

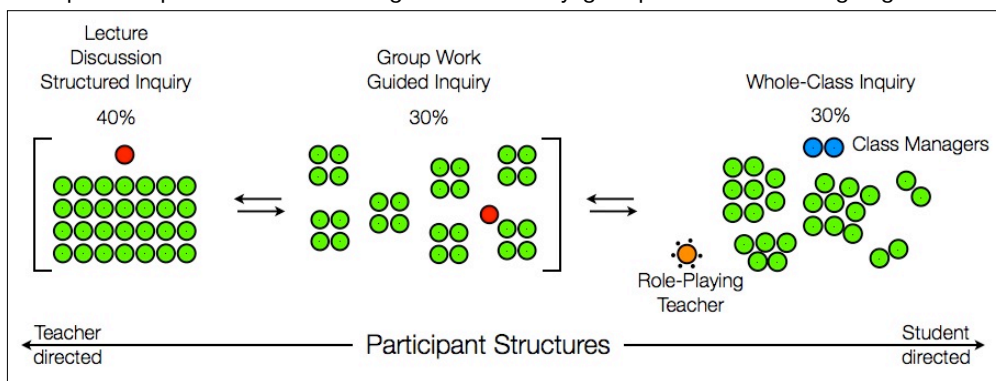
Grappling with Assumptions about Student-Directed Participant Structures

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VEXATION

In the Crossroads 2009 call, social capital is defined to represent “the trust among individuals and their sense of obligation to each other [within a community], the flow of information among the actors within the network, and the interactional norms and expectations that sustain the collective good.” Since 1994, Joan Gallagher-Bolos and I have been working to design, document, and report upon pedagogy that builds social capital among students within a science classroom. In particular, our work has focused on how to transform the teacher-directed participant structure (see Phillips, 1972) found in the typical high school classroom (Smith, 2002) to one that is more student-directed, like that espoused in the National Science Education Standards (NRC, 1996). Over the years, we have found that dramatic changes in participant structures can be effectively brought about through pedagogy that we call “whole-class inquiry” (WCI). Briefly, the WCI pedagogy involves three key components. First, from the beginning, the teacher envisions an end-of-the-year goal of creating a classroom community that is capable of and willing to assume full responsibility for *inquiring* together as a *whole class* to efficiently and effectively solve a teacher-posed problem. In such a community, under the guidance of two students who act as class managers, the class makes decisions about what to do, who does what, and how it gets done. Also, by assuming another identity through role-play (e.g., lab assistant), the teacher provides her students with the autonomy and agency necessary to take charge. Second, the teacher engages her students in multiple and periodic WCI challenges so that they gain practice in working together as a collective and, in turn, develop their collaborative skills. These WCI challenges take up about 30% of the curriculum and are embedded among other, more teacher-directed activities. Third, after each WCI challenge, the teacher provides her students with feedback and expects them to apply it towards improving their performance during the next WCI challenge.



In 2004, we published an anecdotal book (Gallagher-Bolos & Smithenry, 2004) about the WCI pedagogy and began presenting our ideas at NSTA conferences. For the most part, teachers were excited about the pedagogy, but remained skeptical about whether they would be able to enact it. They repeatedly told us that it was difficult to imagine what they should be doing during WCI and how it would play out on a minute-by-minute basis. They requested videos of WCI in action. To address this reasonable request (see McDonald, Crossroads 2008), we carried out a research study to (a) develop several video cases of Joan’s enactment of WCI and (b) assess the impact of the WCI curriculum on student learning. The main product of this study has been the publication of a book (Smithenry & Gallagher-Bolos, 2009) that contains four video cases. These videos reveal how Joan’s students engage in several WCIs over the course of a school year and grow into the student-directed, self-sufficient classroom community described above.

So with that tidy summary of fifteen years of work, everything appears to fit into place and we all live happily ever after. Teachers enact student-directed participant structures; students obtain a set of collaborative skills that will be useful in future careers; teacher educators utilize the WCI video cases in their methods courses; and education researchers use the WCI pedagogy to inform future research. Of course, my vexation could be about the ensuing gap that will undoubtedly occur between reality and the aforementioned fantasy. However, for now, I choose to ignore this gap and limit my vexation to the discomfort that I experience when asked a certain subset of questions from those who have viewed *snippets* of the WCI video cases (go to <http://gallery.me.com/dsmithenry#100123> to preview a three-minute clip) at AERA, ASTE, NARST, and NSTA conferences:

- Wouldn’t it be simpler and better to just have the teacher in charge?
- If it’s important for the students to take charge, shouldn’t every student get a chance to be class manager?
- If every student doesn’t get this chance, won’t just the popular students become class managers?
- If students assume different roles when completing a WCI, won’t some end up doing more work than others?
- Won’t some students end up with different levels of understanding if they don’t all do the same thing?

My discomfort does not stem from being unable to answer the above questions. On the contrary, upon hearing them, I patiently offer answers that are rooted in my experiences of enacting the WCI pedagogy as a teacher and studying it as an education researcher. What vexes me about these questions is the set of assumptions upon which they are based. Are the individuals who ask these questions assuming pedagogies that produce teacher-directed participant structures are the gold standard to which other pedagogies must compare? Do they think that that student-directed participant structures are ripe with inequity? Do they imagine that students and teachers are incapable of building a classroom with strong social capital?

VENTURE

My venture is to conduct a research project that grapples with the assumptions that underlie the bulleted questions listed above. Through this project, I expect to better understand why these types of questions are being asked and what opportunities might arise from analyzing them. In particular, I want to better characterize the nature of the assumptions that various stakeholders (students, parents, teachers, politicians, education researchers, and teacher educators) in the science education community hold about student-directed participant structures. Yet before seeking advice on how to conceptualize, design, and conduct such a project (which will be the driving purpose of the incubator session), I want to further detail my initial sense of these assumptions. Below I present my conceptualization of two specific assumptions in the form of opposing dialogues. In each dialogue, I take on the role of the Vexer (who asked the bulleted questions) and delineate the assumptions that I suppose are in her mind. Then, as myself, I respond to the Vexer's assumption. I expect these dialogues to serve as a starting point for the discussion that occurs in the incubator session.

Teacher-Directed Participant Structures Are the Gold Standard

Vexer: Teacher-directed participant structures represent the gold standard against which we should compare everything else. While the current reform movement is pushing to reduce the amount of time that students engage in them, I think that they have stood the test of time. Since teachers, students, parents, and board members are familiar with these types of structures, we should be cautious about moving toward student-directed participant structures that are not tried-and-true.

Smithenry: We have all had lengthy apprenticeships in teacher-directed participant structures and thus find some degree of comfort when we experience and observe them. We know how teachers and students are to act in them. We understand the roles. Yet this familiarity and comfort do not make teacher-directed participant structures the gold standard for comparing other participant structures. They are simply a starting point; a place that we know well.

Student-Directed Participant Structures Breed Inequity in Participation, Understanding, and Status

Vexer: Student-directed participant structures lead to classroom inequities in regards to levels of student participation, understanding, and status. These inequities are inherent in participant structures where students assume different roles and do not complete the same tasks. It is unrealistic to think that students are equipped to make decisions about what to do, who does what, and how it gets done. When given the chance, students will unevenly distribute work, allow only those students with high status to participate and understand. It is much better for the teacher to be in charge so that she can ensure equity in the classroom. In lectures and whole-class discussions, the teacher can bring about equity by asking an equal number of questions of all students. In cooperative group work, teachers can ensure equity by rotating students through roles. There is no place in the classroom for hierarchies among students. To ensure equity in the classroom, either (a) all students should get the chance to assume every role that exists in a certain participant structure or (b) all students should participate in a structure where there is only one role.

Smithenry: My experience with the WCI pedagogy suggests that it is possible to create student-centered participant structures where all students participate (in some way) and understand (at some level). In addition, with strong teacher feedback and support, the students can share the responsibility for ensuring that everyone participates and understands. When enacting the WCI pedagogy, the participant structure does not devolve into a popularity contest or a contest to get out of doing work. Instead, students are able to create an environment where they care about and depend upon one another to solve the teacher-posed problem. The class acts in ways similar to a football team (the goal is to win the game, members assume differing roles, and the coach provides feedback during and after the game) or an academic scientific research group (the goal is to solve a particular problem and publish, members assume differing roles to solve the problem, and the research advisor provides periodic feedback). Yes, students do assume different roles in a student-directed participant structure—in doing so, they contribute to and work toward a common purpose in a setting that has strong social capital.

Conducting Research to Better Characterize Assumptions about Student-Directed Participant Structures

As mentioned earlier, I am seeking advice on how to conduct research into the assumptions held about student-directed participant structures. In the spirit of WCI, I turn this "quest for advice" into a problem that my colleagues will collaboratively solve during the incubator session. To provide structure, I propose that the group select two managers to organize its work and solve the problem by completing the three tasks listed below.

1. Using a Likert scale (Disagree, Neutral, Agree), blindly poll each group member's alignment with the two positions posed by the Vexer and the two by Smithenry (see above). Summarize the results of this poll and discuss them as a group.
2. Utilize the discussion about the poll's results as a backdrop for conceptualizing and designing a strategy that might be effectively used to answer the following research question: What assumptions do science education stakeholders hold about student-directed participant structures? The proposed research strategy should include a theoretical framework, suggestions for methodology, and a list of recommended literature to consult.
3. Give a brief summary of the group's solution to Smithenry near the session's end.