

Activity 4.5: Coaching Inquiry Brief Development

Providing feedback to another teacher researcher is an essential part of the inquiry process. The probing that can occur by having a critical friend who is capable of pushing your thinking is a luxury that is typically celebrated by accomplished teacher researchers. For teacher candidates, this critical friend might be their instructor or mentor teacher, or even peers who are also learning to teach through inquiry. For practicing teachers, this might be another teacher, an administrator, a university partner, a parent, or perhaps even a student. For this activity, review an inquiry brief created for an introductory course on teacher research by mathematics teacher Daniella Suárez and the “bubble comments” provided by Daniella’s faculty instructor, Gage Jeter. Answer the following questions:

1. What is the nature of the comments that Gage is making?
2. What types of questions is Gage asking?
3. Do the comments reflect a coaching or an evaluation approach to feedback? Explain your answer.
4. What other questions might you have asked Daniella?
5. What important lessons have you learned about providing feedback to others on their plans for inquiry by reviewing this interaction between Daniella and her inquiry coach, Gage?

Inquiry Brief

Purpose:

The purpose of this inquiry is to explore how to teach mathematics through a social justice lens and how to measure the impact of this approach on students. Gustein (2003) explains that mathematics can be used to understand power relations, resource inequities, and disparate opportunities within different groups of people. He insists that math can be used to explore phenomena in students' lives as well as our broader society. Lucey and Tanase (2012) cite that in order for the conversation around math and social justice to begin, students must be treated with basic dignity so that they can engage in inquiry processes where they analyze and develop solutions to the problems they have been presented. They also cite "democratic mathematics" and "critical mathematics" as ways to address social justice in the classroom. While the authors define these briefly, these are issues I think I may want to explore in more detail, as they both center around responsive and cross-curricular teaching.

Teachers must pose questions for students to wrestle with issues of social justice in the world surrounding us. Teaching with a social justice lens allows for students to understand their own cultural and social identities by validating the language and culture that they contribute to our larger society (Gustein, 2003). Mamolo and Pinto (2015) argue that one must not be "value neutral" when it comes to teaching math, simply to avoid controversy, but to take a stance to extend possibilities for student development, connecting students to view mathematics as a way to make sense of the world around us. Lastly, McGee and Hostetler (2014) confirm that low-income, inner city and rural students have fewer opportunities to experience success in mathematics, which confirms my desire to work with the population of students that I work with. They too, like Manolo and Pinto (2015) say that teaching math for social justice includes "increased participation in mathematics courses, leading to greater access to higher education and the workforce" (p. 213).

My wondering emerges because when teaching the higher level math, the calculus and the trigonometry, I am often at a loss as to how to tie these in to liberatory practice and critical pedagogy. A lot of the examples that we get on incorporating social justice into the classroom come from a social studies or ELA lens, or are meant for younger kids. I want my students to be able to see math as a means to solve problems that help others. I know that many of my students will possibly never use this math again, so how can I teach math in a way that connects the math concepts students are learning to the ideas of social justice? Do students feel empowered by the math that they are learning to work towards social justice?

Research Question:

How can I teach my statistics units in a way that fosters social justice within my students?

Sub-questions:

What does teaching with a social justice lens look like?

What do students think that learning via social justice looks like?

How am I considering student identities in my mathematics teaching?

How are students articulating their own identities within the context of learning mathematics?

How are students' mindsets about statistics shifting over time?

Can sociopolitical consciousness be measured and if so, who should do the measuring?

Context:

This study will take place within a Title 1 High School, where 42% of the student population identifies as Black, 32% identify as Latino, and 18% of students identify as white. The research will take place in an International Baccalaureate Math class of 16 students who are all Juniors in the first year of the Diploma Programme. I see this group of students every day for an hour and thirty minutes. Some students are in the Standard Level track and others are in the Higher Level track. Some students have not passed the Algebra 1 EOC (state assessment) while others have received perfect scores on their Reading FSA (state assessment). Seven of the students identify as female and the other 9 students identify as male. Twelve of the 16 students identify as students of color.

Methods:

As mentioned, I will work with my first-year IB Math class. Students already have a structure in place called “TOK [Theory of Knowledge] Friday” where we explore math as it relates to other areas of discipline. I keep track of their participation and debrief with them individually the following week. I will be sure to video TOK Friday and to keep track of anecdotal notes from individual student conferences.

Additionally, students will be charged with working on several inquiry questions that apply the statistics that they are learning to issues of social justice and inequities surrounding them. Students will use what they learned about normal distributions to explore differences in Human Development Statistics, such as infant mortality rates, and access to resources, such as health care, in the Americas. Students will examine outliers and ideally pose questions as to what they are seeing, then begin researching to explain the data that they’re seeing, pose additional questions, and possible solutions. I will examine student work samples with a rubric borrowed from Teach for America that provides some language surrounding sociopolitical consciousness and identity, diversity, justice, and action.

Students will also take pre- and post-surveys via a Google Form to determine their level of knowledge on the issues we are tackling in class, their level of thinking as to what they can do about it, and will be asked to self-report any changes in mathematical mindsets (Gustein, 2003).

Data Collection:

Documents/Artifacts/Student Work

Notes from Student Conferences

Video

Student Surveys (Appendix 1)

Reflective journal on the adaptations I am incorporating into my practice

Calendar:

DATE	ACTIVITIES/DATA COLLECTION	DATA ANALYSIS
October 22–26	Draft survey, distribute pre-surveys in class (Appendix 1), determine TOK Friday topic, conduct a TOK Friday	Analyze video for themes that emerge, student participation, and language to address social issues brought up on TOK Friday; analyze pre-surveys for themes and common language
October 29–November 2	Conduct individual debriefs and take anecdotal notes, incorporate conversation feedback AND data from video and survey analysis into inquiry question introduction and next TOK Friday, write/ explore possible adaptations in reflective journal and thoughts on sociopolitical consciousness	Analyze conference notes for trends and themes
November 5–9	Introduce inquiry questions (Appendix 2), students work on their research; conduct a TOK Friday video, and take anecdotal notes	Analyze video for themes that emerge, student participation, and language to address social issues brought up on TOK Friday
November 12–16	Students work on inquiry question, conduct individual debriefs, adapt individual conversations based on TOK Friday video notes, decide if any adaptations need to happen and journal these as well as thoughts on sociopolitical consciousness	Analyze conference notes for trends and themes
November 19–23	Examine student responses to inquiry questions, score against Teach for America rubric (Appendix 3); journal thoughts on sociopolitical consciousness	Analyze projects for the language students use to report their results, similar to how Gustin (2003) reports having done in his work
November 26–30	Conduct post survey (Appendix 4), conduct debriefs with students based on survey and TFA rubric results, take anecdotal notes	Analyze data for shifts in attitudes with students, analyze notes about debriefs with students and compare to earlier weeks. Where were there changes? Where were there no changes?

References

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- Mamolo, A., & Pinto, L. E. (2015). Risks worth taking? Social risks and the mathematics teacher. *The Mathematics Enthusiast*, 12(1), 85–94.
- Mcgee, E. O., & Hostetler, A. L. (2014). Historicizing mathematics and mathematizing social studies for social justice: A call for integration. *Equity & Excellence in Education*, 47(2), 208–229.