

Scaffolding: Re-Framing the Construct in its Original Context

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ABSTRACT

This paper seeks to analyze the criticisms toward the metaphorical construct, scaffolding. Ten articles are critically analyzed for similarity and deviation in trends regarding the use of scaffolding. Findings reveal that scaffolding has been loosely used to describe any learning occurred in classroom such as teacher-centered approach. Further, scaffolding has been used as an umbrella term that includes any support provided by a teacher. Therefore, and because scaffolding is more dynamic and richer than its applications, there is a need to revisit scaffolding within its original, Vygotsky's Zone of Proximal Development (ZPD). Based on the findings of this study, I recommend teachers to apply cooperative learning between peers and incorporate technology as key roles to produce scaffolding strategies in their classroom.

Keywords: Zone of proximal development, scaffolding, metaphorical constructs, cooperative learning

1. Introduction

The focus of this review is to analyze the different criticisms towards the theoretical construct, scaffolding, with the hope that doing so will result in clear scaffolding strategies that teachers can introduce into their classrooms. Scaffolding is a metaphoric, theoretical construct that refers to the design process of a more knowledgeable individual, often a tutor or a teacher, who provides just enough support to facilitate the student's ability to complete the task alone (Benson, 1997). During the scaffolding process, the tutor or teacher intervenes too much, codependency occurs, which is counterproductive to the intended purpose of the construct. Scaffolding, in its literal application, refers to a structure that allows a worker to areas of a project that they would not be able to reach on their own. It plays a supportive, or secondary role to the worker's central objective, which is to complete the task at hand. In the same sense, scaffolding's success is in its supportive role, in which it guides the learner, but the learner feels a sense of personal accomplishment and ownership in solving the problem.

It is also important to recognize that scaffolding is, in a roundabout way, a sub-theoretical within the theoretical construct of Vygotsky's (1978) Zone of Proximal Development (ZPD). An individual's ZPD consists of two developmental levels. The first level being the actual development level, which refers to what the learner can do on their own, and the potential level of development, which refers to what the individual is able to accomplish with the assistance of a more capable peer or an adult (in Bliss, Askew, & Macrae, 1996). Scaffolding acts as one of the processes within ZPD, that can be used to assist an individual in reaching their potential level of development.

This review presents a brief history of scaffolding and explains in connection to ZPD in more detail, before reviewing the different criticisms and limitations towards the current use of scaffolding in educational settings. This review argues that scaffolding has been loosely used to describe any learning that has occurred in the classroom and that there is a need to revisit scaffolding within its original theoretical context as a sub-function of ZPD. In addition, while this review cites the need for additional research to identify specific scaffolding strategies that teachers can use, we also theorize that technology may play a key role in producing scaffolding strategies that can be used in educational settings.

2. Analysis

This review's approach is to present a history of scaffolding, explain its connection to ZPD, and then review the criticisms towards the current application of scaffolding. The researcher kept a list of these objectives apparent as she read through each article, and identified applicable information. By keeping the articles in their electronic, PDF format, the researcher was able to use the available highlight tool in Adobe Reader X, as well as the software's note box, which is used sparingly. In order to gain a sense of the differences in the criticism being directed towards scaffolding, she also used a comparative lens in how each article was approached. For example, before the researcher started on a new article, she asked herself, "how will this criticism differ from the criticism that I just read?" She noticed that most of the criticisms were following the same trend. They were either criticizing the current use of scaffolding in educational settings, or they were conducting research studies, which were critical of the current notions of scaffolding. Therefore, the researcher started to adjust her comparative analyses strategy and began to classify articles as either following the same trend, or deviating from it. Once each article is read and a strong sense of how each contributed to the goals of this review is possessed, the researcher started writing the review. For this review, the literature of Donato (1994), Bliss, Askew and Macrae (1996), Benson (1997), Palinscar (1998), Stone (1998), Guerrero and Villamil (2000), Fernandez, Wegerif, Mercer, and Rojas-Drummond (2001), Sherlin, Reiser and Edelson (2004), Gillies and Boyle (2005), and Verenikina (2008) were analyzed.

3. Result

As noted, this review will begin by presenting a brief history of how the term scaffolding came about. Because this theoretical construct describes a process occurring within the construct of Zone of Proximal Development (ZPD), it is also necessary to briefly present a history of Vygotsky and his influence on the emergence of scaffolding.

Vygotsky is a highly acclaimed Russian psychologist, who made significant contributions on how individuals develop, development potential, and the importance of social and cultural interaction in learning and development. Vygotsky discovered that the cultural development of children emerges two times. First, the person develops individually, or inter-psychologically and then again, through their interaction with others, or intra-psychologically (Vygotsky, 1978). Collectively, these two planes held to establish the concepts and ideas that are associated with higher-level human functioning. Vygotsky became very interested in learning as a result of social interaction, in which an individual interacts with peers, teachers, or their parents, who are more knowledgeable; that knowledge is transferred and then owned by the individual. In his interest in

the individual and social aspects leading to development, he eventually coined the theoretical construct, zone of proximal development (ZPD). ZPD is the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers (Vygotsky, 1978).

While this review will discuss how scaffolding has been wrongfully borrowed to describe any learning that occurs in an educational setting, It will explain how Vygotsky's ZPD has largely remained unaltered and is respected as a very rich and descriptive construct useful in helping to understand individual's development potential.

Scaffolding, was first introduced by Wood, Bruner and Ross in 1976, though it was not emphasized and used commonly until later. In fact, many researchers point out that Bruner was inspired by Vygotsky's theoretical construct, after he had translated part of Vygotsky's text from Russian to English (Stone, 1998). Scaffolding describes the strategy used to help a learner reach a level of development that they could not achieve on their own. Scaffolding involves a more knowledgeable peer, tutor, or adult and a learner. The scaffolder and learner work together, in which the scaffolder is responsible for providing just enough support that the learner is able to complete a task. The theoretical construct is metaphoric in nature, because it essentially describes the same process of constructing a structure that assists workers in being able to reach points of a building, that they would not be able to reach on their own. The structure plays a supportive role, but the emphasis on the task being completed remains on the construction worker. Once the task is completed, the structure is removed. Though the worker could not have completed the task without the use of scaffolding, rarely does the worker look back and attribute the use of scaffolding as the key criteria to complete the construction. Scaffolding as a metaphor for development within ZPD is the same. If the scaffolding process plays a greater role than supporting the learner, it becomes distracting and the learner pays more attention to the scaffolding process than to the task at hand. As this review will demonstrate, this theoretical metaphor has been widely used to describe learning that has occurred in a different context, which harms the richness of this scaffolding within ZPD.

The objective of scaffolding is to enable the learner to reach development with a feeling that their abilities and learned knowledge led to the task being solved. When scaffolding occurs successfully, the learner is able to add the knowledge to their repertoire and therefore, it becomes a part of them. Scaffolding connection to ZPD is quite clear. Scaffolding is a social, two-way process that helps an individual to develop past what they are only able to do on their own, to a level of development that they are able to reach, with the assistance of a more knowledgeable individual (Bruner, 1986; Wood, 1988). In order for scaffolding to successfully occur, the scaffolder must include the following six steps (Wood, Bruner, and Ross (1976):

- 1) Draw the learner in and motivate them to want to solve the problem.
- 2) Simplify the task in a manner that the learner process in small steps.
- 3) Maintaining the goal and keeping the learner on task.
- 4) Reinforcing key features of learning during the problem-solving process, so that the learner is able to recognize key knowledge and start to internalize it.
- 5) Prevent the learner from become frustrated or stressed.

- 6) Have the learner demonstrate the task and the processes that were completed. This helps to reinforce that the learner's ownership over his/her learning.

This review starts presenting a brief history of scaffolding and ZPD, which functions to serve as a context for helping to understand why many of the criticisms are directed towards the current use of scaffolding, which has deviated and become a generic, watered-down construct. Then, it presents a comparative analysis of the articles analyzed, as listed in the "Analysis" section.

One of the criticisms towards scaffolding concerns the broad nature that educators have used it in an educational setting (Palinscar, 1998; Bliss, Askew & Macrae, 1996). For example, because scaffolding refers to the process of a knowledgeable person, or a tutor or teacher assisting a learner in solving a task, educators have been quick to self-identify their roles in the scaffolding metaphor. To complicate the matter, scaffolding has been applied to many different areas of learning, which has created numerous interpretations of the metaphor (in Verenikina, 2008). Part of this effect has resulted in a lack of clear guidelines, which have led to it being used as a generalized term to include any kind of teacher support in the classroom (in Verenikina, 2008; Bliss, Askew & Macrae, 1996). This occurrence, combined with the traditional, one-way delivery model, has tended to result on a greater emphasis being placed on the teacher and detracts from the importance of the learner (Palinscar, 1998; Verenikina, 2008). Some of the researchers (Stone, 1998; Palinscar, 1998; in Verenikina, 2008) have highlighted the need to revisit the proper context of scaffolding within ZPD and recognize that the descriptive nature is much richer and dynamic than its present application. Further, some other researchers have conducted research and concluded this need in their discussion sections. For example, Guerrero and Villamil (2000) conducted a study that sought to expose the dynamic nature of scaffolding, which revealed that scaffolding does not necessarily have to occur between an instructor and a learner, but that scaffolding can occur between equal peers as the result of social interaction and cooperation, as Vygotsky maintained.

Similar to Guerrero and Villamil's study, Donato (1994) also recognized that the current application of the scaffolding metaphor seemed to overly-simplify the metaphor's true descriptive power, as recognized within Vygotsky's (1978) ZPD. Donato emphasized that scaffolding could occur through collaborative means between learners, in which he conducted a research study involving second language learners (L2), in order to determine whether scaffolding occurred without help from the instructor. Donato (1994) study found that 75% of the scaffolded cases occurred when L2 learners collaborated together to learn new phrases. This study suggests the importance of educators expand their understanding and use of scaffolding, in order to activate a greater learning environment that takes advantage of the many learning influences, as Vygotsky contended.

Gillies and Boyle (2005) differed in their approach to cooperative learning between peers, in which they analyzed the role of teachers and their use of verbal utterances to encourage cooperative learning. Essentially, as scaffolding occurring between two cooperative students, the study examined how teachers might play an additional role in the scaffolding process. This study, just as other studies, emphasizes that much of the learning taking place in the classroom is not a true form of scaffolding. Further, it also notes that the manner that teachers interact with

their students is not uniform, but often changes depending on the situation (Gillies & Boyle, 2005). For example, when teachers interact with their class as a whole, they often use language that is much more direct, one-way, and general (in Gillies & Boyle, 2005). However, when teachers interact with small groups of students, they use much more interpersonal communication and the flow of communication goes two-ways (in Gillies & Boyle, 2005). In a small group context, the change in teachers' instruction is thought to be more interactive with students, as required to scaffold a learner. The study found that students working in cooperative groups, model their behavior after their interactions with the teacher, who mediated and presented questions that were meant to facilitate the presented task (Gillies & Boyle, 2005). Though the study has difficulty distinguishing whether scaffolding can be more attributed to the peer group cooperative learning, or to the teacher's interaction with the small groups, the study produces some theories that could lead to specific strategies that teachers could incorporate into their classrooms, although additional, experimental studies are needed to test these possibilities.

As Gillies and Boyle suggested a possible strategy that teachers can introduce into their classroom, Sherlin, Reiser, and Edelson (2004) also offer a possible scaffolding strategy through the use of technology. This study differed in its approach to scaffolding and focused on whether scaffolding could occur through the use of what it defines as technological artifacts (Sherlin, Reiser & Edelson, 2004). The study is also unique in its criticism towards the current use of scaffolding and presents a new argument, in that scaffolding definition should be expanded to account for newer scaffolding possibilities, such as the use of technology, as long as technological scaffolding strategies carry the original theoretical context. In short, the study addresses the limited role of technology when Vygotsky's introduced his theoretical construct or when scaffolding became widely popular. The study describes a technological artifact as an electronic object that assists learners as they try to solve a problem or complete a task. For example, software that is designed to interact and assist the learner as they navigate through a problem and reach a level of development that they did not previously possess, would fit this study's parameters. Gillies and Boyle (2005) argue that the framework that they introduce may lead to a new application of scaffolding, but that the effectiveness of technological artifacts requires follow-up studies to determine their extent.

Though, most of the studies focused their criticism towards the application of scaffolding in asymmetrical examples, Fernandez et al. (2001) was unique in that they questioned whether scaffolding and development could occur between two equal learners. Fernandez et al. theorized that a symmetrical relationship, involving equal peers, could result in successful scaffolding. Their study found that group interaction amongst equal participants could lead to development, if the group conducted exploratory communication. Further, though the participants did not recognize that they were scaffolding, they used socially acceptable communication strategies that were effective and allowed the group to complete a difficult task that was beyond their individual means (Fernandez et al., 2001). While most of the criticisms have focused their attention towards the current use and application of scaffolding in the educational setting, Fernandez et al. is somewhat critical of Vygotsky's ZPD, as it does not acknowledge symmetrical group development, in which the study makes a case for a new theoretical construct, Intermental Development Zone, or a hybrid of ZPD that explains how the use of language and shared context can result in development. Rather than integrating his findings into the Vygotsky's theoretical

construct, which is similar to the issue that occurred in scaffolding being generalized to define many types of learning, this study realized that it was much more beneficial to create a separate construct. In turn, this helps to create strong contrasts between theoretical constructs that reflect on learning and development, which in turn leads to a richer discussion and arguably, helps to set up future, experimental research studies, that will be able to design specific scaffolding strategies for different learning contexts. Fernandez et al. are also critical of the concept of scaffolding in being able to explain learning and development between symmetrical learners. Symmetrical learners refer to social interaction, where the two peers are equal in their knowledge or development, whereas scaffolding and Vygotsky's ZPD, refers to development as the result of social interaction occurring from asymmetrical learners. For example, a parent interacting with a child is an asymmetrical social interaction. Because the study contends that language and shared context is critical to support learning and shared thinking and that it is very complex and continual, the scaffolding metaphor does not apply (Fernandez et al., 2001).

As argued by Stone (1998), Palinscar (1998) and revealed by Guerrero and Villamil's (2000), Donato's (1994), and Fernandez et al.'s (2001) studies, contextualizing the descriptive power of scaffolding requires framing the metaphor within Vygotsky's ZPD, or in the case of Fernandez et al, slightly expanding on Vygotsky's ZPD to also account for symmetrical development. Many of the studies sampled suggest that it is important for teachers to recognize that many of their strategies are not, by definition, uses of scaffolding (Benson, 1997). For example, Gillies and Boyle (2005) focus on the importance of recognizing the interpersonal nature and two-communicative process that occur during scaffolding. Whereas other studies focused their criticism towards different aspects of scaffolding in current educational settings, they maintained that scaffolding may occur when teachers are able to create a more interpersonal process of delivering instruction to smaller groups of students, as they readjust their help based upon the small group's feedback. Naturally, this process is not appropriate when working with a very large group, which many of the others focus the bulk of their criticisms in arguing that teachers need to stop deviating scaffolding from its original context. Gillies and Boyle's point acknowledges the many underlying influences of the learner e.g. cultural, environmental, social, cooperative role, to name several, in addition to the importance of educators recognizing themselves as cooperators working alongside, rather than merely directing and leading (in Verenikina, 2008).

In short, the different criticisms toward the use of scaffolding tend to be one-sided, meaning that have constructed their criticism as a result of its current context in education. Still, while it is clear that the nature of the criticisms and studies are different more than they are similar, there are some important nuances. While many, such as Verenikina, Palinscar, Stone focused their efforts on presenting a thoughtful criticism, others included criticism that was similar but were much more pragmatic, such as Gilles and Boyle, Sherlin, Reiser, and Edelson, and Fernandez et al., who produced potential scaffolding strategies that teachers may be able to utilize in their classrooms.

4. Discussion

There are several important implications produced by this review. First, it is very important that teachers revisit scaffolding within ZPD, in order to help return the construct to its original

theoretical context. While researchers are needed to produce scaffolding strategies that teachers can use in their classrooms, it will be up to the teachers to protect the integrity of scaffolding meaning. If teachers do not use scaffolding in a more responsible manner, it will return to its current umbrella-like state, and be used as general metaphor for any learning that occurs in the classroom. Secondly, this review has proved that research is desperately needed to test whether certain strategies result in scaffolding. Fortunately, several of the studies produced possible solutions, such as gathering students into small groups, in which the teacher can then interact in a much more interpersonal manner, such as gauging their progress and asking questions that are designed to trigger thought that will focus the learners in the right direction. Another potential strategy that this review discussed was the role of technology in helping to scaffold learners. One of the advantages of developing software is that learners can input their current state of understanding, or ask questions in which software can then produce programmed responses that assist the learner to complete a task. Software also frees up the teacher and can allow them to visit students individually, in which they can supplement the software and create a richer scaffolding process. In short, while the implications of this review suggest that teachers need to take a step back and reexamine what they believe scaffolding is and what it truly is within its original theoretical construct, their future of scaffolding and creating clear strategies is promising. Technology and small group, cooperative-learning activities may offer teachers the ability to introduce scaffolding in their classrooms.

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