

Mathematics and Social Justice-Creating Awareness of Social Issues for Pre-service Teachers

Carla Gerberry, PhD (Mathematics and Computer Science)
Mentor: Laney Bender-Slack, EdD (Education)

Goals of the project:

For this project, I had two goals. The first was to infuse my class with the Ignatian pedagogy. The second was to use this pedagogy in order to raise awareness, in my pre-service teachers, about the issues facing those who live in economically poor areas.

The Ignatian heritage highlights reflection, discernment and solidarity and kinship. These are key elements of teaching for social justice. At Xavier, we strive to help students think about others in new ways. As future teachers, it is important for my students to have a heightened awareness of issues they will face besides just teaching their content. Their students will come to them with an outside life and that will influence who they are in class. For those who choose to teach in a high-needs school district, this will be even more important. Issues of homelessness and home life will be more prevalent. Being aware of this will enable my students to be more sensitive and understanding of their student's lives and allows them to stand in solidarity with them.

The project:

The problem

The course in which this project was implemented was a mathematics problem solving content course for middle school teachers. Generally, the course covered a wide range of topics such as logic, probability, geometry and algebra. This allowed a lot of flexibility when conceptualizing an activity that could raise awareness of social issues while still being mathematically rich. I wanted this project to focus on the interweaving of Ignatian pedagogy and the content of the course. More specifically, I wanted my students to critically examine other areas of the country besides where they were from.

The project was based on a problem from "Rethinking Mathematics: Teaching Social Justice by Numbers" edited by Eric Gutstein and Bob Peterson. Specifically, it was a modification of "The Geometry of Inequality" by Andrew Brantlinger. This problem requires students to examine certain aspects of the South Central Los Angeles area. For example, the number of movie theaters, community centers and liquor stores within a given area. The purpose of this project was to raise awareness about the disparities in different regions of the country.

The modification

For this project, students were divided in to groups and given different cities: South Central Los Angeles, Chicago, New York City, and Cincinnati. The point of this

derivation from the original was to have a whole class discussion about the differences in large cities across the US. Students gave presentations at the end of the semester pertaining to their findings, thoughts, connections and mathematics.

Assignment given to students:

Students were given the following assignment for the project.

For your final presentation and write-up, please make sure to include the following:

1. A print off of the map/area you will be covering.
2. A summary of what the math is for the project (e.g. proportions and how you will use them).
3. A paragraph on the Ignatian themes we have covered in class and how these will tie in to your project.
4. A discussion of how these themes may or may not influence your teaching or speak to you as a teacher/human/member of society.

Bi-weekly discussions and presentations:

From the dialogues in class and student's final presentations, it was obvious that the students had learned from this assignment and had an increased awareness of the Ignatian pedagogy. In class discussions brought rich ideas such as the meaning of diversity and how this was different in different areas. Every other week, students were assigned an Ignatian theme of the week. The themes we discussed were discernment, solidarity, kinship service rooted in justice and love, and reflection. For each theme, students came to class and had to provide evidence of their reflection on the topic. Students discussed how they could scaffold ideas of solidarity in their classroom extensively.

Student Reflections:

"As influential and impactful as each Ignatian quality is, I feel as though the two that I would teach/incorporate the most are solidarity and kinship. Students, people for that matter, cannot go through life without having relationships and interaction with others. It is essential that children grow up learning what a solid relationship is and how to build one. Treating others as brothers and sisters and working together is something that every person needs to learn how to do and is something that they will have to do; I think that it is the most beneficial of the Ignatian qualities to teach students."

"A couple of the values that I feel are key to understand when teaching a classroom are solidarity and kinship. Being able to realize that there are other people in this world that are not as fortunate as you are is important, because it gives you the opportunity to see where others are coming from, and what perspective they hold. As a teacher, it means that you must be there for your students, and provide help for them even though it may not be directly related to academics. Sometimes a student just needs someone to understand them, listen to them, and be there. Moreover, if a teacher was to explain these values to their students, then the students can be more aware of how they treat each other

in the classroom as well. This would create an atmosphere of love, and unity because the students would put themselves into shoes, and become more willing to stick together as a class.”

“Making these kinds of comparisons and observations are great ways to make math relevant to the real world, and possible get down to the root issue of some of the social injustices of this world.”

“I think that many of these lessons I have learned about Ignatian pedagogy throughout the semester will greatly influence my teaching. I hope to implement what I have learned during my Jesuit education here at Xavier into my classroom someday, especially in relation to the values of solidarity, kinship, and service. I would love for my students to receive an education that is grounded in values much more important than the Pythagorean theorem or the Gettysburg Address. Teaching students how to relate to others and make decisions with others in mind, especially people who are most vulnerable in our society, will be crucial in developing mindful citizens that are conscious of the need to be an active advocate for social justice.”

Self-reflection:

Reading through my student’s reflections has shown me how they benefited from our class discussions and project. Anecdotally, at the end of our last class session, my students told me that they were nervous about the project because it was so open-ended. In the end, they found it fascinating to learn about different communities, some of which they have been to and some not. Looking at census data alone shed light on topics and issues of fairness and diversity. We had a great discussion about how diversity can mean a lot of things and that when considering what a community looks like, you must consider multiple aspects such as access to positive and negative attributes of the given community.

For example, my students found it very interesting that the amount of liquor stores in Cincinnati nearly matched the number of grocery stores. This created a discussion about the consequences of having this happen in a population and how it may hinder real growth in a community.

For me, this project has increased my interest in the Ignatian pedagogy and I am anxious to incorporate more aspects into my future courses. This semester has given me ideas about what to do with my Number Sense and Geometry courses. In the future, I hope to have parallel assignments that will make my students think about how real life can and will influence their students participation and learning in school. With an Ignatian lens, they will have tools to help all of their students in a rich and meaningful way.