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Flame or Fizzle? A Comparative Case Study of the SPARC Experience

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Running Head: FLAME OR FIZZLE?

Flame or Fizzle? A Comparative Case Study of the SPARC Experience

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Abstract

Social Perceiving-Acting Reciprocal Conversations (SPARC) is an emerging approach to large group discussions. SPARC utilizes an iterative approach to group discussions by nesting small fishbowl discussions within a larger whole group discussion. Theoretically, this structure affords reciprocal participant interactions for the negotiation of meaning and increased depth of inquiry. This study takes a detailed look at the experiences of three undergraduates who participated in SPARC during an Educational Psychology course for non-education majors at a large university in the Northeastern United States. Luke, Esmeralda, and Diane¹ participated in SPARC eleven times between January and May.

Purpose of the Study

This study aims to answer two research questions related to these agents' perceptions of SPARC and their performance with it over time.

RQ1: How did three participants, Diane, Luke, and Esmeralda, experience SPARC across 15 weeks in an undergraduate Educational Psychology class?

- a. What were their perceptions of the SPARC experience?
- b. In what ways do their rubric scores reflect these perceptions?

RQ2: What common themes emerge across these three individual experiences that may contribute to *petite generalizations* (Stake, 1995, 7) about the SPARC experience?

What is SPARC?

Social Perceiving-Acting Reciprocal Conversations (SPARC) is a structured but dynamic and flexible learning tool designed to intentionally make explicit the affordances of group interaction and to tune agents' perceiving-acting systems to the variants and invariants

¹ Luke, Esmeralda, and Diane are pseudonyms used to protect the identities of study participants.

across situations (see Gibson, 1986). Through both individual and group reflection-in-action (Schön, 1991), participants engage in this iterative process in order to generate *affordance networks* and *effectivity sets* (Barab & Roth, 2006). Affordance networks, or the collective possibilities for action, and effectivity sets, or an agent's collective abilities, emerge in an environment over time. SPARC is informed by an ecological theory of knowing (see Barab & Roth, 2006; Gibson, 1986; Greeno, 1998; Young, 2004) and its pedagogy is aligned with theories of situated cognition (see Brown, Collins, & Duguid, 1989; Lave & Wenger, 1991).

SPARC is intended for communities with enough participants to support at least three small groups. The first small group gathers in the center of the room, engaging in a fishbowl discussion; the remainder of participants sit around the outside of the fishbowl and observe this first discussion iteration. Observers silently engage in the discussion by interacting on note sheets—agreeing, disagreeing, providing evidence to support a point being made by a discussant, etc. After ten minutes, the facilitator ends the discussion, and the next small group enters the fishbowl, while those who have already discussed take observer positions around the outside of the circle. The new group engages in the second iteration of the discussion, with the benefit of the notes they have taken. In this way, they can respond to points, questions, and arguments raised in the previous iteration. Those who have discussed become observers and continue the note taking interaction. This process continues until all participants have taken a turn inside the fishbowl, and the session ends with a final iterative reflective exchange (FIRE), which is a final whole group discussion that affords opportunity for remaining questions to be answered, misconceptions to be clarified, and connections to be drawn between concepts. (For more information on SPARC, see Bushey, this session).

Methodology

This case study is part of a larger inquiry into the development of grounded theory (Grbich, 2007, ch. 5) of the SPARC experience. Stake (1995) distinguishes *instrumental* case studies from *intrinsic* case studies (p. 3-4). While an *intrinsic* case study presents itself to the researcher for a number of arbitrary reasons, including assignment to the case or a natural curiosity about a developing issue or phenomenon, an *instrumental* case study is chosen purposefully for its potential to inform larger questions, such as the one I am interested in, which is the transformative potential of SPARC. I am reporting an *instrumental* comparative case study of Luke, Esmeralda, and Diane.

Participants

These three participants were purposefully chosen from the larger study ($n = 19$) for their diverse experiences with SPARC. Collectively, their perceptions and performances tell not only the story of their own experience, but suggest the possibility of *petite generalizations* (Stake, 1995) about SPARC, described as “generalizations that regularly occur all along the way in case study” (p. 7). It is important to note this is different than suggesting broader generalizations often sought in correlational studies (Stake, 1995, p. 8); yet, these outcomes may still contribute to ongoing development of grounded theory (Grbich, 2007, ch. 5) about SPARC.

Gender, year in school, academic major, previous experience with educational psychology, and participation in different small groups were all considerations in selecting these participants for analysis. Table 1 outlines some of these participant characteristics.

Table 1
Participant Characteristics

Name*	Year in School	Academic Major	Reactions after Day #1
Diane	Junior	Communication Sciences	With discussions I do not feel comfortable at all. I don't like being in front of class and talking. I get nervous and built up alot [sic] of anixety [sic] over it. Even if I prepare myself for the discussion, because I am so nervous I forget everything I wanted to say and lose my train of thought... I feel like I am being judge [sic] and that my response isn't good enough.
Luke	Junior	Psychology	The discussions we have in class like we did today are something I've never had to do before. It seems a little stressful to sit in front of the class and be analyzed by your classmates...I'm generally a quiet guy but I feel these discussions will force me to open up and have my voice heard, which can only be beneficial.
Esmeralda	Senior	Psychology	I have always enjoyed class discussions because they provide another medium of classroom instruction which allows me to interact in the learning process. ... At first voicing my thoughts in class is nerve wracking, but in small classes it is easier to get to know classmates and become comfortable speaking.

Methods

In trying to uncover evidence of Luke, Esmeralda, and Diane's performances and experiences with SPARC, I drew upon several data sources, outlined below. To answer RQ 1.a., I used inductive analysis of each participant's journal reflection transcript to identify themes related to each of their experiences with SPARC. For RQ 1.b., my analysis consisted of visual analysis of graphed scoring rubric data and inductive analysis of time-stamped transcript data to interpret the story pictured there. As the result of analysis of both

transcript and rubric data, I have reported findings related to *petite generalizations* (Stake, 1995, p. 7) across the three cases in this study, in response to RQ2.

Data Collection Methods

Data sources included those provided directly from Luke, Esmeralda, and Diane as well as the instructor and other participants: transcripts of participant online reflection journals, e-mail correspondence between participants and myself, teacher log transcripts, and SPARC rubrics. All data sources were time-stamped and could be triangulated (Patton, 2002; Stake, 1995) to increase trustworthiness of the study.

Additional measures for increased credibility in the study included memoing, and the use of a peer debriefer (Patton, 2002). I kept memos from the beginning to the end of the fieldwork, particularly to reflect on my role as researcher and to distinguish it from my role as instructor. I continued to keep memos throughout the data analysis period as well. I met periodically with a peer debriefer to discuss the project and emerging themes, and to constantly compare initial findings with the current direction of the research to try and extract meaning from the data and deepen the emergent understanding of SPARC. In addition, through its formative design, SPARC afforded continuous member checking; the participants and I engaged in a continuous dialogue around the creation and usability of SPARC throughout the semester.

Data Analysis Methods

This comparative case study reports on a purposive sample of three participants from a larger study ($n = 19$) investigating the emergence of SPARC (see Bushey, this session). Using inductive coding of transcript data from all participants' first reflection journal entries (Harry, Sturges, Klingner, 2005; Thomas, 2006) I used constant comparison (Grbich, 2005; Patton, 2002; Thomas, 2006), to arrive at an essential theme that

characterized the initial SPARC experiences of all participants: *SPARC is intimidating, but important*. To varying degrees, all participants reported feeling a level of fear associated with the requirement to participate in SPARC, but simultaneously articulated a conviction to do their best. The reasons for this dedication to the process ranged from getting good grades, to personal growth, to the usefulness of the process for future careers or other courses.

Diane, Luke, and Esmeralda were chosen for the current analysis because they represented differences in gender, year in college, academic major, experience with educational psychology, and degree of anxiety associated with the SPARC experience. They are also representative of three of the four fishbowl discussion groups that came together to form our larger group.

Data analysis included calculating and graphing SPARC scores for the three participants for the purpose of comparing Luke, Esmeralda, and Diane to each other across the 11 weeks of the study. Participant reflection journal transcripts were compared with this performance data to look for trends and patterns between participants' perceptions and performances. In the end, I was able to determine and report common findings across participants.

Findings

First, I have reported findings that characterize the perceptions and experiences of Luke, Esmeralda, and Diane (RQ 1). Secondly, I have compared performance data across the three participants in all rubric areas (RQ 1). And, finally, I conclude with findings that are common across the experiences of these three participants (RQ 2).

Perceptions and Experiences

Diane—anxious but eager to please.

Diane was consistently plagued by anxiety but found ways to cope.

A soft-spoken Communication Sciences major with long flowing brown hair and a medium complexion, Diane habitually sat in the back of the room next to two of her friends, whom she sometimes whispered to or shared knowing glances with in the middle of class. She was frequently huddled up in an overstuffed winter coat, peeking out from under the brim of a baseball cap from this cozy, but introverted position in her chair. Diane was consistently worried about participation in the discussions, but remained dedicated to the process despite this anxiety.

Students were required to respond to prompts in their online reflection journals within 24 hours of each discussion. In 9 out of 11 journal responses that immediately followed discussions, Diane wrote, at least in part, about her anxiety. After the fifth discussion, nearly half way through the semester, Diane commented, “As previously said, I get anxiety when I talk in front of people I don’t know, especially if it is over homework. It is nerve racking. I get very red in the face and feel I’m embarrassed.” This comment showed little change over her initial reaction to SPARC on the first day of class: “I didn’t like the group discussion in front of everyone and everyone is listening. It made me nervous.”

It may be that the source of Diane’s dedication to enduring what she found to be an excruciating experience was her need to please the instructor and earn a high course grade. Even after the final discussion of the semester, Diane reflected, “Also, I wanted to apologize for losing my train of thought. I got very nervous and lost everything that I wanted to say and I was so mad at myself for it. I am trying to so hard to be better at this and I can’t do it and I feel like its [sic] affecting my grade, especially last week’s discussion.”

Diane gave other feedback throughout the semester that indicated she valued a traditional teacher-student hierarchical relationship, where pleasing the teacher was a goal.

In response to a discussion the class had engaged in regarding whether or not I should collect the students' note sheets, Diane responded in her journal:

I would maybe collect our yellow sheets from us and see how good of notes we are taking, because it will see how much we are listening to other group members. Also, from this you can then see if we are able to relate back to others groups or mentioned them or maybe say something specific they said so you know we are paying attention.

Even in her goal-setting, Diane sought my reassurance: “I think my goal for next week is to ask a question or do you think there is something I should improve on [?].”

Diane devised strategies throughout the semester, attempting to combat her anxiety. She tried positioning herself in the discussion to speak first, and even positioned herself physically with her back to most people in the outer group: “I know in one of your comments you said you notice I sit with my back facing the class but that helps me not be so nervous. I still get heart palpitations and anxiety over it. The fear of talking is just taking over even though I try my best.”

Despite her efforts, Diane did *not* experience a notable change in her anxiety level through her engagement with SPARC over time. She reported in her final journal entry:

My comfort level has improved but still isn't the best or do I think it will ever be. I felt better when I wasn't staring at the class and it made it easier but at times when I lost my train of thought I got nervous and lost everything and at those times is what makes me feel not comfortable. Also, I am in a sorority and I am VP of Communications and I have to read off everyone's name for attendance and that even gets me nervous. I don't think it was just this class, I have personal issues ha. Overall, I think I gained some comfort level but not enough to say there was a big improvement towards the end.

Similar to Diane, Esmeralda showed little change in her SPARC performance over time, but for very different reasons.

Esmeralda—dedicated student and *Guitar Hero*

Esmeralda was a dedicated but humble Psychology major, focused on her graduate school pursuits.

Everything I saw Esmeralda engaged in was precise. Her journal responses were sometimes several pages long, well-referenced with outside sources, and she would evaluate them once they were finished, sometimes re-posting if there had been even slight formatting problems or technical issues.

Esmeralda began the class as a highly tuned perceiving-acting agent (Young, 2004; Young et al, 2000), so she knew well how to interact with the SPARC discussion environment, easily engaging in conversations on broad topics, and grasping new procedures in very little time. My inductive analysis of her journal transcripts revealed an individual who was always on the lookout for ways to learn from her environment.

Throughout her transcripts were reflections on various ways she had engaged with past learning environments to increase her knowing. For example, responding to a challenging course concept, she wrote, “Connectionist models were particularly confusing for me when I first encountered them, but since then I have met with some of the Ph.D students in the Cognitive Psychology Department about their research. I have also gotten to work on some of the computer programs used to generate and experiment with connectionist models.” When she didn’t understand this particularly difficult course content, she sought help from experts around her.

In a different reflection, she noted, “In an attempt to prepare for graduate school in school psychology and understand more about the field, I have arranged a number of informational meetings with school psychologists in various districts.” Again, it is clear that Esmeralda has intentionally acted within her environment in ways that will further her personal goals.

Her practical experience extended to a culinary class she taught for special needs children, which she used to support our discussion of Gagne’s Nine Events of Instruction:

“I feel that when I was teaching this culinary course, particularly because my students were novice chefs, that [I] needed to move back and forth between presenting the stimulus, providing learning guidance and eliciting performance for each part of the lesson.”

Despite her drive and industrious nature, Esmeralda was both pragmatic and humble, with a balanced perspective on life. She always arrived to class wearing a smile, and at least twice came with “notes-to-self” written on both sides of her right hand. Yet another time, she had dark stains on that same hand, and in response to my inquiry, she told me it was from tie dying the previous weekend. Lastly, despite all of her academic accomplishments and precise ability to act, when a guest lecturer asked her about her area of expertise, she broke into an infectious grin and replied, “Guitar Hero”.

Esmeralda valued her SPARC experience, mostly for the community it built:

On the first day of class, the discussion experience was awkward and a bit nerve wracking. After the first “real” discussion, I became much more at ease. At this point I feel very comfortable sharing my thoughts and experiences in class. As I mentioned, the class feels like its own community and I am glad that I got the opportunity to interact with my peers. Too often students walk away from class without getting the chance to talk with their classmates about the material. I find that other students are valuable resources, so I enjoyed that we were encouraged to work together.

While SPARC afforded community for Esmeralda, for Luke, it was transformative.

SPARC helped Luke find his voice—shy guy turned leader

Luke’s experience is characterized by his negotiation of two seemingly conflicting goals: speaking his mind verses not being rude to others.

Clean-cut and soft-spoken, Luke was a third year Psychology major. As he entered the classroom on a typical day, he glided quietly with his black backpack slung over a shoulder, and found his habitual seat in the front row of the small lecture hall where we met. I rarely saw Luke without a baseball cap, even on discussion days, and he frequently wore blue jeans and a zipper-front hooded sweatshirt with a t-shirt underneath.

Luke's attention to detail in his reflections and course assignments, as well as his punctuality, suggested he was a conscientious student who engaged with and reflected on the content he was learning. He acted with intentionality regarding how his academic choices would influence his future goals to become a school psychologist.

At the start of the semester, Luke indicated,

My familiarity with psychology I feel is really good for an undergrad student because i've [sic] already taken more than a handful of psycholoy [sic] courses and last semester I took a course on learning and behaviorism which I hope will help me in this class. I've also taken Human Development and Family Studies classes about adolescents and their learning abilities.

Luke began the semester struggling to find his voice in SPARC; initially he found it difficult to speak loudly enough to be heard by everyone in the room, as he simultaneously struggled with how to break into the conversation.

Week 4 was the first of two turning points for Luke. There were at least two distinct environmental changes intentionally made during this particular week; the scoring rubric underwent its first revision as a result of whole group conversations about the effectiveness of the original rubric and group membership changed.

In their reflection journals after week 4 participants were asked to comment on the changes made to the process and the rubric. Luke responded:

I thought the changes were good. I liked my bigger group size [.] I felt it was not too small and not big. I felt a little more comfortable in the bigger group because it was easier to talk for some reason. The revised rubric also helps because I don't feel as pressured to just throw comments in for the sake of doing so. Also knowing that everyone in the room is not tallying every remark you have also puts me at ease.

Luke felt positively about the changes in the learning environment, claiming, "it was easier to talk for some reason", but he was unsure of the reason. He suggested his

increased success might have been related to an increase in the *number* of discussants in his group. But, this isn't likely to be the entire explanation.

Ecological psychology supports knowing as emerging from the interaction between an agent and his environment, rather than being a fixed, or even a dynamic, characteristic of an individual (Young, 2004; Young et al, 2000). The intelligence lies in the interaction (Barab & Plucker, 2002). From this perspective, the marked change in Luke's performance at week 4 can be considered in light of a change not only in himself as a learner, or perceiving-acting agent, but also in the environment.

Participants were not aware that I had purposefully grouped them on this particular week, and for what turned out to be for the rest of the semester, based on certain interactions I had observed in previous discussions. My teacher log illuminated some of the decision-making involved in this choice:

(...) once I had decided on three groups, I purposefully arranged them in a certain way—I put those who have been struggling with shyness and self-declared culture issues that make them feel intimidated, into the same group, and I put the “talkers”—those most comfortable/successful with the current discussion format altogether in the final group (...) in my opinion, before reading any of the student feedback, the quiet group was extremely successful—as individuals I think they made the most progress.

Lending greater support to the hypothesis that group *dynamics* may have played a larger role than group *size* in his positive experience is a comment Luke made in his reflection journal after the next week. “I thought the discussion went well, after going back to the slightly smaller groups I think I prefer it. You get a lot more time for discussing issues with your group members.”

Once Luke had started to know how to break into the conversation, he began to struggle with this new experience. Luke's second transition came after week 8.

Wearing jeans and carrying a backpack, Luke scuffled into my office mid-morning one day in late March, where the breeze was blowing through the slightly cracked office window in a feeble attempt to combat the stale smells of dust and deep thought that were hanging in the air. I looked up and greeted his hesitant gaze with a smile and an invitation to sit and have a conversation. While shifting the hood of his gray sweatshirt so that it rested atop his left shoulder, and adjusting the bill of his slightly worn black baseball cap, Luke took a seat in the maroon swivel chair next to my table. Meanwhile, I shuffled the papers I was working on off to the side and straightened another motley pile of inbox hopefuls awaiting my attention. Luke was here to discuss a recent experience with our course discussions, and I wanted to give him my full attention.

After the eighth scored experience with SPARC, and the third being grouped with the same discussants, Luke expressed concern. His group had experienced several awkward pauses in their past two discussions, and Luke reported in his reflection journal that he was becoming frustrated with what he perceived to be a weaker performance by his group than the other three:

The group dynamics of my group are getting to me a little. I'm seeing other groups having a better connection then [sic] my group. Some of my group members are not speaking enough or at all and it's been like this for the last two discussions. I'm thinking maybe we could bring some one [sic] who is a strong speaker from one of the other groups into ours because we seem to be down one on some days. This will help balance out the discussion so we don't have the silence we did today and it won't just be two people talking the whole time.

As the instructor of the class, I had struggled with this comment, which Luke had written in his most recent reflection journal entry, because I had also observed a shift in this group's performance. I wondered what had changed about the group dynamics and was unsure of how to proceed, because other group members expressed being happy there, and

all other students in the class had reported wanting to remain in their existing discussion groups. I decided to invite Luke to come and see me so we could troubleshoot the situation.

As we spoke, Luke's affect oscillated between compassion and annoyance. He was feeling frustrated with two women in particular who rarely chose to speak, and this dynamic was contributing to a certain awkwardness in the group's conversations; but at the same time, Luke empathized with them. "I can totally understand. I think if I was in a different group, I might be like them." These words were followed by a sheepish grin and a modest tilt of the head that was accompanied by a statement indicating that now he is a leader; but with a quick glance at me, he was quick to add, "Well, not a leader, but (slight pause) I don't know, I used to be more like them. Now it's changed. I don't know why it's changed. Maybe because of the course—I don't know." When I questioned him further about what he meant, he indicated that he is usually quiet in class and rarely contributes to class discussions, but in our class he has come to talk a lot.

Luke reported a second time that SPARC might have contributed to his change in self-perception, from "quiet guy" to leader. In his final reflection on the semester, Luke discussed the ways he found SPARC useful and commented on his perception of the process over time:

The discussions helped my understanding of course content because I would see how other people used the theories in the arguments or examples. The specific cases we were given and how we would approach them using the theory were what I thought helped me out the most. I learned a lot from reading the problems within a teaching case and how I if I were [a] teacher [I] would handle it. In a sense I was able to play a pretend learning theorist every Tuesday and argue for or against certain ideas. And ... my comfort level with the discussions went from 0 to 100 at this point. Thats [sic] because not only am I more comfortable speaking in front of the class, but as my knowledge on learning theories increased I also had more confidence in my arguments and ideas I shared with the class. I think the discussion part of the course will also be useful for my future. I grew as a speaker and thats [sic] valuable for any future job. Overall I was very satisfied with the course and any

skepticism I had in the beginning [was] quickly gone after one or two discussions.

Performance Findings

I have reported two findings related to the performance of these three SPARC participants across all SPARC experiences. Altogether, there were 7 rubric categories, but not all categories were scored in all weeks, and the descriptions of some of these categories changed over time (see Bushey, this session, for more information on rubric iterations). Each area was scored holistically, on a 0-4 scale, with 4 representing the highest level of performance, and 0 indicating no observable performance in that area. For this analysis, I have included 5 of these categories.²

Finding 1: All three participants reached Level 4 performance in 3 of the 5 analyzed rubric areas.

Despite differences in their perceptions of and experiences with SPARC, Luke, Esmeralda, and Diane all grew in their performance over time to achieve Level 4 performance in the areas of *Listening*, *Participation*, and *Volume & Clarity*.

The area of *Volume & Clarity* assessed how well those sitting nearby and far away could hear and understand the speaker; this ranged from a Level 0, which would indicate the person sitting right beside the speaker could not hear him, up to a Level 4, where everyone in the room could hear and understand the speaker. Although *Volume & Clarity* was no longer assessed after week 6, by then, Luke, Esmeralda, and Diane had all reached Level 4 performance in that area (See *Figure 1*). Luke made the most dramatic improvement in this area, moving from barely being able to be heard, to being heard consistently by everyone in the room. It is not possible to know if this Level 4 performance would have been sustained,

² Two categories, *Materials*, and *Preparation* were not included because they were found to be prerequisite to success in the other 5 rubric categories (see Bushey, this session).

but a review of the existing transcript data after that date offered no indication that “being heard” was an issue for any of these participants after week 6.

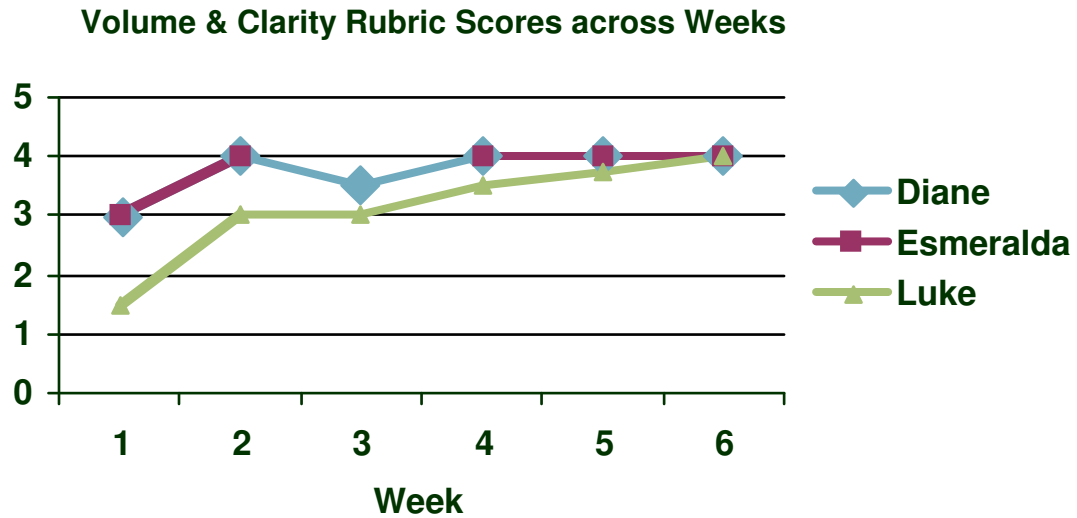


Figure 1. Volume and clarity rubric scores across weeks for Diane, Esmeralda, and Luke.

In both *Listening* and *Participation*, all three participants achieved Level 4 performance by week 5, and sustained this level of performance for the remainder of the semester.

Listening was scored on how often a participant acknowledged the previous speaker's remarks before moving onto her own discussion contribution. Examples of active listening included asking clarifying questions, elaborating on the current topic, or agreeing/disagreeing with what was just said. Esmeralda scored at a Level 4 in this area for every week she was present for the discussion; and Luke performed similarly, with achievement of Level 4 scores in all weeks but one, where he scored a Level 3. Diane's early performance in this area was more inconsistent than the other two participants, but by week 5, she too began performing consistently at Level 4 (See Figure 2).

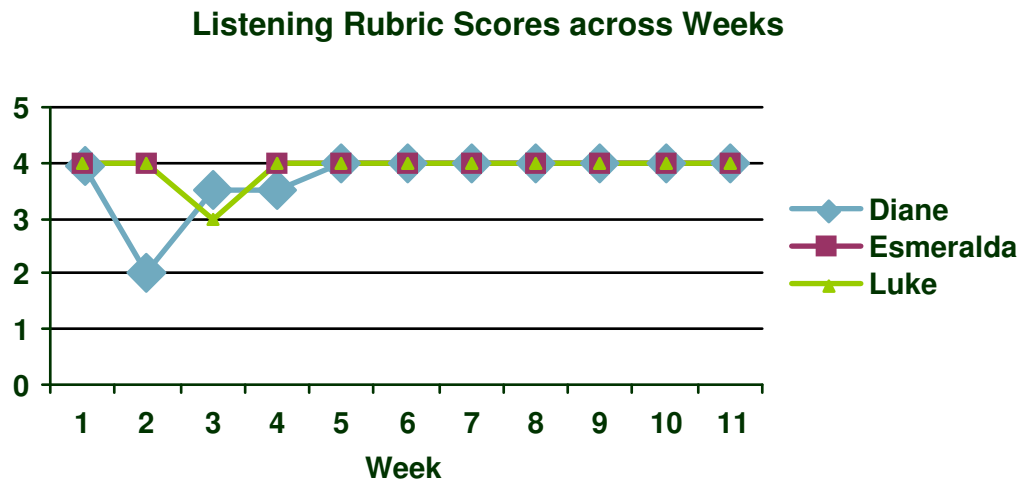


Figure 2. Listening rubric scores across weeks for Diane, Esmeralda, and Luke.

The intentions guiding the area of *Participation* were shifted twice between weeks 1 and 11. For the first three discussions, *Participation* was defined as, “Contributed several different times to the discussion; added to the topic at least half of the time”, so the focus was on the *frequency* of participant turn-taking in the discussion. Beginning in week 4, the focus was shifted to emphasize the *quality* of the turns: “Contributions to the discussion reflect thoughtful understanding and questioning of the course content.” And, in week 7, this category was clarified further, with the addition of “personal anecdotes and/or examples from the readings are used to support claims.”

As in the area of *Listening*, Figure 3 shows that Esmeralda scored consistently high in the area of *Participation*, across all weeks and all three rubric iterations. Luke and Diane experienced a wide range of performance in *Participation* in the first three weeks, but after the first shift in rubric expectations, their performance moved quickly towards Level 4, and then stayed there for the remainder of weeks.

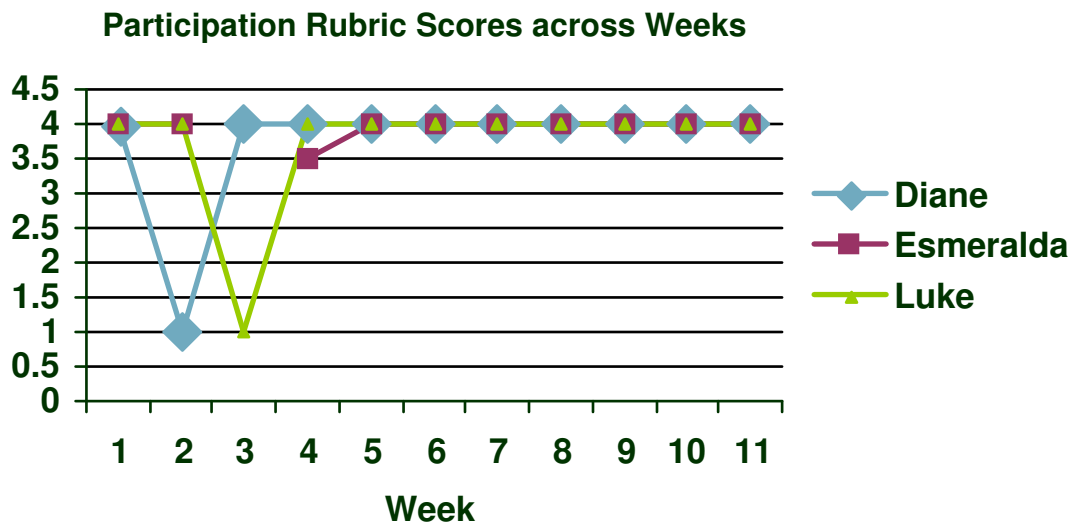


Figure 3. Participation rubric scores across weeks for Diane, Esmeralda, and Luke.

Contrary to the findings for the areas of *Volume & Clarity*, *Listening*, and *Participation*, where all three participants reached and maintained Level 4 performance, an analysis of *Reference to Notes & Literature* and *Real-time Discussion Notes* revealed different results.

Finding 2: After Week #5, Luke and Esmeralda scored consistently high in *Reference to Notes & Literature* and *Real-time Discussion Notes*, but Diane's performance remained inconsistent.

Reference to Notes & Literature measured the participants' use of the assigned reading materials or outside sources to support their turn taking in the discussion. It called for specific referencing of page numbers, and direct reading of passages to provide evidence for the speaker's claims. Figure 4 displays a comparison of Luke, Esmeralda, and Diane's performances in this area from the start to the end of the semester.

Esmeralda had the most consistent performance in *Reference to Notes & Literature*, ranging from a Level 3 to a Level 4 most weeks, though she did perform at a Level 0 in week

4. The rubric criteria in this category had changed in week 4, favoring *quality* over *frequency* of contributions, similar to the changes that had occurred in the *Participation* category.

Esmeralda reflected on this particular performance in her reflection journal:

For me, the change in reference to notes and literature was worrisome. Unfortunately, I did not get an opportunity to reference text although I had various quotes and examples that I wanted to share. However, I like that there is an emphasis on ...supporting the speaker's point and moving the discussion forward.

I replied to her journal entry, asking her to explain what she meant by "worrisome," and she replied:

I have difficulty connecting to the text in an organized way during discussion. Many times I feel that I can indirectly reference the text as the conversation with my group evolves due to the contributions and opinions of my classmates. However, I have trouble going back to a point that I wanted to make and reading from the text or adequately referring to the material. I think that the change in the area just made me a bit more nervous about that because my attention was drawn to that criterion.

Luke's performance in the area of *Reference to Notes & Literature* made a dramatic change from week 1 to week 5, where he went from having scored a Level 1 in week 1 to having scored a Level 4 in week 5. He then maintained a Level 4 for the remainder of weeks. Analysis of his reflection journal transcripts for those early weeks revealed that he was struggling at that time to "break into" the conversation, and his goals were focused around finding his voice. After the first discussion, he reflected, "I felt a little more comfortable, but still seem to have difficulty jumping in to state my own point. I don't want to be rude to the other students. I feel at sometimes that it could possibly turn into more of a competition of saying comments then [sic] having a genuine discussion."

In week 3, Luke experienced a dip, after having improved his *Reference to Notes & Literature* performance in week 2. In his reflection journal, he articulated his extreme frustration at his inability to share what he had prepared for the discussion:

I was generally frustrated with the discussion today. Don't get me wrong I enjoy our class a lot [sic], but yesterday I was frustrated. I feel as though I spent hours of work for nothing. I type up answers to the questions, read both the text and the book but fail to speak more than once in the discussion. I knw[sic] our discussion was good, but the same story was being told as we went from person to person speaking. I didn't want to be rude and just change the course of discussion to fulfill [sic] my own agenda. I've taken cognitive science and cognitive psychology [sic] here at [university], I knew what we were talkig [sic] about, but 10 minutes went by and I had only contributed once. I really wanted to talk about the models more and the articles, those were the most interesting things I felt we could of [sic] discussed. I felt we talked about the obvious of long term memory and its role in exams, and it frustrated me. My goal next week is to contribute more and try to possibly take what my group is discussing and relate it to some of my ideas of interest.

Luke's perseverance showed through in the next discussion, and his scores began to rise. After the discussion in week 4, where he performed at a Level 3.5, he reflected:

I had a few good insights and spoke a better as far as communicating what I wanted to get across clearly. I felt better at speaking up also, just because I stopped looking at it as just speaking and really tried to pay attention to what my group members were saying. Listening carefully to their points in turn helped set the stage for my own good arguments. For the next discussion I want to try to incorporate the weeks topic more. I felt I didn't talk in reference to schema theory enough today and also I want to make better eye contact.

Luke attributed his shift in performance to a shift in his intentionality around the discussion. Instead of focusing on being observed and making sure he spoke, he chose to focus on listening to others in his group, and found that this made it easier to contribute to the discussion in a meaningful way.

Whereas Luke began to perceive the affordances of the group and started focusing intentionally on these group interactions, Diane remained focused inward, on her own anxieties. While she showed an increase in performance between weeks 1 and 5, her performance dropped back to Level 0 in week 6. Her reflection on this situation revealed a belief that the popularity of the topic made it more difficult for her to "break in" to the conversation, but her goal showed a determination to find ways to keep her anxiety at bay:

I think because the topic “intelligence” was a popular one it was hard to get in there and say something because everyone was jumping in when they can. I thought I had better examples and little more in depth. Yet, I feel I am still getting so nervous, and get so red in the face. It’s just to the point that it’s annoying that it is getting in the way. What I felt was helpful is that my group really listened to each other and related to one another. It made the conversation flow better and it wasn’t so random like oh I agree and in this article on page...I feel it was much better experience. I am going to try as my next goal to ask a question or maybe start the group off and see if that will lower my anxiety.

In the following week, Diane’s performance went back up in this area, but then steadily decreased again, before a final finish in the last week with a Level 4 score.

Reference to Notes & Literature Rubric Scores across Weeks

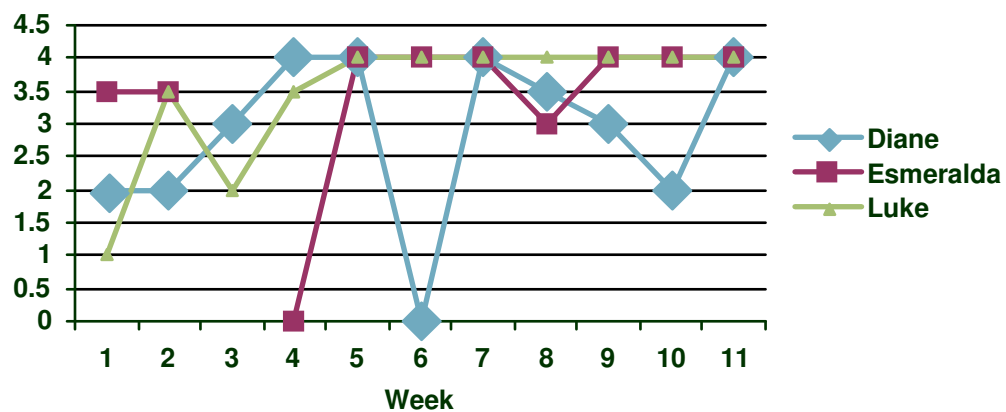


Figure 4. Rubric scores for the category of reference to notes and literature for Diane, Esmeralda, and Luke.

The rubric category, *Real-time Discussion Notes*, was added in week 7; Figure 5 displays performance data for Luke, Esmeralda, and Diane in this category for weeks 7-11. This category emerged out of a perceived need to focus observers’ attention on the interactions of the small groups in real time. Using this new category, I assessed both participants’ note-taking performance and real-time discussion interactions. The rubric indicated desired

performance levels, specifying quality of observations and personal reflections on those observations. Appendix A displays examples of student responses across all rubric-scoring levels. These examples were generated from data collected in the class, and it was distributed to participants in week 8 to help inform their future perceptions and actions around the note-taking procedure.

Real-time Discussion Notes Rubric Scores across Weeks

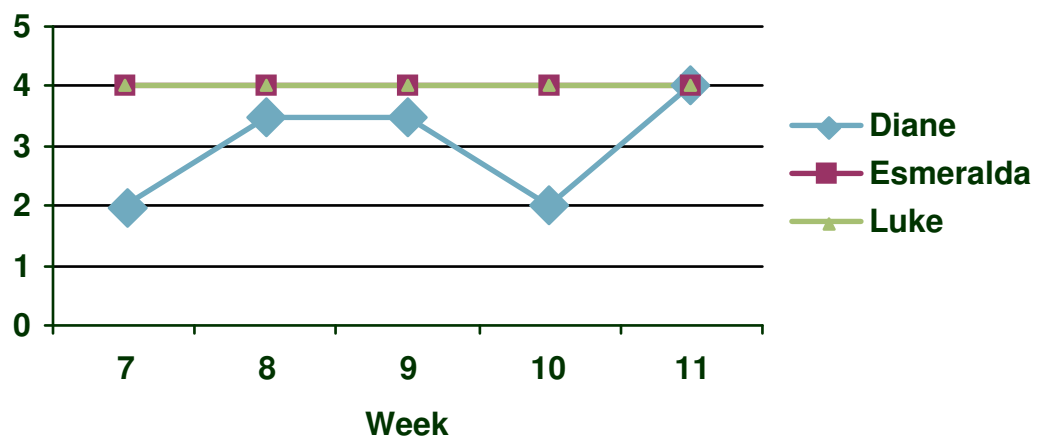


Figure 5. Rubric scores for the category of real-time discussion notes across weeks for Diane, Esmeralda and Luke.

Both Luke and Esmeralda scored Level 4 in all weeks. Their reflection journal entries provided a look at the ways they intentionally used these forms. After week 8, Luke wrote, “In general I used the yellow sheet to help me gather ideas for the previous group so I could use [them] in my discuss[ion] and then later I used it to mark down ideas that I thought were really relevant to my ideas and the discussion as a whole.”

In that same week, Esmeralda perceived similar affordances emerging through the use of the note sheets, for promoting dialogue across groups, and she even acted on this perception by incorporating it into her goal for the following week:

I continued to find the yellow sheet tremendously helpful even though I was not able to incorporate it into my group's discussion. Many of my classmates brought up interesting aspects of the text and personal experience that prompted me to think more critically on my thoughts coming into class. I appreciated the opportunity to elaborate, agree and disagree with statements made in discussion through the use of the yellow sheet. These forms will be very helpful to reference for future discussions and the final exam. I was particularly impressed with how this week's discussions flowed from one group to the next. The ending point of one group was used to jumpstart the next group's discourse. Each group built on previous statements offering personal examples and statements of agreement and disagreement. In my group we discussed possible options for promoting engagement in the case of Darrin. We suggested incorporating his interests. In the third group, Luke elaborated on this by proposing use of varied teaching methods and mediums in addition to playing to Darrin's interests. Further, by the end of the class I felt that each successive group further clarified and enhanced my understanding of salient concepts. The last group brought up an aspect of Bandura's social learning theory. One member stressed that seeing peers of similar abilities succeed may provide Sasha with greater confidence and incentive. This called attention to the importance of perceived similarity between the individual [and] his or her model. Accordingly, my goal for next week's discussion is to reference a specific comment from a previous group that I find important and build on it through personal anecdotes or examples from the text.

In contrast, Diane struggled to effectively use the real-time note taking procedure in a consistent way. Her *Real-time Discussion Notes* scores, represented in *Figure 5*, show that her performance ranged from Level 2 to Level 4 across weeks 7 through 11.

Diane's reflection after week 7 revealed that she *perceived* the same affordances of the note sheets as Esmeralda and Luke; however, she did not *act* on these affordances:

The yellow sheets, I think are beneficial because you can look at what the first group said and then you can branch off of what the group said or change some things or maybe even argue a point said in the previous group, but I noticed I didn't look at what the group said before I went because I feel like I had different points I wanted to say but I think the yellow sheet might help if you say your own points and can relate to the other groups.

When she did act with intentionality around use of the note sheet the following week, her performance rose to Level 3.5:

I did like the yellow sheets [...] I took advantage of it this time and put down information I wanted to use from another group and then I added it in my discussion. I am just really now adjusting to the new system and starting to benefit from it now. I think the groups related to one another. At least one or two people referenced from another group. I noticed it a lot yesterday and I thin[k] it is because of the yellow sheets because you are adding side notes for yourself.

Besides using the note sheet herself in this week, Diane also discussed noticing how others were using it as well; it may be that through acting on the affordances of the yellow sheets Diane was also able to perceive the affordances of these sheets for the larger group.

Findings related to *Real-time Notes & Literature* in this study may support a theory that it is the *perception of* and *action on* the affordances of the note taking procedure in a particular situation, rather than a *static* ability of an individual to use the note sheet, that affords the emergence of reciprocity between and across discussion groups.

Once the rubric data analysis was complete, I determined several *petite generalizations* (Stake, 1995, p. 8) in this comparative case study to answer RQ2.

Petite Generalizations

Luke, Esmeralda, and Diane were three SPARC participants who brought different experiences, intentions, and *effectivity sets*, or abilities (Barab & Roth, 2006), to SPARC. Esmeralda was a confident and optimistic learner with a very specific set of intentions related to her future plans, and this intentionality guided her interactions in our class. For Luke, engagement with SPARC was transformative; he started the semester with intentions to interact, but it was only through initial frustration and experience that his effectivities to act emerged. Finally, Diane started the semester very inwardly focused, and ended the semester the same way. Her anxieties over discussing in front of others remained a

constraint on the problem space for her until the end of the study. Yet, regardless of the range of SPARC experiences represented across these three cases, several *petite generalizations* (Stake, 1995) can be made. It is important to note that these findings may not generalize beyond this comparative case study.

1. Regardless of differences in experience, confidence, and perception, overall SPARC performance increased over the 11 weeks.

This petite generalization can most confidently be made in the three rubric areas where all three participants achieved and maintained Level 4 performance: *Volume & Clarity*, *Participation*, and *Listening*. This finding suggests that with increased engagement in SPARC, these participants learned to perceive the affordances of speaking loudly, responding to others, and contributing to the discussion to increase the knowing of the group.

2. Perceiving and acting with intentionality both inside and outside the fishbowl contributed to reciprocity between and across discussion groups.

When the note sheets were intentionally used, all three participants demonstrated high levels of performance in the area of *Real-time Discussion Notes*. Esmeralda and Luke engaged with this process consistently, while Diane only used the real-time note sheet for a portion of the discussions. In the discussions where she did act with intentionality around real-time discussion interaction, her performance went up over the times she reported not having engaged in this process.

3. Experience over *time* may be necessary for the emergence of reciprocity between and across groups in SPARC.

In several rubric categories, week 5 was a “magic number”. Possible explanations include that it might take this long to become familiar with SPARC expectations; or, slightly differently, it may be that it takes that long to feel comfortable within the community.

However, an alternate explanation for this phenomenon is that rubric criteria changed in week 4, which may have afforded increased participant interaction. Further, in week 5, which was the “magic number” for most rubric categories, we kept the new rubric changes but returned to smaller groups, which research has shown affords increased dialogic interaction over larger groups (Fayet al, 2000).

Conclusions and Educational Implications

The findings and petite generalizations in this study may help inform practice in educational settings using group discussion environments, particularly in the application of SPARC within group environments. This study may also help define future research directions for the investigation of *how* best to engage students in discourse that promotes participant dialogic interaction.

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Appendix A

Name: _____ Date: _____

Interpreting the Revised Discussion Rubric

Use this sheet to help guide your interpretation of the “Real-time Discussion Notes” section of the Discussion Rubric. Please seek clarification if you are confused, or if you disagree with the levels as they are defined. These exemplars emerged across several students’ work from Tuesday’s discussion on Motivation. They are not meant to be the only examples found in the notes, nor are they inclusive of all possibilities at each level. The score is holistic, and this is not meant to suggest that every note must be a sparkling gem. This is just meant to guide your discussions towards greater reflective practice.

Level	Exemplars		Rubric Language Addressed by Exemplar
	<i>Observation</i>	<i>Reflection</i>	
4	-goal setting—allowing to set own goals	-I’d like to expand -contract grading	<i>Indicate a relationship between a presented idea and one you intend to discuss, (or extend the conversation)</i>
	Sasha-big school/big family	Sasha is kind of ignored—maybe Sasha should stay in for recess a few times a week with teacher and work on reading skills	
	-good point about choices in your assignments relates to ARC model of relevance and confidence	No one is really mentioning Albert Bandura’s ideas of self regulation, might want to mention them	
	Basketball case from Bartholomew article	I cited this as a good example of the ARCs Model	
	Pitfalls of token economy and behaviorism principles	-Successful motivational models don’t necessarily rely on extrinsic rewards -best motivational models take advantage of satisfiers and valuations choices and controlled by an individual -using praise and feedback instead of token economy	<i>Reference past discussions and content</i>
	Gloria—groups that integrate all levels	Jackie built off of this and made a really good point by using her real life example of special needs kids with normal functioning kids	<i>Related to previous groups’ comments within this discussion</i>
	Gloria brought up family helping with motivation	Agree I brought this up earlier	
	Luke referenced back to our group about rewards and consequences	Getting a good grade for cheating is a reward. This will perpetuate the cheating behavior (*this also relates back to past discussions and content-category above)	

Level	Exemplars		Rubric Language Addressed by Exemplar
	Observation	Reflection	
3	Talked about the teacher incorporating music to the lesson.	I disagree with this the teacher already has so many criteria to meet that they shouldn't have to change their own lesson for one child.	Offering a countering position
	Lisa's comment about keeping kid in at recess	Typically doesn't work because then not being able to read seems like a punishment. Maybe have an older kid help give her practice and give older kid credit, money or community service hours for helping.	
	Peer help with Sasha	She has problems with her peers, they make fun of her	
	Orchestrating Intelligence- everyone can motivate one another if everyone can learn according to their own strengths	What if they don't have any goals? What if he simply cannot be provoked to <u>care</u> ?	Posing a question
	Independence as a motivator?	Interesting take on his situation, would it help though since he's already an "outsider"?	
	Darrin not coming to school	-its true if student doesn't show you can try and out reach to them but when is crossing the line?	
	Use of media technology	Specifically with Derrin and the music interest, possibly podcasts would help him learn.	Relating a personal example or one from the text
	-allowing students to set goals most effective way to start motivation/learning	Agree with them in Bartholomew article	
2	Building confidence for Sasha to increase learning	Important that children are confident when learning	Comments made on both sides of sheet but lack detail and meaningful connection to the discussion
	Discussed ways to motivate Derrin through his love for music	agreement	
	Building confidence is important before integrating	agree	
1	Different intelligences		Very few observations/reflections; disorganized
	Rewards as motivators		
	Resource room		
	<u>Note:</u> These are given as examples, but a level "1" would only be achieved if MOST statements on the sheet matched these—it is okay to have a few sprinkled in here and there, because the discussion moves so rapidly that I understand you can't always finish EVERY thought.		
0	We have no "0" exemplars, I am happy to report ☺		Note sheet is blank, or nearly so, and is void of reflective comments.

