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**“LEARNING MOMENTS” AND THE NATURE OF STUDENT INTERACTIONS  
IN THE ORCA CONTROVERSY DISCUSSIONS<sup>1</sup>**

Creating environments in which students are engaged in disciplinary work has long been a goal for many teachers and education reformers but has proven difficult to create and sustain. In such environments students are envisioned to be actively and publicly engaged in their learning while utilizing disciplinary language, ideas, and methods. This case explores a specific series of discussions in an elementary school that utilized disciplinary thinking (Engle & Conant 2002; Engle 2006; Engle, Conant & Greeno, 2007). While participating in a curriculum aimed at fostering science reasoning, content literacy, and creating student learning communities, two groups of fifth-graders took part in an ongoing informal debate over the taxonomical classification of orcas, or killer whales. The debate centered on whether orcas were properly classified as whales or dolphins. According to researchers who documented this activity, instances in which the students took part in the debate were marked by heightened levels of attention, engagement, and emotionality. Eight such instances of debate over the classification of orcas were observed by the researchers. Summaries of all eight are presented in this case, but the primary focus is on one specific instance where four students described the controversy to a new student teacher. More specifically, this case will describe the curriculum and structure of tasks utilized by the teachers, aspects of the social dynamics

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between students, and empirical evidence for how the instances of argumentation influenced the students' level of engagement.

### **Setting & Data Collection**

The data used in this case came from two fifth-grade classrooms using the 'Fostering a Community of Learners' (FCL) a curricular and pedagogical reform (Brown & Campione 1994), in a socio-economically and ethnically diverse school in the San Francisco Bay area. FCL was a late 1990s pedagogical reform focused on 1<sup>st</sup> through 8<sup>th</sup> grade classrooms developed by the cognitive psychologists Ann Brown and Joseph Campione. Brown and Campione aimed to create classroom environments that developed students' in critical and reflective thinking and literacy around disciplinary norms and ideas. The initial focus of FCL, as with the two classrooms under study, was on biology and ecology.

The FCL pedagogy involves three phases (Brown & Campione, 1996). In the first phase students are divided into small groups which focus on a particular topic (e.g., in a unit about marine life one group may study whales). Within these small groups each member chooses a subtopic to become an expert about (e.g., whale eating habits, physical features of whales). In the second phase students share their subtopic learning with fellow group members. Information is then shared across groups through a jigsaw style format in which new groups are created out of members of old groups. In the final phase students take the knowledge they have learned and perform a 'consequential' task that requires students to pool what they have learned across groups. These tasks range from public presentations to bulletin board displays to service projects.

Two teachers, Laurie Wingate and Jeannie Kohl, adapted the FCL "Endangered Species" unit for use in their fifth-grade classrooms (Engle & Conant 2002; Engle 2006). In both classes activity was centered on the guiding question of 'how do animals survive?' The Endangered Species unit lasted from December 4, 1995 through April 2, 1996. This four-month period was interrupted, however, by several events. It includes a gap of two weeks for winter holidays, five weeks of a local teachers strike, and one week for the school's annual trip to a science camp. When in session, the two classrooms engaged in the FCL curriculum approximately three times a week. Over the course of the entire unit this amounted to 34 sessions of 90 minutes each (see Appendix A, adopted from Engle & Conant 2002 pg. 411), for a brief timeline of the classroom activities). As mentioned above, the FCL unit is divided into three phases. In Wingate and Kohl's classrooms the three phases were:

#### **Phase 1:**

Students watched a nature video and asked questions in response. These questions were then organized through whole-class benchmark discussions then categorized according to sub-topics. These subtopics dealt with the set of needs that all species need to satisfy to be able to survive (e.g., food, reproduction, protection from predators, etc), a key conceptual idea for understanding endangerment.

#### Phase 2:

Groups of four or five students wrote proposals to study specific endangered animals. Groups were assigned topics based on how a committee of other teachers assessed the quality of the proposal. Each student within a group chose a subtopic to study in negotiation with the rest of his or her group, and became the groups' 'expert' on it (e.g., eating habits; reproduction strategies).

#### Phase 3:

Finally, each student was expected to make a presentation of their group's report to their fellow classmates in a 'jigsaw' session. Unlike in a typical FCL unit, however, the groups did not perform a consequential task.

Researchers observed and videotaped four of these small research groups from two classrooms (Engle & Conant 2002; Engle 2006). This case is primarily focused on a group of five students who studied whales in Ms. Wingate's class. It also looks at the interactions of this group with the parallel whale group in Ms. Kohl's class. The group from Ms. Wingate's class was: Brian, Jonelle, Racquel, Samantha, and Toscan. The group from Ms. Kohl's class was Devonae, Jonah, Liana, Shantelle, and Sione. This case documents a series of arguments between these two groups about the taxonomical classification of 'killer whales' which have been called the orca controversy discussions.

#### **Timeline of Arguments**

During the course of the Endangered Species unit a total of eight instances of argumentation about the classification of killer whales were recorded (see Appendix B, adopted from Engle & Conant 2002 pg 413-14). The controversy began during a class field-trip to Marine World. At a killer whale (orca) show a trainer told the crowd that despite their name killer whales are not whales, but in fact dolphins. The next day the whale groups from the two classrooms were working together in the hallway on a bulletin board display. A dispute began about whether killer whales should be included on the bulletin board considering what the trainer had said the previous day. Ms. Wingate then brought the two groups into the classroom where they continued to argue until the end of the session, approximately 27 minutes. This discussion was later referred to by one of the students as a "Big Ol' Argument (Engle & Conant 2002, pg 412)." The end of the session consisted of a wrap up in which the different groups summarized their work for their classmates. In both Ms. Wingate and Ms. Kohl's classrooms the whale groups discuss the orca dispute as part of their wrap-up.

One week later, on the next Friday, the disagreement was picked up again. A brief description can be found in Appendix B. A five-week teachers' strike began on the following Monday and ended right before the two classes spent a week at a science camp. During the first Tuesday after school resumed, more than six weeks after the last controversial event, Brian, along with three of his group-mates, described their research to a new student teacher. During this description the controversy over orca classification reemerged. A full transcript of the discussion can be found in Appendix C (from Engle

& Conant 2002 pg 465-73) and video can be seen at [http://171.64.200.218/webdiver/webdiver\\_23c/webdiver\\_home\\_v15.php](http://171.64.200.218/webdiver/webdiver_23c/webdiver_home_v15.php). After the description of the dispute given to the student teacher, the argument resurfaced three more times – twice the next day and one final time the following week while Ms. Wingate’s group was discussing how to present the information they had learned to their classmates. Again, brief descriptions of these events can be found in Appendix B.

### **Structure of Classroom Work**

All eight instances of dispute over orca classification occurred during the second phase of the FCL curriculum in which small student groups were independently researching their topics. Most of the classroom time in the phase was used for students to independently research and write about their specific subtopic. Periodically, the groups engaged in joint tasks, including collaboratively writing an introduction and conclusion for their group report as well as creating several public displays of their group’s research findings. The eight instances in which the argument about orcas arose occurred during differing activity structures. Three instances, including the one in which the debate first arose, occurred when the small groups were discussing a collective public display they were creating together (a bulletin board on 2/2; written report on 3/27; and oral report on 4/2). In these cases the students were charged with working collectively to pool their individual research findings into a common display or report. Each time the debate arose over disagreement about whether orcas should be included.

Three times the controversy reemerged when the groups were asked to update their learning or progress to an adult (a teacher on 2/2, a parent volunteer on 2/9, and a student teacher on 3/26). In these cases one or more students chose the controversy as an aspect of the project salient enough to be worth sharing. Two other times the debate reemerged during periods in which the groups were independently researching their topics (on 2/9 and 3/27). In both cases members of Ms. Kohl’s whale group approached the members of Ms. Wingate’s group either with new evidence or an expressed desire to settle the debate. In one of these instances Ms. Wingate eventually sent the students from the other class away saying her group had other things to work on.

### **Peer Interaction**

The dispute first arose when the two groups were working together in the hallway. After the argument became noisy enough to attract the attention of another teacher, Ms. Wingate brought both groups into her classroom to continue the discussion. Brian was the most vocal proponent of orca-as-whale, while Samantha and Jonah both argued for orca-as-dolphin. Most students were initially ambiguous in their belief about proper classification and a few did not participate until specifically prompted by Ms. Wingate. As the discussion continued these students also took positions, some of them shifting during the conversation.

One of the initially ambivalent students was Toscan. The researchers reported that he was highly influential socially and wondered if, after siding with Brian, he brought other students to the orca-as-whale position by virtue of his standing with his peers

(Engle & Conant 2002, pg. 443). By the end of the 'Big Ol' Argument', in fact, all students with the exception of Samantha had taken the orca-as-whale position. This includes Jonah, who was originally one of the most vocal proponents of the orca-as-dolphin view. In both classes during the wrap-up after that session the students described the debate to their classmates as being settled with the exception of one hold-out, Samantha. Ms. Wingate, in response, tried to reframe the issue as a legitimate ongoing debate with two sides. The next time the debate surfaced, the following Friday, several members of Ms. Kohl's group visit Ms. Wingate's room to discuss the controversy. Liana let's Ms. Wingate's group know that two of her group-mates, Devonea and Sione, now think that orcas are dolphins. Ms. Wingate's group has a vote and again, only Samantha supports the orca as dolphin position.

The next recorded instance of the debate was immediately after school resumed following the teachers' strike. As already mentioned, Ms. Wingate's whale group was summarizing their findings to a new student teacher. Proceeding in a rather uneventful manner, the situation changed when Brian brought up the orca controversy. The researchers note that he makes his statement after looking in Samantha's direction and that his wording may have been a "deliberate overstatement intended to provoke a reaction from...the other students (Engle & Conant 2002, pg. 419)." The issue was reengaged, in other words, in a manner reflecting an awareness of the social dynamics of the situation.

Finally, it is worth noting one minor classroom norm that influenced the nature of the students' discussions with each other. When a student had finished his or her turn talking they had the ability to choose who they handed off the turn to. In other words, the current speaker is able to choose who the following speaker will be. The researchers report that students sometimes used this norm strategically in order to create alliances and to shut down opposing views (Engle & Conant 2002, pg. 445). This strategic use of the turn-taking norm was representative of the fact that much of the interaction and discussion was not only evidence based, but also took on a more personal and partisan tone. The researchers noted that at times the goal of 'winning' seemed more salient than coming to a true consensus (Engle & Conant 2002, pg 445).

### **Quantification of Discussion with Student Teacher**

The case now returns to the specific instance of disputation that is the focal point of this case, the description of the controversy to a new student teacher. The discussion with the student teacher began with the students reporting uncontroversial facts they had learned about whales. As each student took a turn doing this, the other students engaged in side-behaviors like paper passing and note organizing. As mentioned above, when Brian began discussing the orca's dorsal fin, the source of much of the controversy, he glanced at his group-mates and said "Some people believe that the KILLer whale are actually the biggest dolphin, but scientists prov- proved that is NOT TRUE" (Appendix C, lines 61-62, 66, 70). This statement precipitated a major shift in the group's behavior, most notably from student turn-taking in speech to overlapping and simultaneous talk. To quantify this shift, the researchers counted the number of times each student spoke before

and after Brian’s statement. More specifically, counts were of ‘intonation units’ which are “bursts of speech that are often the size of a short phrase or clause and express something like a single idea (Engle & Conant 2002 pg. 474). The results for the number of intonation units per student for the 70 seconds before and after Brian’s statement can be seen below in Table 1 (adopted from Engle & Conant 2002, pg. 474) The difference before and after the shift in the distribution of intonation units from Brian compared to the other students is statistically significant at  $p < .00001$ .

Table 1 - Percentage of Intonation Units Presented by Each Student Before and After the Shift

	Brian	Jonelle	Samantha	Toscan
Before Shift (N=35)	91%	3%	0%	6%
After Shift (N=55)	33%	16%	16%	35%

Researchers also found that before the shift almost all on-topic intonation units were directed toward the student teacher (97% of the 35 units). After the shift, however, only 58% of the on-topic intonation units were directed at the student teacher and 42% directed at fellow students. This difference is statistically significant at  $p < .0001$  (Engle & Conant 2002, pg. 474). Along with this transition toward more interactive discussion, there was also a shift toward more on-task behavior. Before Brian’s comment 19 of the 35 intonation units were unrelated to the academic task. After the shift, only 1 of the 55 intonation units concerned an unrelated task. This difference, statistically significant at  $p < .00001$ , suggests that after the shift students’ behavior was almost entirely related to the discussion of orca classification (pg. 475). Finally, the researchers found (pg. 476) that before the shift there was only one emotional display by any of the students, while there were 16 after (e.g., eye rolling, exaggerated smiling, high-fiving).

## References

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Appendix A (Adopted from Engle & Conant 2002, pg. 411)

Timeline of 1995–1996 Endangered Species Unit in the Grove School with Focus on Ms. Wingate’s Whale Research Group

<i>Days of Unit</i>	<i>Dates</i>	<i>Name and Description</i>
1–7	12/4/95–12/15/95	<p>Unit introduction (7 days)</p> <ul style="list-style-type: none"> <li>• Watched video about habitat destruction and extinction in Hawaii</li> <li>• Generated questions about animals and sorted them into categories</li> <li>• Organized initial categories into survival needs subtopics in benchmark</li> <li>• Wrote and presented research proposals to judges (other teachers)</li> <li>• Judges decided which endangered animal each research group would study</li> </ul>
8–23	12/18/95–2/5/96	<p>Doing research (~16 days)</p> <ul style="list-style-type: none"> <li>• Individual group members consulted books and other sources about their topic</li> <li>• On days 10–13, 15, and 18–19, shared findings on topics in breakout groups</li> <li>• With Ms. Kohl’s whale group, worked on bulletin board on days 13, 22, and 24</li> <li>• Went on field trip to Marine World on day 21 (2/1/96)</li> <li>• In preparation for writing, participated in benchmark on outlining</li> </ul>
24–28	2/8/96–3/28/96	<p>Writing individual chapters (~5 days, spanning strike and science camp)</p> <ul style="list-style-type: none"> <li>• Each student began and finished writing at different times; this is a typical timeline</li> <li>• Most chapters had several drafts, many prompted by Ms. Wingate</li> </ul>
29–31	3/29/96–4/2/96	<p>Writing group conclusion and preparing for jigsaw (~3 days)</p> <ul style="list-style-type: none"> <li>• Made initial and final draft of group conclusion on first two days</li> <li>• On third day, quizzed each other in preparation for jigsaw presentations</li> </ul>
32–34	4/3/96–4/4/96	<p>Presenting reports in jigsaw sessions (3 days)</p> <ul style="list-style-type: none"> <li>• Samantha, Brian, Jonelle, and Toscan with Racquel each presented the group’s report to classmates who had studied other endangered animals</li> </ul>

Appendix B (Adopted from Engle & Conant 2002, pg. 413-4)

Orca Controversy Events

<i>Day of Unit</i>	<i>Dates</i>	<i>Name and Description</i>
19	Thursday, 2/1/96	Marine World field trip (MW): At killer whale show, trainer announces that killer whales are not whales, but dolphins; question and answer session follows
20	Friday, 2/2/96	Hallway argument (HW): In the hallway, the two whale groups argue about whether killer whales should be included in their bulletin board
20	Friday, 2/2/96	Big Ol' Argument (BOA): Ms. Wingate brings the two groups into classroom and they argue until the end of the session whales are whales or dolphins
20	Friday, 2/2/96	Wrap-up sessions (WU): At the end of the Big Ol' Argument, each group reports on the controversy to their class; Ms. Kohl's group reports the issue is still open because one person is not convinced they are whales; in Ms. Wingate's class, the students' report about the issue leads to a meta-level discussion of how to decide which sources to believe
23	Friday, 2/9/96	Continuing disagreement and new evidence: In update on their research to parent volunteer, Ms. Kohl's whale group says the controversy is continuing; Devonae twice mentions Sione found a book saying orcas are the largest dolphin
23	Friday, 2/9/96	Both groups continue their discussions, sharing more new evidence: Representatives of Ms. Kohl's whale group visits Ms. Wingate's whale group several times to discuss the status of the controversy and share evidence: <ul style="list-style-type: none"> <li>• First, Liana lets Ms. Wingate's whale group know that Devonae and Sione from her group now think orcas are dolphins because they read it in two new books; Samantha says she also has read it in two books, and gives one to Liana to share with her group</li> <li>• A minute later, Shantelle suggests the two groups need to meet, as they do not have a consensus; when Ms. Wingate's whale group resists, Shantelle asks them which claim is true, but the students shout different answers; Shantelle then has them vote, and declares whales the winner; 1 min later she returns, however, saying they still need to convince Sione that orcas are whales; Ms. Wingate sends her away, saying the group has other work to do</li> <li>• Three minutes later, Ms. Wingate's group discovers a book about evolutionary ancestors of whales and dolphins that they use to claim that orcas are not dolphins; when Liana returns, reporting that her group still doesn't "know what to beLIEVE," the group shares this new evidence with her and Ms. Wingate</li> <li>• Four minutes later, Samantha uses a picture of a dolphin to point out its visual similarities to orcas; in response, Toscan argues that none of their newer books claim that killer whales are dolphins</li> </ul>
Five-week teachers' strike followed by 1 week of science camp focusing on other topics		
24	Tuesday, 3/26/96	Report to new student teacher (NST): During Brian's report on whale features, Ms. Wingate's group reanimates the argument with each other and then recounts its history to the new student teacher

25	Wednesday, 3/27/96	Continuing disagreement 2: When Shantelle approaches Ms. Wingate's group saying only, "Can I ask you a question?," Toscan and Samantha respond by vehemently expressing their disagreement about the controversy
25	Wednesday, 3/27/96	Negotiating the written account: Over 30 min later, Brian has Samantha read what he wrote about the controversy in his report, with explicit work between them on how to manage their disagreement publicly and privately; 4 min later, Ms. Wingate urges Brian to include more evidence in his report for both positions, asking him to consult with Samantha for her side; Samantha is busy and gives only minimal help
29	Tuesday, 4/2/96	Continuing disagreement 3 and negotiating the oral presentation: While Brian quizzes the group about his report on features in preparation for jigsaw, Toscan finds two occasions to shout that "they're NOT, a DOLphin" (during questions about dorsal fins and baleen versus toothed whales); 1 min later when Brian jokingly asks them, "What is a killer whale?," the group expresses their disagreement and begins negotiating how to present it to classmates in jigsaw, which turns into jokes about the vagaries of classifying species

## Appendix C (Adopted from Engle & Conant 2002, pg. 465-73)

### Transcript of Brian's Report to the New Student Teacher on "Whale Features" Research

#### Legend

Each line is a spoken intonation unit and/or any co-occurring nonspeech moves.  
At the end of each spoken intonation unit, punctuation indicates the type of intonational contour:

- . = falling/end intonation contour
- ? = rising/questioning intonation contour
- ! = an exclamation
- , = anything else, usually a slightly falling/continuing intonation contour

Line numbers for lines that include no speech are in italics. Numbers for lines judged as being off the main topic of the conversation are underlined. When two or more topical threads were competing to be the main topic, they were both coded as on it. A question mark around a line number indicates a line that was not sufficiently audible for it to be coded. Other symbols include:

- [*inaudible*] = word cannot be identified
- [*description*] = transcriber's description of nonspeech moves or other behaviors
- (word(s)) = transcriber uncertain that the word(s) has been correctly identified
- ((word(s))) = transcriber especially uncertain about correct word identification
- (word1/word2) = either word1 or word2 could have been spoken
- wor- = word or intonation unit cut off midstream
- exte::::nd = vowel lengthened, with more colons indicating more lengthening

Points of overlap across participants are indicated by pairs of large opening brackets that are aligned from one line to the next to indicate where overlap begins (e.g., see lines 4 and 5). When useful, pairs of closing brackets indicate where overlap ends (e.g., see lines 37 and 40). Finally, capitals are used to indicate syllables given particularly strong emphasis by the speaker through especially salient changes in pitch, volume, or (more rarely) speed.

Tuesday 3/26/96, Day 28 (Just After FCL Resumed After the Strike and Science Camp)

**\*\*SEE VIDEO\*\***

As this segment begins, each student has been telling the new student teacher (Ms. P) what he or she has learned so far about his or her research topic. According to Ms. Wingate's instructions at the beginning of class, the purpose of the session is

twofold: The group is to begin teaching each other what they know and help catch up the new student teacher on what she doesn't know. Brian's report on whale features is the last one before they return to class.

The coding described in Appendix B compared the first 70 sec of this presentation (lines 1–56) to the next 70 sec after it (lines 57–130), which starts with Brian's allusion to the controversy (lines 57–58, 60–62, 66–67, 70).

*11:05:59. Brian's second turn in the panel presentation.*

1 Brian: [to Ms. P] I did features of whales.  
 2 Ms. P: you did what?  
 3 Brian: features.  
 4 [(I did features).  
 5 Ms. P: [features?  
 6 Brian: [nods]  
 7 Toscan: [[appears to be mouthing words to a song] ]  
 8 Ms. P: [can you tell us about features.  
 9 Brian: [to Ms. P] well um- [pause] (uh um) [pause], ]  
 10 Samantha: [ [ picks up set of papers from her  
 or Jonelle's folder and starts looking at it] ]  
 11 Brian: [continuing] [well [glances towards Toscan,  
 returning to Ms. P],  
 12 actually like Toscan said [ pointing to him],  
 13 they have like these TOOTH BRUSH bristles (on it/that are)  
 [gesturing to show the vertical threads of baleen],  
 14 THAT long [shows length by stretching  
 out hands horizontally]. ]  
 15 Jonelle: [ [sorts through her folder] ]  
 16 Brian: [ [continuing to Ms. P] the [(the baleen whales). ]  
 ?17? Toscan: [(inaudible, so not coded)]  
 18 Samantha: [returns papers to Jonelle's folder]  
 19 Jonelle: [[closes it, saying/mouthing something to Samantha like "oh thanks"]] ]  
 20 Brian: [[to Ms. P] they're really [HUGE.  
 21 Toscan: [also to Ms. P] [they're almost as long as this  
 table [looking and gesturing  
 across table towards Jonelle].]  
 22 huge [opens mouth wide, exaggeratedly stretching the rest  
 of his face].  
 23 Jonelle: [begins to add a book to her pile of things while Samantha  
 starts pulling it back]  
 24 [mouths/says something like "that's okay" to Samantha]  
 25 Brian: [to Ms. P] and they're round,  
 26 ba- they're called baleen.  
 27 Jonelle: [to Samantha, with amazement] as big as this TABLE!  
 28 Brian: [continuing] they SUCK in the plankton,  
 29 (then/and) [FILter the water [demos water moving past





102 Brian: [to Jonelle] thank YOU!  
103 Jonelle: [[shakes Brian's outstretched hand]  
104 Brian: [[continuing to Jonelle] that's my point!  
105 Toscan: [thank you [Toscan holds out his hand for Jonelle  
who doesn't take it]  
106 Samantha: [to J] [because [pause] [they just found it out.  
107 Toscan: [thank you VERY much  
[taps Jonelle on arm].  
108 Jonelle: [shakes Toscan's hand]  
109 Samantha: [to students] and I still don't see why you guys  
won't believe the TRAINERS.  
110? Jonelle: [[inaudible 3 syllables, so not coded]  
111 Toscan: [[turns to S] they said ["MA:::YBE"  
[puffs face up, bugs eyes out]  
112 Brian: [turns to S] [because they've only been working,  
113 they- we knew more than THEY did!  
114 Brian: [continuing] [They didn't know what-  
115 Jonelle: [to students] [They didn't know ((hardly)) ANY!  
116 [to Ms. P] they (didn't even-) they had to keep asking people.  
117 Brian: [to Ms. P] they were like,  
118 "is that [RIGHT?"  
119 Jonelle: [RIGHT?"  
120 Toscan: [to Ms. P, smiling] [yeah,  
121 they kept asking.  
122 Samantha: [to students] [the other one was-  
123 [you guys you guys let me (just say this)  
[indicates her point with her right index finger]  
124 Brian: [[to Ms. P] we were at Marine World,  
125 and they [were like  
126 Toscan: [they kept saying,  
127 "is that right?"  
128 ["well it's this and this,  
129 not that and that."  
130 Brian: [making fun] ["I think they have forty teeth,

**11:08:19. End of 70-sec coded segment after the big shift.**

131 Brian: [continuing] well no no it's the other way around!"  
132 Samantha: no,  
133 but it's [like  
134 Ms. P: [did you go as a class?  
135 Jon, Tos & Bri: no  
136 Samantha: [to Ms. P] no we went with our whale group,  
137 [to other students] but see,  
138 you guys,  
139 I don't see-

140 there were two trainers right?  
141 and ONE of them was doing all the talking,  
142 and SHE was the one that wasn't sure,  
143 the other one was ABSolutely positive.  
144 so why won't you believe the other trainer?  
145 Toscan: [to Samantha] but [the- in their sci- en- ti- FIC!  
146 Brian: [to Samantha] [we don't believe both of them.  
147 Toscan: [to Samantha] that their skin is LIKE a dolphin,  
148 and their dorsal fin is like a dolphin,  
149 and it goes like that [moving his arm like a swimming dolphin].  
150 and all the other whales go like that  
[again moving his arm like a swimming dolphin].  
151 they don't go [moving his arm to swim like a fish].  
152 so maybe they're A:::LL dolphins [sweeps hand forward],  
153 or maybe they're A:::LL [sweeps hand back towards  
original position] whales!  
154 Brian: my point exactly!  
155 Toscan: they don't go [arm swimming like a fish],  
156 Brian: or you [could just SEparate them  
[demos splitting into two with hands],  
157 and they're two different things.  
158 Toscan: [they go [arm swimming like a dolphin].  
159 Samantha: so maybe you guys-  
160 [you're saying that maybe theymaybe  
the killer whales COULD be dolphins,  
161 along with all the other whales.  
162 Jonelle: [to Ms. P] [this could go on forever  
[starts assembling her papers]  
163 Brian: actually I'M [pointing to self] not saying that,  
164 HE [pointing his thumb at Toscan] said that,  
165 okay?  
166 Toscan: what? [glances at Samantha and then Brian  
with look of mock incomprehension]  
167 Brian: I beLIEVE (..) that they (..) are not dolphins.  
168 Toscan: (I know) [(that). [inaudible-1 syllable]  
169  
170 Samantha: [I believe that they ARE.  
171 Brian: basically,  
172 the beLUGa whale [is basically just like the killer  
whale, =  
173 Jonelle: [to Ms. P, in disgust] [this could go on for HOURS,  
174 and HOURS,  
175 (upon/and) HOURS [hits her pencil down],  
176 (and) HOURS [hits her pencil down again],  
177 (and) HOURS [hits pencil down once again]. ]  
178 Brian: = except  
that it has a FLAT head [brings his hand  
down in front of his face to show a flat head]

179 Toscan: [the baleen.  
 180 the sperm whale!  
 181 Brian: [ uh uh ] all the  
 other-  
 182 the SPERM whale  
 183 [pause] [(it's just) flat [bringing hands  
 in front of face again].  
 184 Jonelle: [to Ms. P] [ours lasted-  
 185 we had this ARGument,  
 186 but it lasted for about a good HOUR. ]  
 187 Toscan: eXACTly. ]  
 188 Tos&Bri: [slap hands]  
 189 Ms. P: that's amazing.  
 190 it's a good argument.  
 191 Toscan: because (.) [it's like [starts gesturing and stops]-  
 192 Brian: [to Ms. P] [one day in class we um-  
 193 (.) well ALL the whale groups meeting from like next door,  
 194 got together and we all had this big ol' ARGument.  
 195 and most EVeryone,  
 196 except for ME,  
 197 believed that the whales are DOLphins.  
 198 and thank you very much to me,  
 199 [holds his hands up in victory and nods, smiling],  
 200 that everyone CHANGED.  
 201 Toscan: and then \*I\* changed,  
 202 [and then I made- I made EVERYBODY  
 [makes a sweeping arm gesture],  
 203 except her [points to Samantha].  
 204 Brian: [except for,  
 205 this person [pointing to Samantha].  
 206 Samantha: no,  
 207 [Devonae,  
 208 Devonae.  
 209 Toscan: [(we're a team) [motioning with his arm around Brian].  
 210 Toscan: Devonae still thinks that they're dolphins,  
 211 swimming in the sea [flapping his arms to show swimming,  
 and speaking in a high voice, mimicking Devonae].  
 212 Brian: Devonae thinks,  
 213 whatever she thinks.  
 214 ((because she's)) [twirls finger at temple, gesturing  
 "that person is crazy"].  
 215 Toscan: I know [laughs].  
 216 ((I suppose)) [looks at Brian].  
 217 Ms. P: anything else?  
 218 Samantha: nope.  
 219 Jonelle: I'm trying to make my eraser [inaudible-1 syllable].  
 220 (I think I can) fix (it).  
 221 Toscan: um they're not dolphins,

222                   they're not whales,  
223                   they're not anything,  
224                   they're just living in the sea,  
225                   having fun,  
226                   and leave 'em     [alone.  
227     Jonelle:       [*starts to get up*]  
228     Students:     [*put away their things*]  
229     Jonelle:                             [(they're cats!)]  
230     Toscan:       hey  
231     Jonelle:       hey cat fish  
232   [[*inaudible-3 syllables*]  
233   if cat fish,  
234   if cat fish!  
235     Ms. P:         [*to Brian*]         [how long do they live?]

***11:10:36. [Brian doesn't answer question, conversation moves to other topics as they leave].***