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# Group and Interactive Learning

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# **Task influences on spontaneous peer learning in the classroom**

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## **Abstract**

A number of experimental interventions have confirmed the effectiveness of peer collaboration for the acquisition of concepts such as conservation. However, no study to date has described the process or effectiveness of peer learning as it takes place in classrooms. The present study documented episodes of spontaneous peer interaction during academic tasks in a progressive school. Results indicated that the type of task performed influenced the structure of the interaction. Open-ended or discovery tasks such as story-writing promoted more exchange of information and more argumentation than did skill tasks that had only one right answer. Skill tasks were related to more negative behaviors, such as refusals and rejections, and resulted in more time spent off task. The interactive behavior observed during engagement with discovery tasks is consistent with the interactive style related to cognitive growth in laboratory studies of peer interaction.

## **1 Introduction**

During the last two decades educators have increasingly included peer learning alternatives in their traditional classrooms. This rapid and enthusiastic change toward the use of peers constitutes a "movement" in education (Damon

& Phelps<sup>1</sup>). Broad acceptance of peer learning can be credited to the considerable body of experimental literature on the subject. The effectiveness of peer collaboration in the acquisition of conservation (e.g., Doise & Mugny<sup>2</sup>), spatial coordination (e.g., Emler & Valiant<sup>3</sup>), legal thinking (Roy & Howe<sup>6</sup>), moral reasoning (e.g., Kruger<sup>4</sup>), and mathematics (Phelps & Damon<sup>5</sup>) is well-documented. However, these studies all relied on laboratory or school-based interventions that were structured and maintained by adults. To date no one has described the process of peer learning as it spontaneously occurs in the classroom, often with minimal adult facilitation.

The purpose of the present study was to examine the structure of peer learning in a classroom designed to allow spontaneous interactions among children. The research questions investigated were:

1) Will the organization of peer interaction in the classroom resemble the organization of peer interaction in the laboratory?

2) In laboratory studies, peer interaction that is effective for learning features social engagement and the criticism of ideas. Will this happen in the classroom?

3) Will the type of task the children are working on affect the nature of their interaction?

Following Damon and Phelps<sup>1</sup>, it was predicted that peers would be more actively engaged with each other's ideas when working on tasks requiring creativity or discovery. It was further predicted that children would be less interactive when working together on tasks that require the practice of skills.

## 2 Method

### *Subjects.*

Subjects were 16 (eight males, eight females) middle and upper-middle class children. Thirteen of the children were European-American, one was Latin-American, one was Asian-American, and one was African-American. Their mean age was 7.6 years. The 16 subjects represent a subset of a

first/second grade classroom of 28 children taught by two full time teachers in a progressive private school.

*Observational Procedure.*

Children's classroom interactions were videotaped and audio taped as unobtrusively as possible. Thirteen episodes (mean length = 18 min) of spontaneous peer interaction were selected for taping. During these episodes the subjects worked with one or more partners on various academic tasks. No instruction on how to work with partners was provided, but teachers occasionally prompted children who were having difficulties.

*Coding Procedure.*

The tasks the subjects worked on were coded as either

- 1) Discovery tasks, such as story-writing and code-breaking, or
- 2) Skill tasks, such as measuring and arithmetic puzzles.

The characteristic that distinguishes these two types of task is the presence or absence of only one right answer. Open-ended tasks were coded as discovery tasks. Tasks with only one answer were coded as skill tasks.

The videotaped episodes were coded for the amount of time children spent in different types of social interaction. On a moment-to-moment basis, each subject was coded as being in one of the following 10 interactive states.

- 1) Egalitarian - subjects are working together, sharing equally in the task
- 2) Asymmetrical - one subject is focusing on the thoughts of the other as follows
  - a) onlooking - monitoring a partner's independent work
  - b) giving help - providing assistance to the partner
  - c) requesting help - asking for assistance from a partner

- d) refusing to help - declining to give assistance when it is requested
  - e) persuading - making an argument to the partner in favor of an idea
  - f) countering - making an alternative argument to the persuading partner
  - g) rejecting - actively refusing to engage in discussion of an idea
- 3) Independent - the subject is focused only on his/her own work and is not in a social interaction
- 4) Off Task - the subject is no longer attending to the task at hand

### 3 Results

The amount of time (in seconds) spent in each of the 10 coded states was summarized for each subject. The mean durations for each state during discovery task episodes were compared to those during skill task episodes via a series of *t*-tests. Subjects performing discovery tasks spent the same amount of time in Egalitarian interactions as did subjects performing skill tasks. The two groups also spent similar amounts of time in Independent states. However, as predicted, subjects performing discovery tasks spent significantly more time in Asymmetrical states than did those working on skills. In particular, discovery tasks promoted more onlooking, giving help, requesting help, persuasion, and countering than did skill tasks. Skill tasks, by contrast, promoted significantly more Off Task behavior, more refusal to help, and more rejection of persuasion than did discovery tasks. See Figures 1, 2, and 3.

### 4 Discussion

The type of task subjects worked on influenced the nature of their peer interaction. Discovery tasks, compared to skill tasks, promoted more lively discussion of ideas as measured by the argumentation codes and more exchange of information as measured by the helping codes. Interestingly, skill task subjects were more likely to engage in negative behaviors, such as refusing to help or rejecting the partner's ideas. Furthermore, they were significantly

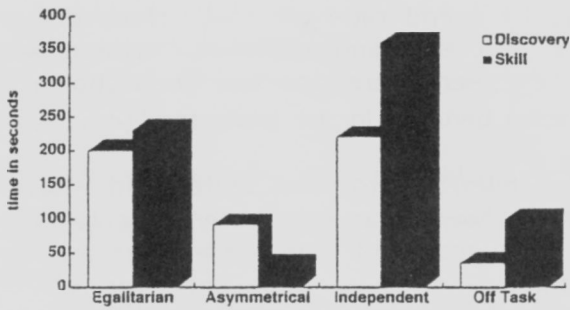


Figure 1: Task influences on social interaction

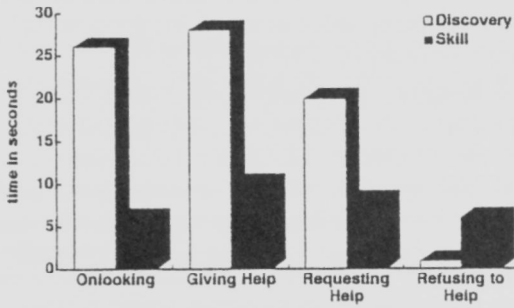


Figure 2: Task influences on helping

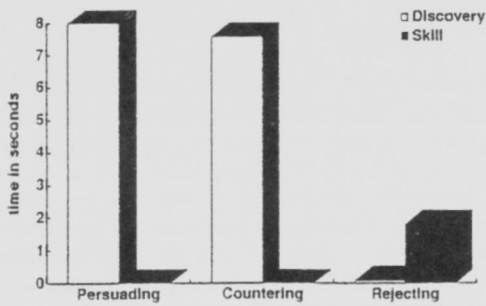


Figure 3: Task influences on argumentation



more likely to spend time off task. Thus, discovery tasks promoted a more engaging exchange between partners; this type of lively peer interaction has been shown to produce more cognitive benefits in the laboratory (e.g., Kruger<sup>4</sup>).

The present data are limited in that they are observational. No outcome measures were taken. However, this study is an important step toward identification of the circumstances and tasks necessary for effective peer learning in the classroom.

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