Student Participation in Disciplinary Discourses: When the Teacher Takes a Step Back, Who Takes a Step Forward?

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Abstract: This study compares the participation patterns of students across two classrooms, which were involved in a design-based experiment called PATHS. While both classes followed the same curriculum, which encouraged disciplinary engagement in the subjects of history and science, the pedagogical stances of the teachers led to some noticeable differences in the "participatory roles" that students took up during the course of instruction. However, despite differences in terms of the way students participated in discussions, this study finds that the stratification of students within each classroom in terms of the total amount of participation per student was the same across both rooms. The data point to pervasive patterns of student/student and student/teacher interaction, which confer status (and thus the right to speak) on particular kids.

Introduction

Allowing students to directly engage with the tools and thinking practices of a discipline like science or history has the potential of being a liberating and powerful experience. Liberating in that students can come to find themselves in new relationships of power not only with the subject matter, but with the teacher as well (Cornelius & Herrenkohl, 2004). Powerful in that this process of engaging in knowledge creation draws on the students' own understandings of the topic at hand, and allows for a thoroughly contructivist approach to learning (Cobb, 1994). Such frameworks for the design of effective learning environments stress the benefits of having students engage with one another in this process of creating knowledge (Herrenkohl & Guerra, 1998; Engle & Conant, 2002; Palincsar & Brown, 1984; Roth, McGinn, Woszczyna & Boutonne, 1999). Students learn through discussion with one another and with their teacher what the limits of their knowledge are, how to justify their beliefs to another person, and what might count as evidence in particular disciplines or situations.

In order to realize this powerful form of learning, transformations in the typical relationships between students and teachers, and among students, have to take place (Hatano & Inagaki, 1991). The use of teacher-led I-R-E discourse patterns (Cazden, 1988) are reduced in favor of giving students the opportunity to engage directly with the materials, concepts and thinking practices of the discipline. Although the teacher remains an important "guide" (Brown & Campione, 1994; Collins, Brown & Holum, 1991) and plays an important role in scaffolding students' interactions with the subject matter, their position of power is reduced. Instead, students are encouraged to develop and to utilize their own judgments about what counts as knowledge, and to learn how to assess their own learning (Bransford, Brown & Cocking, 2000).

Design based research in these types of classroom environments has gone far in explicating the possibilities open to classroom teachers in connecting their students with meaningful learning experiences and in having productive exchanges with one another. Many studies have explored how the teacher might position him or herself in relation to the subject matter knowledge and to the students, so that students might begin to take up new intellectual roles and positions (Collins, Brown & Newman, 1989; O'Connor, 2001). Instructional supports in the curriculum also assist teachers in repositioning their students as knowers and thinkers. Herrenkohl et al.'s (1999) use of intellectual audience roles is one such tool that assists students in engaging in expert thinking practices while discussing theoretical ideas with their peers.

Despite the potential of this type of instruction, there remain many unresolved issues about how to help students navigate these new intellectual and social roles effectively. And there is still much that we do not know about the accessibility of these knowledge-making practices for all students. To this end, I aim to explore student engagement in disciplinary discourses in terms of the types of *participatory roles* that students appropriate when engaging in this type of classroom environment. Following Goffman's (1981) discussion of "participation frameworks", I conceptualize this construct of participatory roles as a way to account for both the communicative act (i.e. the utterance) of a speaker, as well as the social and intellectual role that the utterance plays in the collective creation of meaning in the classroom. Traditional classroom practices typically allow students one or two participatory roles, for example, that of "respondent" to a question, or that of a "clarifier" of the teacher's instructions or explanations. As students are allowed to take on more of the intellectual work in the classroom, their potential to take on new intellectual participatory roles also expands. But the question remains about the extent to which students take up the new roles that are made available to them, and whether this happens in an equal way for all students in a given classroom.

This study examines students' participatory roles during a design based experiment that was implemented in two sixth grade classrooms. This research provides an opportunity to disentangle several factors

that may influence student participation. I compare two sixth-grade classes from the same school building, who used the same curriculum, but whose teachers differed substantially in terms of their pedagogical approach. This study examines specifically the following questions concerning the interrelationships between teaching, curriculum and student participation:

1) In what ways did each of the teachers position students within the disciplinary subject matter?
2) What participatory roles were taken up by students? Were there any systematic differences in the roles taken up by students between the two classrooms?
3) How were participatory roles shared among students?

Description of the Research Setting

The data for this study were collected as a part of the PATHS study (Promoting Argumentation in the Teaching of History and Science). This study aimed to develop and explore students' epistemological understandings within and across these two subject areas (Stevens, Wineburg, Bell & Herrenkohl, 2004). The PATHS study was implemented in two fifth and two sixth grade classrooms, but for the purposes of the current study, I will report on the two sixth grade classes only. To promote student engagement with the subject matters of history and science, we implemented a curriculum in which students would work directly with the materials and knowledge making practices of the two disciplines.

In total, we implemented 5 units: two units in science and two in history, and one culminating unit that crossed both disciplines. Our involvement in the classrooms began in October and continued until May of the same school year. The main unit in science was Sinking and Floating. Students worked together in groups to test various materials and to develop and revise their own theories about why things sink and float. In history, the main unit was on Rosa Parks, and students worked with a collection of primary and secondary source documents to develop their own theories about where Rosa Parks actually sat on the bus and why she stayed in her seat. In addition to exploring these subject areas in isolation, the curriculum structured lessons through which students could make comparisons across these two ways of knowing.

Several instructional supports were introduced alongside the curriculum in order to ensure that students were engaging with each other and with the subject matters in meaningful ways. In both subjects, students developed, recorded and revised their theories with the support of a SenseMaker Board (Bell, 2002). "Audience roles" used in conjunction with a "Questions chart" were adapted from the work of Herrenkohl et al. (1999) with the purpose of scaffolding students' discourse. These tools assisted students with knowing what kinds of questions to ask of each other during whole class presentations, wherein one group presented their theory to an "audience" of their fellow scientists or historians.

Two sixth grade teachers participated in this study. Mrs. Garrett (hereafter FG) had been teaching for three years at the time of the study, and Mrs. Pratt (hereafter JP) had been teaching for thirteen years at the time of the study. There were approximately 30 students in each classsroom, with a nearly even distribution between male and female students. These classrooms were located next door to one another in a semi-urban elementary school in the Western United States. The student population was racially diverse: 50% of the students were non-White and represented a multitude of racial and ethnic backgrounds. In each class, six different native languages were represented.

Someone from our team of researchers was always present during instruction to help teachers set up, assist with any conceptual or organizational issues, and to video tape each lesson. In a few instances, a member of the research team actually led the class discussion, in the event that the teacher was absent. This occurred on two days in FG's class and on one day in JP's class over the 17 days of instruction during the two main units.

Data Sources and Methods

The data for this study came from video recordings from 17 days of classroom instruction: 7 days of science during the main unit of Sinking and Floating, and 10 days of history during the main unit of Rosa Parks. This totaled approximately 34 hours of instruction per classroom. From the video tapes, the classroom discourse was transcribed verbatim as thoroughly as possible. The transcripts were coded according to a coding scheme that I developed to account for the discursive and intellectual roles that students took up. Prior to coding the entire data set, inter-rater reliability for these codes was obtained on 10% of data, with a reliability of 70% for the 13 codes (See Appendix A for a full list of the codes and description of their use).

The 13 codes were applied to every speaking turn taken by a student, whether the speaker was known or not. There were some codes that, as a rule, could be used in conjunction with other codes, such as Challenger (which was always coded alongside Questioner, Hypothesizer, or Reporter). In general, however, there was only one code applied per student turn. For each code applied, I also coded which student had spoken. Every code was also embedded within one of four possible participant structures (c.f. Philips, 1983) introduced by the curriculum: Whole Class Present (WCP); Whole Class Teacher Led (WCTL); Small Group (SMG) or Whole Class Student Led (WCSL).

To aggregate the codes, I ran a series of queries on the coded data. The first query tabulated the total number of student turns taken within each code in each of the two classrooms. The second query tabulated the total number of turns taken for each student, in both classrooms, across history and science, and during all of the whole class participant structures: WCP, WCTL and WCSL (1).

Findings

Mrs. Garrett and Mrs. Pratt were both skilled teachers, but they differed substantially in terms of their epistemological stances and the ways in which they positioned students within the disciplinary structures provided by the curriculum. I use Nystrand's (1997) distinction between monologically and dialogically organized instruction to explore what some of the critical differences were between these two teachers. Monologically organized instruction is carefully constrained by the teacher, is characterized by recitation, and attempts an accurate transmission of information from the teacher or text to the student. The uptake of ideas and questions from students by the teacher in this type of instruction is limited, as the teacher is likely to view them as a distraction or divergence from the goal of the instruction, which is to transmit a body of knowledge intact. A dialogically organized instruction, at the other end of the spectrum, is organized around the premises that understandings evolve and are co-constructed through discourse, and that students themselves are sources of knowledge. Such a classroom environment acknowledges students' ownership of ideas, and includes their ideas and questions as part of the larger dialogue toward the creation of meaning in the classroom.

With these characterizations in mind, I acknowledge that monologic and dialogic approaches to instruction are the ends of a spectrum, and that neither teacher's instruction could be characterized by either end. Generally, however, an analysis of both teachers' meta-talk (Leinhardt & Steele, 2005) and the ways in which they shaped the discourses among students found that Mrs. Garrett's instruction was more dialogically organized. Mrs. Garrett was more likely to stress a view of knowledge as a "transformation of understanding" (Nystrand, 1997) citing examples from her own experiences where she had struggled with coming to understand particular concepts. She stressed the importance of students' engaging in dialogue with one another to benefit their learning. She often encouraged them to be mindful of each other's turns at talk, and promoted a positive image of hearing from everyone. Mrs. Garrett also discouraged students from thinking about the curriculum in terms of finding "one right answer"; instead, she promoted an image of knowledge wherein people are always coming to understand things in new and better ways. These comments from the teacher following students' presentations during the history unit illustrate the ways in which she used meta-talk to position her students as knowledgeable and to diminish the image of a teacher as the final authority:

FG: I don't feel like we have to fight about it until we all agree on the exact same thing, because it's just like [my husband] and I when we fight, sometimes we have to agree to disagree. There, there's not always an ultimate answer in which we can all be completely comfortable. They might change it because they're just sick of hearing about the fighting about it. You know what I'm saying? But they may not-, this is how they interpret the truth right now. And that's okay. I don't know what the real truth is, I honestly don't know, this is the second time I've done it and I don't know which pieces are completely the ones that should be used, I don't know where she sat, I don't know why she did it for sure. I'm still changing. Every time one of you goes up, you make me change my beliefs. [some laughter].

Mrs. Pratt's organization of instruction (as stated above) was not the opposite of Mrs. Garrett's, but generally, it was more monologically organized. Mrs. Pratt's communication model was more oriented toward a "transmission of knowledge" (Nystrand, 1997) where a major goal of instruction was to get students to a realization of the right answer by the end of the unit. Mrs. Pratt was more likely to mediate discussions herself, posing more questions and challenges to students, and designating the turns at talk. There were some interesting subject matter differences in this class, however, where students were given greater epistemic roles in history than in science. In science, students were allowed little time to present and ask questions of each other, and most of the conversations were initiated and mediated by the teacher. In history, students were encouraged more to debate with one another and to hold each other accountable to the evidence. This excerpt shows how Mrs. Pratt promoted a more argumentative image of what students what types of questions students were supposed to ask when another group was presenting, where she stressed that weak arguments were not to be tolerated:

JP: So that you've got all your information here ready to zing em when they're up there presenting. Okay, "well where did you put this piece of evidence? Did you just ignore that piece of evidence? Uh, you know, why did you ignore it?" Okay, you know, "It was i-, we thought it was important." Okay. "Explain. Give me your reasoning." Okay, you want, you want to be able to nail them. Put them on the hot seat, okay.

Though these two teachers differed in terms of their portrayal of knowledge and in the ways that they positioned students within the curriculum, an analysis of the discourse data also found some similarities in their interactions with students. Both teachers provided opportunities for students to create explanations and to make sense of the evidence provided through the curriculum. Both teachers probed students' thinking and encouraged

them to create better explanations. And through their meta-talk, both teachers positioned students as historians and scientists as they engaged in these disciplinary ways of knowing.

Before examining the participatory roles that were taken up by students in each of these classroom environments, I examined the frequencies of the total numbers of student turns taken in each classroom. These data show that students in FG's class as a whole participated approximately 16% more than their peers in JP's class (See Table 1). Since the timing and duration of the two units was the same in both classes, these numbers can be taken as support for the extent to which each teacher gave students the space and time to engage with each other and with the subject matter. These totals also reflect the subject matter differences observed within JP's class, where her students were given larger epistemic roles in history than in science. The total number of student turns is therefore proportionally more similar between the two classrooms in history than in science.

Table 1: Total number of student turns at talk by subject (2)

	Science	History	Total
Mrs. Garrett	6,171	9,540	15,711
Mrs. Pratt	4,481	8,589	13,070

An analysis of the number of student turns taken within each of the three whole class participant structures found some notable differences between the two classrooms as well (See Figure 1) In JP's class, WCTL accounted for 57.6% of student turns during the whole class time. In FG's class, WCTL accounted for only 32.6%. This indicates that students in JP's class were afforded opportunities to participate far more often when the teacher herself led the discussion; in contrast, most of the student talk in FG's class occurred when students were presenting out and asking questions of each other during WCP.

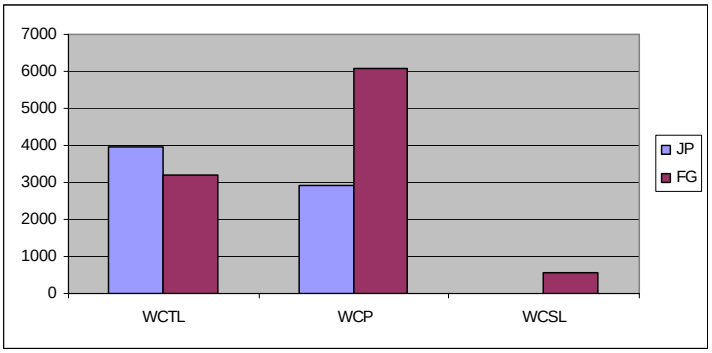

Figure 1. Totals of student turns taken within each whole class participant structure, across both classrooms.

The next level of analysis involved comparing both classrooms along the 13 participatory role codes to indicate whether the differences in overall participation were merely quantitative or if there were noticeable differences in the *types* of student participation being afforded by the curriculum and by the teacher's instructional organization of the curriculum. A look at the totals for each participant role found some similarities between the two classes, and also some notable differences. Figure 2 indicates the total numbers for each participatory role in each classroom.

As there were more total turns in FG's class, we would expect the totals to be higher for each code. This was not the case for every code, however. Four codes (Inaudible, Other, Reader and Respondent) were higher, though just slightly, in JP's classroom. The fact that students participated more frequently as Respondents in JP's class reflects the higher level of teacher-initiated, recitation-like questions in the discourse. The high proportion of the Other code in this classroom indicates a significant amount of off-topic or indecipherable talk, including students' making funny comments not necessarily related to the subject matter at hand. The higher level of students assuming roles as Readers in JP's class (thought the frequencies were low in both classrooms) is likely reflective of the high level of accountability the teacher gave her students for justifying their claims in history. Asking students to support their claims often sent them back to the evidence to read and re-read particular lines to clarify meanings and to bolster arguments.

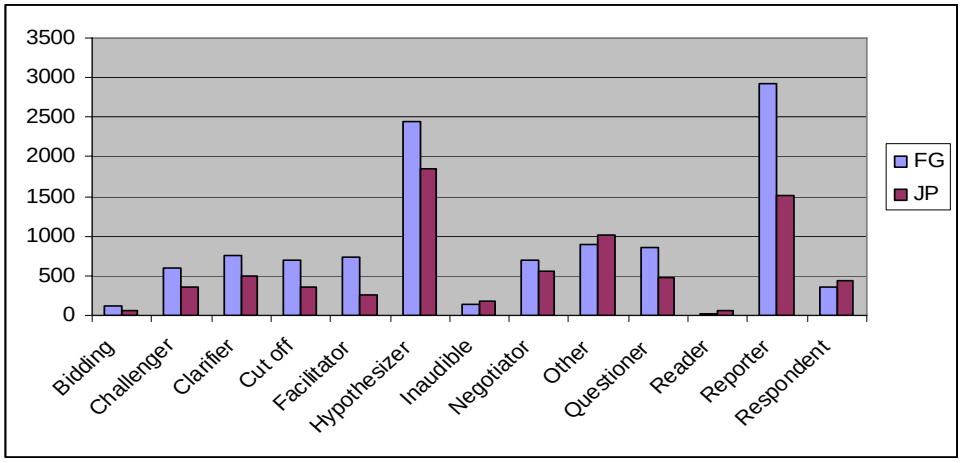

Figure 2. Totals for Each Participatory Role Within Each Classroom (3).

In FG's class, there were some codes that were proportionally much higher than in JP's class, and therefore indicate a higher concentration of those participatory roles within the discourse of the classroom. The roles of Facilitator, Questioner and Reporter stand out as being much more frequent in FG's class. The higher rate of these particular codes points to the observed differences in the ways that the two teachers scaffolded student interaction during WCP participant structures. In JP's class, reporting sessions were much shorter on average, and the teacher often did much of the question asking and facilitating. In FG's class, more of the student turns involved the students' reporting and facilitating conversations themselves. FG was also more consistent, in science at least, at revisiting the audience roles and questions charts, which reiterated to students before each presentation session their role as active participants in understanding and challenging their classmates' theories. In history, however, neither teacher consistently used the audience roles as a tool to scaffold students' conversations.

In both classes, students frequently participated as Hypothesizers. This was coded any time a student made any sort of theoretical claim, drew from his or her own background knowledge, or explored ideas. Proportionally, students assumed this role equally in both classrooms. Challenger was also coded similarly across both classrooms. These similarities affirm that while the teachers' positioning of students may have differed in some respects, both teachers' approaches offered students opportunities to engage in the theory building and argumentation that was intended through the curriculum.

My final research question asks whether these differences in instruction had an effect on the level of participation for individual students. Since each participatory role code was coded in conjunction with the name of the student who made the utterance, I was able to determine the total numbers of turns taken for each student.

The totals show that the overall level of participation differed widely between students (see Figure 3). This pattern held in both of the classrooms. In each classroom, there were two to three students who had a remarkable level of participation, between 1000 and 1600 total turns taken. After these top students, the level of participation for students quickly tapered off (see Table 2). In both classrooms the bottom fifteen to sixteen students combined accounted for only 12.2% (FG) and 8.6% (JP) of the total number of turns. These data show slightly more stratification between the top 15 and bottom 15 students in JP's class, meaning that the students in the bottom half of this class took even fewer turns than they did in FG's class. The overall pattern of stratification in terms of their frequency of participation, however, looked quite similar across both classrooms.

Table 2: Percentage of total participation by the top students in each classroom (all codes)

	Top 5 students (total)	Top 10 students (total)	Top 15 students (total)
Mrs. Garrett	55.7%	75.5%	87.2%
Mrs. Pratt	53.9%	78.7%	91.4%

*percentage of total number of codes applied for all students

In my larger attempt to understand these data, I have conducted five case studies of students in each of these two classrooms, using a sample of students with differing patterns of participation. In some cases, I was able to interview students about their perceptions of their own participation. Although each student understood their own interaction in the classroom in unique ways, those students who participated the most in each classroom tended to express an affinity for debate or argumentation. Students who did not participate as much indicated that at times they had ideas, but censored themselves out of fear of saying something wrong. Some lower participating students also referenced their peers who were more argumentative, and stated that at times it was difficult for them to follow the back and forth nature of certain conversations, and they got lost.

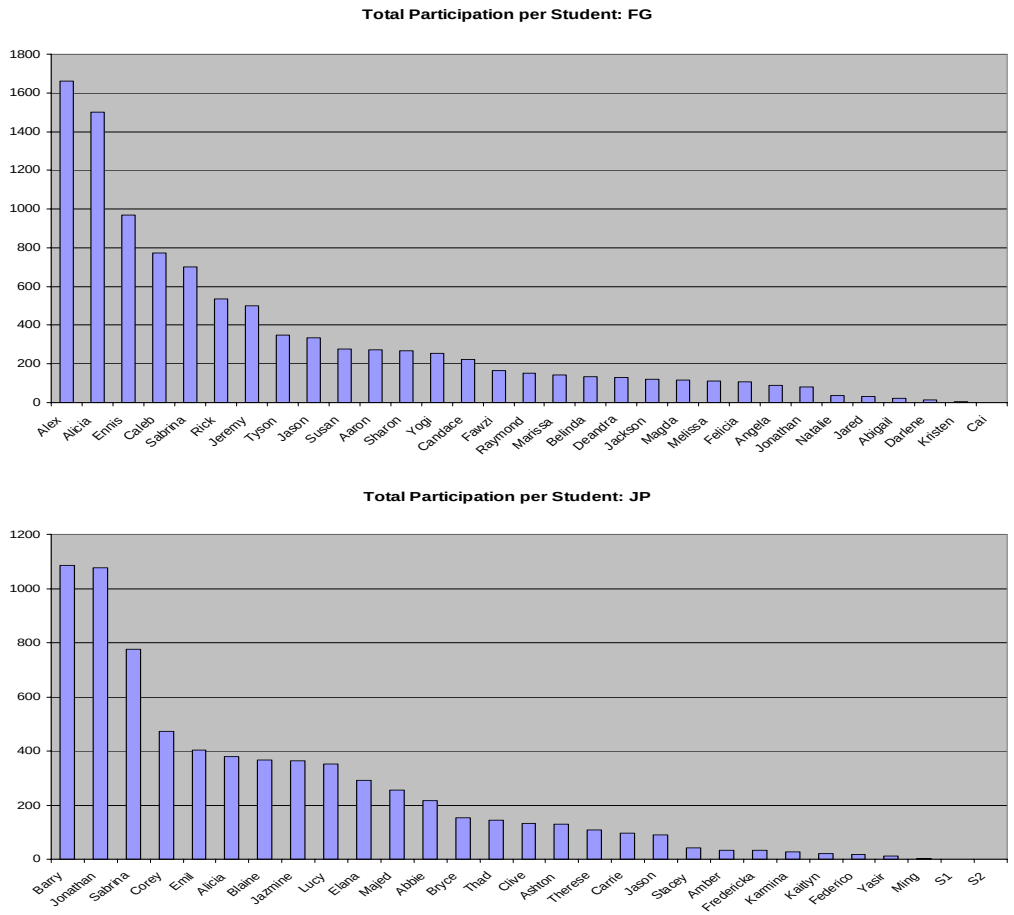

Figure 2. Participation totals for individual students across both classrooms.

These data indicate that although students in both classrooms generally had access to engaging with the subject matter and with their peers in meaningful ways, students brought with them to these interactions years of both positive and negative experiences of their own participation in classroom discourses. The classroom, when viewed as a figured world (Holland et al., 2000) is a social setting where each student constructs her own understanding of the types of social moves available to her, and improvises action based on her own motives within that understanding. In FG's class, for example, a few students alluded to the fact that they did not view active participation in conversations as social moves that were always open to them. In comparing their own ideas to those of lead arguers in the class, like Alicia and Alex, these students viewed participation in the classroom as being more open to those who had something good or interesting to say, or to someone who seemed better at sustaining these types of arguments.

Conclusions

The data in this study indicates that while the pedagogical approach of the teacher did influence the types of intellectual and social "participatory roles" that students took up in the discourse of the classroom during these two units, the distribution of participation across all students in both of the classrooms was quite stratified. While a select group of students in each classroom tended to take center stage in the theoretical discussions, many students had minor roles, walked through the stage as "extras", or remained in the audience completely. Although the reason for these observed differences cannot be located directly, due to our limited involvement in the classrooms outside of our implementation of the PATHS project, I believe that an explanation involving enduring patterns of student status and relationships of power in the classroom is warranted. Cohen and Lotan (1995) describe how persistent these patterns of inequity can be unless consciously and directly addressed by the teacher. This study shows that a general move to a more discursive pedagogy, even one that affords students serious epistemic roles, does not automatically give students equal chances to speak. Cohen's work describes how students' senses of themselves and their perceptions of their peers must be addressed in this process.

My concern for the inequitable participation in these classrooms does not mean, however, that there were not many benefits for students in participating in this type of disciplinary inquiry and discourse. On the

whole, the level of student engagement in developing and revising arguments in history and science was astounding. Even those students toward the bottom of the chart made important contributions to the conversation, and undoubtedly learned something about the constructive nature of knowledge. But if we want these types of instructional environments to have the greatest possible impact on all students' learning, we need to make sure that all students have access to the most valuable tool in their construction of that knowledge: talk.

Endnotes

(1) Small Group was not included because data only existed for the 4 or 5 students in the focus group and were thus not comparable to the rest of the students in the classroom.
(2) The larger numbers in history in both classrooms reflect the length of the unit and the time spent on instruction. The history unit includes three more days (approximately six hours) of instruction than in science.
(3) Excludes Small Group data

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Appendix A:

Bidding for Attention	A student is verbally trying to get the attention of the teacher or student facilitator so that they can speak
Challenger	A student appears is directly contradicting or pushing on another student's idea. This is always coded with hypothesizer, questioner or reporter.
Clarifying	This occurs on three levels: (a) basic communicative repair; (b) conceptual repair - when a student hears an argument but does not understand it; and (c) conceptual mediation - when a student clarifies or mediates arguments that they hear coming from multiple or conflicting viewpoints.
Cut off	The student is cut off mid-speech, and it is impossible to code this utterance in any way other than that it was cut off. However, if there is enough information in the student's turn to code it as something else before the cut off occurred, two codes are applied.
Facilitator	During WCP, the student is acting as "point person" - calling on other students and monitoring the discussion. During SMG or WCSL, the student is taking the lead in organizing the activity of their peers.
Hypothesizer	The student is proposing explanations or ideas. This can occur tentatively on the student's part, or boldly. This code includes students' drawing on prior experiences (i.e. contextualizing) to support a point.
Negotiator of space/time/materials	The student is a part of a group of kids trying to carry out some procedure, and deciding who is doing what. This is largely procedural, and does not include negotiations of theoretical ideas.
Other	Utterances by students that could not be interpreted; off-topic conversation by students. Also includes previous category of Behavior Monitor – students acting to reprimand or redirect the behavior of their peers.
Questioner	Student is asking a question that has the intention of (a) obtaining needed information from another; (b) requesting knowledge; or (c) soliciting someone else's ideas.
Reader	Student is reading out loud for any length of time
Reporter	During WCP, the student is presenting in the front of the classroom. All utterances by presenting group coded as Reporter. During SMG, the student is reporting some independent activity to one another (e.g. one person has read a document and is telling everyone else what it was about).
Respondent	When the teacher is looking for a quick, or known-answer response to review key ideas or concepts, and the student provides the answer.