taught. "Any questions? No. OK, let's move on" is not closure. Closure is used to cue students to the fact that they have arrived at an important point in the lesson or the end of a lesson, to help organize student learning, to help form a coherent picture, to consolidate, eliminate confusion and frustration, and so on, and to reinforce the major points to be learned. Thus closure involves reviewing and clarifying the key points of a lesson, trying them together indo a coherent whole, and ensuring they will be applied by the student by ensuring they have become part of the student's conceptual network.

7. There is *independent practice*. Once students have mastered the content or skill, it is time to provide for reinforcement practice. It is provided on a repeating schedule so that learning is not forgotten. It may be homework or group or individual work in class. It is important to note that this practice can provide for decontextualization: enough different contexts so that the skill or concept may be applied to any relevant situation and not only the context in which it was originally learned. For example, if the lesson is about inference from reading a passage about dinosaurs, the practice should be about inference from reading about another topic such as whales. The advocates of Direct Instruction argue that the failure to do this seventh step is responsible for most student failure to be able to apply something learned.

In a nutshell: The teacher decides the learning intentions and success criteria, makes them transparent to the students, demonstrates them by modeling, evaluations if they understand what they have been told by checking for understanding, and re-telling them what they have told by tying it all together with closure (see Cooper, 2006). Carnine (2000, p. 12) summarized the Follow Through findings this way:

> In only one approach, the Direct Instruction (DI) model, were participating students near or at national norms in math and language and close to national norms in reading. Students in … the other Follow Through 8 approaches-discovery learning, language experience, developmentally appropriate practices, and open education-often performed worse than the control group. This poor performance came in spite of tens of thousands of additional dollars provided for each classroom each year.
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> (Carnine, 2000, p. 12)

Adams and Englemann (1996) made a useful connection between direct instruction and acceleration, as the principal objective of direct instruction is to provide instruction to accelerate the performance of the students; that is, teach more in less clock time, aim at teaching generalizations beyond rote learning, sequence learning and constantly monitor the performance of students as they move to achieve their challenging goals.

One of the common criticisms is that Direct Instruction works with very low-level or specific skills, and with lower ability and the youngest students. These are not the findings from the meta-analyses. The effects of Direct Instruction are similar for regular (d = 0.99), and special education and lower ability students (d = 0.86), higher for reading (d = 0.89) than mathematics (d = 0.50), similar for the more low-level work-attack (d =

0.64) and also for high-level comprehension (d = 0.54), and similar for elementary and high school students (Adams & Engelmann, 1996). Similarly, a 1997 integrative analysis of intervention programs for special education students found direct instruction to be the only one of seven interventions showing strong evidence of effectiveness (Forness, Kavale, Blum, & Lloyd, 1997). To demonstrate that the effects from direct instruction ate not specifically teacher effects, Fisher and Tarver (Fischer & Tarver, 1997) delivered mathematics lessons via videodisc; the effects were close to d = 100.

The messages of these meta-analyses on Direct Instruction underline the power of stating the learning intentions and success criteria, and then engaging students in moving towards these. The teacher needs to invite the students to learn, provide much deliberative practice and modeling, and provide appropriate feedback and multiple opportunities to learn. Students need opportunities for independent practice, and then there need to be opportunities to learn the skill or knowledge implicit in the learning intention in contexts other than those directly taught.