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Explicit Instruction as the Essential Tool for Executing the Science of Reading

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Abstract

Every decade it seems that we have a new version of debates about how to teach reading. Recently, the issues have focused on the science of reading and how teachers can ensure that they are using it to provide informed and effective instruction for their students (Castles et al., 2018). You may be wondering, as are many educators, “What is the science of reading, and how do I know if I am using it in my instruction?”

To address this question, it is important to understand that the science of reading is based on cumulative, evolving evidence which is derived from numerous studies that reflect a scientific process of inquiry and use scientific methods of investigation. In this respect, science in education is like science in other fields, such as physics, chemistry, and the social sciences (Shavelson & Towne, 2002). As defined in Shavelson and Towne (p.52), there are six guiding principles that ensure the scientific process:

- Pose significant questions that can be investigated empirically
- Link research to relevant theory
- Use methods that permit direct investigation of the question
- Provide a coherent and explicit chain of reasoning
- Replicate and generalize across studies
- Disclose research to encourage professional scrutiny and critique

Studies that utilize scientific methods incorporate: (a) rigorous designs, e.g., randomized control trials or other designs that reduce bias, (b) ways to protect findings from bias or contamination, (c) reliable and valid measures, (d) methods that allow for replication by other researchers, and (e) interpretation in ways that are trustworthy. In the scientific process, the research questions and methods stem from theory, and the results are subjected to public scrutiny through peer review by other scientists and through publication of the results. Evidence that is gathered in this way allows educators and key stakeholders to make informed decisions about what to teach and, in many cases, how to teach. There is no single study that conclusively establishes the evidence about how children learn to read. That is not

the way scientific knowledge develops. Instead, in a pains-taking and cumulative fashion, studies over time and across multiple disciplines (including instruction, neuroimaging, and cognitive psychology) converge on evidence that increases our understanding about how students learn to read. Multiple studies and replication of findings allow the field to confidently establish the reliability of the knowledge gained about how children learn to read and why some struggle.

Because of this reliability, it is reasonable to expect that every reading teacher would use the knowledge gleaned from these studies to inform their instruction. Evidence from the research has established that there are five major elements of reading instruction that contribute to the successful acquisition of reading. These elements are sometimes referred to as *the big five:* phonological/phonemic awareness, phonics, fluency, vocabulary, and comprehension. These are not the only elements that contribute to reading success. Evidence also supports the reciprocal connection between learning to read and learning to spell and write. The emphasis on each of these elements varies based on the different needs of the reader. Most learners benefit from organized, deliberate, and explicit instruction in the critical elements of reading.

The science of reading has established that *explicit instruction* is associated with beneficial outcomes for students and may be the secret sauce of instructional success (Fletcher et al., 2019; Foorman et al., 2016). This explicitness includes modeling new skills, giving students ample practice with feedback, and providing structured opportunities for review and practice. In this paper, we present a description of explicit instruction, provide examples of explicit versus vague instruction, and offer guidelines for improving explicit instruction in the classroom to benefit all learners-but particularly those who find learning to read more difficult. Explicit instruction in reading requires an understanding of key reading terms (see Sidebar). We do not make specific contrasts with approaches we would consider less explicit, but note that such approaches are often based on the view of learning to read as a natural process that is as easy as learning to talk and which sees the teacher as a facilitator or guide to the child's discovery of reading. When these less explicit approaches have phonics components, they are considered incidental and not explicit (Student Achievement Partners, 2020). We provide many examples of explicit instruction in this paper, but no lesson plans. Specific lesson plans incorporating explicit instruction for word work, comprehension, and fluency across age ranges can be downloaded from our website (www.texasldcenter.org).

What is Explicit Instruction?

Explicit instruction is essential for students who struggle to learn to read, write, and do math, and The Council for Exceptional Children (McLeskey et al., 2017) identified it as a high-leverage practice. Explicit instruction in reading requires an understanding of certain terms (see Sidebar) and knowledge of its critical elements (see Table 1). We describe the principles of explicit instruction from the perspective of the science of reading, focusing on five essential components: (1) segmenting complex skills into smaller manageable tasks; (2) modeling or thinking-aloud to address the important features of the content; (3) promoting successful engagement using faded supports and prompts; (4) providing feedback; and (5) creating purposeful practice opportunities. Explicit instruction is teacher-driven, intentional,

focused on individual student needs, and requires judgment even if a program is highly scripted. However, explicit instruction does not have to be scripted, manualized, or prescriptive, as long as the lesson plan is organized and students receive support geared to their individual needs. Table 1 highlights critical elements of explicit instruction. Explicit instruction is a broad construct that represents a set of instructional routines that specify tasks and behaviors in a continuously defined manner. It is also a way to make instruction clearer, more responsive to learners' needs, and success oriented. Explicit instruction is learner-focused in that the instruction becomes more explicit in response to students demonstrating increasing learning challenges. As one of many examples, Hughes et al. (2017) provided an overview of the history of explicit instruction, revealing that it has been described and advanced since the 1990s and is embedded in approaches to implementing interventions within a Response to Intervention (RTI) or Multiple Tiered System of Supports (MTSS approach) (Fien et al., 2015; Fuchs et al., 2018); we go over these findings below.

Segmenting Complex Skills Into Manageable Tasks

Segmenting complex skills involves breaking down or chunking complex tasks into more manageable units, then teaching each of the individual tasks/units one by one, and finally integrating them so that students can more readily acquire the complex task. This process requires an analysis of a complex task in order to isolate the multiple components into smaller units, which has the effect of making instruction more explicit. The tasks are organized so that students acquire the first chunk before moving to the next, reviewing and integrating until the more complex skill is readily achieved. For example, when teaching word reading, first ensure that students know the sounds of the letters needed to read the words. Next integrate multiple sounds that include a consonant and a vowel, and then move to reading c/v/c words (e.g., man, fun, sit). This type of task analysis, which involves chunking, can also occur when teaching comprehension strategies. For example, when we teach students to get the *gist* or *main idea* of a passage, we first ask them to determine the most important *who* or *what* in the passage. After students can answer this question accurately, we then ask them to provide several key words that describe what the most important thing is about the who or what. When they can do both of these steps well, we ask them to say what the text is about in their own words. Finally, we ask students to write the gist, or main idea.

Using Modeling or Think-Alouds

The second of the essential components is to use *modeling or think-alouds* to address the important features of the content. Modeling, or showing students in an organized and clear manner how to do something (e.g., read sentences to figure out the meaning of a word), can be an effective tool for ensuring students can reproduce and then apply the same practice. Modeling may involve the teacher thinking aloud while also providing explanations of the processes utilized. For example, when reading a science text, a teacher could model how to go back and reread a section to gain understanding of an unknown word, and then talk about why they reread the section and what they were thinking while they did so. "Because I didn't understand *mitosis,* I needed to reread these two sentences where mitosis is explained. Rereading helped me to get a better idea of the meaning." In many ways,

a think-aloud is a mechanism for sharing a *mind script* with the learner so that they can borrow that mind script for their own learning. There are several key factors that make modeling and think-alouds successful: clarity of words, brevity of words, demonstrations when possible, describing misunderstandings and how to fix them, and using consistent key language (Hattie, 2009; Hollo & Wehby, 2017). Below is an example of using brief, clear, and consistent language when teaching ch = /ch/ which is then contrasted with an example using less clear and consistent language.

Explicit: "Watch me. I'm writing the word 'ouch.' Notice the 'ch' at the end of /ouch/ says the sound /ch/ like 'church.' Listen to me read two more words. This word is 'porch.' This word is 'couch.' Now, I will point to words with the sound /ch/, and we will all read them. Way to go, expert readers! Now, I want each of you to individually read the words. OK, pro readers, let's now write a word that has 'ch' at the end. Individually, read the word you wrote."

Vague: "We are now going to learn something new. We are going to learn how to read some new words today. Do you remember that sometimes words have letters that go together? It helps us to read if we remember that these letters go together. Let me show you a word that has two letters that go together. The word is 'ouch.' What two letters go together in this word? Does anyone know? Let's make a guess about what two letters go together. We are going to read a story and there will be some words in the story that are like this. Let's see if we can read those words well. If you have trouble, just do the best you can or ask a friend."

Using Prompts and Fading Supports to Promote Engagement

The third of the essential components is *promoting successful engagement* using faded supports and prompts. When teachers successfully apply this essential component, they gradually and systematically reduce cues and supports. This process eventually releases the responsibility to the students when they are able to perform the complex task without scaffolds, modeling, think-alouds, or other supports from the teacher. The amount and intensity of support is decreased, providing increased time for the student to demonstrate independent application.

Providing Feedback and Purposeful Practice

The fourth of the essential components is *providing feedback.* Effective feedback is clear, focused, directly related to the learning task, and guides the student to continue and/or to adjust learning practices. Ongoing opportunities to respond and to receive feedback are fundamental to explicit instruction. Teachers' feedback is determined by closely monitoring students' responses. This feedback should include specific praise that describes what students are doing well and corrective feedback to point out what requires adjustment (Heward & Wood, 2013).

The fifth of the essential components is *creating purposeful practice opportunities.* Practice may be the one thing that is nearly impossible to overdo—particularly purposeful practice, in which the task difficulty is gradually increased, resulting in automaticity and nearly flawless accelerated learning (Fuchs et al., 2013; Swanson & Deshler, 2003). This process of

gradually increasing difficulty of tasks so students become increasingly proficient is referred to as *scaffolding learning* and is described in more detail in Table 1.

Effective practice procedures include: (a) distributing practice (e.g., practicing learned words, phrases, sounds, and strategies over time to ensure retention); (b) problem solving or worked solutions for practice (e.g., applying reading strategies to problems or texts); and c) retrieval practice (e.g., using games and activities to test and apply what has been previously learned). These practice activities promote retention and learning over time and generalization to other settings. Practice (essential practice 5) and feedback (essential practice 4) are closely linked, because the effectiveness of practice is maximized through affirmative and corrective feedback (Hattie & Yates, 2014).

Connecting Explicit Instruction to Other Facets of Instructional Design

Explicit instruction is often yoked with the term *systematic instruction.* In fact, it is common for instructional designs to advance the idea that the instruction they propose is both explicit and systematic. Systematic is derived from the term *system,* which implies that there is an overall structural architecture to the design of the reading instruction. For example, the design may start with several common consonant sounds along with a common short vowel sound so that students can readily begin to blend these sounds to make words. The program might then add more consonant and vowel sounds, opening up the opportunity for reading even more words. Since English has a large number of high frequency words that do not follow the rules (i.e., irregular words, see Sidebar), the systematic instruction might also include high frequency words, such as *the, of,* and *was,* to advance access to text reading. While there is no one “right way” to establish a systematic approach to teaching, we do know that the system and architecture should make sense and support the application of explicit instruction-which is the most important instructional element. The gradation of systematicity needed by learners varies considerably based on their learning needs. For example, students with dyslexia can have profound difficulty with word reading and spelling. These students will require even more gradation (smaller steps and more opportunities to practice) in order to become fluent readers.

Systematic reading instruction involves a *scope and sequence,* which refers to the range of skills being taught (e.g., sounds of individual phonemes to multisyllabic words) and the order in which to teach these skills. There is no one correct scope and sequence for teaching reading skills. Since our goal is for students to gain rapid access to word reading, it makes sense to choose a scope and sequence that begins with high frequency sounds, such as /m/, /s/, /t/, and /a/, as a means to quickly reach this desired result. We want to build on what students already know, and then integrate words they can read into phrases and sentences. Teachers should strive to accelerate instruction as rapidly as students’ learning will successfully allow, as they move from readily accessible skills to more complex learning. We encourage you to look for opportunities within your explicit instruction to provide engaging work in which most of the effort is done by the student-not the teacher. This requires a quick pace, avoiding excessive teacher talk, and ensuring that students experience many opportunities to respond while receiving feedback.

As previously stated, explicit instruction does not require a particular scope and sequence as there is no research supporting which sounds should be taught first, second, and so on. What is important is that the lesson plan is explicit and organized. Sometimes these terms are used as if they are equivalent, implying that explicit approaches must be manualized and scripted, which some have complained deprofessionalizes teachers. The National Reading Panel (NICHD, 2000), for example, phrased the question about the effectiveness of phonics instruction as a comparison of systematic versus unsystematic phonics. This comparison was controversial, because it was interpreted as indicating that a prescribed, scripted approach to teaching phonics was better than other approaches. However, a careful survey of the studies reviewed by the National Reading Panel shows that the key issue was that the instruction was explicit, intentional, and teacher-driven. Approaches where phonics instruction was incidental and not explicit were less effective (Stuebing et al., 2008). This means that explicit approaches do not need to be scripted if the lesson plans are organized and delivered using the principles in Table 1. Several studies compared approaches to teaching reading that were explicit and scripted versus approaches that were explicit and organized (but without a rigid scope and sequence or manual), and found that both approaches were effective (Mathes et al., 2005; Torgesen et al., 2001). Explicit instruction was the key to this effectiveness.

It is virtually impossible to consider explicit instruction without also addressing ways to *scaffold* instruction to meet students' needs. Scaffolding instruction refers to purposeful organization of instruction so that the teacher either adds or reduces supports based on students' responses. Even a highly scripted approach requires teacher judgment, especially in terms of scaffolding and practice. The intent of scaffolding is to provide students with challenging tasks that require attention and effort while providing the necessary supports and feedback so that the students can complete the task successfully. Similarly, these supports are thoughtfully withdrawn until the students can accomplish the task without teaching support. Thus, the level of scaffolded support depends on the students' mastery of tasks. For example, a teacher may use tiles for students to manipulate as they say and blend sounds. As their proficiency with this task increases, the tiles may be removed. Some teachers provide cue cards to remind students to underline unfamiliar words when reading and then to reread the text around the word to uncover the meaning. Scaffolding instruction relates to explicit instruction in that teachers are making information more accessible to the learner, thus promoting improved learning outcomes.

Why Use Explicit Instruction?

Perhaps the most important reasons to use explicit instruction are that it makes learning more accessible to the student, increases their confidence in tackling challenging tasks, and produces more impactful outcomes. Simply put, students learn to read more efficiently. In addition, students who receive explicit instruction are able to tackle tasks requiring higher order thinking. Because explicit instruction requires teachers to consider the chunks of a learning task and to break them into acquirable units that are then reintegrated into a more complex task, many individuals inaccurately consider explicit instruction to be simplistic. To the contrary, explicit instruction builds the necessary foundational skills and knowledge that make more advanced tasks available to students. For example, learning to make inferences when reading text is a higher order thinking task that can be made more accessible to

students through chunking the elements into smaller tasks that are then assembled and applied within the text that they are reading (see sample lessons). When teachers use explicit instruction to teach inference making, they recognize and teach each type of inference, provide examples of how to apply each, and then integrate various types of inferences across a range of text types.

Explicit instruction is engaging and facilitates successful learning experiences for all students, but most notably those with attention and learning problems. Because tasks are organized into achievable units that are manageable for learners, these students are able to follow the sequence of the lesson, practice more of the elements of the task, receive ongoing feedback, and express improved learning outcomes. Explicit instruction thus allows a wider range of learners to benefit from instruction (Fletcher et al., 2019; Klingner et al., 2015). ■

Biography

Dr. Sharon Vaughn

Dr. Sharon Vaughn is the Manuel J. Justiz Endowed Chair in Education and the Executive Director of The Meadows Center for Preventing Educational Risk, an organized research unit that she founded with a “make a wish” gift from the Meadows Foundation family. She is the recipient of numerous awards including the Distinguished Faculty and Research Award, the CEC research award, the AERA SIG distinguished researcher award, and the Jeannette E. Fleischner Award. She is the author of more than 35 books and 250 research articles, six of which have met the What Works Clearing House Criteria for their intervention reports.

Jack M. Fletcher

Jack M. Fletcher is the Hugh Roy and Lillie Cranz Cullen Distinguished Professor of Psychology at the University of Houston. A child neuropsychologist, Dr. Fletcher has focused on learning disabilities, including dyslexia, in domains involving definition and classification, neurobiological correlates, and intervention. He is the Principle Investigator of an NICHD-funded national Learning Disability Research Center (Texas Center for Learning Disabilities; www.texasldcenter.org) and the 2003 recipient of the Samuel T. Orton award from the International Dyslexia Association.

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Key Reading Terms Related to Explicit Instruction in Reading

Consonant blend:

Two or more consonants together; each retains its sound (e.g., st, pl, br)

Consonant digraph:

Two consonants together that stand for one sound (e.g., ch, sh)

Diphthong:

Vowel sounds caused by a gliding action in the mouth (e.g., oi, oy, ou)

Grapheme:

The written representation of a sound

Irregular word:

Word in which one or more of the sound/letter correspondences do not make their most common sounds

Morpheme:

The smallest meaningful units of language (e.g., prefixes and suffixes)

Phonics:

The relationships between the sound system and the written language; the instructional approach of teaching these relationships

Regular word:

Word in which all sound/letter correspondences represent their most common sounds

Scaffolding:

Purposeful organization of instruction so that the teacher either adds or reduces supports based on students' responses

Schwa:

Variant of a vowel sound as a result of less emphasis on that sound (e.g., happen, about, gallop)

Scope:

The extent or range of skill instruction

Sequence:

The order in which the skills are taught

Systematic:

Derived from the term system, which implies that there is an overall structural architecture to the design of the reading instruction

Vowel digraphs:

Two vowels together that stand for one sound (e.g., oa, ai, ee, ay)

Table 1

Teaching Behaviors That Define Explicit Instruction

• Students clearly understand what is expected-including what they are supposed to do, practice, and/or express
• Instructions are brief and precise
• Instruction is student focused and guided by students' learning and responses
• Instruction is provided in a highly structured manner
• New learning is connected to previous learning
• Teachers often model expected behavior using think alouds to express what they intend for students to be thinking while they are performing the task
• Teachers gradually release learning tasks to the students, initially modeling, then providing guided support, and giving increasingly challenging related tasks for students to perform independently
• Students receive ongoing feedback to support and guide their learning
• Learning is built upon and revisited to ensure advancing learning and to maintain previous learning
• The sequencing of learning tasks is logical with more advanced tasks built through breaking them into less challenging tasks and advancing
• Goals and expectations related to all activities are clearly stated and understood
• Step by step demonstrations provide clear and achievable pathways to acquire and integrate skills to achieve complex tasks
• A wide range of examples is provided
• Students demonstrate a high rate of responding, including oral group, oral individual, written, hand signals, and turn and talk
• Students recognize that their responses matter as the teacher listens carefully and responds with detailed support and feedback
• Instruction is provided at a brisk pace that is engaging to the student and demonstrates the high priority of the learning that is expected