Re-Thinking the Student Teaching Curriculum: Using Field-Based Instruction to Help Candidates Notice, Acknowledge, And Address Bias in the Classroom

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Abstract
A quasi-experimental mixed-methods study was conducted to evaluate the effectiveness of an equity intervention on student-teachers' understandings of equity literacy. Three pre/post instruments were used to gauge the difference in equity beliefs, skills, and knowledge outcomes for control (N=83) and treatment (N=35) groups. Treatment participants were exposed to a compilation of curricular modifications including professional workshops, panel events, and online modules. Quantitative findings show a statistically significant treatment effect and greater growth outcomes for treatment participants. Qualitative analyses show that treatment participants used more specific equity language and displayed greater noticing skills of nuanced bias in classroom settings. Implications for practice are provided.

Keywords: Student teaching, Equity, Quasi-experimental

Objectives or Purposes

The Student Teaching Equity Project (STEP) was conceptualized after field instructors and clinical educators reported that student-teachers are inadequately prepared to identify, discuss, and address issues involving equity and social justice (Authors, 2017). We conducted a quasi-experimental mixed-methods study (N=118) to investigate the impact of an equity-focused student teaching curriculum. Our three aims were to (1) determine the relationship between equity-centered curricular innovations and candidates' knowledge, beliefs, and skills, (2) examine the impact of an equity-focused intervention, and (3) explore how to harness the power of mixed-methods by refining instruments, developing coding schemes, and building statistical models.

Perspectives or Theoretical Framework

Equity and Social Justice Teacher Preparation

Similar to Milner and Howard's conclusions (2013), we note that our teacher preparation program is over reliant on subject matter knowledge and pedagogical content methods coursework, which causes a narrowing of the preparation curriculum and limits the focus on equity center social justice frameworks. Though the field is clear that justice-based education can help teachers disrupt inequities and position children as change agents, the majority of teacher preparation programs have not taken up this charge (Larrivee, 2008; Celio, et al., 2011). Many have noted that the teaching force is less diverse than the population it serves (Milner, 2008; Milner & Delale-O'Connor, 2016), yet this fact has also not compelled our program to innovate the curriculum. We agree with social justice scholars, that teacher educators are responsible for helping candidates build equity literacy skills, learn to implement culturally relevant and responsive pedagogies, and design critical multicultural curriculum (Dover, 2013; Sleeter, 2008; Gorski, 2008; Stevenson, 2016; Gay & Howard, 2000; Ladson-Billings, 1999). However, to accomplish these goals, student-teachers must first learn to examine and question their beliefs and notice how these beliefs impact decision-making and classroom interactions (Rychly & Graves, 2012).

The current study is framed by the desire to shift student-teachers' beliefs, improve their equity skills, and develop their equity knowledge base (Cochran-Smith, 2008; Coleman & Stevenson, 2014; Michael & Bartoli, 2014; Gorski, 2014). One way to address this desire is to create opportunities for student-teachers to confront and challenge their preconceived or strongly held beliefs by introducing ideas which purposefully create cognitive dissonance, an oft used strategy in social justice workshops (Gorski, 2009). Additionally, since race plays such a large role in interactions between students and teachers, we follow the suggestions of McGee, Alvarez, and Milner (2016) to center issues of race, among other equity issues, within our revised student teaching curriculum to help student-teachers acknowledge and redress the potential negative impact of racial bias and discrimination.

Methods, techniques, or modes of inquiry

Context and Sample

The four-year Elementary Teacher Education Program (ETE) is housed within the College of Education and Human Development at a large mid-Atlantic university on the East Coast of the United States. In their last year of the program, candidates complete two semesters of student teaching, earning certification in two areas: (1) elementary and (2) middle school content area or special education. Placements are made in both racially homogenous and diverse schools serving urban and suburban populations. A convenience sample of (N=118) was culled (See Table 1.0 – Settings).

Table 1.0: Placement Settings by Group

	Urban Schools	Suburban Schools
Treatment (N=35)	11	24
Control (N=83)	30	53

Equity Intervention

The equity intervention was developed to build student-teachers' equity knowledge, skills, and beliefs. Since student-teachers were not systematically exposed to these issues during their pre-student teaching course work, we decided to focus our curriculum intervention on a requisite first step; *noticing* and becoming better prepared to acknowledge, and address bias and discrimination in the classroom. The intervention included a full-day professional development, online modules, expert community-based panel event, reflective activities, inquiry group participation, and post-lesson observation debriefing sessions. The curricular content from the intervention provided opportunities to promote positive identity development, explore one's own bias, complete readings and case study activities to build a knowledge base about how bias and discrimination is experienced in schools, and help student teachers make sense of teaching experiences and learn how to practically apply an equity-skillset in the field.

Quantitative Methods

Prior to conducting the research study, we completed an *a priori* power analysis to determine the minimum detectable effect size (MDE), given our sample size and desired power of .95 (Faul, et. al, 2007). The analysis revealed the need for a small effect to detect a significant difference between the control and treatment group on a Multivariate Analysis of Variance, MANOVA, and Multivariate Analysis of Covariance, MANCOVA, (Cohen, 1988). Both approaches use a "linear combination of measured dependent variables to maximize group differences" (Tabachnick & Fidell, 2013, p 245). For the MANOVA, three survey instruments were used for the dependent variables and group membership (control or treatment) was used for the independent variable. For the MANCOVA, the dependent variables and independent variable remained the same, with the only difference being that we controlled for pretest differences. Following the

collection of pre-semester scores, baseline equivalency between the control and treatment group was evaluated. No significant differences were found between the treatment and control groups.

Qualitative Methods

In addition to collecting pre/post qualitative data from surveys completed by both groups, qualitative data were collected and analyzed from the treatment groups' discussion board postings and assignments taken from the online module component of the equity intervention for a subgroup of students who were placed in urban schools (N=11). Open coding methods were used to create coding schemes and findings from individual students were compared across the subgroup to create major themes and bolster the credibility of claims. Codes were developed and applied to the entire dataset by a researcher blind to participant assignment. Additionally, coding reliability was confirmed through an inter-coder reliability check. Data sources and instruments are summarized in Table 2.0.

Table 2.0 - Instruments and Data Sources

	Learning to Teach for Social Justice Beliefs	Equity Scenario Responses	Oath	Equity Literacy Discussion	Implicit Bias Test Reflections	Racist Terms Case Study Response
Description	Self-report beliefs	Rate and analyze teacher responses to classroom scenarios	Teachers Oath (i.e. Hippocratic Oath)	Response to readings and videos	Respond to reflective prompts after taking and IBT on race	Case study analysis of "Racist Terms of Endearment"
Construct	Beliefs	Knowledge, Skills	Beliefs	Knowledge	Beliefs	Skills
Administration	Pre/Post	Pre/Post	Pre/Post	Week 1-2	Week 3-4	Week 5-6
Treatment (N=35)	X	X	X	N=11 urban	N=11 urban	N=11 urban
Control (N=83)	X	X	X			
Quantitative	X	X	X			
Scale/Range	1-5/12-60	1-7/12-84	Frequency: 0-10			
Qualitative	X	X	X	X	X	X
Literature or Source	Enterline, et al., 2008	Authors, 2016	Author, 2012	Gorski & Swalwell, 2015; Gorski, 2014; Abbott, 2014	Project Implicit ©2011	Gorski, 2014

The survey instruments were administered at different interval time points, prior to the start of the semester and after. We acknowledge the intricacies and challenges of measuring equity and social justice outcomes in teaching (Cochran-Smith et al., 2012). We believe the instruments used in this study each provide unique insight regarding

candidates' equity knowledge, skills, and beliefs; instruments are labeled for the type of research method(s) and equity construct(s). Below we share the coding scheme developed to analyze the narrative responses from one pre/post instrument, Teacher's Oath (see Table 3.0).

Table 3.0 Coding Scheme Example – Oath Data

	LITERATURE	CODES	DEFINITIONS	DATA EXAMPLES (direct quotes)
INSTRUCTION	(Ladson-Billings, 1995; 2014; Gay, 2002; 2010, Paris, 2015; Villegas & Lucas, 2002; Gorski & Swalwell, 2015; Gorski, 2014; Nieto, 2015; Wlodkowski & Ginsberg, 2013)	Student Centered	Instructional decision, plan, or lesson focused on putting students in position to influence the lesson or materials	I will consider all students' strengths and weaknesses and develop lessons with these in mind. I will provide students a wide variety of assessments so they all have an equal opportunity to demonstrate their knowledge.
		Differentiation	Addressing learning differences by varying instructional approaches	I will find ways to ensure that all students are included in ways that allow them to continuously grow and learn. I will differentiate design my instruction to meet the needs of individual learners by using scaffolding and, small groups, and varying instructional environments/techniques (e.g. small group, collaborative learning, etc)
		Relevance Sustaining	Aligning instruction and/or materials to students' lived experiences and/or home culture	I will avoid busy-work in favor of work with real meaning to the students and their families. I vow to be culturally responsive and I vow to be responsive to the individual needs of my learners
		Multiculturalism	Using instructional approaches and/or using curriculum materials that represents and encourages understanding of a wide-array of cultures	*No coded samples of multiculturalism in the data set*
		High Expectations Rigor	High expectations, all learners can learn, teaching to mastery, challenge and rigor	I will set standards high in order that students will be challenged and engage my students in productive struggles on a daily basis I will always expect the best from all of my students, and push them to succeed. I will give my students greater challenge and encourage them to try new things.
LIFE LONG LEARNING	(Larrivee, 2008; Sirota 2013; Coleman & Stevenson, 2014; Friedrich & McKinney, 2010)	Reflection/Open Mindedness	Receptive, open, willingness to continue learning	I pledge to be open to constructive criticism. I will be responsible for the education of my students, teaching with an open mind and room for adjustment.
		Fallibility	Mistake making as learning	Learn from my own mistakes and triumphs. I will not be ashamed to admit to students when I have made a mistake, to ask for help, or to tell my students that I am sorry when I have messed up.
		Collaboration	Work with others, collaborate, cooperate	I will respect the ideas of my fellow educators and collaborate with them to form a strong, professional learning community.
		Exploring Personal Bias	Commitment to not be bias and explore issues of discrimination and other injustices	Throughout my time in the field of education I will work to combat social injustices and inequities both inside and outside of the classroom. I will identify and work to eliminate my biases and preconceived notions about students.
		Seeking Help/Self Education	Seek out research-based strategies, ask for help, continue to engage in learning	I will not be afraid to ask questions when I need help. I will read journals and research to stay up to date I will continue to learn more as I experience more years of being a teacher. I will forever be a student.

CARE	(Noddings, 1984; McDermott, 1977; Ladson-Billings, 1995; 2014; Villegas, 1998; Villegas & Lucas, 2002; Gay 2010; Tomlinson, 2015; Tomlinson & Javius, 2012; Warren, 2000)	Class Environment	Warm, safe, and welcoming environment (including classroom management)	I will build a safe and welcoming classroom environment. I will put the safety and learning of my students before anything else.
		Social Emotional Learning	Wellbeing, specific reference to children's emotional wellbeing and learning	I must remember to help my students' socio-emotional well-being grow as well.
		Rapport/Respect	Respect, rapport, treatment, equity, humanistic approaches	I will respect students of all age, race and background. Every child is a cognizant being, capable of joy, laughter, sadness, fear, and above all learning. I swear to treat all students with respect no matter their race, gender, sexual orientation, and background. People don't learn from people they don't like.
		Family Partnerships	Collaborating and or reaching out to parents	I will go above and beyond in reaching out to families to keep them in the loop of their student's success. I will work with families to make sure I better understand my students and their specific needs/interests so I can meet them.
		Home Life Lived Experiences Cultural	I get that all kids come from different backgrounds and it impacts how they act, loving kids beyond race/religion/SES	I will remember that students come from all over and each student is unique. I will be sensitive and understanding to all students' circumstances and backgrounds. I will take into consideration their backgrounds and how they may affect every day learning, in order to make sure they have the most comfortable and suitable environment, both in and out of the classroom. I will value their cultures and ethnicities.
AGENCY BUILDING	(Gorski & Swalwell, 2015; Gorski, 2014; Bartolome, 1994; Cook-Sather, 2002; Johnston-Parsons et al, 2007; Stevenson, 2015)	Students as community members	Helping students see themselves as community members	I will embrace where they come from and make sure they are proud of it. I will use what I have learned in my years of schooling to teach these young ones how to be good citizens. Foster a sense of community not only within my classroom, but amidst the twisted and confusing world that students return to after school every single day.
		Students have worth/value/voice	Value student opinion and promote student voice	I will respect my student's opinions, thoughts, and ideas with the highest regard for their courage to share them. Encourage my pupils to research and evaluate pro and con arguments when the topic is subjective, rather than parroting the consensus of a supposed majority of opinion.
		Students can make a difference	Understand they can make changes in the classroom or community, students have power	My students will feel loved, know how important they are, and know they have a purpose in life. Students will be encouraged to find answers, and solve problems.
		Student's self-efficacy	Promoting students' self-belief that they can have a positive impact on themselves and others	I will remember this to ensure that I never make another young scholar feel inadequate or that they will not achieve. I will prevent any student from leaving my room at the end of the year without feeling like they have improved or succeeded at something. I will strive to always utilize a strength-based approach with my students. Every student in my classroom will know they are capable to achieve at the highest level.
		Building student's identity Uniqueness	Communicating the importance of identity and non-conformity	I will challenge my students to be the best versions of themselves. I will work to make sure that the classroom is a safe place to be him/herself

Results

Quantitative Findings

Using descriptive statistics, Table 4.0 displays control and treatment mean scores on the three outcome measures at two different time points. The last column of the table provides the difference scores tabulated by subtracting post-semester mean scores from pre-semester mean scores. The treatment group showed a greater increase in scores on all three measures.

Table 4.0: Descriptive Statistics

Instrument	Group	N	Pre-Semester Mean	Post-Semester Mean	Difference (Post - Pre)
LTSJ-B	Control	85	44.9	44.3	-0.6
	Treatment	34	43.8	46.48	2.68
SR	Control	87	50.57	53.21	2.64
	Treatment	34	51.71	55.94	4.23
TO	Control	77	3.91	3.95	0.04
	Treatment	31	4.66	4.81	0.15

MANOVA. The MANOVA revealed a significant effect with a *p-value of less than .003* and a *medium effect size*, $F(3, 104)=5.02$, $d=.48$ (Cohen, 1988). The treatment effect is the difference between the group means. The treatment, or group membership, accounted for 12.6% of the variance on the linear combination of dependent variables, $\eta^2_p= .126$. In other words, 12.6% of the outcomes can be attributed to the equity intervention.

MANCOVA. After controlling for pre-test differences, the MANCOVA found a significant effect, with a *p-value of less than .001* and a *medium effect size* $F(3, 99)=8.46$, $d=.62$ (Cohen, 1988). The treatment effect is the difference between the adjusted group means. The treatment, or group membership, accounted for 20.4% of the variance on the linear combination of dependent variables, $\eta^2_p = .204$. In other words, 20.4% of the outcomes can be attributed to the equity intervention.

For both the MANOVA and MANCOVA, the multivariate effect showed the scores from the combined three measures were significantly affected by group membership; results suggesting the equity intervention had a significant impact on the treatment group. All assumptions were met for the MANOVA AND MANCOVA (Tabachnick & Fidell, 2013).

Qualitative Findings

Module Data. Equity interventions created space for student-teachers to think and talk about equity related issues that occurred in the field. The full day professional workshop, prior to the start of student-teaching, provided opportunities to gain knowledge about positive identify development, explore biased views based on demographic data and fiscal resources afforded to particular schooling populations, identify existing inequities in schools, and develop multicultural identity activities that could be used with students. Treatment participants reported they appreciated the space to use words such as race, Black, White Privilege, and so on, noting that these opportunities were either non-existent or not-systematic throughout their first three years in the program. Though candidates were open to exploring equity, deficit views persisted. These ideas were repeated through the reflective discussion posts and responses in the biweekly online modules (see Table 5.0 for a summary).

Table 5.0 – Summary of Data from Online Modules (N=11) – Urban Subgroup
Module Topics

	Equity Literacy How do the concepts of equity literacy and opportunity gaps come to life in your classroom or school?	**Implicit Bias** Reflect on experiences after taking Racial Bias Test and viewing videos of classroom teachers discussing race and ethnicity	**Racial Slur Case Study** Case study analysis and follow discussion re: "Racist Terms of Endearment"
Shifting Beliefs	-Families don't care (deficit) -Families don't exist (deficit)	-Disappointment in self for biased views -Need to change self-perceptions	-Derogatory language should be punished (divorced from context) -Low income students do not have role models (deficit)
Developing Knowledge	-Lack of resources (food and supplies) -Better understanding of poverty and reduced lunch programs	- Model minority myth is harmful - Society conditions negative views of people of color	-Derogatory language makes students feel unsafe -Racialized events are teaching opportunities
Developing Skills	-Noticing bias in assessments -Noticing irrelevant curriculum -Noticing others' biased views of children -Noticing students' low self-efficacy	-Noticing that racial membership does not preclude you from bias against your own race -Noticing that conscious will alone does not iliminate bias	-Noticing impact of bias on children -Redressing inequitable situations by instituting curricular changes and multicultural programming

Oath and Scenario Pre/Post Data. The qualitative analysis of all participants' pre/post Oath responses (see Table 3.0 for the coding scheme) showed that treatment participants articulated more equity-focused beliefs and referenced more equity-focused practices compared to the control. In Table 6.0, cells aligned with Agency/Social Justice and Instruction are shaded to highlight that more than 30% of written segments coded in these categories were attributed to the treatment group (+9% and +5% respectively). If the treatment group and control group performed similarly, the percentages would mirror the split of the total sample (30%/70%).

Table 6.0 Summary of the Oath findings

	Instruction	Life Long Learning	Respect Rapport	Agency Social Justice
Totals	71	155	200	52
Treatment N= 30% of sample	25 (35%)	46 (30%)	54 (27%)	20 (39%)
Control N= 70% of sample	46 (65%)	109 (70%)	146 (73%)	32 (61%)

In addition to looking for frequency of codes within the oaths, we identified twelve exemplar oaths (again, blind to assignment). Six of the exemplars were attributed to candidates in the treatment group, whilst six were associated with the control. This means treatment group participants were twice as likely to be tagged with an exemplar than a student in the control group. Similarly, analysis of scenario response data showed that treatment participants increased their use of equity-specific language and were better able to notice and address inequitable scenarios (see Table 7.0 for an example).

Table 7.0 Scenario Example Response Pre/Post

Explain your rating…	What adjustments are needed, if any…
Student A – Pre I think that she was trying to encourage the students, but I don't think the wording was great.	**Student B – Pre** She should focus on a more positive theme for the book such as perseverance in pursuing a dream.
Student A – Post I don't like what she said. It creates a picture that it is ok to be put down, especially if you are **African American**.	**Student B – Post** I think she should address the idea of **oppression** and how the views of **African Americans** in sports has changed over time and taken the time to highlight their important contributions to sports and branched out to other areas as well.

Discussion and Implications for Practice

The qualitative and quantitative findings suggest an equity-centered curriculum can impact pre-service teachers' preparedness to address equity issues in the field. Overall, candidates in the treatment group improved their understanding and noticing of bias and discrimination in schools and have begun to develop the knowledge, skills, and beliefs necessary to enable them to disrupt and address biases.

We plan to refine our instruments and methods, revise the equity intervention, and conduct a randomized experiment for the Fall 2017 semester; the treatment group will include 50% of student-teachers in the ETE program. We have also started a faculty and staff equity inquiry group comprised of members across five teacher preparation programs, so that we can collectively think through ways to center issues of equity across the entire preparation curriculum. We hope that our findings contribute to the ongoing conversation about how to improve the ways in which faculty and instructional staff address issues of diversity, equity, and inclusion in our curricular choices.

Significance

The significance of this work aligns with the three aforementioned aims. (1) We were able to determine the relationship between equity-centered curricular innovations and candidates' knowledge, beliefs, and skills by showing the relationship between the learning opportunities afforded to student-teachers and the subsequent shifts and developments across equity-related knowledge, beliefs, and skills. (2) We were able to examine the impact of an equity-focused intervention by using sound quantitative methods, complimented by the use of descriptive statistics and qualitative coding

schemes. Finally, (3) we demonstrated how a mixed-method approach can result in findings that support the refinement of instruments, developing coding schemes, and building statistical models to harness the true power of mixed methodological approaches.

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