Collaborative and Cooperative Approaches to Online Group Work: The impact of task type

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One purpose of online group projects is to encourage collaborative dialogue for new knowledge construction. During such projects students have a dual objective: learn through constructing new knowledge together while also completing the task. Cooperative approaches to task completion are an alternative to collaborative dialogue. The impact of task type on collaborative versus cooperative approaches to group projects has not been greatly examined in online environments. Transcripts of 10 small groups completing two types of tasks, synthesis or application, in an online graduate course were analyzed using Herring’s computer-mediated discourse analysis and Pearson’s chi-square tests to determine (a) whether groups took a collaborative or cooperative approach to task completion when explicitly encouraged to collaborate; and (b) whether the type of task affected the approach used. Overall, groups chose to cooperate more than collaborate, with application task groups taking a significantly more cooperative approach and synthesis task groups a significantly more collaborative approach. Implications for the design of online group tasks are discussed.

Introduction

Interaction and dialogue are key components of learning according to social learning theory (Bandura, 1971). Social constructivism emphasizes the negotiation of meaning and construction of shared understandings through dialogue (Jonassen, Davidson, Collins, Campbell, & Haag, 1995; Bonk & Cunningham, 1998; Bonk & Kim, 1998). Vygotsky’s (1978) view of learning as a social process that occurs within the zone of proximal development (ZPD) also positions interaction as crucial to the development of thought and behavior patterns. Fernandez, Wegerif, Mercer, and Rojas-Drummond (2001) argue that ZPD can be extended from interactions with a more

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able peer or instructor to symmetrical learning situations by “moving from a concept based on the idea of a teacher’s conscious intentions outside of a dialogue, to concepts based on a characterisation of dynamic processes maintained by the reciprocal and responsive way in which participants use language within dialogues” (p. 53). Such increased peer interaction in distance courses is often encouraged through small group projects and tasks.

Simonson (2000), however, argues that the popular claim “the more interaction there is in a distance class, the better” (p. 278) is a myth, citing a lack of empirical evidence to support any relationship between increased interaction and learning outcomes. Rather than defining learning outcomes solely as earned grades, as is the traditional view, they may also be defined as the processes learners engage in as they work together. Researchers in computer-supported collaborative learning (CSCL) have advocated such a shift in focus toward “the processes involved in successful peer interaction, rather than just on learning outcomes” (O’Malley, 1991, p. v). Stahl’s (2002, 2003a, b) social theory of CSCL views learning not as a knowledge-transmission process but rather a knowledge-creation process, in which knowledge is created in conversation with others. Stahl (2003b) outlines how individual knowing is in essence an interpretation of the meaning that is first made while in dialogic communication with others. It is through analyzing the dialogue in its context that we can understand how knowledge is created collaboratively:

> The fact that collaborative learning necessarily makes learning visible provides the methodological basis for empirical analysis by researchers. Researchers of collaborative learning are not restricted to indirect evidence of learning (such as pre-test and post-test differences) because they can analyse and interpret the making of meaning as it unfolds in the data at the group level and in individual trajectories of utterances … (p. 35)

Encouraging learners to engage in collaborative dialogue for the purpose of constructing new knowledge together and examining the dialogic artifacts for such new knowledge is one way to examine learning in online environments.

Collaborative dialogue for new knowledge construction, then, may be one intended outcome of educators assigning group tasks in online learning environments. However, there are different approaches that students can take to completing these assigned tasks. Henri and Rigault (1996) distinguish, for example, between cooperative and collaborative approaches. The primary difference between the two is whether tasks are divided up and completed individually (cooperative) or completed together through dialogue (collaborative). Characteristics of cooperative learning include division of labor, task specialization, and individual responsibility for part of the final product. Rose (2002) defines cooperative learning as “a teacher-structured, systematic instructional approach typified by small groups of learners working together on a common learning task … The approach employs specific mechanisms to achieve positive interdependence and promotive interaction, especially division of labor activated by role assignment” (p. 6). The success of the group depends on the contribution of each member of the group.

Collaboration, in contrast, has been defined as “a coordinated, synchronous activity that is the result of a continued attempt to construct and maintain a shared
concept of a problem” (Roschelle & Teasley, 1995, p. 70). Schrage (1990) describes collaboration as a “process of shared creation: two or more individuals with complementary skills interacting to create a shared understanding that none had previously possessed or could have come to on their own” (p. 40). Rose (2002) defines collaborative learning as “a learning and instructional approach typified by self-directed groups working together on a common learning task. The approach relies upon mutual engagement of learners to jointly clarify their reasoning process and construct common meaning primarily through dialogical discourse” (p. 6). Dialogue, then, is critical to collaboration, because it creates awareness of one’s own thinking processes as multiple perspectives are shared through discussion (Arvaja, Hakkinen, Etelapelta, & Rasku-Puttonen, in press).

However, what may be intended by educators as a task to be completed collaboratively may well be undertaken as a cooperative one by the students, as found by Kitchen and McDougall (1998–1999). Participants in their study chose to divide up tasks, complete them individually, and then combine the independent efforts into a final product. Hathorn and Ingram (2002a) and Paulus (2004) also found that small online graduate groups chose to cooperate rather than collaborate on a task. While cooperative approaches, such as dividing up the task or setting deadlines, may be important to ensure that the task is completed in a timely manner, this approach alone does not foster dialogue among the participants in which they can construct new knowledge of the material together. Putting students in groups does not automatically result in collaborative interactions, but Hathorn and Ingram (2002a) point out that providing guidelines for groups can increase the likelihood of collaboration.

When the purpose of online group work is to promote collaborative dialogue, it is useful to analyze how much of the group’s discussion is collaborative dialogue and how much is cooperative interaction. Analyzing the transcripts of online group communication can provide insight into what approach they take—collaborative dialogue, cooperative interactions or both. Distinguishing when groups are talking about the concepts to be learned (conceptual) from when they are talking about procedures for completing the task (non-conceptual) provides a picture of how groups approach the tasks, be it collaboratively (conceptual) or cooperatively (non-conceptual). Prior research has made similar distinctions. Poole (2000) identified four categories of conversation in her study of an online graduate course: article/content (which could be categorized as conceptual) and technical, procedural, and non-academic (which could be categorized as non-conceptual). Davidson-Shivers, Muilenburg, and Tanner (2001) used the topical categories of non-substantive and substantive. Within the non-substantive category they identified procedural, technical, and chat/supportive, all of which could be categorized as non-conceptual. This categorization of the dialogue gives an initial view of what groups are talking about online.

However, these and other studies cited often in the literature on online discussions (e.g., Henri, 1992; Howell-Richardson & Mellar, 1996; Gunawardena, Lowe, & Anderson, 1997; Newman, Johnson, Webb, & Cochrane, 1997; Kanuka & Anderson, 1998) have been criticized for including too few details about coding procedures, being inconsistent in the units of analysis, and not detailing a solid epistemological
stance (Rourke, Anderson, Garrison, & Archer, 2001; Rourke & Anderson, 2004). When analyzing discussion transcripts, Dillenbourg, Baker, Blaye, and O’Malley (1996) admit that “deciding on the meaning of ... expressions in a given dialogue context is thus quite complex, but necessary if we are to understand when students are really collaborating and co-constructing problem solutions” (p. 18). They point out that a promising possibility is to “exploit selective branches of linguistics research on models of conversation, discourse or dialogue to provide a more principled theoretical framework for analysis” (p. 19). Mazur (2004) and Herring (2004) have begun to do exactly that. Herring’s (2004) computer-mediated discourse analysis (CMDA) is “any analysis of online behavior that is grounded in empirical, textual observations ... [I]t views online behavior through the lens of language, and its interpretations are grounded in observations about language and language use” (Herring, 2004, p. 339). CMDA draws upon theoretical assumptions of linguistic discourse analysis, including the notion that recurring patterns are present in discourse which may be identified by the analyst, even though speakers themselves may not be aware of these patterns.

The notion that we do things with words can be traced back to Austin (1962) and Searle (1969) and speech act theory. This view of language is particularly useful when seeking to examine how groups complete a process. Traditionally, content analysis techniques have been used to reveal what participants say online; however, what participants are trying to do with what they say online is of particular interest when describing a process such as collaboration and cooperation. Unitizing online discussions into functional moves (speech acts) better captures the function of the discussion in its context and how groups are talking about their assigned tasks.

In addition to instructing groups to collaborate, Hathorn and Ingram (2002b) identify context variables that may impact collaborative outcomes: task type, available technology, group size, facilitation, incentive, individual accountability, and individual differences. Studies should include more contextual information that can help us better understand the outcomes of groups working together. Creating small groups, providing a variety of communication tools, instructing students to collaborate on goal-oriented tasks independent of the instructor, and including an incentive to do so are all consistent with the guidelines for collaboration recommended by Hathorn and Ingram (2002a). The impact of task type on how groups approach working together online is the variable of interest in this study.

**Purpose of the Study**

What groups are actually talking about as they work together on particular types of tasks has not been greatly examined in online learning environments. Analyzing the approaches and processes that online groups adopt for completing tasks together may be a useful starting point for assessing learner achievement through collaborative dialogue in higher education environments. In this exploratory, in vivo study, small groups of experienced online students were provided with a variety of communication tools and specific guidelines for collaborating on two different types of goal-oriented tasks.
The primary research questions of the study are as follows:

(1) Do small online groups take a collaborative or cooperative approach to completing assigned tasks when specifically asked to collaborate?
(2) Is there a difference in the approach used by groups completing different types of tasks?

**Method**

This paper reports findings from a larger study of small group interactions in an online graduate-level educational psychology course at a large Midwestern university. Sixteen of the twenty-one students enrolled in the course consented to participate in the study; thus a total of 10 groups were analyzed (see Table 1). All but two of the students had prior experience with online group work. Groups could use any communication mode available in the university’s course management system: e-mail, asynchronous discussion forums, or synchronous chat. The course was taught by a professor from the educational psychology department and a graduate assistant. Neither instructor was involved in the data analysis for this study.

The 12-week course was comprised of 2-week units, each focused on a particular learning theory. Students were assigned to groups and asked to complete two tasks simultaneously during each unit: a synthesis task and an application task. The synthesis task required students to discuss the assigned chapters from Driscoll’s

<table>
<thead>
<tr>
<th>Group</th>
<th>Participants</th>
<th>Size (n)</th>
<th>Task type</th>
<th>Communication tool used</th>
<th>No. messages</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Frank, Karl, Zelda, Kylie, Tawna</td>
<td>5</td>
<td>Synthesis</td>
<td>Forum</td>
<td>48</td>
</tr>
<tr>
<td>B</td>
<td>Kate, Lou, Quinn, Samantha, Linus</td>
<td>5</td>
<td>Synthesis</td>
<td>Forum</td>
<td>38</td>
</tr>
<tr>
<td>C</td>
<td>Scott, Bonnie, Noah, Selma, Zach</td>
<td>5</td>
<td>Synthesis</td>
<td>Forum and e-mail</td>
<td>39</td>
</tr>
<tr>
<td>D</td>
<td>Kate, Frank, Lou, Karl, Zelda, Kylie, Quinn, Samantha, Tawna, Katarina, Linus</td>
<td>11</td>
<td>Synthesis</td>
<td>Forum and e-mail</td>
<td>58</td>
</tr>
<tr>
<td>E</td>
<td>Scott, Frank, Tawna, Linus</td>
<td>4</td>
<td>Application</td>
<td>Forum, chat, and e-mail</td>
<td>198</td>
</tr>
<tr>
<td>F</td>
<td>Katarina, Kate, Zach, Quinn</td>
<td>4</td>
<td>Application</td>
<td>Forum and e-mail</td>
<td>42</td>
</tr>
<tr>
<td>G</td>
<td>Scott, Selma, Samantha, Linus</td>
<td>4</td>
<td>Application</td>
<td>Forum, chat, and e-mail</td>
<td>291</td>
</tr>
<tr>
<td>H</td>
<td>Lou, Karl, Kylie, Samantha</td>
<td>4</td>
<td>Application</td>
<td>Forum and e-mail</td>
<td>47</td>
</tr>
<tr>
<td>I</td>
<td>Frank, Zelda, Quinn</td>
<td>3</td>
<td>Application</td>
<td>Forum and e-mail</td>
<td>33</td>
</tr>
<tr>
<td>J</td>
<td>Kate, Tawna, Zach</td>
<td>3</td>
<td>Application</td>
<td>Forum and e-mail</td>
<td>32</td>
</tr>
</tbody>
</table>
The synthesis task discussions were monitored by the instructor and the quality and quantity of discussion postings counted toward the student’s participation grade. The application task asked the group to apply the learning theory to solve a particular learning problem (see Appendix A for examples of each task type). Both tasks required the group to create and submit a final document to the instructor. Both tasks were designed according to recommendations by Hathorn and Ingram (2002b) for promoting collaboration (see Appendix B for details).

Data selection was done using a motivated sample (Herring, 2004); transcripts of all communication that took place in the 10 groups were analyzed (e-mail, synchronous chat, and asynchronous discussion forum messages). Chat and forum transcripts were archived automatically by the course management system and downloaded into word processing and spreadsheet files for analysis after the course had ended. Electronic mail was an internal feature of the course management system; all e-mail correspondence was saved by the instructor and students and sent to the researchers at the end of the course.

A CMDA approach was taken to investigate the research questions (Herring, 2004; Paulus, 2004). The process was as follows: messages were unitized into functional moves. A functional move is defined as the purpose served by a particular part of a message, similar to speech acts or what Henri and Rigault (1996) define as a speech segment: “the smallest unit of delivery, linked to a single theme, directed at the same interlocutor, identified by a single type, having a single function” (p. 62). Each functional move was then coded as either conceptual or non-conceptual in nature. Conceptual moves addressed the conceptual understanding of the learning theory being studied during the unit task. Non-conceptual moves were related to logistical issues, technical concerns or social exchanges (see Table 2).

Two researchers, neither of whom were instructors for the course, coded the functional moves. The coders reviewed the task assignment and all transcripts of the groups’ communications in order to fully understand the context of each online discussion. They were not told explicitly, however, whether the task was officially a synthesis or an application task.

To establish reliability, the coders analyzed a portion of the data set to eliminate inconsistencies in the categorization of the data. The complete set of data from Group E (representing 20% of the entire data set) was used to establish inter-rater reliability, with the goal of reaching 80% agreement (Bauer, 2000). Inter-rater reliability of 83% was reached. When disagreement occurred, the functional move was marked to indicate that coders did not agree. Then, each coder stated her reasons for the code she assigned based on the criteria. In some cases one of the coders readily agreed that the other coder was correct based on the coding category criteria, and the move was coded accordingly. When the two coders felt it was not clear into which category a move would fit, the two coders negotiated to reach a final decision.

Finally, a Pearson chi-square (Pearson $\chi^2$) was conducted to evaluate whether task type (synthesis or application) was related to the type of move (conceptual or non-conceptual).
Findings and Discussion

Research question No. 1. Do small online groups take a collaborative or cooperative approach to completing assigned tasks when specifically asked to collaborate?

There were 2,552 functional moves exchanged by the 10 groups; of these, 1,563 (61%) moves were non-conceptual. The remaining 989 (39%) of the functional moves were conceptual, as illustrated in Table 3.

Despite instructions to the contrary, the vast majority of the discussion (61%) was not collaborative. This supports findings from previous studies in which students were instructed to collaborate but instead adopted a cooperative approach to the task (Kitchen & McDougall, 1998–1999, Hathorn & Ingram 2002a; Paulus, 2004). However, when the effect of type of task is factored in, the pattern changes.

Research question No. 2. Is there a difference in the approach used by groups completing different types of tasks?

The synthesis groups exchanged more conceptual moves (62%) than non-conceptual moves (38%). This reveals an overall focus on collaboration. That is, discussing the learning theories to be mastered in the unit rather than a focus on completing the task itself. The application task groups, in contrast, exchanged more non-conceptual moves (72%) than conceptual moves (28%), revealing a cooperative approach to the

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Functional moves</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conceptual</td>
<td>Addresses the conceptual understanding of the content of the current task</td>
<td>Share information, Discover inconsistencies, Negotiate inconsistencies, Propose compromise, Agree on compromise</td>
<td><em>I think Vygotsky would say learning can take place between people despite age differences or life experience</em></td>
</tr>
<tr>
<td>Non-conceptual</td>
<td>Logistics (addresses the completion of the task)</td>
<td>Manage/report/follow up, Take action, Initiate or suggest, Respond, Elicit response, Engage others to act</td>
<td><em>The best approach I’ve experienced with groups is to break up the work, but have one person responsible for compiling a rough draft. Then track changes to edit the rough draft</em></td>
</tr>
<tr>
<td>Social (greetings, closings, small talk)</td>
<td>Socialize, Empathize, Support</td>
<td><em>Just thought I’d say hi to my teammates for this unit. So “Hi” Frank, Scott, and Linus</em></td>
<td></td>
</tr>
<tr>
<td>Technical (concerns the functionality and use of the communication tools)</td>
<td>Manage technology, Support, Emote</td>
<td><em>The server must be slow or something, I tried uploading the file, but nothing seemed to happen. I’m retying this message</em></td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Conceptual and non-conceptual coding categories
Results of the Pearson chi-square analysis revealed that task type was significantly related to approach taken: Pearson $\chi^2 (1, N = 2,552) = 266.235, p < 0.001$. This means that the impact of task type on functional move was significant; there were a greater than expected number of conceptual moves in the synthesis task discussions and a lower than expected number of conceptual moves in the application task discussions.

The high number of non-conceptual moves in the application task discussions points to a cooperative rather than collaborative approach taken to completing this type of task. This approach seems similar to what Sherry and Billig (2000) call “design conversation.” Design conversation is “goal-related and focuses on creating something new … students describe projects, post them, and request feedback on specific design points” (p. 88). The students’ focus in the application tasks was on individual contribution to the group effort without explicitly discussing the course material. The emphasis in the application task groups was on group process and completion of the task, with groups typically taking a “round robin” approach to the task—one member writing a first draft and sending it to the next member for their feedback or development. For example, in the application task Group F only 4% of the functional moves were conceptual, and all of these moves were to circulate drafts of their paper. It was also the case that the members of Group F knew each other less well than the other group members. There was evidence of miscommunication and conflict in Group F, particularly in task assignment and feedback cycle expectations that were not met. These factors likely contributed to the group’s primary focus on logistic, technical and social matters.

### Table 3. Total non-conceptual and conceptual functional moves

<table>
<thead>
<tr>
<th>Group</th>
<th>Non-conceptual</th>
<th>Conceptual</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>Synthesis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>74</td>
<td>37</td>
<td>125</td>
</tr>
<tr>
<td>B</td>
<td>90</td>
<td>57</td>
<td>68</td>
</tr>
<tr>
<td>C</td>
<td>86</td>
<td>43</td>
<td>116</td>
</tr>
<tr>
<td>D</td>
<td>46</td>
<td>20</td>
<td>181</td>
</tr>
<tr>
<td>Subtotal</td>
<td>296</td>
<td>38</td>
<td>490</td>
</tr>
<tr>
<td>Application</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>337</td>
<td>68</td>
<td>161</td>
</tr>
<tr>
<td>F</td>
<td>167</td>
<td>96</td>
<td>7</td>
</tr>
<tr>
<td>G</td>
<td>436</td>
<td>70</td>
<td>186</td>
</tr>
<tr>
<td>H</td>
<td>139</td>
<td>68</td>
<td>64</td>
</tr>
<tr>
<td>I</td>
<td>112</td>
<td>75</td>
<td>37</td>
</tr>
<tr>
<td>J</td>
<td>76</td>
<td>88</td>
<td>44</td>
</tr>
<tr>
<td>Subtotal</td>
<td>1,267</td>
<td>72</td>
<td>499</td>
</tr>
<tr>
<td>Grand total</td>
<td>1,563</td>
<td>61</td>
<td>989</td>
</tr>
</tbody>
</table>
In contrast, the synthesis groups participated in what Jenlink and Carr (1996, as cited in Sherry & Billig, 2000) call “dialogue conversation, [which] focuses on constructing meaning through sharing multiple perspectives” (p. 88). There was less emphasis in the synthesis groups on who would be doing what; rather, group members together talked about the learning theories, and at the end of the discussion one member volunteered to synthesize the discussion informally. Variation existed among the four groups. Group D, the largest group (N = 11) had the highest percentage of conceptual moves of any group. Group B was the only synthesis group that exchanged more non-conceptual than conceptual moves in their discussion. One group member arrived late to the discussion and initiated a “round robin” feedback cycle for the group. Group B’s high number of non-conceptual moves included initial statements of availability for working on the task, discussion of one group member’s initial absence, and the feedback cycle. Thus, while overall the synthesis groups took a collaborative approach, talking more about the concepts, not every individual group did so. This is an area for further exploration.

Graham and Misanchuk (2004) distinguish between work teams and learning teams (see Table 4). The work team characteristics look similar to the cooperative approach that application task groups took, whereas learning teams look similar to the synthesis task group collaborative process. Graham and Misanchuk (2004) explain that in work teams the process occurs by “defining how individual pieces of the design interface with each other” (p. 185). They acknowledge that even though both work teams and learning teams may be project oriented, the primary goal of learning teams “is individual learning and not just the quality of the final product” (p. 185). They argue that in a learning team, “instructors must emphasise the primacy of learning over production, so that team members can suppress their natural drive to produce an excellent deliverable at the expense of an excellent learning outcome” (p. 185). Even though the two task types were not officially categorized as “learning” versus “work” teams by the instructor, this may have been the perception of the students.

One reason for this difference could have been the incentive element of the task design. Meloth and Deering (1994) differentiate between reward and strategic task conditions. Reward task conditions are structured so that each individual action

<table>
<thead>
<tr>
<th>Work team characteristics</th>
<th>Learning team characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchical leadership structure</td>
<td>Flat leadership structure</td>
</tr>
<tr>
<td>Clear role definitions</td>
<td>No role definitions</td>
</tr>
<tr>
<td>Collaboration is to maximize productivity</td>
<td>Collaboration is to maximize learning</td>
</tr>
<tr>
<td>Goals are product oriented</td>
<td>Goals are learning oriented</td>
</tr>
<tr>
<td>Team members take on tasks that reflect skills and strengths already acquired</td>
<td>Team members may accept tasks to gain skills they have not already acquired in order to learn</td>
</tr>
<tr>
<td>Focus is on the product or outcome</td>
<td>Focus is on the process or learning</td>
</tr>
</tbody>
</table>
benefits the group and vice versa. Reward conditions foster more of a cooperative approach to completing the task. The application task groups in this study were rewarded with a specific grade on their unit products. This reward condition may have unintentionally fostered a cooperative approach. Strategic task conditions, in contrast, Meloth and Deering argue, emphasize the learning of content, strategies and skills. The synthesis task groups in this study may have been operating under what could be considered a strategic condition. Though their participation in the synthesis group counted toward their overall grade, synthesis groups did not receive a separate grade for their final product. Thus, students may have viewed the task as having less direct impact on their individual grades.

Meloth and Deering (1994) found that in groups performing under the strategic condition, “the academic talk in general was focused toward the facts, concepts, and strategies associated with the task content.” (p. 156) That is, the students were talking about the concepts to be learned rather than assigning individual responsibilities for completing the task itself. The synthesis groups in this study, operating under a condition akin to the strategic condition, talked more about conceptual learning, whereas the application groups, operating under a condition akin to the reward condition, talked more about the procedures of the task itself, thus supporting the findings by Meloth and Deering.

Conclusion and Implications

Groups working on synthesis tasks engaged in more collaborative dialogue than did groups working on application tasks. Synthesis task groups reflected learning team characteristics and participated in more dialogue conversation. To foster collaborative dialogue rather than cooperation, a synthesis task should be given to online groups. Larger groups (approximately more than 10) may be more effective for collaborative dialogue. Also, the task should de-emphasize the grade element. The tradeoff with this type of task could be that some students may not participate as much as they would if they were receiving a separate grade.

If one purpose of the task is to teach cooperative group process skills and emphasize individual accountability, then application tasks should be used. The group should submit one product for a grade, with students evaluating their peers’ performances. The tradeoff with the application task is that groups may focus more on completion of the task over constructing new knowledge together through collaborative dialogue. However, a different type of learning may take place as each member completes their part of the task and shares it with the group.

Limitations and Directions for Further Research

There are several limitations to this study and areas for further research. First, the CMDA approach is relatively new in the area of online learning. While it is grounded in traditional linguistic theories of discourse analysis, more studies are needed to establish its usefulness in this arena. Second, while the coders were not
explicitly told whether the transcripts they analyzed were from the synthesis or application task groups, they did familiarize themselves with the tasks in order to fully understand the context of the conversations. Thus, it is possible that the coders deduced the difference in task, leading to an unintended bias in the coding. Third, the two types of tasks differed in two respects: in the goal of the task (synthesize or apply learning theories) and in the way student performance was graded (participation score or final product grade). These elements of the task are confounded and could be examined separately in future studies. Fourth, while students were strongly encouraged to communicate within the course management system so that all conversations were captured for analysis, it is possible that they talked through other channels. Any such communication was not analyzed and would thus present an additional limitation to the study.

There are several promising areas for further research. The comments and feedback provided by circulating drafts of the project as attachments were not analyzed in this study. It is possible that students were giving substantive, conceptual feedback to each other, and this is an area for further investigation. Another promising area for further research is to analyze individual groups as case studies for how they completed the tasks together. The 10 groups varied in size, approach, and use of the communication tools. These are additional factors which may also impact on the approach taken to completing group tasks. These can be analyzed further through a quasi-experimental design. Finally, no attention was given to the quality of the collaborative dialogue, only whether the conversation focused on the concepts being learned or on elements of completing the task. A greater understanding of how groups communicate, complete tasks and construct new knowledge through collaborative dialogue can help online educators create such tasks more effectively.

Note
1. Students were highly encouraged to communicate within the course system since a portion of their grade was based on team process; thus, it is believed that all communication that did take place was captured for analysis.

Notes on Contributor
Trena M. Paulus is an Assistant Professor in collaborative learning in the Department of Educational Psychology and Counseling at the University of Tennessee. Her current research is in the area of distance education, computer-mediated communication, and discourse analysis methods.

References


Appendix A: Example of synthesis and application tasks

Synthesis Task

Mason is a seventh grader who is having difficulty in math class. He stares blankly at the test paper asking him to compute fractions such as 5/7 and 9/12 as percentages. He can’t remember at all how to determine whether 4/5 is larger or smaller than 5/8 so he makes a guess. He hopes that, with some luck, he might manage in class. On the weekend, Mason is watching his favorite sport, basketball. He remarks to his sister, “Oh, this guy made 8 out of 11 shots last week; He’s close to an 80% shooter so he should be okay for these free throws.” After the player makes both shots, Mason looks down at the statistics sheet he’s been keeping on the local teams’ shooting percentages, and updates the statistics. Your discussion group’s task is to analyze Mason’s behavior from the perspectives of the theories. Then, come up with recommendations from the three theorists’ points of view.

Application Task

Chapters 6 and 7 introduce the views of three important experts in educational psychology: Piaget, Bruner, and Vygotsky. Your task for this unit is to role-play a conversation between the three experts as they try to analyze a learning situation. Each person on your team will play the role of one of the experts. If you have more than three people in your group, more than one of you can play the same expert, or you can bring in other learning theory experts you have read thus far (such as Skinner) into the discussion. You will be addressing a particular learning issue from your expert’s point of view, while other team members will challenge your explanation and question you further on particular details from their expert’s point of view. Research your particular expert and also pinpoint specific ways in which your expert’s views differ from those of the other two experts. The Web resources and the suggested articles at the beginning of the chapter may be helpful as you formulate your ideas. Your group may choose one of these learning issues to discuss:

Issue #1: How would you face the task of teaching math to a culturally diverse group of second-graders (7 years old) at an urban elementary school? (Don’t be concerned with the specific content to be taught, just the nature of the learning tasks, and how they might be determined and organized according to each expert.)

Issue #2: Adult employees at a particular company are having difficulty transferring learning from training sessions to the workplace. What strategies should be used according to each expert? Which is the best approach?

Issue #3: Which comes first, learning or development? That is, must a child be at a particular point in development for learning to occur effectively? Or does learning prompt movement from one stage of development to the next? What evidence supports your view as one of these experts?

Issue #4: Are social interactions necessary for learning? Why or why not? Can an internal dialogue substitute for external others? Why or why not according to these experts?
Appendix B: Guidelines for fostering collaborative groups

1. Define the group goal. Groups were given a clear goal for their efforts. That is, they were asked to participate in the collaborative process for a defined length of time to complete a specified task.

2. Form groups. Students were assigned to small groups based on recommendations from prior studies (Henri & Rigault, 1996; Bernard & Lundgren-Cayrol, 2001). Groups were formed based on previous distance education experience, professional background, previous work experiences, and summer schedule availability. Groups were also formed with an eye towards giving students a chance to work with different people during the course. Group members participated in ice breaker activities at the beginning of the course, including posting short biographies and a photo to help facilitate a sense of community in the course.

3. Give instructions to collaborate. Participants were specifically encouraged to work together and collaborate through the detailed task descriptions (e.g., to participate equally and mutually assist one another without the instructor’s intervention). Guidelines for collaboration and participation were provided as part of the course Web site.

4. Define process for producing end result. The guidelines for collaboration and participation encouraged all students to participate in the process, explained the role of the instructor, and outlined the technology tools available for communication.

5. Add accountability. Students’ grades were dependent on the successful outcomes of their group effort. Accountability was built into the tasks through participant peer evaluation.

6. Foster interdependence. The task instructions and guidelines for collaboration were designed to encourage interdependence among group members. Throughout the syllabus it was emphasized that students should work together for success, and not rely on the instructor to direct the group’s interaction.

7. Practice. Learners began working in groups during the second unit of the course and did so throughout the course. All cohort members had previous experience with online group work from their previous distance courses.