

“I study features; believe me, I should know!” The mediational role of distributed expertise in the development of student authority

Jennifer M. Langer-Osuna, University of Miami
222 Merrick Building, Coral Gables, FL, 33124 USA, jlangerosuna@miami.edu
Randi A. Engle, University of California, Berkeley
4641 Tolman Hall, Berkeley, CA, 94720 USA, raengle@berkeley.edu

Abstract: This paper examines the development of student authority in a case of one student assigned the role of topic expert in a classroom that utilized distributed expertise as a participation structure during collaborative projects. Using video data of a heated student-led debate, we show how this student successfully positioned himself with greater authority than recognized adult experts, despite the fact that his evidence was often weak given classroom norms. He was able to do so for two reasons. First, he utilized his role as topic expert to position himself with authority and discredit others, including the recognized adult experts. Second, he drew on student allies that supported his position. We conclude with implications of this paper for how participation structures may mediate the development of powerful student identities, and function in concert with other interactional factors in the classroom.

Introduction

Many math and science classrooms have shifted toward a sociocultural view of education, in which learning occurs through interactions among students, and between students and the teacher. A central feature of such classrooms is to have students work collaboratively in structured ways designed to support their engagement in disciplinary ideas and practices. Participation structures, such as using a “round robin” to share ideas (Langer-Osuna, 2007; Saxe et al., 2005), the jigsaw method for sharing expertise (Brown & Campione, 1994), or the use of student group roles (Cohen & Lotan, 1995; Herrenkohl & Guerra, 1998) afford students opportunities to think through and debate ideas, to judge ideas as reasonable, and to gain a sense of ownership over their learning. Participation structures are also designed to support more equitable engagement in collaborative tasks (Cohen & Lotan, 1997). If each student is expected to contribute ideas in a structured fashion, then it is less likely students will become privileged in or marginalized from group discussions.

Recent studies, however, have shown that the goals of equitable, collaborative learning are difficult to accomplish even with such participation structures because students tend to construct inequitable relations of authority among themselves (Bianchini, 1999; Kurth, Anderson, & Palinscar, 2002). For instance, Esmonde and Langer-Osuna (2009) found that relational power among students—including social authority such as friendship and popularity, and academic authority such as being considered smart—still played a large role in how students negotiated group discussions despite classroom norms valuing multiple competencies. Engle, McKinney de Royston, Langer-Osuna, Bergan, and Mazzei (2007) found that some students illegitimately gained more influence and authority over others in a discussion in part by differentially making use of tactics to gain greater access to the discussion despite classroom norms designed to promote equitable turn-taking.

Understanding how students become positioned with authority is important to the goal of supporting productive student-led discussions (Engle & Conant, 2002; Gresalfi, Martin, Hand, & Greeno, 2009). Students positioned with authority participate more frequently in small groups, are more able to gain access to and hold the conversational floor, decide what is correct, be seen as contributing more meritorious ideas, and become more influential than students perceived as having less social or academic authority (Cohen, 1997; Inglis & Mejia-Ramos, 2009; Langer-Osuna, 2009). Being positioned with authority supports engagement because the student is in a position to judge what is correct or incorrect, and to initiate or close down group discussion (Esmonde & Langer-Osuna, 2009). Such privileged engagement and influence can occur not only in classroom using participation structures, but even when the students positioned with authority make claims that are not as objectively meritorious as those made by others (Engle, et al., 2007; Kurth, Anderson, & Palinscar, 2002).

This paper focuses on how a particular participation structure, the role of being a local expert mediated the assigned student’s position of authority in coordination with his and other students’ actions. The classroom used a participation structure called *distributed expertise*, in which students were assigned particular topics to research and become experts in, and then teach what they have learned to other students (Brown et al., 1993). In particular, we explain how this student, Brian, ultimately became positioned with authority because: (a) he utilized his role as features expert in order to position himself with greater authority than other students and even adult professionals; and (b) he made use of potential allies who took up his position of authority.

Data Collection and Analytic Strategies

In classrooms that utilize distributed expertise, students are treated like researchers who gather, analyze, and share information about a particular topic, gradually developing expertise in that specialty area (Brown et al., 1993). Our paper is situated in one such classroom, in which students were researching different endangered species. Students in this classroom established their expertise when they showed that they could provide a legitimate answer to any reasonable question about their topics (Engle & Conant, 2002).

We analyze a case of nine fifth graders who engaged in a student-led debate (Engle & Conant, 2002; Engle, et al., 2007) that arose unexpectedly the day after a field trip to Marine World, then a science learning center. During the orca (i.e., killer whale) show one of the trainers stated that orcas were not whales, but rather the largest member of the dolphin family. Soon before going to Marine World and after a long struggle, this particular group of fifth graders had finally proven themselves to have sufficient expertise about whales to be allowed to create a bulletin board about their research for the rest of the school. As part of that, Brian had been established as the local expert on the anatomical features of whales. Thus, when the Marine World trainers mentioned the orca's large dorsal fin as being relevant to their assertion that orcas were not whales, this was taken up as a direct challenge to the group's, and especially Brian's, hard-fought authority. In the face of what is typically a greater source of authority – adult professionals – Brian stood firm on his position as an “expert” on whale features. Thus he sought to position himself as *more credible* than the adult professionals.

We view the case of Brian as a revelatory case (Yin, 2001) as it is more dramatic than typical student led discussions, thereby highlighting how issues of authority are negotiated vis-à-vis student roles in interaction. Indeed, the student-led debate was loud and intense, and Brian successfully utilized his role as features expert to convince all but one student that he was a more credible source of information than the Marine World trainers and, later, the author of a science book about whales. The dramatic nature of this debate illuminates the ways in which such participation structures as distributed expertise can mediate not only the participation of a particular student in a given role, but also the interactions among students, and how students get positioned as a result. The processes of mediated student interactions and positioning occur in collaborative discussions that utilize participation structures. Our goal, then, is to explore the relationship between these processes, and how they explain the development of positions of authority.

The primary data source utilized here is a 27-minute videotape of the student-led debate. Video was recorded by a mostly fixed Hi-8 camcorder that captured the circularly arranged group from the side and was connected to a radio microphone placed in the center of the group. Video data were coded and organized into an analytical transcript that was divided into columns (Barron & Engle, 2007; Jordan & Henderson, 1995) for words and actions relevant to: (a) making claims about whether orcas are whales or dolphins, and (b) indications of being influenced by particular students; (c) type of evidence used to support those claims, and (d) the perceived authority of sources of evidence; (e) the management of the conversational floor and interactional space; and (e) a miscellaneous column for all other words and actions. Multifunctional words and actions were included in multiple columns. This analytical transcript was originally used for previous analysis that considered multiple factors explaining students' differential influence during this student-led debate (Engle, et al. 2007; Engle, Langer-Osuna, & McKinney de Royston, 2008). Of the four explanatory factors, students' negotiated levels of authority were particularly central. This, in this paper, we go beyond previous analyses to unpack exactly *how* Brian developed a position of authority vis-à-vis other students during this student-led debate.

To understand how Brian developed a position of authority, we coded for events that signaled a shift in each student's position with respect to authority. A person was considered to be positioned with authority on a topic to the degree that he or she was evaluated, acted, or was treated as being credible. A shift in a student's perceived authority could be signaled by statements that contained explicit evaluations of his or her credibility (e.g., “He's features expert, he should know”), statements or actions that evidenced that student being treated as an authority (e.g. one student asking another to give them the correct answer and recording it without request for justification), or the student acting like an authority without anyone contesting it (e.g., “Believe me, I should know” with no one else objecting). For each shift in students' perceived authority, we then noted the student interactions that preceded the shift. Patterns of interaction were compiled into categories (Guba & Lincoln, 1982), which served as a basis for characterizing the interactions that explained the development of Brian's position of authority in this student-led debate.

Characterizing Changes in Brian's Authority During the Student-Led Debate

We begin with an analytical narrative (Angelillo, Rogoff & Chavajay, 2007) based on the coded, analytical transcript. The narrative describes the key events of the debate relevant to characterizing how Brian's authority developed. Because another student, Samantha, was the most vocal opponent to Brian, changes in her authority, which increasingly became oppositionally paired with Brian's, are also described.

Early in the Debate, Both Brian and Samantha Positioned with Similar Levels of Authority

At the start of the debate, both Brian and Samantha were generally oriented to as having higher authority than other students in the group. Brian was recognized as the expert on whale anatomical features, his assigned role for the project. In contrast, Samantha was often oriented to by the teacher and other students as a good student who knew things, which was evidenced by another student's comment at one point in the debate that "we all goin' against Samantha; we better be right." (line 420). Samantha's authority also may have been strengthened given her recent influence in the hallway debate about whether to include orcas on their bulletin board. Early in the debate (through line 97), Brian's authority was given additional boosts by the teacher who represented him as having "serious points" that should be considered.

Brian's Authority Was Challenged

During the next phase of the debate (lines 97-180), Brian's authority was challenged on three occasions when the quality of his evidence was evaluated as being low. First, Brian's and Samantha's credibility were both challenged when the teacher declared that only one student, Jonah, had thus far presented evidence. His arguments had used documentary sources (lines 50-52) while theirs had not. Brian and Samantha then argued back and forth for opposing positions with no resolution while each implied that the other had lower credibility. This started to put their positions of authority in opposition. Next, Brian's authority received an additional downgrade by the teacher who required him to provide a more well-justified argument before she left the group to attend to other groups. As the teacher left, a next student, Toscan, took up Brian's role as features expert by asking him for key facts about whales' anatomy. However, Brian's role as expert was weakened further as Jonah used new documentary evidence to contradict Brian's claims, which Toscan subsequently acknowledged.

Brian's Authority Steadily Increased

A transition occurred during the next episode (lines 181-379) when Samantha began defending the authority of the trainers. Brian then began arguing for his superior authority on the topic due to his role as features expert. Toscan defended Brian as having greater authority than the trainers, and presumably anyone else who might wish to argue against Brian. Several other students joined Brian's side of the argument during this time. Later, after having difficulties getting selected for turns, Samantha interrupted to argue against Brian's presumptions that he was a scientist and that the trainers were not, but was stopped first by Brian and then Toscan.

In the debate's climax (lines 380-435), Brian made a point against the trainers' authority that was oriented to as high quality and in response three more students publicly declared allegiance to Brian's side while one strengthened her commitment to it, with Brian and his allies celebrating after each success. It began with a rolling chorus of student agreements to Brian's point about the trainers not being experts as one of them confused how many teeth orcas have as compared to dolphins. At this point in the debate, most students had aligned with Brian. Jonah then got the floor and argued that the book he was using as documentary evidence to challenge Brian's credibility offered contradicting information, discrediting the book's authority. Gaining Jonah as an ally was interpreted by Brian and Toscan as meaning they had "won" the argument. Finally, Brian got Jonah to call on a still unaffiliated student, Sione, who also declared allegiance with Brian's side. The teacher then called to the group to wrap up the debate, and Brian concluded, "I rest my case."

Analyzing the Development of Student Authority

Our analyses, described below, show that Brian became positioned with and sustained relatively greater authority primarily because: (1) he utilized his role as "features expert" to mediate his position of authority vis-à-vis others; and (2) he made effective use of potential allies who took up his position of authority.

The Role of Expert as a Resource that Brian Used to Position Himself with Authority

Brian engaged in particular forms of interactions that served to maintain his position as expert on whale features and become positioned with relatively greater authority than others: (a) he highlighted the relevance of his role, while (b) personalizing his expertise beyond the role itself; and (c) he simultaneously redefined the trainers as non-scientists, and then (d) linked the discredited trainers with Samantha, which reduced her credibility.

The Relevance of Brian's Role as Features Expert Was Made Central to the Debate

Brian's role as features expert was germane to the debate that erupted among students after the Marine World fieldtrip. That is, to decide whether orcas were actually whales, an understanding of the anatomical features of whales would be critical. However, other sources of information contradicted his conclusion that, because of similarities of anatomical features, orcas were indeed whales. Students drew on these sources of evidence, which included a book on whales, to argue against Brian's conclusions. Because classroom norms valued backing up arguments with sources of evidence, the information offered in the book became more central to the debate. Indeed, early in the debate when the teacher was still present, she stated that only one student, who had drawn on information from a book, had thus far used any evidence despite the fact that Brian had cited

particular features of orcas that were similar to whales. In doing so, Brian's "knowledge" of anatomical features became less central than the information gleaned from the book or even from the trainers during the field trip.

Thus, in order for Brian to claim a position of authority, he needed to make his role as features expert just as central a source of information as books or the trainers. In the excerpt below, Brian positioned his role as features expert as a central *source of information*:

- 51 Brian: Oh . . . it's . . . it's kinda it seems like it's not true [*that orcas are dolphins*]
 52 because . . . um in all the research
 53 everything I've done on/ on killer whales
 54 it points to that they are whales
 (+ *signifies Brian's gestures for emphasis*)
 55 the +blubber . . . the+blowhole . . . the +eyes . . . the +teeth
 56 it points out . . . that they're a whale

Brian's phrases "in *all* the research" and "*everything* I've done" (lines 52-53) emphasize that he had done a lot of work on his route to becoming an expert and had gathered much information, such that his conclusions (lines 54, 56) ought to be considered credible.

However, his conclusions were challenged by some of the other students who drew on other sources of evidence that suggested that these similarities also extended to dolphins. Thus, as in the following statement, and in many other moments (included in other sections below), Brian positioned his role as features expert itself as making him a central *authority* in the debate:

- 199 Brian: I study FEATURES . . . believe me I should know . . . I should know . . .

When other students, in particular Samantha, asserted that the trainers were also in positions of authority on the topic by virtue of their profession, Brian sought to expand his expertise by personalizing it beyond the classroom role to Brian *himself* being an authority on the issues relevant to the debate.

Brian personalized his expertise beyond the role itself

Brian personalized his expertise so it transcended his classroom role as features expert by claiming that he as a person was an authority on issues pertinent to the debate:

- 226-7 Brian: I've known a lot about whales . . . before I started researching . . .

- ...
 498-9 I: . . . know . . . a lot about whales personally before I even started researching this . . .
 500 so nothing's that new to me

Brian defended his position of authority by claiming that his expertise went beyond the role of features expert to include the contents of his individual mind (line 290), which existed prior to the assigned role (lines 498-500), and was inaccessible for critique (line 291-2).

Brian redefined the trainers' role to that of non-scientist

At the same time, Brian simultaneously defended his position of authority by *redefining the trainers' role* to that of a non-scientist. Brian's role as classroom expert on the anatomical features of whales gave him particular tasks to complete, which included researching, documenting, and sharing information about whale features with his group, the class as a whole, the rest of the school, and any adults who might engage with the class (see Engle & Conant, 2002). Brian's specific tasks were well-defined and easily defended to the other students as engaging in "real research." Brian thus argued that the role of Marine World trainers included little more than performing with dolphins and included little of the real work of scientists like himself.

In the excerpts below, Brian contrasted his and the trainers' roles, asserting that they were not comparable in expertise:

- 221-3 Brian: I study FEATURES . . . believe me I should know . . . I should know . . .
 224-5 they TRAI:N whales . . . there's a BIG old difference . . .

- ...
 369-70 Brian: okay I'm gonna change and be one of the persons who works at Marine World
 371-3 for the whale training . . . [I apply for a job . . . um . . . and then my boss tells me
 374-6 . . . take this stick . . . tap [the water . . . and then the whale will come up

- ...
 387-8 and I know a LOT about whales, AND I've REsearched it . . .

- ...
 478-9 Brian: like they're really sci:entists /they just apply for a job one day
 480 got told a little bit about it . . .
 481 and they've been working with the whales ever since . . .

In lines 221-225, Brian directly contrasted the two roles and asserted that he, unlike the trainers, actually studied the anatomical features of whales. The trainers, instead, were simply employees who were told by their employers what to do to make the whale come out of the water during the show, and perhaps told also a "tiny

bit” about whales (lines 224, 379-381, 480). Toward the end of the debate, Brian directly challenged their expertise by sarcastically stating, “like they’re really scientists” (line 478).

By engaging in such interactions with the group, Brian positioned himself as a more valid source of information than the trainers by virtue of their contrasting roles. Brian’s role as features expert positioned him as a “real scientist”, while the trainers’ role was redefined to include little more than following directions

The discredited trainers became linked to Samantha’s credibility

In the course of the student-led debate, Samantha became the most vocal supporter of the trainers’ credibility. She was considered to be someone who gave evidence-backed arguments. Indeed, prior analysis of this data (see Engle, et al., 2007, Appendix A) indicated that Samantha’s arguments during the focal student-led debate were more objectively meritorious than Brian’s arguments. Thus, in order to reduce Samantha’s credibility as a student with valid arguments to consider in the debate, Brian (and his allies) effectively linked Samantha’s credibility with that of the discredited trainers. Because the trainers’ authority was, in essence, directly in opposition to Brian’s, Samantha’s authority became oppositionally linked to Brian’s.

In the following excerpt, Samantha was positioned as knowing less than Brian, even though at the start of debate, and throughout the year, Samantha was considered to be a student with high academic status.

- 410-1 Samantha: I see (your point of view) but still . . . is . . . that [*the trainers know better than us*]
 412-3 Jonah: still what? [*Toscan puts hand down, Jonah’s is still up*]
 414-5 Brian: (*to Samantha*) At first you’re TOTally convinced that a killer whale is a whale . . .
 416-7 THEN you find out just from ONE person . . . from ONE moment . . .
 418 that it’s a dolphin.
 ...
 447-8 Brian: [*the trainers know better than*] you do . . . better than . YOU do . . .
 449 I:: know what I:’m talkin’ about

The excerpt above followed after Samantha asserted that the students should believe the trainers because they likely knew more about whales and dolphins than the students did. Some of the students then pointed out mistakes they recalled the trainers making during their performance in order to discredit them. Samantha conceded their point and had begun formulating a counter-response (lines 411-412) but was then interrupted and criticized for believing, not an expert, but rather “one person from one moment” (lines 416-417). Brian then shifted the nature of the criticism to be about Samantha herself, stating that the trainers, if anything, knew more than she did (lines 447-448) but not more than he did (line 449). In doing so, Brian first linked Samantha’s and the trainers’ credibility, and then demoted Samantha as knowing less than even the discredited trainers.

Allies Took Up and Supported Brian’s Position of Authority

Brian’s moves to position himself with greater authority than even adult professionals could not be successful by themselves. Other students could have rejected his attempts to position himself in such ways, negotiated an alternative positioning with him, or taken up his proposed positioning as having greater authority (Clark, 1996).

In order to encourage the latter to occur, Brian engaged in several kinds of interactions that served to gain and maintain allies, including taking credit for arguments stated by others, and rousing students’ desires to be his ally rather than foe. We then see evidence that students rallied in support of Brian’s credibility, joining in the criticisms of the trainers, Samantha, and even the book author, while aligning with and building on Brian’s arguments or the arguments of others that Brian had claimed as his.

Brian gained authority by taking credit for others’ points that supported his side of the debate

Brian often positioned himself with authority during the debate, which was at times taken up or challenged by the other students. Brian was able to increase uptake of his position of authority by aligning with, and taking credit for, points made by others that had been oriented to as compelling in the debate. In the following excerpt, Brian claimed another student’s point and was later credited with that point by a third student:

- 213-4 Jonelle: if . . . if they’re dolphins why do they call them killer whales? . . .
 215 why don’t they call them [(killer dolphins?)]
 216 Brian: My point exactly . . .

- ...
 234 Toscan: ok, Brian has a very good point
 235-6 when . . . the killer whales, if they’re called . . .
 237-8 and Jonelle, if the killer whales are called killer whales . . .
 239 why are they saying NOW that they’re dolphins

Jonelle argued that orcas, also known as killer whales, were likely to be whales because their name includes the term “whales,” not “dolphins” (lines 213-215). Brian immediately then exclaimed, “my point exactly” (line 216) claiming the idea as his. Moments later, Toscan attributed the point to Brian (lines 234) and repeated the argument, mentioning Jonelle as linked to this point only in passing (line 237).

During the debate Brian frequently used the phrase “my point exactly” or later simply “exactly” (lines 41, 44, 216, 620-621, 659, 695, 721) in response to others’ points for the orcas-as-whales view and then got the last word at the very end of the debate, saying, “I rest my case” (line 836). In essence, Brian successfully took ownership of many of the arguments offered by others that supported his side of the debate, positioning himself as the leader of the “orcas as whales” side, and the other students as merely supporting *his side* of the debate.

Brian created in students a desire to align with him rather than against him

In addition to gaining allies by essentially becoming the figurehead of successful points, Brian also created in students a desire to align with him by dramatically celebrating when students took up his position through cheers and high-fives while also creating an intimidating climate for disagreeing.

Brian loudly and excitedly celebrated when students announced either switching to or confirming support for his side of the student-led debate. For instance, in response to a claim that supported Brian’s attempts to discredit the trainers, Brian loudly and excitedly exclaimed, “Yup, yeah you’re right! You’re right! You’re hecka right!” Moments later, Brian exclaimed, “whooo!” in support of another student contributing arguments that also positioned her on the orcas-as-whales side. Directly after this, several students shot their hands up to speak next. From that point on, the majority of students in the group shared cheers, high-fives, and animated talk as they contributed to the orcas-as-whales side of the argument, creating a snowball effect of support for Brian’s position of authority in the debate (Anderson, et al., 2001).

For instance, in the excerpt below, Brian dramatically celebrated after Jonah read information from the book *Album of Whales* that could be understood to support the claim that orcas are not dolphins:

647-8 Jonah: (*holding up book*) it says right here . that um . wha/ that . um
 649-50 that wha/ . that um dolphins are beaked wha/ . beaked whales . . a family
 651-2 (*looks up from book*) killer whales are not even/ . don't even have have a beak
 653 Brian: A:::ND:::H (*screeches; Brian jumps up and down, in and out of chair*)
 654 (*Brian high five's Toscan and Sione*) We WON!

...
 665-7 . . we convinced him . we convinced him we convinced him

...
 672 (*Brian jumps up from chair, turns around dancing in place three times, lifting right and left arms in air alternately, and says in sing-song voice*)

673 HALLELUIA, that's the way

Jonah offered evidence that dolphins are considered “beaked whales” (lines 647-650) and noted that orcas do not have a beak (line 651-652). This was Jonah’s first contribution supporting the orcas-as-whales side; his previous contributions, which all used high-status and high-quality documentary evidence, tended to support the opposing view. Brian dramatically celebrated Jonah’s contribution, which he interpreted as signaling that Jonah had switched sides. Brian jumped in and out of his chair, screamed, gave high-fives to nearby students, danced around, and even yelled out, “Halleluia” in praise of gaining a new ally in Jonah, also a high-status student.

These celebrations were coupled with harsh responses to Samantha’s challenges of Brian’s position of authority, which may have dissuaded other students from also challenging him. For instance, Brian often groaned in protest, or aggressively pointed or gestured to Samantha when she challenged his credibility. Over time, other students, as examined below, even jumped on the bandwagon of trying to intimidate Samantha.

Allies tag-team in a snowballing increase of support for Brian's credibility and against others

Most of the students ultimately supported Brian’s position of authority in the debate. They positioned his role as features expert as central, discredited the trainers and the book author, and took up his arguments.

For instance, in the excerpt below, Toscan defended the centrality of Brian’s role as features expert:

253 Toscan: if Brian is studying features . . .
 254 why didn't HE get the information before Jonah did . . .
 255 because he was studying it a lot more and . . .
 256 every book that he got said whales and now they're saying . . .
 257 “OH yeah they're dolphins” . . .

Toscan challenged the credibility of Jonah’s argument, based on evidence he found in a book, by drawing on Brian’s role as features expert. He claimed that Brian, as features expert (line 218) had researched far more than Jonah (or other students) had (line 220), and had considered more than just one book (line 221). In doing so, he took up Brian’s role as features expert as central to the argument, and Brian as a credible source of information.

Students also joined Brian’s attempts to discredit the trainers. In the excerpt below, Liana built on Brian’s assertion that the trainers were not really experts and therefore not believable:

607 Liana: [OH! . . . oh . . . oh . . . (*raising her hand excitedly*)
 608 A:::ND . she probably didn't even know .
 609-10 because she was probably just there, for a little whi::le .

612 and then she just made it [up

Liana contributed to Brian's effort to re-define the role of the trainers as non-scientists. She claimed that the trainer "probably didn't even know", had been there for just "a little while", and had "made up" the information offered at the show (lines 608-610). Finally, the other students joined Brian in trying (though unsuccessfully) to intimidate Samantha to change her position. In this excerpt from late in the debate, Samantha was hassled in multiple ways for continuing to disagree with Brian:

- 425 Samantha: okay . so . well . I still don't believe it
 426-7 becu:z . I don't think she said that, "I think"]
 428 Jonah: [she did too]
 429 Samantha: [what I remember is .
 430-1 her saying that . . . that "we have figured out that
 432-3 Brian: (*holding tape recorder to Samantha*) Talk! talk]
 434 Sione: (*holding microphone within inches of Samantha's face*) [Talk! . . .
 435-6 Brian: (*to Samantha*) C'mon, just forget it.
 437 Samantha: the whale/ ok . the killer whale
 441 is a probably . a dolphin becu:z .
 442 I think they know better what they're talking about than we do/]
 443 Jonah: [PRO:BABLY?
 444-5 Brian: NO! . . . (MAKE THAT BETTER THAN . YO::U! DO! . . .)
 446 Jonah: [*chuckling*] probably

Samantha was frequently interrupted here (lines 428, 432-436, 443-445) and earlier, but she successfully reclaimed the floor (lines 419-425, 429-431, 437-442). In response, Brian and his allies sought to intimidate Samantha by placing the researchers' microphone directly in her face, spatially crowding her, and yelling at her to "talk!" (lines 432-434, and later), while Brian then calmly and almost dismissively urged her to "c'mon, just forget it" (line 435-436). When Samantha persevered (lines 437-442), Jonah and Brian ridiculed her.

As dramatic as these interactions may have been, once the students were regrouped as a class with the teacher, opportunities to address Brian's domination arose. In the ensuing weeks of the unit as the students continued to debate the question, the teacher continually emphasized the importance of considering evidence and discouraged students, including Brian, from declaring victory. Students found additional evidence for Samantha's side. By the end of the unit when Brian wrote about the controversy in his part of the group's report, he represented it as a stalemate with evidence for both sides. This made sense given that orcas can be considered to be both whales and dolphins (orcas are in the "dolphin" [delphinidae] family, which is itself within the sub-order glossed as being the "toothed whales" [odontocetes]). Thus Brian's strong position of authority, perceived as even greater than the authority of the trainers and the book author within this one debate, did not prevent these students from productively engaging in the issue over the long haul (see Engle & Conant, 2002 for more)

Discussion

Participation structures, such as student roles that make use of shared expertise, not only mediate students' engagement in collaborative work, but also their positions of authority in relation to other students and beyond. In the case of Brian, he was positioned with authority on whale features because of his assigned role, but it went beyond simply this to afford a positional identity as not only a central and credible student, but also as a "real" expert on par with adult professionals (Langer-Osuna, 2009; Wortham, 2004).

This paper explored how particular participation structures, such as distributed expertise (Brown et al. 1993) can support the development of student authority, and identities of power. These identities may be critical to support valued learning processes, such as students becoming authors of ideas, debating and coming to consensus on student-authored ideas, and using sources of evidence from adult professionals to think through the reasonableness of ideas without passively aligning to the authority of such sources (Inglis & Mejia-Ramos, 2009). However, student identities as authorities can also lead to bad outcomes when students do not sufficiently hold themselves accountable to others and disciplinary norms (Engle & Conant, 2002), resulting in the propagation of invalid ideas and reasoning (Brown & Campione, 1994).

But participation structures are not the only factor to consider with respect to how student authority becomes constructed in classroom interaction. Engle, Langer-Osuna, and McKinney de Royston (2008) offer a model that depicts the dynamic interactions of four negotiated factors that affect how students gain influence over others, based in part on the student-led debate discussed here. These factors include students' perceived authority, but also the perceived merit of their arguments as well as their access to the conversational floor and interactional space. For instance, when Brian's authority was challenged early in the discussion, he was less frequently chosen to speak. However, Brian then worked to increase his access to interactional space through dramatic gesturing, and otherwise spatially gaining attention. In doing so, he gained access to the discussion, which he then used to strengthen his position of authority in the ways we have analyzed here. We believe that such dynamics within and between authority and other factors will also be relevant to other student discussions .

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