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# Vale Siegfried Engelmann, father of Direct Instruction

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Siegfried (Zig) Engelmann, the main developer of the educational model known as Direct Instruction (DI), died at his home on February 15, 2019 aged 87 years, after some months of illness. Zig's career in education was both extended and productive. He received nine funded research grants, and wrote 18 books, 27 book chapters and monographs, and 47 articles. In conjunction with colleagues, he was primarily responsible for an array of more than 100 educational programs, including 20 in reading, eight in spelling, 18 in mathematics, 10 in language, and three in writing. Probably the most well-known of these are *Reading Mastery*, *Spelling Mastery*, and *Corrective Reading*. In recognition of his contribution to education, he was awarded a Professorship in Education at the University of Oregon. Engelmann was also the director of the non-profit National Institute for Direct Instruction (NIFDI).

## **What is Zig's contribution to education?**

Zig had an unusual pathway into education. He was working in advertising, and was interested in how an advertising message might be structured so that it was more likely to be remembered by children. Following this slightly chilling start, he became fascinated with the possibly broader implications of this work in the education field.

Without denying the influence of genetics on student attainment, he asked, what are the limits on instruction as a strong influence on learning? Can instruction be designed so as to increase this influence – whether on young, struggling students, second language learners, gifted students, or average students? This was a major advance, involving a shift in educational emphasis from the qualities of the learner to the quality of the teaching content and process. So, he didn't develop a theory of learning, but rather a theory of instruction.

For more than 50 years Engelmann productively addressed the conundrum of why some students learn following typical classroom instruction and some don't. In avoiding the learner-at-fault explanation for the latter event, he began analyses of stimuli, communication, and behaviour as the important addressable variables. He developed a logical technique for designing curriculum with an emphasis on avoiding ambiguities that might distract students. He also considered the ghost-in-the-machine – how a curriculum's effectiveness also depends on a host of presentation elements. So, his approach addresses how effectively a teacher, working from a curriculum, ensures students master the curriculum concepts/knowledge/tasks/routines. By almost obsessive attention to these details, instructional quality becomes a major

influence on intervention success.

That the philosophy and principles of instruction have been translated into so many instructional domains, such as reading, writing, language, spelling, maths, and spoken English, is further testimony to their validity. For those interested in detail about his programs, there are many journal and web articles. See the NIFDI pages and Zig's own site. See also the Engelmann and Carnine classic, *Theory of Instruction*.

### What is the background to his approach?

Empathy for students who suffer the indignity of sustained educational failure clearly drove Engelmann's endeavours. This is reflected in his shifting of the focus from student responsibility to an instructional focus. This empathy was not simply a hollow bemoaning of a supposedly inevitable reality, but a determination to do something productive about it. His capacity to show how this can be achieved has changed the life trajectory of many struggling students.

Following his death, there will be much written about the substance of his work. However, Zig's own words offer a picture of the person and his story of Direct Instruction.

*If we are humanists, we begin with the obvious fact that the children we work with are perfectly capable of learning anything that we have to teach. We further recognize that we should be able to engineer the learning so that it is reinforcing – perhaps not “fun,” but challenging and engaging. We then proceed to do it – not to continue talking about it. We try to control these variables that are potentially within our control so that they facilitate learning. We train the teacher, design the program, work out a reasonable daily schedule, and leave NOTHING TO CHANCE. We monitor and we respond quickly to problems. We respond quickly and effectively because we consider the problems moral and we conceive of ourselves as providing a uniquely important function – particularly for those children who would most certainly fail without our concerted help.*

*We function as advocates for the children, with the understanding that if we fail, the children will be seriously pre-empted from doing things with their lives, such as having important career options and achieving some potential values for society. We should respond to inadequate teaching as we would to problems of physical abuse. Just as our sense of humanity would not permit us to allow child abuse in the physical sense, we should not tolerate it in the cognitive setting.*

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*We should be intolerant because we know what can be achieved if children are taught appropriately. We know that the intellectual crippling of children is caused overwhelmingly by faulty instruction – not by faulty children. (p. 725)*

### Attention to detail in DI:

*[DI involves] picky details of how the tasks are formulated, how the example sets are designed, how the details of lessons are organized and sequenced from one lesson to the next so that only about 10-15% of each lesson presents brand new material, how exercises are designed so they are unambiguous about details of the content, and therefore, how the analysis of the content permits the progressive and systematic transmission of the content to the average and low-performing students. If you think about it, you see that the program has to be an orchestration of detail.*

### Effectiveness of DI

The most famous of the evaluations was a massive 700,000 student study in the USA called Project Follow Through. It involved implementing numerous educational models to determine which had the strongest impact on the skill attainment of disadvantaged students. Engelmann's Direct Instruction produced the strongest results in reading, math, spelling, language, and even self-esteem. For more recent research, see the [Stockard et al.](#) extensive review of 50 years of DI research.

It is perhaps too early to make firm judgements about Zig's legacy. Perhaps the acceptance in the education domain that eluded him during his lifetime will eventually occur as the movement towards evidence-based practice continues to gather momentum.

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