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## Examining the impact of scaffolding on literacy learning: A critical examination of research and guidelines to advance inquiry

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### ABSTRACT

Despite its appeal and widespread use, the term scaffolding has been inconsistently invoked across the field of education, particularly in literacy research. Indeed, its meaning has become so broad that its impact on learning is unclear. This review elucidates the theoretical tenets that underpin the metaphor and critically examines the impact of scaffolding on literacy learning by interrogating the existing literature in terms of its adherence to the theoretical tenets of the construct and the methodology used to determine the relationship between teachers' scaffolding and students' literacy learning. Guidelines for future research are offered to advance understanding of the role of scaffolding in literacy learning. In offering these guidelines, we endeavor to adhere to the theoretical underpinnings of the concept and address methodological weaknesses in extant empirical research.

Through interactions with students, teachers have the potential to bring even the youngest learners into new competencies in reading, writing, and language (Cazden, 2005). It is well established that the quality of these interactions is important for shaping student growth (Curby, Rimm-Kaufman, and Ponitz (2009); Maloch, 2002; Pianta, Belsky, Vandergrift, Houts, and Morrison (2008); Rodgers, 2004), yet the precise nature of the interactions that foster learning remains elusive. One model of teacher-student interaction presumed to foster student growth is scaffolding. According to Wood, Bruner, and Ross (1976), scaffolding refers to the process by which an adult or more expert other assists a child or novice to solve a problem or carry out a task, the result of which may lead to “the development of task competence by the learner that would far outstrip his unassisted efforts” (p. 90). Since its origin in the work of Wood et al., the metaphor of scaffolding has appealed to educators, psychologists, and researchers interested in learning and development.

According to Palincsar (1998), the metaphor of scaffolding has garnered broad appeal because it captures multiple dimensions of teaching and learning and describes “an instructional context that is at once supportive, flexible enough to accommodate individual differences, and designed to cede increasing responsibility to the learner” (p. 373). Early studies of scaffolding examined activities in informal contexts typical of Western culture, such as parent-child participation in a peekaboo game (e.g. Bruner & Sherwood, 1976) or in construction of a puzzle (e.g., Wood et al., 1976; see Stone, 1998 for a review of early scaffolding research). In more recent studies, the construct of scaffolding has been widely applied by researchers studying interactions in formal contexts such as classrooms, small groups, and one-to-one tutoring situations in social studies and math, as well as literacy.

Despite its appeal and widespread use, the term scaffolding has been inconsistently invoked in the field of education and in literacy research in particular. Indeed, the meaning of the term has become so broad that its significance has become unclear (Pea, 2004; Sherin, Reiser, & Edelson, 2004; Stone, 2002). For example, in some recent applications, the construct of scaffolding has

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become synonymous with nearly any form of guidance or support (Elbers, Rojas-Drummond, & van de Pol, 2013; Puntambekar & Hubscher, 2005; Stone, 2002). According to Jadallah, Anderson, Nguyen-Jahiel, and Miller (2011) and Puntambekar and Hubscher (2005), the definitions of scaffolding in some recent studies have resulted in interpretations of the construct that are distant from its original meaning and, because scholars have interpreted scaffolding differently, there is a lack of coherence in the field with regard to the instructional implications of the concept. Further, ill-defined use of the term is problematic for practitioners who may conflate scaffolding with any form of support.

Because of researchers' overgeneralization of the term scaffolding in education, there is a need for conceptual clarity with regard to the theoretical tenets underlying the metaphor. This is particularly true in the area of literacy learning, where scaffolding is often taken up in practice, yet little is known about its impact on children's literacy achievement. There is a need for a synthesis of existing research on scaffolding in this context to assess where the field stands, and to provide guidelines for future research that advance understanding of the role of scaffolding in children's literacy learning and adhere to theoretical underpinnings of the concept.

The purpose of this paper is to examine research on scaffolding and literacy learning for children in grades pre-K through 12, and to propose a way of studying scaffolding that is empirically and theoretically defensible. We identified literature for this review by searching the ERIC and PsychINFO databases. For each database, we conducted separate searches using the keywords (1) 'scaffold\*' AND 'reading'; (2) 'scaffold\*' AND 'writing'; and (3) 'scaffold\*' AND 'literacy'. We limited our search to reports of empirical studies conducted with students up to and including high school age and published in peer-reviewed journals. We then combined results of our three searches. This resulted in a total of 157 articles from the ERIC search; and 218 from the PsychINFO search. We also scanned references from documents retrieved to identify additional sources.

Because we sought to clarify how scaffolding might support children's literacy learning, published work had to satisfy the following criteria to qualify for inclusion:

- pertain to literacy learning and/or teaching;
- center on children from pre-k to grade 12;
- focus on scaffolding as the topic of inquiry.

In total, 60 reports of empirical studies from our literature search met our criteria and were included in the present review.

We judged scaffolding to be the topic of inquiry if the authors investigated the construct of scaffolding and either made claims about the nature of scaffolding, and/or reported findings on the impact of scaffolding on children's learning. For example, Juel (1996) studied the effectiveness of a one-to-one tutoring intervention in which first grade children were tutored in reading, writing, and phonemic awareness by a university athlete twice a week for 45 min over the course of a school year. She characterized the interactions in the most successful dyads as "scaffolded reading and writing experiences" (p. 283), and reported that scaffolding was a component of effective tutoring. Because Juel drew a conclusion about scaffolding and her study took place in a pre-K through grade 12 literacy setting, her study met our criteria for inclusion. In contrast, a study by Woo, Chu, Ho and Li (2011) was excluded from our review, for example, because it did not focus on scaffolding as the topic of inquiry. In this study, the authors examined the use of a wiki as a scaffold for writing in a primary English-language class. The focus of inquiry was the wiki, not scaffolding, as conclusions were drawn about the wiki and how it was used to foster collaboration.

Our agenda is as follows. First, we review the concept of scaffolding as it has been applied in literacy research and describe the theoretical tenets that underpin the metaphor. Next, we critically review empirical studies of scaffolding as it relates to literacy learning, with particular attention to how scaffolding is conceptualized in the studies. We organize our review in terms of three categories of studies: 1) studies that have theoretical limitations in how the researchers interpreted the construct of scaffolding, 2) studies that have methodological limitations in how researchers measured scaffolding, and 3) studies that provide rich descriptions of scaffolding yet limited links between scaffolding and learning. We conclude by offering guidelines for future research that adhere to the theoretical tenets of the concept and address the methodological weaknesses in the existing empirical research.

## 1. The scaffolding metaphor

The term scaffolding first appeared in the work of Bruner (1975) who described mothers interacting with their infants as "supporting the child in achieving an intended outcome, entering only to assist or reciprocate or 'scaffold' the interaction" (p. 12). The metaphor was subsequently invoked more deliberately by Wood et al. (1976), who described scaffolding as a "process that enables a child or novice to solve a problem, carry out a task, or achieve a goal which would be beyond his unassisted efforts" (p. 90). It is to this work that origination of the concept is commonly attributed. Wood et al. observed 30 three-, four- and five-year old children as they engaged in a pyramid-building task with wooden blocks of various sizes along with the support of a tutor. The tutor took a "gentle, appreciative approach to the children" (Wood et al., 1976, p. 92) and provided more or less help, typically in the form of verbal prompts or corrections, depending on the actions of the child.

Wood et al.'s analysis resulted in a six-part description of the scaffolding process. Wood et al. specified that when scaffolding a child's performance, a tutor:

- recruits the child's interest,
- simplifies and manages the task by reducing the degrees of freedom for the child,
- maintains the child's attention and motivation on the task,
- marks critical features of the task,

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