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When the Zone of Proximal Development Becomes a Virtual Zone: An Examination of Scaffolded Instruction in an Online Literacy Course

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Abstract: This qualitative inquiry described the scaffolding provided by the instructor and class participants in an online graduate literacy course. Participants included the instructor and 16 students. Data were 588 bulletin board messages which were analyzed using the constant-comparative method. Analysis revealed five areas in which scaffolding occurred (a) technology, (b) assignments, (c) online processes, (d) literacy concepts, and (e) educational concepts. Through on-line conversations in this course, a community was established allowing the instructor and participants to provide support by scaffolding instruction at the point of need.

Social constructivists stress the role of social interaction as integral to students' knowledge construction (Smagorinsky, 1995; Vygotsky, 1978). When social interactions in a classroom focus on content or strategies within a learner's zone of proximal development, a teacher or more able peer supplies scaffolding for the novice learner (Vygotsky, 1978). Scaffolding traditionally refers to the structure used in construction that provides support during the building process. Juxtaposed in the context of learning, scaffolding allows the learner to extend their current understanding of concept in question (Rogoff, 1990). Such scaffolding provides the support or assistance that enables the learner to develop knowledge or use strategies they would not have been capable of independently (Langer, 1984; Meyer, 1993; Palincsar, 1986; Wood, Bruner, & Ross, 1976). Scaffolding occurs within instructional conversations as teachers gradually withdraw support and transfer responsibility for learning to the student (Many, 2002). As a result, an increase in student participation and input is evident (Palinscar, 1986). Consequently, the context for instructional conversations where effective scaffolding can occur must provide for ample student discourse.

Social constructivist views of the importance of dialogue, social interaction, and scaffolding inform not only K-12 instruction, but practices in teacher education as well (Patterson, 2000; Raphael, 2000; Ridgeway, 2000). Anders, Hoffman, and Duffy (2000) note that quality teacher education programs include characteristics such as monitoring, coaching and clinical support, collaboration among different professionals, and dialogue. Obviously, opportunities for social interactions where scaffolding can occur are important in course experiences for teachers. With that in mind, it is important to examine a new development in teacher education, the use of distance learning as a delivery model for teachers' professional development.

In recent years, researchers in literacy teacher education have begun to consider how various forms of technology can be used to improve teacher education (National Institute of Child Health and Human Development, 2000). Interestingly, previous studies have underscored the ways in which technology can facilitate the communication of teachers in both preservice and inservice education programs. In addition, research indicates teachers' and students' roles may shift in the on-line community (Harris, 1993; Rice-Lively, 1994) and that teachers can effectively use on-line formats to gain both procedural and declarative knowledge through dialogue with peers (Grisham, 1997). One study explicitly examined the quality of the discourse environment in an online literacy graduate course (Many, Howrey, Race, Pottingerbird, & Stern, 2004). The authors noted that with deliberate scaffolding by the instructor and teacher-leaders, students developed a strong support community, provided mentoring and advice, and collaborated with colleagues. Little is known, however, regarding the ways in which scaffolding within a student's zone of proximal development may occur within the virtual zone of an online environment. Therefore, the question guiding this inquiry was: How can the scaffolding provided by the instructor and the class participants in an online literacy course be described?

Methodology

The context for this study was an online literacy course offered by an urban research institution in the southeast. The course focused on linking literacy assessment and instruction for struggling readers. Primary participants included the female instructor, and the 15 females, and 1 male who completed the course. All participants were certified teachers enrolled in a graduate education program.

The online course met the first night to review the syllabus and to introduce students to WebCT (the program used to deliver the online course). Support groups of 4-6 people were created at this time. Each group was designed to include members who had expertise in technology, teaching reading, teaching or interest in primary grades, and teaching or interest in middle/secondary grades.

The online course was originally structured in 14 modules. Each module consisted of the following sections: Purpose, Before Reading, Reading, After Reading, and Classroom Application. The After Reading reflections were analogous to class discussions and were posted to a bulletin board area designated for specific support groups. This article focuses specifically on analysis of the teacher and peer scaffolding as emerged in the analysis of 588 bulletin board messages posted during the semester and the instructor's personal reflections on the course. Data were analyzed using a constant-comparative method (Glaser & Strauss, 1967) and data reduction techniques as recommended by Hubermann and Miles (1993). Initial codes were established by two research assistants who began by reading and coding the postings by support group. This preliminary analysis of one group was done independently and the research team then met to compare and discuss codes. At this point, a list of introductory categories were decided upon which the assistants then applied to support group two's postings. This system then continued with the postings from each support group. After each phase, the assistants met with the researcher to share the emerging patterns and themes and reach consensus regarding them. Once the postings for each support group had been coded in this way, final categories were established and the entire data set was recoded accordingly. Throughout the process, literature in the field related to instructional scaffolding was revisited which influenced each step and helped shape and refine the categories. This allowed the

analysis to proceed in a recursive generative manner from the literature in the field related to instructional scaffolding to the data excerpts.

Results

Data analysis of the online support group bulletin board postings revealed five areas in which scaffolding took place. These categories included: (a) technology, (b) assignments, (c) online processes, (d) literacy concepts, and (e) educational concepts. In addition patterns emerged relating to the scaffolding processes that described how the teacher or peers provided scaffolding for students. These categories included: (a) modeling; (b) supplying information; (c) clarifying; (d) assisting; (e) questioning; (f) prompting; (g) focusing attention; (h) encouraging self-monitoring; and (i) labeling/affirming. Despite the fact that the groups had only one class on campus, communities of learners evolved online providing a supportive context for scaffolding. In the following sections, we will discuss the various content themes, integrating attention to the method of scaffolding and the nature of support group interactions.

Technology. In the area of technology, the teacher and students often supplied information for tasks such as attaching a file, getting into chat rooms, and reading messages from the bulletin board. In one bulletin board posting, for example, the instructor noted, "When you click 'mark messages as read' and they disappear- it may be because you are in the 'show unread messages' mode and the computer shows you no messages because you have marked them all as read" (August 31, 2000). In another instance, a student was having difficulty posting to the bulletin board because when she did, the last few lines of each attempt were deleted. The instructor assisted by writing, "… it tends to happen on all of your documents – why don't you try signing off and then skipping down 2 lines and writing a P. S. that you don't really care about – that way what is cut off won't be content related" (Sept. 6).

While there were obvious examples like the aforementioned, scaffolding also occurred on a more abstract level as a result of the technology. A posting by one teacher, Liz (pseudonym), read, "I had this thought during the chat with Dr. (Author 3) that you [referring to those participating in chats] are going so slow to read the messages, then wait for a reply, that you really analyze what you are saying to a deeper level. What do you think? Do you think you are thinking at a deeper level of thought because of the slower pace and the reflective nature of writing? Just curious" (Sept. 5). While Liz's comments were introspective in nature, such postings prompted others to think about their reflections and the role technology played in those reflections. Liz's fellow group members were left wondering if in fact they were thinking at a deeper level of thought and this process alone encouraged them to be more contemplative about their postings.

Technology, while perhaps allowing students to be more reflective, also created an increase in anxiety. For the majority of the students, this was their first on-line course. At the initial and only class on campus, the professor introduced the students to WebCT and modeled how to use its many functions. Despite this, however, there were still frustrations. It was often these frustrations that provided opportunities for scaffolding within the support groups.

The groups were responsible, in addition to the bulletin board postings, for holding four group chats. At the beginning of the semester, several students had difficulty participating in these chats due to computer problems. Evidence of students assisting one another with technology problems was apparent. Kim assisted Melissa via the telephone after she missed her group's first

scheduled chat. Kim freely shared of her time to ensure Melissa would be able to participate in the next online conversation. Kim wrote, “We missed you, but don’t worry about it, you’ll make the next one. Ok, call me after 8 at xxx xxxx and we’ll try to figure out what happened (to your computer) and I’ll fill you in on today” (Sept. 11). The support provided by Kim alleviated Melissa’s anxiety as Kim not only explained what took place during the chat, but additionally helped solve her computer problems.

Class assignments. WebCT also provided a forum in which the students could discuss the class assignments. Unlike a traditional classroom setting, where students are often rushing home after attending classes all day or night, WebCT provided a medium for students to discuss the expectations of the class and how to meet those expectations. The organization of work habits and the meeting of deadlines were quite different in this online course. In a traditional setting, conversations about assignments usually occur at the end of each class in the form of a summary of due dates and expectations. This opportunity was lost in the virtual classroom and as a result, assignments were scaffolded by peers as they encouraged each other to self-monitor completion of tasks. This support is illustrated through a student’s posting, “I know Beth said she couldn’t chat today because she is working on a project or something, but maybe we could chat next Monday (the 20th) at 5:00, if that is a good time for all. Once we decide, we have to make sure we post it on the calendar” (Sept.14). Prompts such as these were important in developing and supporting the students’ online organizational habits as they related to the completion of their assignments.

Students also appealed for help in regards to individual assignments, “Hey all. Has anyone started their literacy profile? I will be using the Reading Interview to start things off- get a picture of my child. I was wondering what everyone else plans on using for their assessment. Are you going to use the inventory or something else, and why?” (Sept. 13). Again WebCT afforded the students the opportunity to share their successes and failures ultimately scaffolding learning in a variety of areas for their classmates.

The instructor also scaffolded student participation in online chats. Upon reading the transcript of a group chat, the instructor noted that only two group members had participated and wrote, “Hello! Just a note to let you know that I posted Beth and Joy’s chat in your group’s name under ‘Course Materials’ – ‘chat transcripts.’ For those of you who didn’t make the chat – I will watch to see if you are able to schedule an extra one at some point so those of you who missed the first one will be able to still get in 4 by the end of the semester. – Hope everyone is doing well – and I look forward to reading the reflections on Module 1!” (Aug. 29). In this posting, the instructor encouraged self-monitoring of participation in online chats and also expressed the importance of the students’ reflections. Because students in an online course might perceive the instructor as distant and somewhat out of touch, the statement that she was looking forward to reading their comments informed the students that she was interested in their reflections and would indeed read them.

Online processes. In addition to forming habits related to distance learning, the students’ online learning processes developed too. At the beginning of the semester, students were already aware of the different processes that on-line learning involves. Students were quick to utilize the technology to enhance their learning. Liz wrote, “I was thinking about Len’s comment about the effectiveness of this type of learning, and I’m wondering if we could also have a “side-bar” conversation evaluating our learnings throughout the course” (Sept. 5). One support group member was even learning from another group’s on-line processes. Darlene wrote, “I have noticed that some groups assign a specific topic beforehand so that everyone comes equipped with ideas” (Nov. 6). In

this instance, Darlene realized that her group's chats were not as productive or stimulating as one of the other group's discussions. She investigated why and found the other group decided upon a specific topic on which their dialogue would center. This impelled her to prompt her small group to do the same, in turn scaffolding her group's online processes.

Collaboration across groups was also encouraged by the instructor when scaffolding online processes. After two members of a group dropped the course, she gave the remaining members the option of joining another group. When they opted to remain an independent group, she wrote, "Sounds like the *Variety Pack* it is – small but powerful! I do think the smaller number makes for a more effective chat – and if you want to look at the other groups to just see ideas you always can" (Sept. 11). In this message, the instructor affirmed the choices of the group and prompted them to look across groups for needed information. Another example of affirming online processes was the instructor's posting to the group called the *Cucumbers*. "Hi Cucumbers – what a great start to the class – I enjoyed having the chance to meet all of you – your group seems to be quite comfortable with the computers and to have 'jelled' very quickly – In the near future I'll be in touch with each of you and hope to sit in on at least one of your chats" (Aug. 22).

Literacy concepts. The members of the support groups also scaffolded each other's understanding of literacy concepts. In one example, Melissa scaffolds for Amy by first praising her reflection and then by supplying further information. Melissa wrote about her love of the book Where the Red Fern Grows and connected her own memories of being read to with the importance of reading aloud to students. She then commented on one of the many benefits of reading aloud, "Even my high school students enjoy read alouds from time to time. It helps with listening skills too" (Sept. 11). Through the posting of this bulletin board message, Melissa scaffolded the importance of reading aloud for Amy.

In another instance, several group members replied to a response Amy wrote to an article regarding the use of newspapers in the classroom. Again, a group member supplied information ultimately scaffolding a literacy concept and its implementation in Amy's classroom. Kim wrote,

> ... I, too was wondering about the article's suggestion for using newspapers in the classroom. I also think they can be difficult and they may be too challenging for many students. However, I was thinking about it and thought that maybe using selective articles from the daily paper might be a good tool for some of your students. Perhaps if you bring them a short article on occasion, some students will be interested in reading other parts of the newspaper. I do think that bringing a whole newspaper to class could be overwhelming for students. Are you familiar with the children's newspaper called "TIME for Kids?" It is only a few pages long and the articles are short and geared for middle-upper elementary school kids. I'm sure you could find out more about it if you were interested in bringing some sort of newspaper into your classroom but thought that the daily paper is too much. (Sept. 8).

The instructor also provided scaffolding for literacy concepts through labeling and affirming concepts mentioned in student postings and supplying related information. In response to one of Joy's reflections, the instructor wrote, "…I really enjoyed your detailed reflection on both the importance of the home literacy environment and your work with the emergent reader whom you have chosen" (Sept. 14). The instructor further elaborated by providing a detailed description of

how she provided literacy experiences for her own children through family reading time each night and how this time continues presently despite her children's ages.

In one instance, a group was provided with scaffolding as the instructor affirmed their bulletin board postings. "Hi Kim- Amy- Melissa. I enjoyed reading your postings thus far on module 2" (Sept. 11). She continued by affirming the suggestions provided by and to the group members regarding the use of newspapers in the classroom and supplying information in the form of personal lesson plans. "I do have a neat activity/lesson…it is called Once Upon a Time News – as a class we make a newspaper that would be in the world of fairy tales…I can put the entire thing in the course materials section if you are interested." She also offered text suggestions, "Kim- I have a fantastic 'war' picture book…come by my office some day and I'll show it to you…" (Sept. 11).

Educational concepts. In addition to literacy concepts, general educational concepts were also discussed within bulletin board conversations surrounding literacy concepts. In a posting, Liz responded to a group member's suggestion that determining a child's reading level requires some "intuition" (Oct. 8) on the teacher's part. While Liz agrees somewhat with this comment she used it as an opportunity to scaffold for her fellow group member. She wrote, "maybe they just really know the child…Maybe they really know the reading process so they know which assessments to emphasize more…Maybe they just really have a gut feeling about how to teach reading to that one child" (Oct. 8). Liz actually scaffolds on two different levels in this bulletin board message. First she clarified for her classmate the factors that contribute to a teacher's intuition. Liz says that teaching reading is not a "mystery or fluke" meaning that it is not haphazard. She then elaborated by saying that intuition might be defined as knowing your student's strengths and weaknesses as a result of being informed by effective assessments and then using this to guide the teaching of that one child. Liz went on to scaffold the idea that teaching in general is an art, "But there is something about the art of teaching and the instinct of teachers that does fit into this entire process" (Oct. 8).

Scaffolding of general educational concepts also occurred through the group members' reflections to specific readings. For example, Laney wrote in a reflection,

> I think that establishing rapport is an extremely important issue for most teachers. Many students come into our school with poor self-esteem and a lack of trust in the educational system. One of the first jobs we have is to show our students that they have not only a place to learn, but that it is a safe place to learn. In order to establish rapport, students must know that they can trust those who teach them. Once a student feels a connection has been made with the teacher then they feel free and comfortable to take the risk of trying something that may be difficult for them, or that may have caused failure and embarrassment in the past. (Oct. 8).

Discussion

The notion of the importance of instructional scaffolding in an online environment as noted in Many et.al's (2004) study and the importance of collaboration, dialogue, reflection, and support in literacy teacher education as underscored in Anders et.al (2000) are grounded in social constructivist views of learning and instruction. In their review of research in literacy teacher education, Anders, Hoffman, and Duffy (2000) note that quality teacher education at the inservice level has a number of common characteristics. Such characteristics include monitoring and support

for connections to classroom practice (Moore, 1991); opportunities for reflection (Anders, 1991); dialogue (Anders & Richardson, 1991); and collaboration among professionals from different roles (Short & Kauffman, 1992).

Monitoring and support for connections to classroom practice were scaffolded by both the teacher and class members. The instructor especially noticed this as she reflected at the end of the semester about her experiences teaching the online course."My teaching for this course is often done one on one as I see elements in responses and classroom application that I can clarify, provide information about, focus attention on, etc." (Nov. 20). This comment illustrates that the online format provided the instructor with opportunities to link the students' learning to their individual classroom practices. Additionally, students shared personal teaching experiences that provided scaffolding for peers through information supplied about technology, assignments, online processes, literacy concepts, and general educational concepts.

The design of this course naturally provided opportunities for reflection, as each module required the students to respond to prompts and questions from the instructor. While this was intentional on the part of the teacher, it was well received by the students. In a traditional classroom setting, students might not reflect orally because they feel inhibited. Often certain class members monopolize the conversations leaving little opportunity for others. This was not the case online because all students were required to post reflections to each course module. Additionally, this format provided the students with the opportunity to think through their responses before posting. One student commented that she reflected more thoughtfully as a result of putting her ideas in writing (Sept. 5).

In addition to the requirement of posting their own reflections, students were asked by the instructor to respond to a minimum of one other reflection. This requirement fostered the development of the online community and encouraged dialogue between class members above and beyond the required communications. The dialogue between the professor and the students also looked differently than it might in a traditional classroom setting. The instructor wrote in a personal reflection about the class, "The resulting dialogue is sometimes much more individualized and personally meaningful to individual students" (Nov. 20). This is not always the case in a traditional classroom setting where few opportunities for individualized instruction and interaction occur. In an online setting, however, the instructor can scaffold learning on both an individual and group basis.

This dialogue resulted in a unique collaboration. In the online class, there were two basic roles; the teacher and the student. These basic roles, however, manifested themselves in a number of different ways and, as noted in previous research, the roles often shifted across the semester (Harris, 1993; Rice-Lively, 1994). In this course, because each student was also a classroom teacher, the university instructor was able to communicate with him or her on two levels. The traditional student-teacher relationship was, of course, in place, but the teacher was also able to mentor the individuals as teaching colleagues. For example, in addition to course content and learning theories, the instructor also shared lesson plans and personal teaching strategies with the students. The students also had a two-tiered relationship with their fellow classmates. As students, they provided scaffolding for one another in the areas of technology, assignments, and online processes because these were areas that were relevant to them as students. As teachers, they provided scaffolding for one another in the areas of literacy concepts and general educational concepts. These were topics where their professional pedagogy was relevant and resulted in the sharing of best practices.

Applying the principles for good literacy teacher education, including monitoring and support for connections to classroom practice, opportunities for reflection, dialogue, and collaboration among professionals from different roles, to this online course allowed scaffolding to occur in a virtual zone. This study shows that it is possible to identify the student's zone of proximal development in an online course and to scaffold instruction within this zone. In fact, in some instances, the online course lent itself more to this than the traditional classroom setting. Again, we are reminded of the instructor's comments which show that she is providing more individualized instruction than in the traditional setting, "I think one of the biggest changes that I have felt as a teacher is that I am teaching much more to the particular – the specific- than I have previously" (Nov. 20). As a result of the individual requirements in this online course, including posting responses to classmates' reflections, instructional conversations were guaranteed. It was in the process of listening and responding to these conversations that the instructor and students provide scaffolding within a virtual zone.

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