Task Complexity

Group work must be carefully planned and structured to ensure learning, but it is worth the extra effort.

By Nancy Frey and Douglas Fisher

Nancy Frey (nfrey@mail.sdsu.edu) is a professor of teacher education at San Diego State University and a teacher leader at Health Sciences High and Middle College in San Diego, CA.

Douglas Fisher (dfisher@mail.sdsu.edu) is a professor of teacher education at San Diego State University and a teacher leader at Health Sciences High and Middle College.

They are the authors of Guided Instruction: How to Develop Confident and Successful Learners (2010, ASCD).

I'm just not sure they're really doing anything of value when they're in groups.

That is perhaps the reservation most frequently mentioned by secondary school educators when the subject of productive group work comes up. Worried about the amount of instructional time that must be dedicated to a group project, some teachers question whether it is better to simply tell students what they need to know—even when they know that telling alone isn't especially effective (Tharp, Estrada, Dalton, & Yamauchi, 2000). Other teachers possess a fixed idea about the task itself, believing incorrectly that for the work itself to be worthwhile, it must extend over several class periods. Still others express concerns about individual students who prefer to work alone, rather than in a group.

Armed with these misgivings, many teachers can list the benefits of group work and then apologetically explain that "it just doesn't work for the students I teach." Many of their apprehensions focus on issues of task complexity. Will there be logistical and behavior problems if the task is too easy or too difficult? Is the learning worth the fuss? Are students capable of sustained group work without the constant presence of an adult?

An appropriate level of task complexity is key to ensuring that the time devoted to group work is productive (Frey, Fisher, & Everlove, 2009). Indicators of high-quality, appropriate task complexity include structures that elevate academic language, a design that requires students to work together, grade-level work, and the opportunity for productive failure.

Structure the Task Thoughtfully

Group tasks require the same thoughtful design that goes into other aspects of instruction. First and foremost, students must know how to interact with one another, how to seek help, and how to engage in the academic language of the lesson. Secondary school teachers sometimes believe that they shouldn't have to teach about the norms of interaction because students "should know how to work together by now." That is true, but only to a point. Although they may have had ample experience with group work in previous grades, they don't yet know how to work for a particular teacher. Therefore, we suggest that teachers post, teach, and revisit norms for interaction, especially in how to debate and disagree without being disagreeable and how to seek, offer, accept, and decline help graciously. Students at all ages and experience levels also benefit from language scaffolds that encourage them to use academic language and vocabulary. Language frames—partially constructed statements and questions that frame original ideas—are highly useful during productive group work. (See the February 2011 column and video for more information on academic language supports: www.nassp.org/pl0211fisher.)

A mathematics teacher at our school ensures that her students build skills for communicating with one another. The video that accompanies this column shows her helping math students accomplish a group task during the first days of school. She reminds them to talk to one another as they work in groups of six to stack plastic cups in a pyramid shape without directly touching the containers.
Her students give directions to one another (e.g., “Pull your side, Michelle” and “That’ll work”), and three students even figured out how to solve the problem of having two cups wedged tightly together. They also rely on nonverbal communication, especially gestures, eye gaze, and body language. Although her students are still in the early stages of learning how to communicate with one another, such complex tasks as this require the group to work together to accomplish a shared goal. As she reminds them, “Just because we’re not doing math problems doesn’t mean problem solving was not involved.”

It is important that teachers keep task complexity in mind when introducing new routines to students. A class that is learning a new method for working in groups should not be additionally challenged with demanding content at the same time. The task complexity itself should be temporarily lowered to make it possible for students to learn the processes and procedures of working together productively. This is important point for administrators to take into account when observing classroom instruction. If a task itself seems somewhat easy, ask the teacher why that is so. In many cases, it may be a conscious decision to temporarily lower the cognitive demand of the task so that students can focus on acquiring new process or procedural knowledge.

Ensure Grade-Level Work
One of the things that leaders should look for while students are engaged in group work is the rigor of the task. It really doesn’t matter how good the instruction is if students in a ninth-grade English class are working on seventh-grade content. While students are working productively with their peers, and have peer support and language brokers, they should be working on tasks that facilitate their understanding of grade-level concepts.

Guided instruction (see our January 2011 column at www.nassp.org/pl0111fisher)—which involves the teacher using questions, prompts, cues, and direct explanations to raise students’ achievement—is a good strategy to ensure appropriate levels of work. In guided instruction, students can be grouped on the basis of their assessed needs and the teacher can focus on those needs in small groups.

For example, consider a task that biology students completed as part of their unit on energy in an ecosystem. The teacher gave each group of students an envelope that contained little slips of paper with the names of different organisms in an ecosystem. Students were asked to sort the words in any categorical system that made sense to them. As group members moved words into categories, they had to defend their placement to their peers. They were encouraged to use a sentence frame, “This organism, _____, belongs in the _____ category because _____.” When Imani moved the paper with the word bacteria to a new column, she said, “This organism, bacteria, belongs in a new category because it doesn’t fit in any of these others.” Her team members put their thumbs up to show their agreement.

Once students had their categories, the teacher introduced technical vocabulary, including autotroph and heterotroph. He asked students to re-sort their organisms on the basis of this new information. Spenser moved all of the papers back to a pile, saying, “These categories don’t work for this.
Productive group work isn’t just pushing four desks together and then calling it a day. A truer measure of the value of collaborative learning is the complexity of the task and how students cognitively engage with it.

This organism, zooplankton, belongs in the heterotroph category because it can’t make organic compounds. Instead, they eat other organisms. During the period, the teacher added additional words, such as decomposer and producer, and asked his students to continue their sorts. In doing so, the students in this biology class completed tasks designed to ensure their learning of grade-level biology concepts. And that’s what productive group work should do: it should give students an opportunity to consolidate their understanding of rigorous concepts.

**Design for Productive Failure**

“Failure” may seem antithetical to education, but we consider it an indicator of task complexity. In much the same way that we teachers often learn from our own mistakes, so it is with the learners in our classrooms. The growing research on productive failure in learning is that middle and high school students who initially fail at a task are more receptive to subsequent instruction, as evidenced by increased achievement and performance (Kapur, 2008). It’s important to note, however, that we don’t want students to experience this failure in isolation. The best time to do so is during collaborative learning.

A task designed with the possibility of productive failure in mind must be sufficiently novel. In other words, it is not a mere reproduction of what the teacher just did. A problem with reproductive tasks is that they are susceptible to the “divide and conquer” approach—parallel independent work—that so many groups engage in. When the task itself is already known, it’s just a matter of following the steps—no thinking required. Groups in this mind-set merely divide up the task, go their separate ways, then get back together to assemble the final product.

For the task to possess the possibility of productive failure, it must require interaction and teamwork. Students working in a group that is wrestling with a task that is difficult enough to possibly fail will discuss the content, not just the task. They will use academic language and vocabulary in ways that indicate they are cognitively engaged. Students will ask questions of one another, offer explanations and clarifications, and provide evidence to support their claims. To be sure, this quality indicator requires getting close to groups to hear how they apply their knowledge to solve problems. But that is essential to fully understand the quality of learning that is occurring in a classroom.

**Conclusion**

Productive group work isn’t just pushing four desks together and then calling it a day. A truer measure of the value of collaborative learning is the complexity of the task and how students cognitively engage with it. The complexity of the task ensures they have something to talk about; the structure of the task provides them the forum for doing so.

**REFERENCES**

COPYRIGHT INFORMATION

TITLE: Task Complexity
SOURCE: Princ Leadership 11 no7 Mr 2011

The magazine publisher is the copyright holder of this article and it is reproduced with permission. Further reproduction of this article in violation of the copyright is prohibited. To contact the publisher:
http://www.naesp.org