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## Abstract

In this paper, we—one mathematics teacher educator and one social studies teacher educator—describe a project where we collaborated to model teaching integrated mathematics and social studies for social justice in our methods courses. We encountered varied challenges in our efforts to prepare teacher candidates for social-justice-oriented lessons. These challenges included teacher candidates' perception of authority/credibility of their professors who were foreign females from the “Third World”, teacher candidates' deficit views on minoritized students, and the limited time and resources for teacher collaboration in teacher education. Despite these challenges, we believe this kind of project is necessary to move forward in teacher preparation for social justice education.

## Keywords

mathematics, social studies, integration, social justice, self-study, teacher preparation

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## **Possibilities and Challenges of Teaching Integrated Math and Social Studies for Social Justice: Two Teacher Educators' Collaborative Self-Study**

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**Abstract:** In this paper, we—one mathematics teacher educator and one social studies teacher educator—describe a project where we collaborated to model teaching integrated mathematics and social studies for social justice in our methods courses. Using a self-study approach, we examined our teaching and our students' learning with regards to teaching integrated mathematics and social studies for social justice. We encountered varied challenges in our efforts to prepare teacher candidates for social-justice-oriented lessons. These challenges included teacher candidates' perception of authority/credibility of their professors who were foreign females from the "Third World," teacher candidates' deficit views on minoritized students, and the limited time and resources for teacher collaboration in teacher education. Despite these challenges, we believe this kind of project is necessary to move forward in teacher preparation for social justice education.

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## **Possibilities and Challenges of Teaching Integrated Math and Social Studies for Social Justice: Two Teacher Educators' Collaborative Self-Study**

As elementary education classrooms grow more diverse (Nieto, 2013), teachers need to understand the importance of their political role as well as understand their students and their struggles to achieve and be successful, especially when the students are considered to be a member of a minority group. We believe it is crucial that teachers embrace the responsibility of guiding students to find their voice and walk liberatory paths leading them to not only academic success but also success as citizens of a world that is becoming more and more interconnected. Those especially who will be teachers in urban schools, who will have a tougher position to advocate for themselves and use their professional judgment (Gutierrez, 2013), need to be exposed to ways of teaching that empower them to empower their students. For those reasons, we wanted to expose our teacher candidates to lessons that not only show the connection between mathematics and social studies but also fall under the umbrella of “social justice.”

To reach such a goal, we created and co-taught lessons to our teacher candidates where mathematics and social studies were taught not only to highlight that content but also to start conversations about social justice. We modeled these lessons so that the teacher candidates would have more than just readings to go back to when they taught their own lessons to children in their field experiences. We also asked our teacher candidates to reflect on this experience (both being our students and experiencing our lessons as well as being teachers and teaching their own social justice lessons for mathematics and social studies integration).

Throughout this experiment, we realized that it was not only their experience that was worth examining but also ours. In this paper, we describe and analyze the data collected in

multiple ways to understand teacher candidates' thinking and also to understand our own struggles and learning. We believe not only that others with similar experiences can benefit from this kind of study but also that all teacher educators can use it to rethink the kind of opportunities they make available for teacher candidates to be better prepared to work with others whose cultural background may not be similar to their own. In the following sections, we first describe who we are and how we came up with this project. Then, we discuss the theoretical lenses that framed our self-study. Next, we outline the methodology used in conducting the study and share the findings. We end with the lessons we learned from our self-study, hoping to contribute to teacher education for social justice.

### **Who We Are**

Often, people do not consider mathematics and social justice as areas that “go” together. People say things like, “Mathematics is black or white,” “It is either right or wrong,” and “There are no shades of grey.” Paula, one of the authors of this paper, is a mathematics methods instructor who has a slightly different mind frame when she thinks about mathematics. She sees the power of mathematics as a social justice tool. Just as it is a tool to understand science, it is also a tool to understand inequities and injustices. And it is a powerful tool when it comes time to think of correcting those inequities. The “reading -and writing- the world” (Gutstein, 2003, p. 62) with mathematics” that others like Freire (1970) and talked about—that is the view of mathematics that Paula has.

Maybe it was easy to develop this idea about mathematics because of Paula's cultural background as a Latina. Having not moved to the United States until after she was a mathematics teacher, and with her vast experience teaching the subject, she experienced a slight change of identity once she found herself away from home. Or maybe it was not a “change” per se, but a realization: She was not White, she was not “the norm,” and she was not in control, as she had lost some power. And even more interesting and moving was for

her to see the educational experiences that other Latinos—some born in the United States, some brought here very young—were having. This made her think about ways to better teach mathematics to this particular population (with the added barrier of language) as well as ways in which mathematics could empower these children and their families.

So this caused this Latina mathematics educator to research and work for the teaching of mathematics for social justice and the experiences that Latinos go through while learning mathematics in school. Her views of mathematics and her cultural background determine that every decision she makes in the classroom—as well as every decision any teacher makes while teaching mathematics—is a political decision. Because of that, this author believes it is crucial that teacher candidates see this reality, understand it, and act accordingly. They must be aware of their political power and use it so that all of their students have the same opportunities, instead of naively offering what they believe to be “the same” to all of the students. Furthermore, it is with this mind-set that Paula walks inside the teacher educator classroom, and these ideas led her to start this project along with Sohyun, the other author of this paper.

Born and raised in South Korea, and having lived there until she came to the United States in her late 20s, Sohyun is a social studies teacher educator. For her, social studies is the core of citizenship education, educating the future citizen for democracy. Her goal as a teacher educator is to challenge what most teacher candidates believe about the goal, nature, and ways of teaching social studies. Unfortunately, many teacher candidates hardly bring positive memories of learning social studies as students. Many confess that “Social studies has never been my favorite subject,” “I didn’t understand why we learned the same history over and over,” and “Social studies was always boring; it was mostly about memorizing history facts, which I hardly found of any relevance to me.” Thus, one of her primary goals is to assist candidates to see that social studies is and should be a powerful tool to interpret the

world, the past, and the present, and to lead the world and the future to be more socially just and peaceful. Her goal as a social studies teacher educator is to assist teacher candidates to see the power of social studies in developing historical, sociopolitical, and ethical lenses to understand the past and the present of their own society and the larger world and in developing the civic responsibility and efficacy to stand up for a more just and democratic society.

### **Collaboration Beginnings**

As described above, we, the authors of this paper, believe that changes for social justice begin at the school. For that, teacher education preparation must have the same basic ideas behind it, so that teachers can be prepared when they need to work with diverse populations who need to challenge the status quo in search of equity. We also agree on the need for embedding these ideas into the teacher education curriculum. Because mathematics is seen as a “right or wrong” discipline and social studies is a marginalized subject in the era of the Common Core standards and standardized testing, we came up with an initiative to teach mathematics for social justice, as embedded in social studies. In doing so, we hope teacher candidates, and consequently children, will see mathematics as a tool to understand the world and not just as a set of rules that one needs to memorize and then discard once outside of the classroom. We hope teacher candidates and their future students will develop critical civic agency (Mitra & Serriere, 2015).

We teach math and social studies methods courses, which are two courses teacher candidates in our elementary teacher education program must take, along with reading and science methods, prior to the student teaching semester. Candidates take this method block as a cohort. In the fall of 2012, we had the same cohort, for which we implemented this project—collaborating to teach math and social studies methods courses with a focus on math and social studies integration and social justice as an overarching goal.

## Theoretical Framework: Teacher Education for Social Justice

The term *social justice* has proliferated in teacher education in recent years in order to tackle the continued, ever-increasing disparity among racial, cultural, and linguistic groups in school achievement and later social achievement (Darling-Hammond, French, & Garcia-Lopez, 2002; Kozol, 1991; McDonald, 2005; Sleeter, 2014; Zollers, Albert, & Cochran-Smith, 1999). Different educators and scholars take up different positions on social justice education, such as redistributing resources, developing student agency, or recognizing and affirming all social groups—especially those that have been marginalized—and ensuring their success (Cochran-Smith & Lytle, 2009; Zeichner, 2009). We agree with Bell (2007) that each perspective is necessary because “social justice is both a process and a goal” (p. 1), and to achieve it in education is a complex endeavor that is not reduced simply to a method or methods.

Teaching for social justice can be related to a range of different practices, including but not limited to critical pedagogy (e.g., Frankenstein, 1990; Freire, 1970/2002), critical multiculturalism (Nieto, 1999, 2002, 2004; Sleeter & Grant, 1999), culturally responsive pedagogy (Gay, 2000; Ladson-Billings, 1994; Villegas & Lucas, 2002), and critical literacy practices (Vasquez, 2004). While we build on these varied ways to teach for social justice in our teacher education practice, we particularly agree with Freire’s (2004) assertion that a social justice teacher must “not only teach his or her discipline well, but he or she must also challenge the learner to critically think through the social, political, and historic reality within which he or she is a presence” (p. 19).

By fostering the development of students’ critical analysis of society, social justice education is not simply to engage in a sociopolitical critique of the world; doing so is only a step toward *transforming injustice*. As Freire and Macedo (1987) argued, “reading the word

is not preceded merely by reading the world, but by a certain form of *writing* or *rewriting* it, that is, of transforming it by means of conscious, practical work” (p. 35).

## **Literature Review**

### **Teaching Math for Social Justice**

Problem solving/posing and culturally relevant pedagogy are both important aspects of teaching mathematics today. Both aspects are also part of what it means to teach mathematics for social justice, with problem posing gaining spotlight as students bring to the classroom their social concerns to be analyzed through mathematics highlighting the knowledge they have about their communities’ struggles (Gutstein, 2012). Bartell (2008) stated: “Instruction in mathematics should help students use mathematics to understand and address inequities in society” (p. 95). Based on Freire (1970), Bartell suggests that teaching mathematics for social justice includes problematizing students’ lives and makes that a crucial part of teaching. In return, those realities need to also be a concern and be known by teachers. Similarly, Gutstein (2006) takes Freire’s ideas and outlines two sets of goals for teaching mathematics for social justice: (1) social justice pedagogical goals (reading and writing the world with mathematics and developing positive cultural identities) and (2) mathematics pedagogical goals (reading the mathematical world, succeeding academically in the traditional sense, changing one’s orientation toward mathematics).

Problematizing students’ and students’ communities’ realities would eventually lead to some kind of action and changing the world (Gutstein, 2006; Ladson-Billings, 1997). This kind of teaching requires commitment not only on the side of the students but also on the side of the teachers, who are often not a member of those communities apart from their teaching position, as the population of schools has grown diverse, but the teacher population has remained “relatively monolithic” (McDonald, 2007). Ladson-Billings (1997) claimed:

“Effective pedagogical practice involves in-depth knowledge of students as well as subject matter.” (p. 740). Clearly, when teaching mathematics for social justice, this is crucial.

Because teaching then becomes something that depends on each group of students, their cultural background, and specific realities for each community, there is no one right way to teach mathematics for social justice (Bartell, 2013). This kind of work cannot be done on isolated occasions, but it must be an integral part of the curriculum and “permeate all aspects of the classroom” (Diversity in Mathematics Education Center for Learning and Teaching, 2007, p. 420). It is imperative to prepare teacher candidates to work with children from varied backgrounds and critically think about the reality surrounding their students (Picower, 2011). Boaler and Staples (2008) stated that there are some indications that the success of reform-oriented approaches depends on the “teacher’s social and cultural awareness sensitivity” (p. 611).

Knowing mathematics opens doors (Hyde, Fennema, Ryan, Frost, & Hopp, 1990). Students of every background need to have access to that knowledge—as Gutierrez (2002) put it when defining equity as the “inability to predict mathematics achievement and participation based solely on student characteristics such as race, class, ethnicity, sex, beliefs, and proficiency in the dominant language” (p. 153). Gutierrez (2007) also mentioned that a piece of that equity is power, and “the power dimension takes up issues of social transformation at many dimensions” (p. 4). Gutierrez (2013) went a step ahead and analyzed the power of mathematics as a political power. She stated: “By virtue of mathematics being political, all mathematics *teaching* is political” (p. 11). This is the kind of power that those seeking for social justice need to regain and use to not only understand the world, but also change it and rewrite it.

But teaching mathematics for social justice has proven to be not a simple thing. Bartell (2013) found that teachers embarked in a project to teach for social justice had to face

tensions balancing social justice and mathematical goals. Also, she found that reaching those social justice goals was difficult in itself. For this reason, she described the commitment teachers need to have toward social justice as something that requires “effort, perseverance, and reflection” (Bartell, 2013, p. 4).

Gutstein (2012) also described the ups and down and self-evaluation of the process of working with teenagers teaching mathematics for social justice. This demonstrates that even for an experienced and deeply committed teacher, the challenges are never ending, as our students are diverse and their concerns are complex. Yet that struggle worked to help the teacher re-think his practice. It did not discourage him; it was another source of knowledge for his future practice.

### **Teaching Social Studies for Social Justice**

Incorporating social justice issues into social studies education is particularly important, as social studies is especially well suited to teaching about the oppressive tendencies and anti-oppressive possibilities of individuals, cultures, institutions, and histories (Lewis, 2001; Rierson & Duty, 2003; DeLeon & Ross, 2010; Wade, 2007). Social-justice-oriented social studies teaching reflects an understanding that teachers (1) integrate the voices of those dominated, marginalized, or excluded in texts so that students can examine the hegemonic status quo norms of sociohistorical knowledge; (2) build a curriculum connected to students’ lives and current events so that students can understand their experience in the larger sociohistorical context; and (3) develop student agency as agents of transformation in classrooms, schools, and communities for social justice (Agarwal, 2011; Au, 2009; Ladson-Billings, 1994; Sleeter & Grant, 2009; Wade, 2007; Zinn, 2003).

While empirical research evidences the possibilities of social-justice-oriented social studies instruction at the elementary level (Field & Castro, 2010; Wade, 2007), teaching social studies for social justice rarely occurs in elementary classrooms (Hess, 2008). In most

elementary classrooms across the United States, social studies instruction is largely textbook driven and based on uncritical memorization of discrete facts (Parker, 2008). What is worse is that little instructional time is given to social studies in today's elementary education. Since No Child Left Behind (NCLB), teachers today are pressured to focus on reading, writing, and math, for which they are held accountable (Barton & Levstik, 2003; Cornbleth, 2002), finding little time to teach social studies.

In an effort to counter the effects of the reduction of social studies instruction that results from the pressure to increase test scores in reading and mathematics, many educators promote the idea of integrating the curriculum (Hinde, 2005). We believe that effective integration is one way that social studies can be revived in the elementary curriculum, and here we focus on the integration of social studies with math.

### **Teaching Integrated Math and Social Studies**

Integrating math and social studies benefits both subjects. Through the integration, social studies would be taught during the school day, which has proven to be difficult, with teachers not having time to teach social studies (Hinde, 2005; Kinniburgh & Byrd, 2008). And math can be more meaningfully taught because social studies can make learning math connected to students' lives and experiences.

In addition, the actual nature of social studies and mathematics provides a philosophical framework for integrating these disciplines in the classroom. Mathematical thinking, including numeracy, logical thinking, and problem solving, is a vital skill for competent citizens of a democracy to make decisions on public issues toward a more just, democratic, and peaceful society, which is the core of democratic citizenship that social studies can develop (Crowe, 2010). The National Council of Teachers of Mathematics (NCTM) also suggests teachers connect mathematical content in several ways, so that it is more meaningful to students' lives, including their interests, connections to other content

areas, and connections within math content.

Notwithstanding the logical link between the two subjects, along with the practical benefits of the integration of the two, the integration of math and social studies is rare. A review of the literature shows that there is considerable research on the integration of social studies and language arts or the integration of math and science; little exists on the integration of math and social studies. As Hinde (2005) stated well, meaningful integration is not an easy task. Teachers must have adequate knowledge about the content areas they are integrating, as well as various integrative methods, which we believe should be covered in teacher preparation (Lonning & DeFranco, 1997). This is the motivation behind this research.

## **Methodology**

### **Research Context**

In the 2012 fall semester, we were assigned to teach a cohort of 18 teacher candidates back to back on the same day. Taking this as a great opportunity to collaborate, we planned and implemented the integration of the math and social studies methods courses to enrich the learning experiences of the teacher candidates as well as the development of their own teaching practices.

Integration of mathematics and social studies methods courses can be accomplished in many different ways. For the purposes of this project, we emphasized two key areas: collaboration and modeling. Through a process of collaboration, ongoing reflection, and extensive discussions, a consensus was reached regarding our viewpoints and orientation about teaching for social justice and the integration of math and social studies. Modeling in the methods classes created an environment that had many hands-on activities of meaningful math and social studies integration. As we were modeling math- and social-studies-integrated lessons, teacher candidates were engaged in the lessons and activities and the consequent

debrief to see the challenges and promises of teaching integrated mathematics and social studies from a social justice perspective.

The classes met together for 10 weeks on a 6-hour weekly block. Over the 10 weeks, two sessions were designed to be team taught (weeks four and seven), in which we modeled a math- and social-studies-integrated lesson for social justice. The rest of the sessions were taught separately, addressing the core contents and skills in each discipline, the framework of teaching for social justice, and the rationale and methods of the math/social studies integration.

The first co-taught lesson was an integrated math and social studies lesson titled “History of American Immigration through Different Types of Graphs.” Candidates were given immigration and population data from 1880 to 2010 along with the primary and secondary sources of what was happening in the historical time period. Candidates in small groups were challenged to come up with a graph that showed the immigration trend and present it to the class. In their presentation, they were to explain why they chose a certain type of graph, the scales, axes, and units, and also to explain their theory behind the trends of immigration. After the presentation, candidates were given other primary and secondary sources, such as newspapers and data regarding today’s politics in American immigration, and were challenged to come up with a prediction graph for the next 20 years. Candidates were to provide the reasoning behind all of their choices: scale, range, and trends. After the presentation of the prediction graph, the whole class discussed the immigration controversy in today’s America. After the hour-long lesson was done, we engaged candidates to debrief them on the lesson, what they learned, and how they want to apply it to their future classroom.

In Week 7, we conducted the second co-taught lesson, titled “Maps as a Story,” which addressed the social significance of maps and proportionality. We first introduced different

projections of world maps and had the candidates compare the different proportions of countries and continents based on the projection methods, and then had them suggest why a certain projection is popular for a certain country. In doing so, candidates began to discuss the social and geopolitical meaning of maps and worldviews and how using a certain map may impact schoolchildren's vision of the world. Mathematical thinking and skills of proportionality and data analysis, along with critical reading of maps and data, were the goals of the lesson. The lesson followed with discussion of applicability, differentiation, and extension. During the remainder of the weeks, we taught separately with a focus on the integration of math and social studies.

The culminating assignment was the social-studies- and math-integrated lesson plan, which candidates submitted at the end of the course. Teacher candidates were to choose a topic and grade level of their own choice and develop a math- and social-studies-integrated lesson with the goal of teaching for social justice.

### **Choosing Self-Study**

In an attempt to make sense of our experience teaching elementary teacher candidates about integrating math and social studies for social justice, we decided to embark on a self-study. Hamilton and Pinnegar (1998) defined *self-study* as “the study of one’s self, one’s actions, one’s ideas, as well as the ‘not self’” (p. 236). Self-study of teacher education involves teacher educators reflecting on their own practice for the purpose of improving it and the practice of others (Hamilton, 1998). It has been advocated for the potential to promote the idea of teaching as reflection, to model an inquiry-based approach to pedagogy, and to contribute to the improvement of teacher education practice and to a broader knowledge about particular questions of significance to teacher educators and policy makers (Cole & Knowles, 1996; Dinkelman, 2003; Hamilton, 1998; Zeichner, 2007).

By taking a self-study approach, we aimed to examine our personal experiences in a

public way and contribute to dialogue among teacher educators and others in similar contexts regarding how we teacher educators better educate teacher candidates for teaching for social justice in terms of mathematics and social studies. The research questions that guided the self-study were: (1) To what extent and in what ways did the course impact candidates' understanding and confidence to teach integrated mathematics and social studies from a social justice perspective? (2) What possibilities and challenges did we encounter to complete such a project?

### **Study Participants and Data**

Participants of this self-study were ourselves and teacher candidates enrolled in our courses in the 2012 fall semester. On the first day of the course, we explained the study. All 18 candidates signed consent forms and permitted us to use the assignments and class activities. There were 14 Caucasians, 3 African Americans, 1 Asian American; 16 females and 2 males between 21 and 23 years old with no previous teaching experience.

Multiple data sources were collected for analysis, including pre- and post-surveys, weekly reading responses, culminating lesson plan assignment, class discussions, class activities, group interviews that took place at the end of the semester, and our reflective journals. The goal of the pre-/post-survey was to see the change in the candidates' understanding and confidence to teach integrated mathematics and social studies from a social justice perspective over the course. Through weekly reading responses, class discussions, and activities, we sought to examine how candidates make sense of teaching social studies and mathematics, teaching for social justice, and integrated teaching. Culminating lesson plans provided another window into candidates' understanding of teaching integrated mathematics and social studies for social justice. Group interviews at the end of the course were to explore how teacher candidates evaluated our project and what they took away from our teaching of integrated mathematics and social studies for social justice.

In addition to these data, we also sought to observe candidates' teaching during their field experience. Because of difficulty to getting elementary school Institutional Review Board (IRB) approval, we could only observe four teacher candidates. These multiple sources were collected to answer the first research question: To what extent and in what ways did the course impact candidates' understanding and confidence to teach integrated mathematics and social studies from a social justice perspective? Complementing the data were our reflective journals, in which we documented our ideas, actions, feelings, questions, observations, and links to theoretical understandings and shared experience as we taught. This was utilized to answer the second research question: What possibilities and challenges did we encounter to complete such a project?

To analyze all of the data, which are qualitative in nature, we employed a grounded theory approach (Strauss & Corbin, 1998). We identified each of the themes that had emerged from the analysis and examined the range. We noted repeated patterns and identified categories and conditions within the data. We mapped the data back to these themes for final definition and clarification. The methods suggested and described by Eisner (1991), Erickson (1986), Guba and Lincoln (1989), and Janesick (2000)—which include analyzing multiple written and verbal data sources, engaging in ongoing critical discussions during the study, and crosschecking data across sources to support emerging agreements in interpreting the data by both researchers—strengthened the trustworthiness (Guba & Lincoln, 1989) of the study.

### **Findings**

The approach to teaching social studies and mathematics in an integrated way from a social justice perspective gave us insights into the possibilities and limitations of such a project. The highlights of what we found are as follows.

The candidates' theoretical understanding of “integration” of content areas grew, and

they felt it was a positive and important thing to do. Yet their competence integrating did not grow. Also, social justice was one item to check off their checklist. Finally, who the instructors were (where they came from, their cultural background, etc) played a role in how much or how little resistance the students would experiment in regard to social justice.

### **Emergent Understanding of Integrated Mathematics and Social Studies**

First of all, we found that candidates largely opened their eyes to the promise of integrated math and social studies lessons for their own students' learning. At the beginning of the course, most candidates were not sure "why" or "how" to integrate math and social studies. For instance, on the first day of class, one candidate said during a discussion of the project, "I like the idea of integration. But I really don't know how" (personal communication, August 17, 2012). Candidates were largely unsure of why they should integrate subjects, other than "Integration is good always!" as another student commented on the pre-survey she completed (personal communication, August 17, 2012). Specially integrating mathematics because of the push for science, technology, engineering, and mathematics (STEM) is clear for them, as more than one candidate stated when responding to the reading of the Principles and Standards of Mathematics (NCTM, 2000). Even though they were positive, not all of the students agreed or strongly agreed with integrating mathematics and social studies, and in the pre-survey, 67% of the surveyed students agreed or strongly agreed with that idea. Figure 1 shows the results of the pre- and post-survey for items related to teaching integrated mathematics and social studies.

<b>Question</b>	<b>Pre-survey results (% of students who agreed or strongly agreed)</b>	<b>Post-survey results (% of students who agreed or strongly agreed)</b>
<i>I feel confident integrating mathematics and social studies.</i>	67%	87%
<i>I had observed integrated lessons for mathematics and social studies in my placement.</i>	6%	6%
<i>I will teach mathematics and social studies in an integrated way</i>	27%	87%

Figure 1. Pre- and post-survey agreements with statements regarding integrating mathematics and social studies.

However, as the semester progressed, candidates began to express their newly developed understanding of the benefits of integrating the two subject areas and showed confidence in their capacity to do so. In post-surveys, a majority (87%) of the candidates agreed or strongly agreed with the statement “I feel confident about integrating math and social studies.” And they also made positive comments about doing such an integration in our class discussions. In the group interview conducted at the end of the course, a candidate shared that “One thing I want to take away from the course is that it is possible and in fact amazing to teach math integrated with social studies. It gives a lot of meaning to otherwise a dry subject like math” (personal communication, November 2, 2012). Another candidate

followed, “I agree. I liked the immigration and the map lessons we did in class. It’s not that hard as long as you invest time to find a connection between the two areas” (personal communication, November 2, 2012).

Yet the fact that they believed it could be done and that they realized it was a positive experience for children in the classrooms does not mean they could actually perform that integration meaningfully, as we uncovered when we reviewed the lesson plans they created as well as observed some of those lessons being taught.

To understand the results of the pre-survey we also need to mention that at that point the candidates had not been exposed to “teaching for social justice,” which they had by the time they completed the post-survey. Yet their units showed a limited understanding, or perhaps a limited application of the understanding of teaching for social justice, which they for the most part avoided.

### **Limited Competence of Meaningful Integration**

Compared to the overall increased awareness and confidence of integrating social studies and mathematics, the results of analyzing the lesson plans that the candidates prepared as an assignment were less than satisfactory. Only four of the candidates (24%) were able to successfully integrate mathematics and social studies, and only one of them (6%) successfully infused social justice in her lesson. The integration was superficial with little rigor in the link between the two areas, and more importantly, there was a lack of a critical lens to analyze situations of inequality in society. This critical lens and analysis of inequity had been the focus of the integration that the instructors used during the demonstrations and discussions, which made the lack of it in the lesson plans more evident.

<b>Social issues in the lesson plans</b>	<b>Math and Social Studies integration</b>	<b>Social justice in the lesson</b>
<i>Maps</i>	Low	No
<i>Immigration and graphs “Where does your family come from?”</i>	Low	No
<i>Comparisons: we are alike, we are different: what does your family celebrate?</i>	Low	No
<i>Victory gardens</i>	Low	No
<i>Lewis and Clark</i>	Low	No
<i>Printing in colonial America</i>	Medium	No
<i>Quilting in colonial America</i>	Low	No
<i>The Gold Rush travelers' experiences</i>	Low	No
<i>Presidential race</i>	High	Yes
<i>Immigration</i>	High	No
<i>Latitude and longitude</i>	Medium	No
<i>Trail of Tears and mapping</i>	High	No
<i>Thanksgiving: how did the pilgrims and Indians trade?</i>	Low	No
<i>American heroes</i>	Low	No
<i>Budget making</i>	High	No
<i>Important people of Georgia: living “two”gether.</i>	Low	No
<i>Maps</i>	Low	No

Figure 2. Lesson plan topics, level of integration, and social justice.

When we say that the integration was superficial, we mean that their lessons did not open doors for children to critically analyze a problematic social situation using mathematics, but instead they used some social studies content to write a story problem. Children were meant to complete the problem and move on. Social studies was not embedded further, and it only provided some context to the mathematics problems and numbers that the children had to work with. As we reflected in our journals about this situation, we realized that many times, the only link between the mathematics and social studies was the names of the characters in the problems, who were historical figures (see Figure 2 for more examples). Other candid efforts to integrate mathematics, social studies, and social justice were demonstrated in the lessons “We are alike, we are different: what does your family celebrate?” and “Where does your family come from?” But they focused on the “feel-good” aspect of social justice and diversity, without approaching more in-depth discussions of issues of immigration or the experiences of Native Americans then and today. With an integration of this sort, social justice was unlikely to come up. But we also realized how difficult it was on our part to grade these lessons and create a rubric that reflected our goals so that candidates needed to critically think about those links to make the lessons more meaningful.

Specifically about the mathematics, there were attempts to use problem solving for math, but in most cases they were naïve attempts. Candidates presented students with problematic situations, but then they proceeded to explain “the rule” that would solve the problem, instead of allowing students to think and reason. The focus was not on student thinking and reasoning, but on completing a task with a given algorithm or rule. And, in social studies, despite the explicit focus on rethinking the dominant narrative of U.S. history that was made during class discussions in every session, as well as the critical reading of the

official curriculum such as state social studies' standards and textbooks throughout the semester, the candidates reverted to traditional ways of thinking and doing: uncritical uses of standards and textbooks. The students considered the standards as an objective, neutral, and universal truth by which to abide, upon which to build lesson plans, and around which to teach activities.

The observation of student teaching also revealed the limitation of candidates' learning of the power of social studies and math integration for social justice. The four candidates who gave permission for us to come and observe considered that integrating mathematics and social studies was an important part of "good teaching." Despite their expressed interest and efforts, the observations of their lessons told a different story.

For instance, we observed Sam and Katy's co-taught lessons. The first observation took place in one of the placements, where the majority of the students were English Language Learners (ELLs). This was a perfect setting for candidates who had claimed an interest in issues of language while teaching content in elementary schools. The lesson integrated history and money. The 4th-grade students in the candidates' classroom were learning about the American Revolution, taxation, and the Boston Tea Party in social studies. The candidates integrated mathematics into social studies by creating a lesson in which students as colonists traded goods and kept track of their earnings while considering a tax that they had to pay.

This first lesson, which had a good starting point, was stripped of its good essence. Candidates were asking "yes or no" questions, not allowing for a conversation about mathematics, social studies, or the fairness and equity of the situation. Students went from one step of the activity to the other almost mechanically, and the center of this lesson was clearly not the students' thinking but the candidates' goal of completing the activity.

The second attempt the same candidates did of this lesson with the other group of students was different. Children were asked questions that pushed them to think critically about the activity they were completing, and they had more of a central place in the overall scheme of the lesson. The integration of the two content areas was clear during this attempt, and children were getting the benefits of looking at social issues with a mathematical lens. This does not mean that social justice was brought to the conversation, but that the candidates, in this opportunity, took the level of mathematics and social studies up, and the integration was also better. It seemed as if the candidates had changed their approach completely for this lesson and they were moving in the right directions. Conversations during the activity were rich, and the lack of group-sharing time was less of a problem. We were encouraged by this change of style. But during the conversation we had with the candidates who taught these lessons, that feeling decayed.

In the post-conference, Sam confirmed that he and Katy tweaked the lesson for the first group because of the number of ELL students in the classroom. Sam explained that with a class with a majority of students with language issues, Katy and he did not think they could do much and stuck to a more traditional and less challenging lesson. “More than half the students in the class are ELLs and if we don’t simplify questions then we won’t finish the lesson.” Sam said during post conference (personal communication, November 28, 2012). This not only showed that the focus was not the integration or the quality of the mathematics and social studies, but also that a social justice approach to teaching was lacking.

These candidates thought that the second classroom, with more English speakers, was a place where they could push students and not just teach mathematics and social studies. The candidate had no problem labeling the students during the interview, and the deficit views he had of ELL students were clear.

During our debriefing of these observations and as part of our reflective journal entries, we were concerned not only about the deficit views the candidates had of ELL children but also about the short-term effect (if any) that our lessons, which had a social justice undertone, had on the candidates.

### **Discussion**

As we reflected during and after the course, we found several reasons why our approach was not quite successful in challenging candidates to create lessons that not only integrated the areas successfully but also infused social justice in their teaching. For instance, most of our teacher candidates did not have much experience with diversity or being around people who were different from them, and also had little preparation for integration or social justice teaching until they reached the senior year of methods block. Despite our 10-week-long collaborative efforts, the one-semester long learning and discussion about teaching for social justice was not enough for the teacher candidates to develop interest in this approach to teaching. Further, being in a teacher preparation program as a candidate or as a professor involves a lot more than just preparing the classes and the assignments. There are other pressures that come with the job. These included time allotted to teach, workload in a university that is transitioning into a doctoral/research university (DRU), and the stress the candidates go through when they need to pass a standardized test to get their state certification as well as to prepare applications to find a job.

While these challenges are almost universal for teacher educators working for teacher education for social justice, our struggles mostly derived from who we are in relation to who our teacher candidates in our classroom were. Below, we discuss the lesson we learned from our experience.

## **It Matters Who Teaches**

During discussions as well as during our experience teaching integrated mathematics and social studies for social justice, our experience was very positive. A majority (although not all) of students participated enthusiastically. We heard them say what we expected them to, and in our notes we believed to be making progress. Even in the surveys it seemed that students were engaged and excited to participate of the integration process and learn about social justice. Things went almost exactly as planned.

Yet some of that excitement and engagement seemed to have worn off, or perhaps was never there when we saw the lesson plans, and when we read the evaluations. The lesson plans, as described before, did not show social justice throughout as we had expected based on our work and our appreciations of student reception of that work. The final products the candidates produced did not match the level of engagement they claimed to have.

While teacher candidates' lack of exposure to diversity and understanding of social justice are nothing new and are challenges for many teacher educators (Ayers, Quinn, & Stovall, 2008; Kumashiro, 2015), the challenges concretize differently, and indeed, who teaches matters. Stanley (2006) mentioned: "Faculty of color who teach multicultural courses or work to incorporate a multicultural perspective into their courses often face resistance from White students" (p. 706), which speaks to the experiences we had with the group as well as other groups of candidates. Skatchkova (2007) described teaching for female immigrant professors as a "battleground infused with contradictions and conflicts" (p. 705), and their students prefer not to take classes with professors who are not native English speakers.

It was clear that our identity as "foreign" professors from elsewhere became a barrier for us to reach teacher candidates who were White Americans. Teacher candidates found it hard to talk about certain issues with us, professors who were females from another country.

Silence happened often in the classroom, and politically correct statements were a big part of what candidates shared during classrooms discussions. The few times that candidates shared comments that uncovered some of their stereotypical thinking (like Latino families do not care about their children's education as much as White families do, or African American children have behavioral problems and that is the reason why they are overly represented in special education classes), the classroom went silent after being challenged by the professor.

But this does not mean they could not have or were not able to have this kind of conversation. White American professors who also taught this group of teacher candidates revealed that the candidates in the study were very much interested in talking about these issues. With more or less agreement with their professors, they got into heated conversations about issues of race, ethnicity, and social class around their teaching. We found that their concern about offending us, and members of those minorities in general, was too great for them to feel comfortable having these exchanges.

### **Concluding Remarks**

Just like Nieto (2000), we were concerned with the responsibility of colleges of education to prepare teachers to work with students from different backgrounds, especially those who have not been traditionally successful at school. We believed as well that social justice is not something that you teach separately, as if it were separate content, but that you integrate it into your everyday practices. And with that idea in mind, we developed this project where mathematics and social studies were taught together with an underlying goal of social justice. But soon it became evident that getting to the point where small steps could be made toward a social-justice-oriented classroom was not an easy task. We faced a series of challenges that made the completion of their project hard, and that could have potentially hurt the results.

Reading about teaching for social justice while being part of minoritized groups

helped us create a better design, yet it was not enough to know all the barriers we would encounter. We continue to think about ways to be better prepared, and we do not think that any of those barriers or issues is big enough to stop us from the search for a more equitable education in elementary schools and to prepare teachers to complete that task. The experience was very rich and enlightening, and we believe that the next time we stand in front of our classrooms, we will have better skills, knowledge, and tools to reach our goals.

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