



JOURNAL OF CRITICAL THOUGHT AND PRAXIS

IOWA STATE UNIVERSITY DIGITAL PRESS & SCHOOL OF EDUCATION

Volume 6

Issue 1 *Everyday Practices of Social Justice*

Article 5

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Inequalities in Math: Using the Algebra Classroom as a Site for Social Justice

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This article examines what can happen when issues of Social Justice and Equity are explored in a 7th grade Algebra classroom. While the project was met with resistance along the way and it was clear that there was not a great deal of support from other teachers or administration, my classroom became a place of rich dialogue, critical inquiry and vibrant discussion. Work like this is indispensable to providing students with a framework for social justice and equity in their own lives.

Keywords: Social Justice in the Classroom | Math | Challenges in the Classroom

Like most new teachers, I was ready to make change in the lives of children and greater society as a whole when I entered the teaching profession over a decade ago. And again, like most new teachers, after one year in the classroom it was clear to me that the way in which I defined education was not aligned with the way in which the public school system and the government was telling me that education was to be approached and defined. Rather than rich critical dialogue and “teachable moments,” teaching was instead about following the teacher’s manual and working feverishly on “test prep” with the students. I found this concept of education to be exhausting, demoralizing and the major issue that would work to push me out of education. However, as I muddled my way through my next few years of teaching, I began to become more confident in my knowledge and skills as an educator, as a leader, and in my ability to deviate from the incessant focus on standardized tests and pre-packaged programs. Finally, after about 8 years in the field, it started to become clear that it was time to begin integrating two major interests – teaching Math and addressing issues of social justice.

The purpose of this article is to discuss how my seventh grade Pre-Algebra class was transformed to not only integrate social justice issues related to inequality, but also to be aligned with the Common Core State Standards. This article will explain the project that I initiated in my classroom[†]; the ways in which it addressed both Common Core State Standards as well as issues of social justice and diversity; the challenges that I faced in implementing this type of work; the difficulties that my students encountered during the one-week project; and the results of bringing such a project into the lives of my students, as well as my peers.

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[†] A copy of the author’s classroom materials can be found online accompanying this issue.

Social Justice Education

I argue that social justice education is desperately needed in all schools and in all communities. Shields (2013) differentiated a socially-just education from a social justice education when she explained that a socially-just education is concerned about such things as the learning environment, organizational structures, and equitable learning outcomes, while a social justice education goes further to include teaching students about injustice in the world and the need to take a stance against injustice. In my twelve years of experience as an educator, I can honestly state that I have yet to sit-in on a meeting where somebody brought up issues or concerns of equity in the classroom, or how to address what appear to be very obvious issues of social injustice with students or even with each other. To say that this is disheartening would be an understatement, especially when one considers where I worked when I implemented this work. My school was located on the side of town that most would consider the “bad side”. Many of the students in my building were occasionally homeless; often on free or reduced lunch; performing below grade level on standardized examinations and desperately in need of an education that would open their eyes to the world around them and their own circumstances. These are the children whom Henry Giroux (2009) describes in *Youth in a Suspect Society*. They are seen as threats and dangers to society and are subjected to the prison industrial complex. The students in my building at the time (as in many school buildings around the country) were also typically seen as commodities, consumers and essentially disposable. Students who are viewed in this way are often not treated with respect, nor are they viewed as having any cultural capital worthy of being recognized in the classroom. Children like those that I am describing are actually being harmed in school and it is imperative that educators engage a critical social justice understanding and address these issues in their classrooms and schools.

While that statement may seem strong – that students are being done harm in school – I am not engaging in hyperbole. The work of social justice educators, the work that I and a small but growing number of Math educators are passionate about, is not as pervasive in K-12 buildings as it needs to be. Because of this, our students are not only denied critically-conscious education, but also the chances to be treated in humanizing ways in schools that deem them to be disposable and push them aside when it is clear that they cannot or will not contribute to the school atmosphere in the way that the dominant leadership deems appropriate or valuable. This is where my passion of engaging in social justice work arose from – I finally grew tired of the dialogue of disposability surrounding not only my own students, but all of the students in my building. I was more than tired of being told that it was just “too hard” to implement a humanizing, critical pedagogy in the classroom.

Let me be clear here: I am very aware of the ways in which my own positionality allows me to not only do work like this, but to reflect on it as well. I am an educated, White, middle-class teacher who may have struggled growing up in a working-class household, but who neither experienced the pain and hunger of poverty and homelessness, nor the violence of certain neighborhoods or the feeling of being viewed as disposable. I know that it is a privilege to have the time and the ability to simply sit and reflect on these issues. But I also know that I am committed to doing this work – not so I can feel like the “White savior teacher” whom we so often see in feel-good movies, but rather because I genuinely feel that we do not give children enough credit for what they are capable of thinking and

doing. I feel strongly that many adults – not just educators – often don't allow students the chance to have their voices heard or exercise any kind of agency.

My involvement with these students and my own passion for social justice and equity is what drew me to the idea of creating a project that would help students dig beneath the surface of the many unquestioned notions in our world. With this in mind, the starting point, in my mind, would be the ways in which I view and define social justice. Additionally, I wanted to try and get a feel for the ways in which my students read the world and what kind of feelings they had about certain injustices in both their community, as well as society as a whole. After nearly three years of studying in a doctoral program that had a rich focus on social justice and equity in education, I needed to integrate numerous concepts surrounding social justice and figure out how to translate them to my practice. I wanted my students to come away with at least an introduction to the approach to social justice that editors Maurianne Adams, Warren J. Blumenfeld, et.al. (2010) described when they wrote,

Our approach to social difference, social identity, social location, and social inequity calls for appreciation of the multiple, complex, fluid, and cross-cutting aspects of social identities, and awareness that the inequities experienced by any and all disadvantaged groups warrant attention and remedy. (p. xxvi)

I wanted my students to learn ideas of difference regarding race, class, ability and economic status with a platform for them to grapple with these ideas of difference. Again, I hoped that my role in this work would be as a facilitator, not as the all-knowing teacher who set out to fill my students' heads with ideas. I wanted the students to be central to the project and lead in the way through discussions.

I also wanted to take my students outside of their comfort zone by allowing space for dialogue around topics rarely addressed in the classroom. The overarching purpose of the project was to bring to their attention social injustices that are plaguing our world with the thought that students are never too young to start educating themselves, each other and their families about these ideas. While it is not possible to arrive at and stay set on one standard definition of social justice, it is possible to work to educate children around such thinkers as Jean Anyon (2005), Paulo Freire (1970) and Henry Giroux (2009). These scholars play an integral role in helping to bring about education that has transformative possibilities. As Freire so eloquently stated in *Pedagogy of the Oppressed*,

Education either functions as an instrument which is used to facilitate integration of the younger generation into the logic of the present system and bring about conformity or it becomes the practice of freedom, the means by which men and women deal critically and creatively with reality and discover how to participate in the transformation of their world. (p. 67)

My hope was that, by working through this project with my students and acting as a facilitator in the classroom, I could bring to light some of what Freire offers in terms of how an education that is built for social justice and equity can look. By discussing topics such as poverty, income inequalities, taxation, and education, my students would work to reflect on their current situation, as well as that of the world. In offering my students this

space and starting point, my goal was that their future could gradually become one of praxis – reflecting and then using this reflection to act in a transformative way.

For me, this project was the first step in what I believe a critical education steeped in social justice should include. For my students, I hoped it would be an introduction into issues of social justice and equity that maybe they had not had the chance to explore in a classroom setting. By linking these issues to mathematical concepts, I was hoping they would see the link between their own lives, the larger world, and the classroom they spend so much time in every day. The topics that were discussed in class through a mathematical lens served as a springboard to bring to light the structural issues that society faces and that Jean Anyon (2005) conceptualized in her work *Radical Possibilities*. As Anyon explained in this work, hope for future success for urban students (and all students) does not and should not rely on more standardization of everything from testing to teacher preparation to methods used in classrooms. Instead, a social justice education would start from a place of economic reform, federal policies that would level the playing field and acknowledge societal inequities and getting people – especially young people – involved in social movements. By introducing some of these concepts to my students, I planted a seed that can be nourished by these students for years to come, if only given the space, resources and guidance to do so. Eventually, maybe some of my students would become both indignant enough and inspired enough to become involved in a social movement in the future.

Without these critical spaces in the lives of students, youth will find themselves more and more relegated to the outskirts of society, viewed in the way that Giroux (2009) described – as criminals, as threats, as deviants. While I am not naïve or arrogant enough to think that one project could change the ways in which my students view the world, I still wanted to give students voice and agency in the classroom, as a means to stretch their critical thinking skills. I wanted these children to see that there are adults who do respect what they have to say and how they feel about the kinds of controversial topics that most educators and administrators are too ill-at-ease to approach with them. While this may have only been a small starting point, it proved that my views on providing students with a social justice education are not impossible and that the fight must continue. All youth deserve that chance.

Context of My School

As stated above, my school was not one that will neither win awards any time soon for making AYP (Annual Yearly Progress), nor will it be recognized for implementing alternative solutions to different problems that plague students and youth. In fact, our school had the highest suspension rate in our district – a district that houses 11,322 students across 19 different buildings: 27.3% of which are African American, 52.7% of which are Hispanic and 77% of which are low income students. Within my own building of 757 students, 41% of students are African American, 39.2% are Hispanic and 5.2% identify as Multiracial. Additionally, 75.4% are considered to be from low income families. Clearly, these students are coming from the types of neighborhoods and life situations that both Giroux (2009) and Anyon (2005) described and they are either living in or have experienced many of the conditions that we would be studying in the project that I had planned for them.

The junior high school where I taught for 8 of my 11 years of teaching was a place where dissent was not welcomed. It has been made clear in years past that those who dared to voice concern or criticism about the administrative regime found themselves without a job, or at the very least, castigated both publicly and privately and banished to the fringes of our little school society. While many teachers have learned to play politics within the building in order to keep their jobs and some type of integrity, others find that they cannot deal with the disreputable environment and leave before they can make the difference that they had hoped to make. However, there were teachers in my building who had a genuine ethic of care, as Nel Noddings (2012) would say, for the students in our building and who would go out of their way to give their students everything that they possibly could give them. Although these teachers are well meaning, I argue that we are not giving the kids everything that they need by ignoring the need for an education built around social justice. So, while there were teachers in the building that were well-meaning, I often felt very alone in my work.

At the time, though, I was one of the teachers who have learned how to “play the game”. Rochelle Gutierrez (2008) mentioned in her work the needs that Math educators have in order to be effective in their classrooms. I had finally figured out the “creative insubordination” that Gutierrez explains in her work (p. 6); namely, I had figured out that if I toed the line just right and completed my professional duties, I was often left with a great deal of autonomy in the classroom, which was how I was able to create and execute a project like this in the first place. Additionally, I finally felt comfortable enough in my content knowledge, pedagogical knowledge and knowledge of diverse students that I could move beyond those basic needs of a teacher and by “creatively insubordinate” while still challenging my students, working from their own ideas and needs and bringing issues of social justice and equity into the Math classroom.

Even though I was not aware of it when I first set out to do this project, there is a growing number of math teachers, educators and scholars who are working hard to link ideas of social justice and equity with Math. While finding research and resources was not the easiest process, while designing this project I learned about amazing conferences such as the Creating Balance in an Unjust World conference (where Rochelle Gutierrez, mentioned above, has spoken). Additionally, I found phenomenal sites such as www.radicalmath.org, along with books along the lines of *Rethinking Mathematics* (2013). Finding these resources that I was unaware of at the time gave me hope that there are educators out there who see the value in this work and that hopefully, with time, there will be a larger voice for getting more work with a social justice focus into classrooms everywhere.

While I am not proud of the fact that I was not as vocal as I would have a like to be in my school, I also faced the dilemma that many educators face – we want to be critical, be vocal, work to make change – but we also need to keep our jobs. Unfortunately, I worked in a place where this was and still is a real issue. At the same time, however, I recognize there is a desperate need for more comprehensive institutional transformation – not just in this building in particular, but in education as an institution. That is what kept me inspired in the years leading up to this project and in the time after I first implemented this project – I knew that I was finally offering my students a mechanism of understanding and criticality that they had never had before, along with planting the seeds of how they might one day work to challenge power – both at a local level and beyond. This became more

important to me as time went on and as I realized the few opportunities that students have to do this in the classroom.

Inequalities in Math Project

As a Math teacher, I often lamented the difficulty inherent in integrating cultural and societal issues into the curriculum or into our daily schedule. Students are often so afraid of Math or so sure that they cannot “do it” that the bulk of my 80 minutes was spent teaching math and reassuring students and letting kids work and practice and struggle through the content. However, I knew that I could do more as a teacher and that the students were capable of thinking through deep ideas. With that in mind, that is how this project came into being. This venture grew out of my concern over a lack of critical dialogue in the classroom, as well as the need to infuse topics of social justice into the lives of my students. As an educator, I have always had a passion for improving equity in schools and accomplishing this in a humanizing way. This passion was ignited further when I began my doctoral studies and realized more fully the glaring inequalities in communities and classrooms across the globe. Because of this, I have made it my goal as an educator to make critical dialogue and collaboration a part of my daily routine. And so, in my second year of doctoral work, I read *Beyond Heroes and Holidays: A Practical Guide to K-12 Anti-Racist, Multicultural Education and Staff Development* (2008) edited by Enid Lee, Deborah Menkart, and Margo-Okazawa-Rey. This edited volume showed me that it is, in fact, possible to bring issues of diversity and social justice into the Math classroom and after scouring the sections by Jan M. Goodman (2008) and Marilyn Frankenstein (2008), I had the “ah-ha” moment that I was waiting for. I knew just what I wanted to do.

Unfortunately, it was not that easy. Because I wanted to follow the correct chain of command, as well as get my administrators excited about this undertaking, I first went to the principal to explain the project, my rationale behind it and get his permission. To my surprise, he told me that I could not do it. He explained his reasons in a vague way, alluding to something along the lines of “that stuff” does not need to be talked about in class. I was exasperated, frustrated, and – most of all – sad that my students were not going to get the opportunity to engage in this work that I had grown exceedingly excited about. Not only was I excited about the prospect of this project, but I was also felt strongly that all students, but especially children of color and children in urban areas need the chance to grapple with issues that are difficult, but meaningful. Needless to say, I did not give up.

The following year, I took a different approach. Instead of asking for permission, I stated clearly that I was initiating a project in my classroom, that we may be touching on some difficult issues and that – should the administrators get any phone calls from parents – they should direct them to me. Additionally, I made it a point to draw out a project description and plan, clearly explicating the Common Core State Standards that I would be addressing in the course of the project: 7.RP.A 2 and 7.RP. A3. Once I had my standards, my ideas and my timeline on paper, I was ready to get started. What I really wanted my students to take away from this project were enduring understandings regarding social justice and the inequities that abound in our world. This would just be a starting point for them, but by working through some essential questions and designing the unit in a way that would promote global, large-scale thinking, I hoped that I had a good starting point for doing socially just work with the young people in front of me. It was important to me as

well that the students' comments at the beginning of the project acted as a starting point for exploration and discussions, so that I did not have all of the power in the classroom.

I wanted to give my students a space to question and struggle and have clear, respectful, open dialogue with each other, with me, and even with family at home. Because this school is in an urban area, where the vast majority of our students receive free or reduced lunch, they have a personal understanding of and connection to what it means to live in low-income situations or to see the people around them struggle with their life situations. As many educators will argue, if we want students to take an interest in learning, we have to make the content relevant to their lives. Clearly, these topics and this math work were all relevant ideas and offered chances to engage in authentic learning tasks. Additionally, because there is such an intense focus on improving test scores and trying to make Annual Yearly Progress (AYP), having dialogue about things that matter outside of the mainstream, untested curriculum is not something that my students were often exposed to and I desperately wanted to provide them that opportunity.

Executing the Project

Change would come for an entire week in the fall, when I finally was able to get this project off the ground. It was around this time that we were studying ratios, percent, and proportions, where the Common Core State Standards suggest that students should "Analyze proportional relationships and use them to solve real-world and mathematical problems". This is why I focused on standard 7.RP.A.2, which states that students should, "Recognize and represent proportional relationships between quantities" and standard 7.RP.A.3, which states that students should, "Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error." These standards were a perfect fit as the Inequalities in Math Project pushed my students to apply their mathematical knowledge to critically analyze societal problems including poverty and unemployment levels as related to race; taxation levels and where our tax money is allotted to and even minimum wage. Students were free to explore on their own, using me for guidance and clarification. We used a few key skills to explore deep problems; so rather than learning 5 new skills in a 5-day week, we focused on two standards and navigated our way through some tough societal problems with those standards and practice. During our 80-minute class period for 5 days, students were encouraged to talk, disagree and debate in a respectful way, while sharing their calculations and working collaboratively. The focus was on both their mathematical skills as well as challenging their currently held beliefs about inequality.

When I introduced the project on a Monday, I was excited and a bit afraid. Quite honestly, I was worried about how the project would be received by parents; if administration would come observe and shut it down; how the kids would react to all of it. But mostly, I was scared that all of these big ideas would not matter to the kids. What if something that I felt so passionate about and that I knew my students should be exploring ended up holding no meaning for them? I would be crushed. But I needed to take a step back and realize that my students needed to be free to express their feelings openly during the class, even if they didn't share my feelings. If I was unable to do that, then the power that I held as the students' teacher and evaluator would be abused and the ideas that I

wanted us to explore critically would be lost in an attempt to please me and earn a good grade. As Gutstein (2006) explains in this work, there are tensions involved in the classroom when students want to please their teacher and give the ‘right’ answers. While I was unable to eradicate those feelings completely (can any teacher?), I tried my best to give the students the floor and not allow them to feel as though there was a “wrong” answer when talking about opinion-related questions.

As an educator and as an advocate for social justice and education, this project represented much more to me than just a week’s worth of work for my kids to be busy with. It meant getting the chance to open the eyes of youth to something so powerful in their lives and it meant learning from my students as they shared their thoughts with the rest of the class. To take a passion like this and make it public carries with it an inherent risk of vulnerability, hence my fear and realization that I could end up feeling crushed if this did not go as planned. But greater than my fear was my excitement. I was excited to finally do something with my students that held meaning far beyond how they would perform on the next round of standardized exams. I was excited to listen to my students and to treat them as the critical people that I knew that they were capable of being. And so, on that Monday, we set out on a new adventure together.

I passed out the packet of information that I had spent a great deal of time creating. Luckily, the work of Jonathan Osler acted as a great guide, in addition to other work that I adapted or created new. As I was writing the assignment, I struggled with how much to include, how far to go, how to make the Math both challenging and applicable and still keep the greater meaning of what we were trying to study at the forefront. I consulted a number of sources and basically went on an expedition trying to find materials that were worthwhile, as well as create my own. (The website radicalmath.org has some interesting ideas and resources.) So on that first day, with my packet having been edited and revised an inordinate number of times, we were ready to go. I started by giving my students about five minutes to skim through the packet and acquire their own first impressions. They were all incredibly quiet at first, but when I opened it up for discussion, a few children expressed that they thought it would be interesting to learn about these ideas and that they knew that these topics were important in their lives. A number of students explicitly expressed an interest in the income disparities between races and genders, as well as an interest in where our tax money goes, as they had been talking about taxation in Social Studies. I then asked my students if anybody was feeling uncomfortable with the content and one child raised her hand. While the child did not specify what she was uncomfortable with, she was offered an alternative assignment, but chose not to accept it.

Poverty

Once the students toyed with the information in the packet for some time, I started walking my students through the assignment, explaining what we would be doing and why. The first part of the packet dealt with poverty. I prefaced the work portion of the page with, “Sadly, far too many people in our country are living in poverty. The effects of living in poverty are far-reaching; poverty often affects one’s life chances and future; their health and nutrition; their education and their overall stress level.” I then directed the students to the Kaiser Family Foundation website that broke down poverty by state, race and ethnicity. It also gave a definition of poverty. Using this information, as well as another website that

provided percentages of our entire U.S. population living in poverty by race and ethnicity, students would have to complete some basic math problems regarding percentages, as well as reflect on their findings and how they felt about them. For this section, as well as every section of the project, students would have our entire 80-minute class period to work.

On that first day, after walking through each section of the project and before getting started, I asked my students for their own definitions of poverty. Students in my morning class offered ideas along the lines of not having enough money for basic needs, struggling financially, and even the concept of being somewhere in the middle. One student explained, “poverty is being in a position where some people have more than them, but some people have less.” I was surprised at some of the definitions, but spent this time just listening. My afternoon class was a more vocal, thoughtful class all year long and their definition differed slightly. Students in this class defined poverty as people who are homeless, people who barely have enough to manage to live and one child brought up the idea of differences between races. After our discussion, one African American female even remarked that she was excited to bring this home and talk to her parents about it. I chose at this point not to comment on the students’ definitions or comments, as I felt that we could work through them more deeply once the kids started working on the project. With that, I sent the kids off to work. They were told from the start that this was a collaborative effort and that they should not be afraid to share their ideas, difficulties, questions and concerns with both each other and with me. Right from the start on that first day, students were engaged, thoughtful and diligent in their work. This was clear from the ways in which I circulated, informally observing their conversations and dialogue as well as checking in with students to see how much they were getting done.

Minimum Wage

The second portion of the packet dealt with minimum wage. I provided students information regarding how minimum wage has changed since 1955 and the students calculated Math problems using percent of change formulas. I also directed the students to a CNN website that provided minimum wage breakdown by state. Using our previous information about states and their poverty levels and this new information about minimum wage in each state, students were asked to look for a correlation between minimum wage and poverty levels by geographical location. Again, students were asked to reflect and share their thoughts on this information and their findings.

During this portion of the work, some students became a little mired in the difficulty of the Math work and did not focus as heavily on the social issues that were being featured. Before the project began, I did not necessarily anticipate this difficulty. Some students struggled with remembering how to find percent of change, so it was difficult to see the issues involved when they could not solve success complete the math computations. With these students, I was sure to take time and care to work with them on the Math in small groups or even one-on-one in order to alleviate some of the frustration and allow them to enjoy the rich dialogue that some of their classmates were having. And the dialogue was booming! I noticed that when a student or students would engage in conversation that was off-topic, their classmates redirected them. I also noticed that – even though the noise level became a bit loud at times – this conversation was indispensable to this project. Students were making the connections between minimum wage workers and poverty, as well as

offering their own commentary on minimum wage and how they felt that it needed to be raised. Through their research and calculations, students were noticing that in areas of the United States where the minimum wage was lower, there were higher levels of poverty; additionally, they were also noticing that many of the people living in poverty were disproportionately represented by those from minority backgrounds, so they started to question the labor and work choices of African America and Latino(a) employees.

Interestingly, when one child voiced his opinion during a whole group discussion that he thinks minimum wage should stay low so that people will be encouraged to go to college (“Why would anyone go to college if they can make just as much money working at McDonalds?”), the entire class engaged in a respectful, critical discussion about his feelings. While they did not necessarily realize that it was hegemony that influenced his opinion, they did offer a counter-narrative to address his comments. Rather than belittle his feelings or thoughts (as most of his classmates disagreed with him), there was a genuine sharing of knowledge and experiences and the classroom was full of a richness and electricity that had not been felt in my classroom in a long time. Students articulated what their math problems had shown them and then expounded on that by talking about social issues, such as the need for more homeless shelters if so many people are going to be living in poverty. Some students even became incredulous at the fact that people who were working could still be living in poverty. This idea conflicted with what they thought they knew of the world.

As a teacher, this was a difficult terrain to navigate, as I had to help the students mediate these feelings and talk through their thoughts about the broader world, but I feel as though every single one of us in that room benefitted from this discussion. For me, I felt that I benefitted from that discussion because I was having to grapple, on the spot, with the complexity of the projects and issues that I hadn’t anticipated. While I knew not all students would bring the same feelings to the table, I’m not sure I thought through clearly enough how I would respond to certain statements and where the line was between teaching about justice and equity and “preaching” to a point where a student who I challenged would shut down. But I feel that out of discomfort comes growth and that was good for me to experience. As for the students, they benefitted by having the chance to communicate openly and honestly with each other, while learning how to respect feelings and opinions that did not match their own. I don’t know if the outcome would be the same if these conversations took place in an informal setting, but in the setting of the classroom, all students conducted themselves respectfully, which I felt showed them that there is a way to disagree respectfully.

Inequalities in Income and Taxes

“Inequalities in Income” was the title for the third section of the packet. Students were provided with information regarding wages broken down by gender and race, with information from 1975 to 2010. In table form, students were able to compare and contrast the information in order to find and compare median income levels by race and gender and make comparisons. Again, students were asked to look for correlation and reflect on their findings. This section led directly into the fourth section of the packet, which studied taxes. I gave a brief explanation of what taxes are and then I gave a breakdown of the categories that receive tax dollars (for example, military and defense, health, interest on debt,

education, etc.). Students were asked to use this information to find the percent of total for each category and to do this for both state and local information. As with all of the other sections, students were asked to reflect on their findings and give their thoughts on how they felt about how and where our tax dollars should be spent. Beyond these calculations and reflections, students were also given problems about the tax breaks that big corporations receive and the ways in which their billions of dollars in profit often go untaxed. With this information, students were again asked to make calculations, apply the skills that they were acquiring and share their thoughts. (Worth noting here is that I did not have enough time to compile local data for either Illinois or Chicago; instead, I used information that I found from a remarkable teacher, named Jonathon Osler, who is based in Brooklyn. I found his work online while I was searching for the small, but growing community of math teachers who engage in this type of work.)

As with previous sections of the assignment, this segment was meant to take one class session. While students were working on this section, I noticed a lot of great dialogue between students when they thought I was not listening. Many students were talking about “what they’re called” and about different ethnicities. It seemed as though they were trying to be politically correct, or at least get comfortable discussing these often taboo issues. This was interesting to me, as many of these students had known each other for most of their schooling. If they were not comfortable talking to their friends about issues of race and ethnicity, clearly we have made these topics off-limits and have given our students zero tools with which to navigate these very real, very difficult topics. On the other hand, what did offer some optimism was the ways in which students discussed the disparities in income based on race and gender. Students were genuinely dumbfounded by the fact that race and gender have a bearing on income, even when the same educational status is taken into account. There were students who genuinely very angry about this. Seeing this type of emotion in the classroom reiterated to me that this work really is important and valuable for these students.

The students’ conversations during this time also spoke to the problems that they were encountering while doing the work. Few students had problems with the computations of the work. For those that were struggling mathematically, I often worked with them in small groups or more frequently checked their work. However, this presented a struggle, because then they were absent from the rich dialogue that their peers were having. And these conversations illustrated how the lack of political or global awareness impacted the ways in which students were able to interact with this material. I was naïve to the lack of perspective that some of the students possessed, as well as their struggles with how to identify themselves and others, racially. While I do think the students did a nice job trying to work through the math and the social realities at the same time, I do feel as though I could have offered better preparation or more time to unpack our thoughts during the project. While I wanted a hands-off approach, I could have offered a bit more structure to help guide their work, thoughts, feelings and discussions.

The time we did spend discussing ideas as a whole group brought up interesting ideas regarding the kids’ thoughts on taxes. There was a very heavy pro-military stance, with kids arguing that more money should go towards the military. I cannot help but think that this is due in large part to the neoliberal agenda that has plagued schools for the entire duration of this particular generation of students. Noteworthy though were the reactions that the kids had to the ways in which regular people are taxed versus the ways in which

large corporations are taxed. Discussions ensued over the ways in which people are taxed and why the wealthy and big business both have such a different experience than the rest of us. It was immensely difficult to try and explain why things are set up this way and how politics comes into play with all of this. Again though, the discussion was rich and vibrant and all students in the room were active participants. Even if we did not come away with answers that made sense, at least we were talking about these issues and raising awareness.

Costs of Education

Education was the penultimate section of the project. In this section, students were provided with information from the U.S. Census Bureau that broke down median income based on level of educational attainment. The information given stretched from “some high school” all the way to “professional degree” and was broken down into four sections: Persons over 25 with some earnings; males over 25 with some earnings; females over 25 with some earnings and all persons over 25 who are employed full time. Using this information, students worked to answer a number of questions regarding percent change, median, finding correlation, making comparisons and even calculating student loan debt.

As with the section on income inequality, students found themselves disturbed at how different the levels of income were based on education, but also at how there were clear disparities based on gender. While the information regarding a greater income with greater levels of schooling matched with what students already thought they knew, information surrounding student loans and student debt came as quite a shock to them. For my afternoon class in particular, some students told stories about people they knew with college degrees who did not find a job or other stories that questioned how anyone was ever supposed to “get ahead” when it was clear that not all people could afford to attend college. This made for a good time to share some personal information with my students – I was very honest with them about what my own schooling had cost me, as I came from a family background that was working class, at best. They were incredulous at the debt that I now carry, simply to better myself and pursue something that I love. Some students found the numbers to be insurmountable and later remarked in their work that it was “overwhelming” to consider that type of money.

Still other students started to see the catch-22 here: if you attempt to go to college and buy into the myth of meritocracy, then you take the risk of falling into massive debt that you will spend much of your life repaying; however, if you choose not to attend college, then you risk never being able to secure a job that offers more than minimum wage. This line of thinking got most of the students engaged in great debate, as they discussed the pros and cons to each situation and the idea of trying to figure out what would be best for them in the future. While there is no one correct answer, it was great to hear kids entertain these ideas and think critically about what all of this means for them and their own lives.

Analysis and Reflection

At the end of the project, in the final section, students were asked to reflect on the entire project and experience. Students were asked:

Outside of applying our knowledge of rates, ratios and proportions and outside of studying real life applications of fractions, decimals, and percent, what did you learn in this project? What are your thoughts on what you learned? Moving forward, do you feel like any of this information is important in your life or in the lives of people you know? Why or why not?

In addition to their own thoughts, I also requested that students have a parent or guardian sign off on their work and offer any insight that they wanted to share as well. Looking back, I realize that this question can be viewed as a “loaded question” of sorts, pushing students to give the type of answers that they believe I was looking for as their teacher. However, I will say that I received answers that spoke to a very deep level of understanding and connection (an African American girl who was deeply intrigued by the disparities and who spoke with her dad about the project) while also receiving a few answers who did not necessarily connect with the project or see the value at this point in his life (a White male, who just didn’t seem to enjoy the project.)

While constructing all of these sections was tedious and time consuming and I was wrought with self-doubt, as I was working with my students on each section and talking through all of the ideas and questions that they had, I became increasingly more excited that this project was as valuable and beneficial as I had hoped it would be. And while the reflection section showed that some students gained more from the experience than others, I still feel as though there is value in simple exposure and discussion.

This entire project was collaborative -- from me directing questions back at students, to kids sitting down with me to talk about issues they were experiencing. By the end of the project, students demonstrated not only development in their math skills, but also interest and critical insights about local equity issues as well as societal injustices. In spite of the administrative resistance that I experienced earlier, we worked through the project and students shared some of the conversations that they were having with their parents. It was clear that parental responses to the material ranged from complete denial of social inequalities to celebrations that a teacher was finally talking about this material with students. In the end, the majority of the students showed a deeper understanding of both the math issues as well as the cultural issues that were being studied in this project. I felt as though I had reached my goal of bringing issues of equity, fairness, and social justice into the classroom and I hope and believe that I laid a foundation for my students to grow as fair, equitable, just citizens.

In terms of demonstrating their Math skills, students were evaluated both on the project itself (as a formative grade), as well as on a unit test that followed the project (as a summative grade). I graded their project work for both accuracy in mathematical computations, as well as substance and thought in their reflections that were scattered throughout each section. Students’ tests were graded solely on accuracy of their calculations and mathematical understanding. Students had to find the balance of studying these social issues, along with applying their computational skills correctly. I am happy to say that at least 90% of my students showed an improvement in their math skills in the area of percent, proportions and ratios (based on a pre-assessment) and some even credited the chance to connect math to real life issues as a catalyst for both learning and retaining the skills.

For me though, even more exciting than the math that was learned was the incredible critical thinking skills that were developed, polished and shared. I had students give me their honest feedback on the project, and some parents shared their thoughts as well. While one family explicitly told their daughter that my facts were incorrect and that I was trying to frame politics and White people in a certain light, any other child who discussed this with their parents came back with a story of great family conversation, dialogue and questioning. One African American child who remarked that her parents were happy that I was bringing these issues up in class stated that she and her father spent the entire weekend talking through these ideas together. This particular child and I continued to have great dialogue throughout the remainder of the year, and even into her eighth grade year, whenever the opportunity arose.

Additionally, one of the initiatives in place in my building is to use a program called Word Generation, where students discuss a particular topic in all of their core instructional classes. I found our discussions around these topics to be even richer after this project was complete, as students continually referred back to topics that we had talked about; specifically, students seemed most touched by the income disparities around gender and race, as well as how our tax money is allotted. It was extremely powerful to see these ideas in play all year along and to know that I played a role in introducing students to controversial topics that they were really taking hold of and sticking with.

This project also allowed me time for reflection as an educator. It made me question my own teaching techniques and forced me to think about whether or not I construct and run my classroom around the areas of social justice and equity that I am so passionate about. It also forced me to gain perspective and truly think about the students that come to me and the variety of familiar background and experiences that are present in one classroom. With that in mind, when I did this project the following year with a new group of students, I tried to facilitate group discussions in a stronger way, by allowing students to jot down their thoughts as an exit slip before we shared them. Additionally, I added an additional day to the project, as I found that during the first year I was constantly cutting off valuable discussion because I was worried about time. By the time that I reached my third year of this project, I was quite comfortable regarding the logistics of it, but I had also become so jaded by the culture of my building that I can honestly say I did not do a good enough job of instilling passion and critical thought in my students as I could have. I think this spoke to the need to try to get more teachers on board and share the work with others as a means to feel less alone and more supported in the work.

While the Inequalities in Math Project had a difficult time getting off the ground and was laborious to construct, I feel as though this project helped to transform my classroom into a safe place where ideas surrounding social justice were shared and discussed freely. The week that we spent working through each section was time well spent in the classroom – students were on-task and engaged in an authentic, meaningful assessment. As an educator, I feel strongly that more projects such as this one should be integrated into the classroom, in a thoughtful way that takes the unavoidable State Standards as a starting point and then works to build concepts in that are applicable to an education built for social justice. And as a social justice advocate, I feel even more strongly about a social justice education not being the exception to the rule or the anomaly, but rather the type of education that all students, in all communities are receiving.

Author Notes

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