Preservice Mathematics Teachers’ Development of Open-Mindedness and Cultural Competence During an Education Abroad Program: A Qualitative Case Study

Blair Izard  
*University of Connecticut - Storrs, blair.izard@uconn.edu*

Follow this and additional works at: [https://opencommons.uconn.edu/dissertations](https://opencommons.uconn.edu/dissertations)

**Recommended Citation**  
[https://opencommons.uconn.edu/dissertations/2495](https://opencommons.uconn.edu/dissertations/2495)
There is a long-standing issue in mathematics education regarding the support of equitable learning outcomes. As there has been significant attention from professional organizations, including NCTM and others, to address issues of access and equity within mathematics education, there has been an emphasis on creating mathematics classrooms that are responsive to students’ backgrounds, experiences, cultural perspectives, and traditions. However, in order to best meet these needs, we must prepare teachers that have a deep understanding of self, society, culture, and equity, which is no small challenge as it’s essentially calling for shifts in mathematics teachers’ identities. Experiential learning, in particular, education abroad, is a powerful approach that can help mathematics teachers rise to this charge. Given the literature, there appeared to be untapped potential for education abroad to influence the identities of preservice mathematics teachers in ways that they become more 1) culturally aware, 2) open-minded, and 3) aligned with a reform-minded approach to teaching the subject; however, little was known about this. As such, this research explores education abroad as a method to preparing mathematics teachers.

The purpose of this study was to describe and interpret a preservice mathematics teacher’s identity development during a semester-long education abroad program in England, particularly as it related to their sense of cultural perspectives, open-mindedness, and beliefs of mathematics teaching, and findings suggest that education abroad can positively influence these three aspects of identity. This study presents rich, descriptive qualitative data depicting the journey of a participant in a mathematics-focused education abroad program. Implications for
mathematics teacher education include the strategic development of such content-focused programs targeted toward promoting reform-minded teachers.
Preservice Mathematics Teachers’ Development of Open-Mindedness and Cultural Competence During an Education Abroad Program: A Qualitative Case Study

Blair Izard

B.S., University of Connecticut, 2009
M.A., University of Connecticut, 2010

A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy at the University of Connecticut 2020
Doctor of Philosophy Dissertation

Preservice Mathematics Teachers’ Development of Open-mindedness and Cultural Competence During an Education Abroad Program: A Qualitative Case Study

Presented by
Blair Izard, B.S., M.A.

Major Advisor ________________________________________________________________
David M. Moss

Associate Advisor _____________________________________________________________
Douglas Kaufman

Associate Advisor _____________________________________________________________
Mary P. Truxaw

Associate Advisor _____________________________________________________________
Megan Staples

Associate Advisor _____________________________________________________________
Michele Back

University of Connecticut
2020
Acknowledgements

This dissertation would not have been possible without the support and encouragement of many people with whom I would like to share my most sincere gratitude.

First, I would like to thank my mentor and advisor, David Moss. Not only had I never planned to get a PhD; it was not even on my radar. It was David who first planted this idea in my head and then encouraged me to consider it. David, thank you for telling me I could do it. Thank you for reading my drafts and encouraging me to keep writing, for talking through my ideas when I felt stuck, and for supporting and advising me throughout the job application, interview, and ultimately acceptance process. You gave me so many opportunities to grow and learn throughout the past four years, and I am so grateful for your patience, encouragement, advice, and support.

Thank you to the members of my committee. You were generous with your time and feedback, and as I start my career, know that I will pay it forward and pass your generosity on to others.

Mary Truxaw: You met with me when my research ideas were just beginning to take form, and you asked the right questions so I could start connecting my scattering ideas. Thank you for helping me get started and for encouraging me along the way. But, not only were you a valuable committee member; I am beyond grateful that I had the opportunity to co-teach with you. I learned so much from seeing and experiencing your enthusiasm in the classroom. Thank you for always being willing to share your resources, plans, and ideas with me. I loved co-teaching with you and hope that I have similar experiences working with others throughout my career.

Megan Staples: You were my secondary mathematics advisor 10 years ago, and I feel fortunate to have had the opportunity to work with you again. Thank you for including me in the Nottingham program and for trusting me to lead the students through the experience. I always
looked forward to our meetings, often over coffee, to discuss and plan for the upcoming program. Thank you for your generous feedback throughout all phases of my work and for encouraging me to streamline my ideas and clarify my argument.

Doug Kaufman: You often responded with a cheery message—something like “Will get reading!”—when I would email you with a request to provide feedback on my latest draft. Thank you for continuously offering extensive, thoughtful feedback, sometimes on short notice, and for extending my thinking throughout all stages of this process. I occasionally braced myself for your comments—knowing it would include countless numbers of questions, encouraging me to clarify, reconsider, or further explain—but was always aware it was invaluable. And, you provided priceless advice that I consistently reminded myself of, especially on the days when writing felt particularly difficult: just write—just get my thoughts onto paper—and stop overthinking my initial word choice (that can come later).

Michele Back: I appreciate how our work together came full circle. You interviewed me when I first applied to this PhD program, and you were part of my dissertation defense at the end of the program. Thank you for being willing to play catch up. You joined my committee later than the others, and I’m grateful for your inclination to jump right in and offer a fresh perspective.

Thank you to Richard Schwab for supporting me and encouraging me over these past four years. Rich, you weren’t part of my committee—you weren’t required to do anything for me—you were supportive because of your genuine desire to give back. Thank you for your generosity: for including me in your courses, for scheduling lunch or a phone call when I needed advice, and for always being there to cheer me on.
Thank you to Matthew Yates, the Director of Education Abroad, and Krista Miller for logistical support of the Nottingham program, and to all of the faculty members at the University of Nottingham who do amazing work with our students.

To the students of the Nottingham program—Ben, Laurie, Anna, and Amelia— you were open, reflective, and generous with what you chose to share. Thank you for allowing me to learn from you, for answering my many, many questions, for letting me follow you around England for a week, and for your thoughtful journal entries and discussions. I literally could not have completed this dissertation without you.

Thank you to my family. Mom and Dad: I always knew how proud you were. Thank you for believing in me and supporting me throughout this entire endeavour. Marci, your commitment to your values is inspiring, and I’m grateful to have you as a sister. To my grandparents, thank you for always valuing my education. To my friends: thank you for understanding last minute cancelations when I got caught up in my writing.

And finally, thank you to my partner Chelsey for her unwavering love, support, and patience. When I was offered the opportunity to begin this journey, we were living in Colorado, and she didn’t even flinch when I told her about it. “You need to do this” was her response, and we began planning for our move to Connecticut. Chelsey, thank you for being on this journey with me: for understanding when I needed to write for hours (and for trying to be quiet in our small one-bedroom apartment when this was the case); for knowing—often before I did—that I probably wasn’t going to make dinner (even if I said I would) and for keeping me well fed; for listening to me talk about my work and for letting me practice my presentations in front of you; and for believing in me and telling me I was awesome, especially in the moments that I wasn’t so sure. Words cannot express how grateful I am to you.
Table of Contents

Acknowledgements ........................................................................................................ iv
List of Tables .................................................................................................................. x
List of Figures ................................................................................................................. x
Chapter 1: Introduction ................................................................................................. 1
  Purpose of the Study ....................................................................................................... 3
  Calls for Change in Preparing Mathematics Teachers .............................................. 3
  The Potential of Education Abroad ........................................................................... 6
Program Description and Context ............................................................................... 8
Research Questions ....................................................................................................... 10
Significance of the Study ............................................................................................. 10
Chapter 2: Literature Review ....................................................................................... 13
  Experiential Learning ................................................................................................. 24
  Education Abroad ....................................................................................................... 31
    Education Abroad Influencing Cultural Identity ............................................... 32
  Open-Mindedness ...................................................................................................... 39
    Theory of Lay Epistemology and the Need for Closure ...................................... 40
  Reform Identity of Teaching Mathematics ............................................................ 45
    The Traditional Figured World of Mathematics ................................................ 47
    Reform Figured World of Mathematics ............................................................... 47
  Conclusion .................................................................................................................. 49
Chapter 3: Research Design and Methodology ......................................................... 51
  Research Design ........................................................................................................ 51
  Program Description ................................................................................................. 52
  Description of Participants ....................................................................................... 60
  Data Collection .......................................................................................................... 62
    Interviews .............................................................................................................. 64
    Participant Observation ......................................................................................... 66
    Document Review .................................................................................................. 68
  Data Analysis ........................................................................................................... 71
Limitations ...................................................................................................................... 78
Appendices

A: Semi-Structured Interview #1 Protocol ............................................. 188
B: Semi-Structured Interview #2 Protocol ............................................ 189
C: Semi-Structured Interview #3 Protocol ............................................ 190
D: My Cultural Awareness Profile (myCAP) ........................................ 191
E: The Shortened Version of the Revised Need for Closure Scale .......... 192
F: Journal Prompts Relating to Mathematics Teaching ....................... 193
G: Journal Prompts Relating to Open-Mindedness .............................. 195
H: Pre- and Post-IDI Scores for All Students in the 2019 Program ........... 196
List of Tables

Table 3.1: Overall Structure of the Program ................................................................. 54
Table 3.2: Overview of the Program ................................................................. 59
Table 3.3: Data Collection ................................................................. 62
Table 3.4: My Itinerary in Nottingham ................................................................. 67
Table 3.5: In Vivo Coding ................................................................. 73
Table 3.6: An Example of In Vivo Coding with my Data ........................................... 74
Table 3.7: Categories for Research Question 1 ........................................................ 76
Table 4.1: Ben’s MyCAP Responses Before the Program Versus After the Program ...... 128
Table 5.1: Traditional and Reform Figured Worlds ..................................................... 154

List of Figures

Figure 1.1: Education Abroad Influencing Teacher Identity ........................................ 6
Figure 2.1: Intercultural Development Continuum ...................................................... 33
Figure 4.1: Ben’s Developmental Orientation (Prior to the Program) ............................. 89
Figure 4.2: Ben’s Perceived Orientation (Prior to the Program) ..................................... 89
Figure 4.3: Ben’s Post Developmental Orientation ...................................................... 128
Figure 4.4: Ben’s Post Perceived Orientation ............................................................. 128
Figure 5.1: A Common Depiction of the Evolution of Man ......................................... 136
Figure 5.2: Open-Mindedness Versus Knowledge and Perspectives ............................. 171
Chapter 1: Introduction

“Mathematics… has a huge image problem…” (Boaler, 2015, p. 4). Timed tests, a focus on the memorization of facts and figures, and little application or connection to students’ lives has fostered an environment in which many students experience math anxiety and a dislike of the subject (Boaler, 2015). Imagine instead a mathematics classroom that honors the power and potency of mathematics and leverages it as a tool to explore and understand our world. A notable quote from the book *Freakonomics* speaks to this power of mathematics: “If you learn to look at data in the right way, you can explain the riddles that otherwise might have seemed impossible. Because there is nothing like the sheer power of numbers to scrub away layers of confusion and contradiction” (Levitt & Dubner, 2011, p. 13). I have always appreciated this quote because it underscores the importance of mathematics (Izard, 2018). Math can help us pursue meaningful questions and explore the world in a deeper way. What is it like to live on minimum wage? How is wealth distributed throughout the country or world? When will a country first experience a shortage of food? Mathematics education has the potential to help students understand their lives and surroundings in context and see math as instrumental in making the world more equitable and just (Gutstein & Peterson, 2006).

These notions speak to my vision of a successful and impactful mathematics classroom. I envision a classroom that takes what I refer to as a reform-minded rather than traditional approach to teaching the subject. A classroom that uses mathematics to address important social justice issues; a classroom that focuses on reasoning and application, encouraging students to explore the subject and work together to discover new concepts while making connections and talking through their ideas; a classroom in which students see a purpose in the mathematics they are learning instead of wondering why they need to know the skills being taught; a classroom that implements rich tasks that support productive struggle and allow for multiple methods of
solving a problem; a classroom that brings in manipulatives, pictures, and other visual components so that students can develop a concrete understanding of the mathematics being learned; a classroom that promotes low floor and high ceiling tasks that all students can access and also extend to higher levels while they work at different paces and to different depths; a classroom that focuses on the process of solving a problem rather than on the answer; and finally, but perhaps most importantly, a classroom in which all students are believed in and feel heard, respected and valued.

This is likely a very different type of mathematics education than most of us have experienced. Unfortunately, when I visit mathematics classrooms today, I often come across scripted lessons that focus on calculations and algorithms. Perhaps there is a word problem thrown in at the end of a lesson or worksheet, but students often struggle to make sense of these problems, causing them to shut down and disconnect from the discipline. And, to compound the issue, mathematics is often given more academic status than other subjects such as English, history or the arts, as it “serves as a fundamental selection mechanism to track students into various life directions that can be related or unrelated to the field of mathematics” (Ahlquist, 2001, p. 27). For example, “Algebra is often seen as the gatekeeper course in institutions of higher education in that if it is not passed successfully, a student is no longer able to continue into certain majors and on to graduation” (Rech & Harrington, 2000, p. 63). Scores on standardized tests and the level of mathematics completed in high school impact college acceptance rates and entrance into higher paying professions; therefore, “Success in mathematics…gives certain people cultural capital” (Ahlquist, 2001, p. 27). Because of this, mathematics teachers are positioned as gatekeepers within schools and society, with student
achievement in this subject disproportionately impacting their future success and the teachers not fully recognizing this strong negative impact their field might have.

If we look to the National Council of Teachers of Mathematics (NCTM), the National Council of Supervisors of Mathematics (NCSM), and the TODOS: Mathematics for ALL (TODOS), we can see a call for addressing issues of equity, access, and social justice in mathematics education. NCTM articulates that “Creating, supporting, and sustaining a culture of access and equity require being responsive to students’ backgrounds, experiences, cultural perspectives, traditions, and knowledge when designing and implementing a mathematics program and assessing its effectiveness” (2014b, p. 1). A position paper from NCSM and TODOS advocates for “social justice as a key priority in the access to, engagement with, and advancement in mathematics education for our country’s youth” (2016, p. 1), and defines four components of what social justice would look like in mathematics education: “eliminating deficit views of mathematics learning” (p. 1), “eradicating mathematics as a gatekeeper” (p. 2), “engaging the sociopolitical turn of mathematics education” (p. 3), and “elevating the professional learning of mathematics teachers and leaders with a dual focus on mathematics and social justice” (p. 3). This study addresses these calls for change by focusing on preparing mathematics teachers that are equipped to meet these needs of the field.

**Purpose of the Study**

**Calls for Change in Preparing Mathematics Teachers**

A review of the literature underpinning mathematics education illustrates various calls for shifts in how we prepare mathematics teachers. For example, a study by Zevenbergen (2003) shows that mathematics teachers struggled to recognize that education contributes to a cycle of inequity, and that they used a deficit model to describe students of low socio-economic status.
Gutstein writes that when mathematics teachers were asked to explicitly deal with equity within workshops and professional development, there was resistance and negativity (2000). Others write about preservice or in-service mathematics teachers initially dismissing the idea of teaching social justice, thinking that it does not belong in mathematics (de Freitas, 2008; Ahlquist, 2001; Weissglass, 2000). As de Freitas says, “Those frequently heard comments—‘I’m just a math guy,’ ‘I’m one of those people who likes math for the sake of the math only,’ ‘I’m not one for social justice’—share a particular vision of identity as being a fixed, unmovable, and irresolvable entity” (2008, p. 50).

Additionally, preservice teachers begin their teacher preparation programs with previous experiences as students that impact their teaching (Pajares, 1992). Teachers tend to teach in the ways they were taught, and there are depictions of mathematics teachers specifically being guilty of this (Ball, 1998). Because most preservice teachers have had traditional experiences as students (Lortie, 1975), it is imperative that their teacher preparation program expand their view of mathematics education beyond this traditional math for math’s sake approach.

So, what kind of preparation program do preservice mathematics teachers need? Weissglass has said, “Any serious attempt to achieve equity in mathematics education must be rooted in an ongoing process of increasing our understanding of how individual prejudices, unaware biases, and systemic societal discrimination affect teaching and learning” (2000, p. 10). Gutstein has asserted that more work needs to be done to alter teachers’ personal belief systems built on deficit thinking, specifically when working with diverse children (2000). De Freitas has suggested, “Alternative visions of identity are required” in order to change the fixed, closed mindsets of mathematics teachers and begin to develop a critical mathematics education (2008, p. 49). Neumayer DePiper has said that it is not enough to simply develop a set of effective
mathematics teaching practices (2013). These scholars have suggested that other methods of preparing mathematics teachers must be considered—methods that encourage identity development.

Teacher professional identity is a core aspect of the teaching profession (Sachs, 2005): “It provides a framework for teachers to construct their own ideas of ‘how to be’, ‘how to act’ and ‘how to understand’ their work and their place in society” (p. 15). The development of teacher professional identity is an ongoing process (Beijaard, Meijer & Verloop, 2004) that cannot be forced. Instead, “It is negotiated through experience and the sense that is made of that experience” (Sachs, 2005, p. 15). This study focuses on three specific facets of identity: 1) Cultural identity: preservice mathematics teachers should have a developed sense of their own cultural identities and, as Weissglass says, an increased understanding of how their individual prejudices and unaware biases affect teaching and learning; 2) Open-minded identity: rather than having a fixed, closed mindset as de Freitas describes, mathematics teachers can develop an identity that is more open-minded; and 3) Reform identity: mathematics teachers should move beyond the traditional approach to teaching mathematics and identify with the reform approach that I described above and will describe more thoroughly in chapter 2.

Given what is already known about education abroad programs, there appears to be potential for education abroad to influence the identities of preservice mathematics teachers in ways that they become more cultural, open-minded, and aligned with a reform identity; however, little is known about this. This study explores this timely area of inquiry: the influence that education abroad has on these three facets of identity (see figure 1.1). In the next section, I will explore some of the impact we know education abroad can have on preservice teachers.
The Potential of Education Abroad

Research has shown that throughout an education abroad experience, students “challenge their beliefs about the world and its people, develop empathy for and trust in others, learn a significant amount about at least one other culture, and often to their surprise, learn quite a lot about their own culture” (Cushner, 2009, p. 160). Much of this learning comes from the experience of feeling like a cultural outsider while being immersed in a new culture. Merryfield (2000) found that those who left the United States (US) and experienced living in another culture “came to understand temporarily what it feels like to live outside of the mainstream…. They became conscious of what happens to identity when people know they don't belong” (p. 439). This experience of feeling like a cultural outsider is a feeling that many mainstream teachers in the US have never felt before, and it may lead to a personal understanding of what it is like to be marginalized and stereotyped. This is an impactful experience that facilitates teachers “to become more ethnorelative in their understanding of others, more skilled at crossing cultures, and committed to bringing about change through their work” (Cushner, 2009, p. 165; Marcus & Moss, 2015).
These skills are especially important for teachers in the United States given the cultural mismatch between teachers and students. In 2011, 84% of teachers in the United States were White, 7% Black, 6% Hispanic and 4% “other” (Feistritzer, 2011). According to the National Center for Education Statistics (2019), in 2015, the demographics of public-school students in the United States were as follows: 49% White, 15% Black, 26% Hispanic and 9% “other.” Since then, the demographics of students within the United States have continued to grow more diverse, while the demographics of teachers have remained relatively unchanged. In many settings, these cultural differences extend to religious beliefs, language, and country of origin, with the result being that “too many teachers are inadequately prepared to teach ethnically diverse students” (Gay, 2002, p. 106). Terms like “intercultural competence,” “intercultural sensitivity,” “culturally responsiveness” and “cross-cultural communication” have become prevalent within the field of education as more people recognize the general unpreparedness of teachers to work with students of other cultural backgrounds. Cushner (2011) defines intercultural competence as “the critical knowledge and skills that enable people to be successful within a wide range of culturally diverse contexts” (p. 606). Culturally responsive teaching argues that “explicit knowledge about cultural diversity is imperative to meeting the educational needs of ethnically diverse students” (Gay, 2002, p. 107). Intercultural sensitivity is also crucial for today’s teachers. As Mahon says, “Educators must be sensitive to their students’ cultural backgrounds in order to ensure that a fair and equal education is received by all learners” (2003, p. 5). Unfortunately, studies have shown that teachers are lacking in their intercultural sensitivity (Mahon, 2003); and, as Bennett (1993) describes, intercultural sensitivity is not a natural skill:

It is not a part of our primate past, nor has it characterized most of human history. Cross-cultural contact usually has been accompanied by bloodshed, oppression, or genocide.
The continuation of this pattern in today’s world of unimagined interdependence is not just immoral or unprofitable—it is self-destructive. Yet in seeking a different way, we inherit no model from history to guide us (p. 21).

Experiences, like education abroad, that allow preservice teachers to immerse themselves in cultures outside of their home country is one way of providing meaningful cultural experiences that will foster the development of these skills. Studies have shown that education abroad programs can promote higher levels of intercultural sensitivity (Moss, Barry, & MacCleoud, 2018), and research has shown that there are many other personal benefits of participating in an education abroad program, which include an increase in intercultural competence, global consciousness, empathy, international knowledge, self-awareness, self-examination, adaptability, and the opportunity to step outside of one’s comfort zone and challenge current beliefs (Cushner, 2009).

**Program Description and Context**

At the University of Connecticut (UConn), there are multiple opportunities for preservice teachers to participate in education abroad programs. There are both short term (2-6-week summer and intersession programs), and long-term (full 15-week semester programs) options for students. One of the long-term programs is the Nottingham Mathematics Program, a collaboration with the University of Nottingham that is specifically designed for preservice secondary mathematics teachers or preservice elementary teachers whose subject-area concentration is mathematics. This program affords preservice mathematics teachers the opportunity to engage in academic work and an internship during the fall semester (early September to mid-December) of their master’s year as an element of their initial teacher certification program. Students take classes at the University of Nottingham, intern in local...
schools and at the world-renowned Centre for Research in Mathematics Education, and immerse
themselves in British society. They also complete an “inquiry project”: a piece of original
research that is designed to help students see and consider deeper issues of schools and
schooling.

During the summer before departure, students take a class with a UConn instructor to
prepare them for their semester abroad and launch their inquiry project. Once in England,
students conduct their school and research internships, complete coursework at the University of
Nottingham, and participate in a seminar through UConn. This seminar is intended to provide
continued support in the development of their inquiry project and a space for students to make
sense of their experiences abroad. The instructor meets virtually, online, with the students once
per week and visits them in England for about two weeks sometime in late September/early
October. During this visit, they tour cultural sites, hold at least one class in-person, and meet
individually with each student. Throughout this research study, I have been the instructor for the
summer and fall UConn courses, and as such, have worked closely with the students in the
program.

In the fall of 2019, four preservice teachers participated in this education abroad
experience, and although all of them consented to participate in the study, one of them, whom I
will refer to as Ben, was selected as the focus of this case study. In chapter 3, I will describe how
and why I selected Ben as the participant of this study. The fact that I have worked so closely
with this program might be construed as a sample of convenience, and it must be acknowledged
that this has allowed for ease of access. However, the unique characteristics of this program and
the fact that it’s created specifically for preservice teachers with a mathematics focus, made it an
ideal fit to pursue the research questions for this study.
Research Questions

Grounded in my experiences and my review of the literature, I have speculated that if preservice mathematics teachers participate in education abroad programs, they will develop a better understanding of their own cultural identities, they will become more open-minded, and their identity will align more closely with the reform approach I described. Therefore, the purpose of this study is to describe and interpret preservice teachers’ identity development during a semester long education abroad program in Nottingham, England, particularly as it relates to their sense of open-mindedness, intercultural perspectives, and descriptions of mathematics teaching. Hence, the overarching question that has guided this dissertation study is: In what ways do preservice mathematics teachers identities evolve through participation in an education abroad program? Specifically, I explore:

1. In what ways does the experience of participating in an education abroad program influence the cultural identities of preservice mathematics teachers?

2. In what ways does the experience of participating in an education abroad program influence the open-mindedness of preservice mathematics teachers?

3. In what ways does the experience of participating in an education abroad program influence the vision that preservice mathematics have for teaching mathematics?

Significance of the Study

At the beginning of this chapter, I described what I refer to as a reform approach to teaching mathematics, and I believe this description speaks to the potential that I see for a better, more meaningful mathematics education. Rather than focusing on facts, figures, algorithms, and the manipulation of numbers, we can give our students a mathematics education that they can connect to—one that teaches to social justice issues, address issues of access and equity, and
allows all students to feel heard, respected, and valued. These changes in mathematics education are especially important given that mathematics is given more academic status than other subjects.

The Nottingham education abroad program may address some of the calls for change that we have seen in the field of mathematics education. As discussed previously, Zevenbergen (2003) has written about how mathematics teachers have difficulty recognizing that education contributes to a cycle of inequity and use deficit models to describe students of low socio-economic status. Gutstein’s (2000) study showed mathematics teachers demonstrating resistance and negativity when asked to explicitly deal with issues of equity within workshops, and others have written about preservice or in-service mathematics teachers initially dismissing the idea of teaching social justice, thinking that it does not belong in mathematics (de Freitas, 2008; Ahlquist, 2001; Weissglass, 2000). These authors have suggested shifts in the preparation of mathematics teachers in order to address some of the challenges that exist. Weissglass has said mathematics teachers must increase their awareness “of how individual prejudices, unaware biases and systemic societal discrimination affect teaching and learning” (2000, p. 10). Gutstein (2000) suggests that we must alter teachers’ personal belief systems that are built on deficit thinking, and de Freitas contends that “alternative visions of identify are required” to change the fixed, closed mindsets of mathematics teachers (2008, p. 49).

The work of these scholars suggests that we must consider methods of preparing mathematics teachers that encourage identity development. Instead of having fixed and closed mindsets, we want mathematics teachers that have open-minded identities. We want our preservice mathematics teachers to have a developed sense of their cultural identities, an awareness of how their prejudices and biases affect teaching and learning, and the ability to
successfully work with students of other cultural backgrounds. We also want preservice teachers
to have identities that align with the reform approach I described. Given what is already known
about education abroad programs, there appears to be potential for education abroad to influence
the identities of preservice mathematics teachers in ways that they become more cultural, open-
minded, and aligned with a reform identity.

Because the Nottingham program is geared specifically towards the preparation of
mathematics teachers, it is a unique opportunity to study the influence of education abroad on
preservice mathematics teachers. I am unaware of any other program such as this. The previous
two years, I had the wonderful opportunity to work with the cohorts that participated in this
program, and each year I saw how the students grew immensely from their experiences abroad. I
saw firsthand how they came back to the United States with newfound energy as they shared
stories of conferences attended, conversations with mathematics education professors and
researchers, trips they went on, and mistakes they made along the way. These observations were
purely anecdotal, but they suggested that there was something special coming out of this
program. This study has provided the opportunity to learn about what this particular program
offers and how programs such as this can address the calls for change in the preparation of
mathematics teachers.
Chapter 2: Literature Review

There is a long-standing problem in mathematics education with respect to supporting equitable outcomes. When looking at the history of mathematics education, we can see that the field has developed over time, but it is apparent that prior to the mid-90s, there was a lack of focus on issues of access and equity. Going back to Plato’s *Meno* from 380 B.C.E., there was a view of mathematical knowledge as being something that was offered through guidance, rather than something that could be discovered and built from prior understandings (Schoenfeld, 2016). This is a view of mathematics we have seen over time and still see today.

The professionalization of education began in the late 19th and early 20th centuries. Societies that focused on the study of education started to emerge: the American Mathematical Society (AMS) in 1888, National Society for the Study of Education (NSSE) in 1901, Mathematical Association of America (AMS) in 1915, American Educational Research Association (AERA) in 1916, and National Council of Teachers of Mathematics (NCTM) in 1920, to name a few. As Schoenfeld (2016) reports, early documents from these organizations show a field of mathematics education that focused on what to teach and how to teach without paying much attention to the learner. This is apparent by the fact that much of the research in the United States throughout the 1970s still consisted of controlled experiments, laboratory studies and factor analyses, and work from Piaget like *The Child’s Conception of Number* (1952) and *The Child’s Conception of Geometry* (1960) was largely dismissed by the field (Schoenfeld, 2016).

There was a time when sheer drill and practice—the repetitive practice of small tasks, like the memorization of facts and practice of simple skills (Jaakkola & Nurmi, 2009)—was encouraged to help students learn arithmetic (Schorling, 1926; Thorndike, 1921). Wars also
played a role in the development of mathematics education. For example, when World War II began, the US Office of Education collaborated with NCTM to determine the mathematics that schools should provide for students to enter the military with adequate mathematical preparation (NCTM, 1943). In a published report, they declared that public schools had not developed the practical mathematical ability that is needed for the Army and civil life, and they gave an example of men skillfully using the Pythagorean Theorem in geometry class but not seeing its applicability in constructing the corner studs of barracks. The report stated, “Computation has too often been stressed, and accurate, skilled thinking in concrete quantitative situations has been minimized” (p. 245) and “Many students have acquired tricks with numbers which have proven valueless under conditions of use” (p. 245). The authors claimed that two features of mathematical learning had suffered: understanding and experience in application.

Later, the Soviet launching of Sputnik in October of 1957 resulted in a US effort to focus on science, technology, engineering and mathematics (STEM) education. Mathematicians, scientists and educators worked together to create curricula that would allow the United States to compete in areas of science and technology. This time came to be known as the era of the “New Math” movement, and it impacted the educational system throughout the 1960s. This movement intended to improve the mathematical preparation of the scientific workforce and aimed to make school mathematics more like mathematics instruction at the university level (Kilpatrick, 2014). “New Math” reformers felt that schools were not adequately preparing students to study advanced mathematics in college, and they believed that bringing advanced mathematics such as topology and group theory into the lower grades would help solve this problem (Stanic & Kilpatrick, 2004). There was also a focus on using precise language, specifically around the language of sets, relations and functions, as it was believed this would provide more coherent
discourse within the classroom and more meaningful structure for the students. The reformers believed that students would be drawn to mathematics if they were provided with more mathematical structure and could see how the mathematics fit together (Kilpatrick, 2014). Pedagogical approaches such as Socratic dialogue and discovery learning were among the teaching approaches that were used at the time; however, this movement did not last long as teachers and parents struggled to understand the new curriculum and became frustrated (Herrera & Owens, 2001).

In the 1970s, an effort to bring mathematics education “back to the basics” re-emphasized computation and algebraic manipulation (Herrera & Owens, 2001). This movement stemmed from a public perception that the “New Math” movement was unsuccessful based on declines in college admission test scores (Kilpatrick, 2014), even though the assessments had never been updated and were not valid measures of “New Math” approaches. During this “back to the basics” movement, there was a focus on a spiralling curriculum that revisited and built on basic ideas until the student understood the full mathematical system.

In 1980, NCTM published An Agenda for Action stressing that problem solving should be the main focus of the 1980s and finally calling for attention to student thinking within the research community. However, in 1983 A Nation at Risk was released, which sparked a public outcry about the state of US education. Specifically relating to mathematics education, some of the concerns reported in A Nation at Risk included the following: a drop in nearly 40 points on the average mathematics scores from 1963 to 1980 for the College Board’s Scholastic Aptitude Test (SAT); an increase by 72% of remedial mathematics courses taught in public four-year colleges between 1975 and 1980, with these classes representing a quarter of all the mathematics courses taught in those institutions; and a lack of higher order intellectual skills among 17-year-
olds, with only one-third of these students being able to solve a mathematics problem requiring several steps.

NCTM responded in 1989 with the *Curriculum and Evaluation Standards for School Mathematics*, which was an attempt to improve mathematics education nationwide. This document set standards for “mathematical content and instructional conditions that should be associated with a high-quality mathematics program as well as a set of standards for the evaluation of school programs and the assessment of students’ mathematical learning” (NCTM Research Advisory Committee, 1988, p. 338). These NCTM standards defined the beginning of the standards movement: science, language arts, and history standards were also introduced around the same time. In 1991, NCTM published another document, the *Professional Standards for Teaching Mathematics*, which, combined with the *Curriculum and Evaluation Standards for School Mathematics*, was intended to establish a framework for mathematics education reform. These standards detailed what teachers needed to know in order to be successful with the new goals for mathematics education and provided standards for how to support and develop teachers. It included standards for teaching mathematics, standards for the evaluation of teaching mathematics, standards for the professional development of teachers of mathematics, and standards for the support and development of mathematics teachers and teaching. The *Professional Standards for Teaching Mathematics* were built on beliefs that teachers are the main figures in changing the teaching and learning of mathematics in schools, and in order for change to occur, teachers must have long-term support and adequate resources (NCTM, 1991).

In 1995, NCTM published *Assessment Standards for School Mathematics*. Its authors included mathematics educators, K-12 classroom teachers, mathematics supervisors, educational psychologists, and administrators, and the document had been shared widely with more than
2,000 reviewers offering critiques and comments before being published. Within this document, mathematics assessment standards were defined (the mathematics standard, the learning standard, the equity standard, the openness standard, the inferences standard, and the coherence standard), and suggested uses of the assessment standards for different purposes were articulated (monitoring students’ progress, making instructional decisions, evaluating students’ achievement and evaluating programs). Together, these three NCTM documents provided a new vision of school mathematics and helped to reshape instruction within mathematics education. Although the concept of standards was not new to education (they were introduced at least as far back as the Committee of Ten in 1893), the release of the NCTM documents “represented a radical shift in the ways that curriculum specifications were put forward” (Schoenfeld, 2016, p. 511).

Schoenfeld goes on to say:

> Documents prior to the publication of the NCTM standards focused on identifying the content that students should learn…. The standards did, of course, list such content. But in addition, they focused heavily on the processes of doing mathematics in which students should engage to become mathematically proficient: mathematical problem solving, mathematical communication, mathematical reasoning, and making mathematical connections. Learning mathematics was redefined to mean learning the processes of doing mathematics as well as learning the content—a fundamental shift grounded in the work produced by the research community. (2016, p. 511)

Recognizing that the standards would need to be revisited in order to remain relevant, in the late 1990s NCTM put together a team that would work to update the standards. The result was a book, *Principles and Standards for School Mathematics*, which was published in 2000 and served as a single resource for improving mathematics curricula, teaching, and assessment. Its
goal was to provide students with the best mathematics education possible, and it focused on preparing students to “fulfill personal ambitions and career goals in an ever-changing world” (p. 2), shifting the focus away from drilling arithmetic facts. It described the following vision of mathematics education:

All students have access to rigorous, high-quality mathematics instruction, including four years of high school mathematics…. The curriculum is mathematically rich, providing students with opportunities to learn important mathematical concepts and procedures with understanding. Students have access to technologies that broaden and deepen their understanding of mathematics. More students pursue educational paths that prepare them for lifelong work as mathematicians, statisticians, engineers, and scientists (p. 1).

It was in this document, that they highlighted the notion of equity “by making it the first principle for reform of school mathematics,” (Berry, 2005, p. 1). The equity principle stated, “Excellence in mathematics education requires equity—high expectations and strong support for all students” (p. 3). The principle acknowledged that “too many students—especially students who are poor, not native speakers of English, disabled, female, or members of minority groups—are victims of low expectations in mathematics” (p. 3), and it demanded that all students must have the opportunity to learn mathematics. NCTM’s equity principle was an important acknowledgement that has contributed to conversations since then around equity within mathematics education, and this study builds off these principles.

In 2010, the Common Core State Standards for Mathematics (CCSSM) were released. The designers emphasized that three goals of CCSSM were focus, coherence, and rigor. Perhaps surprisingly, the CCSSM did not seem to be influenced by the previous work relating to equity. While it acknowledged that “all students must have the opportunity to learn and meet the same
high standards if they are to access the knowledge and skills necessary in their post-school lives” (p. 4), there was no specific mention of equity. The document has been criticized for being “a move away from the “equity principle” (Gutierrez, 2018) and a departure from work by the NCTM and other groups that have advocated for equity within mathematics education. What the standards did address was “the problem of a curriculum that is “a mile wide and an inch deep”” (CCSSM, 2010, p. 3), and it aimed for more clarity and specificity in terms of what we expect of students. In addition to the content standards (which define what students should understand and be able to do), there were also “standards for mathematical practice,” which rest on processes and proficiencies that have been deemed important within mathematics education. They describe varieties of expertise that mathematics teachers should seek to develop in students across all grade levels. These are:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

These eight practices combined with the standards provide a sense of what we currently expect mathematics teachers to be working towards in their classrooms. While the work of CCSSM failed to underscore issues of access and equity, it did articulate a more progressive vision of mathematics teaching, one that aligns with a reform—rather than traditional—approach.
to teaching the subject. Ma and Singer-Gabella (2011) define “traditional” mathematics teaching as “a routine of presenting a procedure, modeling an example problem, and then asking children to practice similar problems” (p. 8). In comparison, they describe a “reform” approach as “designing and posing tasks that call on children to reason about quantities, invest their own strategies, and discuss their thinking” (p. 8). This description of reform teaching is aligned with the goals of CCSSM.

In 2014, NCTM published *Principles to Actions*, a document to supplement CCSSM. Promoting the idea that “standards do not teach; teachers teach” (p. 1), *Principles to Actions* provides guidelines for how to implement CCSSM. The document provides updated principles that describe features of a high-quality mathematics education, again emphasizing the notion of equity by establishing “access and equity” as one of its updated principles. While this document celebrates some accomplishments within the field of mathematics education, it also points out that we have much work to do. It states, “The difference in average NAEP mathematics scores between white and black and white and Hispanic 9- and 13-year-olds…remains between 17 and 28 points” (p. 2). It advocates for eliminating “racial, ethnic, and income achievement gaps so that all students have opportunities and supports to achieve high levels of mathematics learning” (p. 2), and it stresses that we must shift from “pockets of excellence” to “systemic excellence” (p. 2). Around this time, NCTM also released a position statement on access and equity in mathematics education, stating the following:

Creating, supporting, and sustaining a culture of access and equity require being responsive to students’ backgrounds, experiences, cultural perspectives, traditions, and knowledge when designing and implementing a mathematics program and assessing its effectiveness. Acknowledging and addressing factors that contribute to differential
outcomes among groups of students are critical to ensuring that all students routinely have opportunities to experience high-quality mathematics instruction, learn challenging mathematics content, and receive the support necessary to be successful. Addressing equity and access includes both ensuring that all students attain mathematics proficiency and increasing the numbers of students from all racial, ethnic, linguistic, gender, and socioeconomic groups who attain the highest levels of mathematics achievement (2014b, p. 1).

These documents reflect NCTM’s focus on promoting access and equity within mathematics education. Also supporting the conversation, the National Council of Supervisors of Mathematics (NCSM) and TODOS: Mathematics for ALL (TODOS) released a position paper in 2016 that advocates for “social justice as a key priority in the access to, engagement with, and advancement in mathematics education for our country’s youth” (p. 1). The position paper defines four components of what social justice would look like in mathematics education: “eliminating deficit views of mathematics learning” (p. 1), “eradicating mathematics as a gatekeeper” (p. 2), “engaging the sociopolitical turn of mathematics education” (p. 3), and “elevating the professional learning of mathematics teachers and leaders with a dual focus on mathematics and social justice” (p. 3).

There have been many other pushes toward reforming mathematics education. Work from Gutstein and Peterson (2006) provides examples of how to teach social justice through mathematics, along with work from Nicol et al. (2019), Ross and Shelton (2019), Aguirre, Anhalt, Cortez, Turner, and Simic-Muller (2019), Lesser (2007), McCoy (2008), Turner and Strawhun (2007) and many others. Catalyzing Change in High School Mathematics: Initiating Critical Conversations (NCTM, 2018) provides four key recommendations to ensure that every
student has mathematical experiences for their future success: 1) all students should learn the “Essential Concepts” (p. 7), in other words, what NCTM deems to be the most critical concepts and skills, “in order to expand professional opportunities, understand and critique the world, and experience the joy, wonder, and beauty of mathematics” (p. 7); 2) schools should eliminate “the practice of tracking teachers… [and] students into qualitatively different… course pathways” (p. 7); 3) “Classroom instruction should be consistent with research-informed and equitable teaching practices” (p. 7); and 4) “High schools should offer continuous four-year mathematics pathways with all students studying mathematics each year… to ensure the highest-quality mathematics education for all students” (p. 7).

In summary, the field has worked to address issues of equity and access within mathematics education. Revised standards, new mathematical practices, and an emphasis on equity, access, and social justice provide a vision of mathematics education that has the potential to be meaningful and relevant for all students regardless of race, ethnicity, gender, and socioeconomic status. CCSSM promotes a reform approach to teaching the subject; an approach that emphasizes focus, coherence, and rigor, and stresses varieties of expertise that mathematics teachers should develop in their students through the implementation of the eight mathematical practices. In order for teachers to engage in reform pedagogy, they must develop a vision of teaching mathematics that differs drastically from the vision of traditional classroom models (Ma & Singer-Gabella, 2011). The position statements from NCTM, TODOS, and others advocate for a culture of access and equity—for mathematics classrooms that are responsive to students’ backgrounds, experiences, cultural perspectives, and traditions. This requires teachers to have a deep understanding of self, society, culture, and equity. These demands of mathematics teachers cause an important question to emerge: how do we prepare them to teach in these ways?
A review of the literature suggests that a focus on teacher identity could be helpful in supporting the development of teacher competencies necessary for teaching toward access and equity. Weissglass (2000) writes that “any serious attempt to achieve equity in mathematics education must be rooted in an ongoing process of increasing our understanding of how individual prejudices, unaware biases, and systemic societal discrimination affect teaching and learning” (p. 10). Gutstein references the differing socio-economic demographics between teachers and their students and the widening achievement gap between white students and students of color, reporting on how a state initiative worked to confront teachers’ “perceptions, attitudes, and beliefs toward diverse children in their classrooms” (2000, p. 30). He asserts that more work needs to be done to alter teachers’ personal belief systems built on deficit thinking, specifically when working with diverse children (2000). De Freitas says, “Alternative visions of identity are required” in order to change the fixed, closed mindsets of mathematics teachers and begin to develop a critical mathematics education (2008, p. 49). Ma and Singer-Gabella (2011) argue that we can prepare mathematics teacher identities to align with a reform approach to teaching the subject.

Beauchamp and Thomas advocate for more research on how to influence the shaping of teacher identities within teacher education programs, stating that, ultimately, “the responsibility of teacher education programs [is] to create opportunities for the exploration of new and developing teacher identities” (2009, p. 176). Specifically, for mathematics teachers, Neumayer DePiper says:

- Developing a repertoire of effective mathematics teaching practices is not enough.
- Teacher education must also prepare teacher candidates to enact these practices while navigating the many social, political, and institutional dynamics in mathematics.
classrooms and schools. In the US, these dynamics include the pressures of test-driven accountability and deficit perspectives of students. (2013, p. 9)

Other methods of preparing mathematics teachers appear to be necessary—methods that encourage identity development. This study addresses these calls for shifts in mathematics teachers’ identity. As discussed briefly in chapter 1, teacher professional identity “provides a framework for teachers to construct their own ideas of ‘how to be’, ‘how to act’ and ‘how to understand’ their work and their place in society” (Sachs, 2005, p. 15). Beijaard, Meijer and Verloop’s (2004) literature review found an absence of a clear definition of teacher professional identity but found four features that seemed to speak to teachers’ professional identity: (1) identity is an ongoing process that is dynamic and not stable or fixed, (2) it involves a person and a context, (3) “a teacher’s professional identity consists of sub-identities that more or less harmonize” (p. 122), and (4) it involves agency, or teachers who are “active in the process of professional development” (p. 122). The development of teacher professional identity is an ongoing process (Beijaard, Meijer & Verloop, 2004) that cannot be forced. Instead, “It is negotiated through experience and the sense that is made of that experience (Sachs, 2005, p. 15). Given the fact that experience seems to play a key role in shifting identities, in the next section, I will explore the notion of experiential learning. How does engaging in an experience contribute towards identity development?

**Experiential Learning**

An experiential learning theory was proposed by David A. Kolb in 1984 (2015) and stems from the work of early 20th century scholars, particularly Kurt Lewin, John Dewey, and Jean Piaget. The learning models advanced by these early scholars share characteristics that work to define the nature of experiential learning. For example, the Lewinian model emphasized
personal experience as a way to provide a concrete reference point that would give meaning to abstract concepts (Kolb, 2015). His model was presented as a cycle that consists of four stages: concrete experience, observations and reflections, formation of abstract concepts and generalizations, and testing implications of concepts in new situations. Lewin stressed personal experience as a method and context for understanding and making sense of new ideas.

Dewey’s model of learning is similar to Lewin’s model, although Dewey underscored the developmental nature of learning by describing how “learning transforms the impulses, feelings, and desires of concrete experience into higher-order purposeful action” (Kolb, 2015, p. 33), again referencing the power of experience in the learning process. Piaget’s model of learning and cognitive development highlighted experience, concept, reflection, and action for the development of adult thought (Kolb, 2015). The learning models of these three scholars share similar characteristics, and they come together to provide the foundation for the consideration of experiential learning in the present day. Below, I will address several key assertions stemming from their models that offer a conceptual frame for experiential learning. What follows is a series of tenets that arise out of the work of Kolb (2015) and form my working definition of experiential education.

*Learning occurs from interaction between the person and environment* (Kolb, 2015; Kolb & Kolb, 2005, p. 194). Learning is grounded in experience. When a person interacts with the environment, they acquire direct experience that promotes learning.

*Learning is a process that cannot be measured in terms of outcomes* (Kolb, 2015; Kolb & Kolb, 2005). Education should not only be about determining “how much” the student knows, but instead encouraging the student participate in the process of constructing knowledge. Instead of focusing solely on the academic performance of the student, we should emphasize the process
of learning. If we focus on creating better learning experiences, inevitably more sophisticated outcomes will follow. This is a prevalent concept that has been consistently supported by numerous scholars over time. For example, this perspective was shared by Jerome Bruner, who stated, “We teach a subject not to produce little living libraries on that subject, but rather to get a student to think mathematically for himself, to consider matters as an historian does.... Knowing is a process, not a product” (Bruner, 1966, p. 72).

Building upon this perspective, Lilian G. Katz (1985) emphasized that focusing on performance often results in low recall of concepts over time, whereas focusing on learning promotes long-term understanding. When students are educated in an environment that stresses outcomes, they learn that memorizing rules, technique and facts are more important than deep understanding (Brooks & Brooks, 1999). They focus their efforts on passing tests, and when they are asked to recall or apply their learning later, they struggle. Brooks and Brooks conclude, “Deep understanding, not imitative behavior, is the goal” (1999, p. 16). This is not to say that learning cannot be evaluated in some way. The process and experience of learning can still be assessed and documented; however, it would not be as simple as administering a traditional test. Instead, other methods such as observing students as they work; asking students to think aloud, using rubrics that describe the process of learning as well as outcomes; and having students reflect on their growth can provide teachers with a richer conception of what is being learned.

*Learning is an all-inclusive process that involves the integrated functioning of the total person—thinking, feeling, perceiving, and behaving* (Kolb, 2015; Kolb & Kolb, 2005). In order to truly learn something, one needs to be completely immersed in an experience—to learn mathematics, they must conduct themselves like mathematicians; to understand science, they must participate in a scientific process as though they were scientists.
Thus, Experiential Learning Theory (ELT) suggests “a holistic integrative perspective on learning that combines experience, perception, cognition, and behavior” (Kolb, 2015, p. 31). It stresses that learning is a process where ideas are not fixed but are instead formed and shaped through experience (Kolb, 2015). ELT proposes knowledge is created from “grasping” and “transforming” an experience. There are two modes of grasping an experience—concrete experience and abstract conceptualization—and two modes of transforming an experience—reflective observation and active experimentation. These processes together form a cycle. A person first has a direct or concrete experience (grasping mode). The experience serves as the foundation for reflective observation (transforming mode). The reflections are then refined into abstract concepts (grasping mode). The person can then test these new implications through active experimentation (transforming mode), and use them to create new experiences, repeating learning cycle. In other words, the process of experiential learning involves a continuous cycle of experiencing, reflecting, thinking and acting (Kolb & Kolb, 2005; Dewey, 1938). Potentially, this notion of learning is much more extensive than the typical conceptions of learning that we typically envision within classroom settings. ELT suggests that learning occurs in all settings, “from schools to the workplace, from the research laboratory to the management board room, in personal relationships and the aisles of the local grocery” (Kolb, 2015, p. 43), and it happens at all life stages.

One particularly important aspect of experiential learning is that the person has a positive experience that fosters a love of learning and a desire to continue learning. As Dewey writes, “Formation of enduring attitudes, of likes and dislikes may be and often is much more important than the spelling lesson or lesson in geography or history that is learned” (Dewey, 1938, p. 48). A student who had an affirming experience of learning will have an eagerness to learn and a
desire to continue learning in the future. Dewey writes about visitors to progressive schools that were using an experiential approach to learning often being shocked by what they misinterpreted as a lack of manners among the students (1938). He provides an example of children bumping into each other or visitors without an apology, but explains it is often due to their eager interest to continue doing what they were doing— to continue engaging in the experience of learning. These types of experiences promote a love for learning and a desire to continue learning. If the opposite happens and the desire to learn is lessened, it is not just a lack of preparation that occurs for the student. Even worse, the student may be unable to manage various circumstances throughout the course of their life because they have not developed the ability to learn from the experiences they have. Dewey writes:

> What avail is it to win prescribed amounts of information about geography and history, to win ability to read and write, if in the process the individual loses his own soul: loses his appreciation of things worth while, of the values to which these things are relative; if he loses desire to apply what he has learned and, above all, loses the ability to extract meaning from his future experiences as they occur? (Dewey, 1938, p. 49)

Experiential learning is seen to be a powerful way of coming to know the world. We often hear the distinction between “doing” and “understanding”— “it is a distinction applied to the case, for example, of a student who presumably understands a mathematical idea but does not know how to use it” (Bruner, 1960, p. 29). Solely observing without the opportunity to construct one’s own knowledge is not enough; instead, we have to “understand the significance of what we see, hear, and touch” (Dewey, 1938, p. 68). Engaging in experiences are what promote true learning and intellectual activity. “The schoolboy learning physics is a physicist, and it is easier for him to learn physics behaving like a physicist than doing something else” (Bruner, 1960, p.
14). So often, education focuses around the “something else,” having students, for instance, memorize facts and restate previously drawn conclusions rather than experiencing the process of inquiry and working through it on their own.

It must be stated that the limitations within the “traditional” schoolroom, “with its fixed rows of desks and its military regimen of pupils who were permitted to move only at certain fixed signals” (Dewey, 1938, p. 61), make experiential learning challenging. In 1999, Brooks & Brooks also wrote about overly structured school system making it difficult for learning to occur:

What images are evoked in most people’s minds upon hearing the word “school”?

Raising one’s hand before answering questions, listening to teachers and taking notes, taking tests, lugging textbooks from class to class, writing book reports, standing in straight lines, seeking permission to visit the restroom. These are the very images, practices, and expectations upon which schooling has been structured since the first common schools were erected well over a century ago. They are images of control, not learning (p. 126).

Two decades later, these are still the same images that come to mind when we think of school. Rigid routines put restrictions on intellectual freedom and growth, and students have trouble retaining what they’ve learned in school. They also struggle to apply their learning to real life situations and make connections across content areas. Dewey, in *Experience and Education*, writes:

Almost everyone has had occasion to look back upon his school days and wonder what has become of the knowledge he was supposed to have amassed during years of schooling, and why it is that the technical skills he acquired have to be learned over again and changed form in order to stand him in good stead…. These questions cannot be
disposed of by saying that the subjects were not actually learned, for they were learned at least sufficiently to enable a pupil to pass examinations in them. One trouble is that the subject matter in question was learned in isolation; it was put, as it were, in a water-tight compartment…. it was segregated when it was acquired and hence it is so disconnected from the rest of experience that it is not available under the actual conditions of life (1938, p. 48)

In a 1992 study at a large state university, resident undergraduate students self-reported on what they were learning. Interestingly, they reported the least amount of growth in “changing views,” “writing,” and “mathematical ability,” (Ludwig, 1992, p. 24), but the most amount of growth in “meeting new and different people,” “making decisions independently,” “leadership,” and “social confidence.” Brooks & Brooks discussed this, noting:

Although these differences seem startling, they are really quite predictable. Resident life necessitates the construction of one’s own role in the new social order of dormitories. The environment requires independence. Because students are responsible for their own socialization, they mature in this area. But, in traditional academic domains, the instructor determines what is to be learned, how it is to be learned, and the pace and rhythm of the learning. The learner, to a large degree, loses control. With someone else in charge, personal growth diminishes (1999, p. 49)

It is clear, according to experiential education theorists, that for meaningful learning to occur, we must shift our images of what learning commonly looks like. In order for mathematics teachers to address issues of access and equity, they must develop a deep understanding of self, society, culture, and equity. Experiential learning is a powerful approach that can be used to help teachers develop these understandings and meet these needs of the field. In particular, a
meaningful experience that preservice teachers can have that develops these understandings and ultimately shifts identity, is education abroad. Education abroad provides students with the experience of living in another country, allowing the opportunity for meaningful personal learning and identity development to occur. An experience such as education abroad has the potential to address the calls from Weissglass (2000), Gutstein (2000), de Freitas (2008), and Neumayer DePiper (2013) for change in how we prepare mathematics teachers. Education abroad can foster identities that are culturally aware so that teachers are better prepared to work with students of all cultural backgrounds and eventually address issues of access and equity within mathematics education. The next section details some of what is currently known about education abroad programs for preservice teachers and how it can impact cultural identity.

**Education Abroad**

While student populations have grown more diverse, the demographics of teachers have remained mostly the same, with the vast majority being “European American, middleclass, and monolingual in English and, thus, culturally different from many of the students they teach” (Marx & Moss, 2011a, p. 36). In many settings, these cultural differences extend to religious beliefs, language, and country of origin, with the result being that “too many teachers are inadequately prepared to teach ethnically diverse students” (Gay, 2002, p. 106). Intercultural competence, intercultural sensitivity, culturally responsiveness, and cross-cultural communication have become relevant phrases within the field of education because of a recognition of the fact that teachers are underprepared to work with students of other cultural backgrounds. Intercultural competence has been defined by Cushner (2011) as “the critical knowledge and skills that enable people to be successful within a wide range of culturally diverse contexts” (p. 606). Proponents of culturally responsive teaching argue that “explicit
knowledge about cultural diversity is imperative to meeting the educational needs of ethnically
diverse students” (Gay, 2002, p. 107), as is effective cross-cultural communication. Teachers
must not only recognize and respect cultural differences; they must also welcome and involve all
student voices in their classrooms. Intercultural sensitivity is also crucial for today’s teachers.
Mahon writes, “Educators must be sensitive to their students’ cultural backgrounds in order to
ensure that a fair and equal education is received by all learners” (2003, p. 5). Experiencing an
education abroad program can influence the identity of preservice teachers’ identities in ways
that they become more culturally aware and are better prepared to connect and work with
students of varying cultural backgrounds—an essential component of teaching today. In the next
section, I will explore some of what we know about education abroad and how it can impact the
cultural identity of its participants.

**Education Abroad Influencing Cultural Identity**

One conceptual framework for analyzing cultural identity is the Developmental Model of
Intercultural Sensitivity (DMIS) (Bennett, 1986). As detailed in Hammer, Bennett & Wiseman
(2003), the DMIS “constitutes a progression of worldview ‘orientations toward cultural
difference’” that comprise the potential for increasingly more sophisticated intercultural
experiences” (p. 421). A person with “intercultural sensitivity” understands there are multiple
ways of viewing and interacting with the world; however, it is not as simple as someone either
having or not having intercultural sensitivity. The Intercultural Development Inventory (IDI)
(Hammer & Bennett, 1998), grounded in the theoretical framework of the DMIS, is a validated
instrument that measures a person’s intercultural sensitivity across a continuum. The IDI places
participants on a continuum ranging from “ethnocentric” to “ethnorelative.” Ethnocentrism, is
defined as “the experience of one’s own culture as ‘central to reality,’” in which “the beliefs and
behaviors that people receive in their primary socialization are unquestioned: they are experienced as ‘just the way things are,’” (Bennet, 2004, p. 62). Ethnorelativism, on the other hand, is “the experience of one’s own beliefs and behaviors as just one organization of reality among many viable possibilities” (p. 62). There are three categories in the ethnocentric side of the continuum (Denial, Polarization and Minimization), and two categories on the ethnorelative side (Acceptance and Adaptation). Figure 2.1 below is an illustration of the IDI continuum (Hammer, 2012, p. 119).

![Intercultural Development Continuum](image)

_Denial_ is the first category on the ethnocentric side of the continuum. Someone in this category would view one’s own culture as the only real one, and other cultures would be “either not discriminated at all… or construed in rather vague ways” (Hammer et al., 2003, p. 424). Because of this, a person in denial has trouble seeing cultural differences and may avoid situations where people with cultural differences are present or withdraw when they exist.
Following denial is *polarization*, which indicates a recognition of cultural difference with an “us-them” mindset. This can take the form of “defense” (not being critical of your own culture but being overly critical of other cultures) or “reversal” (being overly critical of your own culture and not critical of others).

*Minimization* is the last category on the ethnocentric side of the continuum. A person in this category minimizes cultural differences, focusing on similarities and what people have in common, rather than the real differences that exist. Someone in minimization “is typically “color-blind,” focusing on commonalities and universal values, emphasizing similarities, and holding the belief that all people are fundamentally the same” (Cushner, 2009, p. 156).

*Acceptance* is the first category on the ethnorelative side of the continuum, and it involves recognizing and appreciating cultural differences such as values, perceptions, and behaviors both within one’s own culture and across cultures. Someone in this category would “experience others as different from themselves, but equally human” (Hammer et al., 2003, p. 425). At times, cultural difference could still be judged negatively, “but the judgment is not ethnocentric in the sense of withholding equal humanity” (Hammer et al., 2003, p. 425). Someone in this category would consider one’s own culture as one of many equally complex worldviews.

*Adaptation* goes beyond acceptance: it not only recognizes and appreciates cultural differences; it also demonstrates a shifting of cultural perspectives and behavior that are appropriate to the culture in which one is interacting. Hammer, Bennett & Wiseman (2003) write, “People at Adaptation can engage in empathy—the ability to take perspective or shift frame of reference vis-à-vis other cultures,” and “this shift is not merely cognitive; it is a change
in the organization of lived experience, which necessarily includes affect and behavior” (p. 425). In this stage, individuals become more competent in their ability to communicate across cultures.

When a person takes the IDI, they receive a report that provides information about how they understand and respond to cultural similarities and differences. One piece of information they receive is their “developmental orientation” which reflects where the IDI places them on the continuum; however, they also receive a “perceived orientation,” which indicates where they believe they fall on the continuum. Interestingly, the perceived orientation averages show that teachers tend to overestimate their intercultural sensitivity, making it difficult to progress to a more ethnorelative stage because they believe they are doing well (Cushner, 2009).

Studies using the IDI have shown that teachers generally lack intercultural sensitivity. For example, Mahon studied 155 teachers in the midwestern US and, using the IDI, found that 100% of them fell at minimization or below (Mahon, 2003). However, other studies have used the IDI to show that education abroad programs can move preservice teachers along the continuum, putting them in a place where they have higher levels of intercultural sensitivity (Marx & Moss, 2011a). Predeparture preparation and guided reflection throughout the semester abroad also appear to contribute this growth (Moss, Barry, & MacCleoud, 2018).

Another tool that can be used to assess cultural identity is the “my Cultural Awareness Profile” (myCAP) (Marx & Moss, 2011b). Moss, Barry, and MacCleoud (2018) discuss how the myCAP can provide respondents with valuable insights and perspectives across three dimensions: 1) Understanding of Cultural and Global Contexts, 2) Integration of Cultural and Global Perspectives in the Curriculum, and 3) Responsiveness to the Influence of Culture on Teaching and Learning. Preservice teachers in their study took the IDI and the myCAP, which provided information about their growth in intercultural competence across these three
dimensions. It is worth noting that Marcus and Moss (2015) discuss “two semester-long education abroad programs as a means for enhancing pre-service teachers’ intercultural competence” (p. 34), and between the two programs, the myCAP, IDI, and journal or blog entries are used as assessments that promote intercultural learning. These tools (the IDI, myCAP, and journaling) have the power to encourage and measure growth in cultural identities.

Beyond using the conceptual frameworks of the DMIS and myCAP to understand shifts in cultural identity, we can also look to previous studies that have reported on positive implications of participating in education abroad programs. After studying abroad, most students report “an increase in self-awareness, self-confidence, and esteem; increased adaptability, persistence, strength, and risk-taking; enhanced relationships with others; and, stepping outside of one’s traditional comfort zone” (Cushner, 2009, p. 160). Many studies report on the benefits of preservice teachers’ participation in an education abroad program. For example, Malewski, Sharma, and Phillion (2012) examined the impact of a short-term study abroad program in Honduras. 49 preservice teachers participated in this study, and using questionnaires, interviews, course assignments, journals, observations, and field notes, the researchers found that “experiential learning in an international setting is key to developing preservice teachers’ cross-cultural awareness” (p. 2). Cushner and Mahon (2002) asked 50 teachers who participated in an overseas student teaching experience to provide written responses to a variety of open-ended questions. Through these reflections, they discovered that “the greatest impact was on students’ beliefs about self and others, as evidenced through increased cultural awareness, improved self-efficacy and self-awareness, and professional development in terms of global-mindedness” (p. 49). Cushner and Mahon also describe how an education abroad program can foster increased confidence and a stronger sense of self:
For many students, the overseas student teaching experience represents the first time they have to rely solely on themselves. Students are confronted with new and different situations, perhaps even fearful ones at times, and must act and make choices if they are to be successful…. Through facing their personal anxieties and testing their own limitations, students create a space for opportunity and empowerment. In that space, they report the growth of self-confidence and esteem, increased adaptability, resourcefulness, and persistence (p. 51).

Through education abroad experiences, students “challenge their beliefs about the world and its people, develop empathy for and trust in others, learn a significant amount about at least one other culture, and often to their surprise, learn quite a lot about their own culture” (Cushner, 2009, p. 160). Stachowski and Brantmeier (2002) asked 60 student teachers who were placed in schools on the Navajo Indian Reservation to reflect in writing on “their observations of and encounters with host culture group members and their experiences in overseas and reservation schools, homes, and communities” (p. 5). These reflections illuminated the students’ shifting perceptions of their “home” culture, which “for most of these students is ‘mainstream’ culture of the United States” (p. 5). The researchers found that while students were learning about cultural traditions of the “other,” they were motivated to look inward and learn about their own roots: “Seeing self through the other created a desire for deeper self-understanding and activism” (p. 8).

Much of this learning comes from the experience of feeling like a cultural outsider. Merryfield (2000) found, through students’ retrospective written reflections, that those who left the US and experienced living in another culture “came to understand temporarily what it feels like to live outside of the mainstream…. They became conscious of what happens to identity when people know they don't belong” (p. 439). Many mainstream teachers in the US have never
felt like cultural outsiders or gained a personal understanding of what it is like to be marginalized and stereotyped.

Cruickshank and Westbrook (2013) studied preservice teachers who participated in an education abroad program in Beijing. Using interviews, they found that “where preservice teachers could not rely on shared understandings and beliefs and where they were the minority not the majority, they were forced to question all areas of their teaching knowledge, skills and beliefs” (p. 65). These impactful experiences lead teachers “to become more ethnorelative in their understanding of others, more skilled at crossing cultures, and committed to bringing about change through their work” (Cushner, 2009, p. 165).

As Zeichner (2010) has said, teachers must become aware of life beyond their nation’s borders in order to “cross the us/them boundary that impedes the development of global consciousness among many Americans and prevents meaningful connections among the world’s people (p. 12-13). Education abroad is a meaningful experience that has the potential to impact the identity of preservice teachers in ways that they become more culturally aware and ultimately better prepared to work with students of varying cultural backgrounds and address issues of access and equity within mathematics education.

Intercultural competence, self-awareness, global consciousness, adaptability, risk-taking, stepping outside of one’s traditional comfort zone, challenging current beliefs, and developing empathy and new perspectives were some of the terms and phrases that were used in the sections above to describe the impact of education abroad. These concepts led me to further explore the notion of open-mindedness because I found an overlap between the personal growth described above and concepts of open-mindedness. I assert that participation in an education abroad program can also impact the identities of preservice teachers in ways that they become more
open-minded, but what does this mean? What is open-mindedness? What might an identity shift toward being more open-minded look like? What sort of literature exists relating to this topic? In this next section, I will consider the concept of open-mindedness more thoroughly and begin to address some of these questions.

Open-Mindedness

Riggs (2010) defines open-mindedness as “being prepared to take seriously the views of others, especially when those views are in conflict with one’s own” (p. 177). Adler (2004) writes that the typical demands of open-mindedness are “to be responsive to the criticism of one’s belief and to the fair consideration of rivals” (p. 128). Hare (1993) writes, “A person must be both willing and able to revise his own position if he is to be open-minded” (p. 8). These definitions all stress the willingness to consider the views of others. However, we cannot know if a person is open-minded based on the beliefs that they have—instead we must look at how they think about their beliefs. In other words, do they see their beliefs as facts or do they recognize that their beliefs are simply that: beliefs. The idea is that open-mindedness is largely an attitude of oneself as a believer, and “To be open-minded is to be aware of one’s fallibility as a believer, and to be willing to acknowledge the possibility that anytime one believes something, it is possible that one is wrong” (Riggs, 2010 p. 180). So, to gauge open-mindedness, we can look at someone’s beliefs about their beliefs.

Two components improve our capacity to be open-minded: self-knowledge and self-monitoring. Riggs (2010) writes, “It is through gaining self-knowledge, which one applies in the moment of challenge through self-monitoring, that the open-minded person makes her awareness of her own cognitive fallibility efficacious in her cognitive practice” (p. 183). In other words, the more we understand and monitor ourselves, the more we are able to separate ourselves from our
beliefs and revise them based on new evidence. Self-knowledge can be refined, and self-monitoring can be practiced. Riggs (2010), writing about the problem of our biases and tendencies being hidden from us, gives an example: “If we have a bias, say, to the effect that people under thirty don’t know anything, we shall dismiss testimony from such sources as even being relevant to anything we believe or are considering” (p. 184). In addition to affecting how we consider various hypotheses, these biases also affect what we consider to be evidence. If we are unaware of our biases, we do not have the option of seeing different points of view. Through exposing ourselves to a multitude of ideas and worldviews, we can become better at discovering our own biases. Riggs (2010) says, “Closed-mindedness can be the result of taking one’s own assumptions to be obvious and universal, hence incontrovertible,” and “To discover that those assumptions are not shared by people across time, place, and culture can help one see that one’s assumptions are controvertible after all” (p. 183-184). Increasing our knowledge of self and becoming aware of our biases are the first steps in becoming more open-minded.

Theory of Lay Epistemology and the Need for Closure

I will use the theory of lay epistemology (Kruglanski, 1989) to further unpack the notion of open-mindedness. The theory of lay epistemology is about how people come to know, referring to the general knowledge acquisition of all people. It “outlines a general framework designed to pertain to all kinds of knowledge, scientific and lay, including personal knowledge of people and world, religious knowledge, political knowledge, etc.” (Kruglanski et al., 2009, p. 148). The theory defines knowledge in two aspects: content and confidence. Content must first be produced, then a degree of confidence is placed on the new knowledge, or hypothesis. In order for confidence to be determined, there is a period of hypothesis generation—or evaluation/validation—of the new knowledge. In this phase, the individual tests the new
knowledge against appropriate evidence. If the evidence is logically consistent, then the individual’s confidence in this new knowledge is strengthened. In addition, if there is no other hypothesis that is consistent with the evidence, then the individual might come to accept the hypothesis as true and firm knowledge. On the other hand, an individual can accept a proposed hypothesis as firm knowledge simply because they failed to produce a plausible alternative hypothesis, and two conditions affect the likeliness of someone to “seize,” or stop, the hypothesis generation process, and “freeze” on knowledge: (1) their capacity to produce alternative hypothesis and (2) their motivation to do so (Kruglanski & Freund, 1983).

I am interested in an individual’s motivation to generate alternative hypotheses because I feel that this speaks to the idea of open-mindedness. If someone is motivated to come up with alternative hypotheses, then they may be more flexible and open in their thinking. Additionally, an understanding of what makes an individual want to generate alternative hypotheses helps us understand how we reason and form judgements, attitudes, and opinions, and how we relate to others and function in groups (Kruglanski, 2004). An individual’s motivation is affected by the need for structure, or “the need to have some knowledge on a given topic, any knowledge as opposed to confusion and ambiguity” (Kruglanski & Freund, 1983, p. 450). If an individual has a need for structure, there is a tendency for “seizing” and “freezing” to occur in the hypothesis generation phase “because the generation of alternative hypotheses endangers the existing hypothesis or structure” (Kruglanski & Freund, 1983, p. 450). There are two categories within this need for structure: the need for (1) nonspecific and (2) specific closure. Nonspecific closure represents the need for any firm answer, regardless of whether the answer is correct, as long as it eliminates confusion or ambiguity. Specific closure represents the need for a specific desired answer, like a high score on a test, a specific diagnosis or an optimistic answer.
Kruglanski, et al. (2009) discuss how each of these needs lies on a continuum, ranging from a low to high need. An individual may long for either nonspecific or specific closure strongly, mildly, or not at all. The strength of the need for nonspecific and specific closure determines how long an individual will participate in the hypothesis generation process. If an individual has a high need for nonspecific closure, the hypothesis generation phase will be shorter as the individual is more likely to “seize” and “freeze” on evidence that promotes closure. If an individual has a high need for specific closure, they will end the hypothesis generation phase once evidence that promotes their desired closure appears. Studies have shown that the need for closure is raised when there are external pressures—i.e. action is required (acting on something entails prior closure) or an individual is under time pressure, fatigued, intoxicated, or in a noisy or stressful environment (Kruglanski et al., 2009).

Beyond external motivators, individuals can also have natural dispositions toward a need for closure. Webster and Kruglanski (1994) developed the Need for Closure (NFC) scale—a 42-item questionnaire that measures five aspects that represent the need for closure: order, predictability, decisiveness, ambiguity, and closed-mindedness. An individual with a high need for closure likely desires order and predictability, feels uncomfortable with ambiguity, reflects a sense of decisiveness, and expresses a closed-mindedness or unwillingness to have their knowledge confronted by other opinions. Because of debates regarding the validity of the questionnaire (Neuberg, Judice, & West, 1997), I will focus on Roets & Van Hiel’s (2007) revised and validated version of the questionnaire. This updated version consists of 41 items on a 6-point Likert scale ranging from “strongly disagree” to “strongly agree,” and has been acknowledged as “an improved version of the scale” (Kruglanski et al., 2009, p. 151). Example
statements on the questionnaire include “I don’t like situations that are uncertain,” and “I dislike questions which could be answered in many different ways.”

When an individual has a high need for nonspecific closure, they are more likely to “seize” and “freeze” on evidence that promotes closure. This “freezing” impacts individuals on the intrapersonal and interpersonal levels, and plays a role in group dynamics. For example, Roets and Van Hiel (2008) demonstrated that individuals who had a high NFC score had increased systolic blood pressure and heart rates, and they self-reported as being distressed when put in a decision-making context. Furthermore, when there was no closure, galvanic skin response indicated that they experienced increased arousal, while individuals with low NFC scores showed no effects. Because social judgments are impacted by these internal states, a high need for nonspecific closure can impact “a host of proximal social psychological phenomena on the intrapersonal level of analysis, reflecting how an individual thinks, feels, and acts with regard to others” (Kruglanski, 2004, p. 88).

“Freezing” also has many interpersonal effects. For example, Kruglanski (2004) writes about the shooting of an unarmed West African immigrant in 1999 by New York City police officers. Forty-one shots were fired at this man as he stood in the doorway of his apartment building in the Bronx. It was not clear why this tragic incident occurred, but, Kruglanski writes, “A strong possibility is that application of an aggressive African American stereotype under high need for closure played a significant part in the quickly unfolding events that led to the shooting (Kruglanski, 2004, p. 82-83). This theory may help us make sense of other similar tragic events.

Other studies have shown that a need for closure can impact people’s engagement in ethnic stereotyping, discrimination, linguistic expression, communication, and empathy, to name a few. For example, a study conducted in Tel-Aviv showed preservice teachers of primarily
Ashkenazi origin scored the work of Ashkenazi students consistently higher than the work of Sepharadi students or students of unidentified backgrounds. The discrepancy was even higher when there was a heightened need for closure due to time pressure (Kruglanski & Freund, 1983). Schteynberg, Gelfand, Imai, Mayer, and Bell (2008) determined that individuals under high need for closure were not as empathic when an experimenter treated a teammate unjustly, and they did not perceive the experimenter as being unfair. Having a high need for nonspecific closure reduces the willingness to continue processing information, making it difficult to take other perspectives into account (Kruglanski, 2004).

Webster, Kruglanski and Pattison (1997) studied the impact of need for closure on linguistic intergroup bias (LIB), or “the tendency to describe positive in-group and negative out-group behaviors in relatively abstract terms,” meaning language that uses general labels or trait terms and carries permanence across situations, “and negative in-group and positive out-group behaviors in relatively concrete terms,” (p. 1122), or language that carries less permanence across situations. They found that individuals who had a high need for closure and were exposed to positive ingroup or negative outgroup behaviors, described these behaviors in abstract terms, indicating a tendency to display ingroup favoritism. In addition, an individual under a high need for closure is more likely to gravitate towards knowledge shared by others in the community (De Grada, Kruglanski, Mannetti & Pierro, 1999).

Other studies have shown that when individuals with a high need for closure are put together, the group displays the materialization of an autocratic group structure, where some members control the group discussion (Pierro et al., 2003). Individuals with a high need for closure are also more likely to be attracted to homogeneous groups that share a similar reality (Kruglanski et al., 2002). In other words, they avoid diversity and stay in groups of people who
are similar to them.

As discussed at the beginning of this chapter, in order to address issues of access and equity in mathematics education, teachers must be responsive to students’ backgrounds, experiences, cultural perspectives, and traditions, which requires a deep understanding of self, society, culture, and equity. If teachers have a high need for closure, they will be more likely to stereotype, discriminate, lack empathy, gravitate towards knowledge shared by others in their community, and be more attracted to homogenous groups that share a similar identity. Individuals with a high need for closure may also stand by prior impressions and preconceived notions instead of being flexible in their thinking and willing to change their opinion when new information comes along. If we are to meet the needs within the field of mathematics education, we must not only develop teacher identities that are culturally aware, as discussed in the previous section, but we must also develop teacher identities that have a lessened need for closure, or in other words, are open-minded. Education abroad demonstrates potential for developing open-minded identities within mathematics teachers, but I am unaware of any studies specific studies that have evaluated this.

Next, I will explore the notion of fostering a “reform identity” within mathematics teachers. If we want to fully address the calls for change in the field of mathematics education, we must also consider the goals of CCSSM, NCTM, and others that promote a reform approach to teaching the subject. In this section, I will introduce the notion of figured worlds as one way to make sense of a “reform identity,” and I will provide a working definition of a reform figured world, and it’s opposite, a traditional figured world.

**Reform Identity of Teaching Mathematics**
Besides impacting preservice mathematics teachers’ identities in ways that they become more culturally aware and open-minded, an education abroad program, specifically one that focuses on mathematics education, also has the potential to foster a reform identity of teaching mathematics. This reform identity stems from Ma and Singer-Gabella’s (2011) approach of viewing mathematics teacher identity. They use the notion of “figured worlds” to explain two distinct approaches to teaching the subject: traditional and reform. “Figured worlds” are “a socially and culturally constructed realm of interpretation in which particular characters and actors are recognized, significance is assigned to certain acts, and particular outcomes are valued over others” (Holland, et al., 1998, p. 52). Figured worlds encompass activities, discourses, performances and artifacts, and are made up of people who carry out its tasks. Ma and Singer-Gabella (2011) write, “Artifacts and signs are attributed meaning that might differ from how those outside of the figured world interpret them,” and “People, actors in the figured world, have expectations for how events unfold and how others will behave in these events” (p. 8). Figured worlds mediate behavior and inform participants’ outlooks. People build understandings of themselves as agents in their figured worlds, but “these understandings—these identities—are unstable, especially as people are first inducted to a figured world, and they continue to undergo heuristic development in concert with people’s acclimation to new spheres of activity” (p. 65).

While the figured worlds of traditional and reform mathematics teaching both have children, parents, teachers, faculty, administrators, curriculum developers, etc. who participate in them, and they both value learning, their ideas of what constitutes learning are vastly different. The routines within classrooms and the relationships and responsibilities between teachers and children are also very different within the two worlds. Below, I elaborate on these figured worlds and offer a comprehensive working definition for each.
The Traditional Figured World of Mathematics

Traditional teaching is often considered a process of “I do, we do, you do,” in which the teacher demonstrates a procedure, then asks the students to practice similar problems (Stigler & Hiebert, 1999). This highly ritualized figured world aligns with Boaler and Greeno’s (2000) concept of a “didactive figured world” (as opposed to “discussion-based”). Students are thought of as receivers of knowledge, instead of active participants in creating knowledge, and there is a focus on memorizing facts and procedures.

Ma and Singer-Gabella (2011) write that in a traditional mathematics classroom, a good mathematics teacher might be described as one who is patient and gives good explanations of procedures. For example, “If a student is having trouble with long division, the teacher might offer a more detailed or different explanation for each step of the process and walk the student through more example problems” (p. 10). Their description aligns with how knowledge is defined in a traditional figured world. A successful student in this world is able to quickly demonstrate memorized facts and procedures. A student who is “having trouble” may not remember the steps correctly or may misinterpret how to carry out each step, and would be recognized as needing a different explanation of the steps, followed by more practice.

Reform Figured World of Mathematics

I base my working definition of reform figured worlds on Ma and Singer-Gabella’s work (2011): “Reform mathematics pedagogy entails designing and posing tasks that call on children to reason about quantities, invent their own strategies, and discuss their thinking” (p. 8). In reform pedagogy, students are not simply asked to find the correct answer, and problems are not just context for practicing procedures. Instead, students are “supported in, and held accountable for, making mathematical sense of problems and communicating their reasoning” (p. 8). In this
world, meaningful mathematical activity is the goal, and teachers and students work together to achieve this. Teachers create and implement tasks, and instruction is informed by student needs.

Ma and Singer-Gabella’s (2011) conception of the reform figured world of mathematics is similar to that of Boaler and Greeno’s (2000), who in a study identified a discussion-based figured world of teaching mathematics. The discussion-based world offers students opportunities to actively discuss problems in small groups and as a class. Students make sense of relationships between quantities and mathematical ideas together. Nicol and Crespo (2003) described developing preservice teachers who “make sense of mathematics, pursue multiple solutions to problems, and make connections within and beyond the discipline” (p. 378).

In this study, I also extend the definition of a reform figured world of teaching mathematics to include what the CCSSM, NCTM, NCSM, TODOS, and others consider to be best practices of teaching mathematics. This means that the eight mathematical practices would fall in this reform approach of teaching the subject. Also, calls for addressing issues of access, equity, and social justice within mathematics would be included in this working definition. This figured world would consist of teachers that believe they must be “responsive to students’ backgrounds, experiences, cultural perspectives, traditions, and knowledge” (NCTM, 2014b, p. 1) in order to promote a culture of access and equity. Teachers would also believe that social justice is a key priority in mathematics education (NCSM & TODOS, 2016).

If we are to fully carry out the vision of successful mathematics teaching that is articulated by CCSSM, NCTM, NCSM, TODOS, and others, we must seek to develop mathematics teachers that are aligned with this reform identity. I believe that an education abroad program, specifically one that focuses specifically on mathematics education, has the
potential to develop this type of mathematics teacher identity; however, I am not aware of any studies that have researched this.

Conclusion

As discussed at the beginning of this chapter, there is a long-standing problem in mathematics education in terms of supporting equitable outcomes. As there has been a push from NCTM and others to address issues of access and equity within mathematics education, we see an emphasis on creating mathematics classrooms that are responsive to students’ backgrounds, experiences, cultural perspectives, and traditions, but in order to meet these needs, we must develop teachers that have a deep understanding of self, society, culture, and equity. This is no small task as it’s essentially calling for shifts in mathematics teachers’ identities. Scholars have argued that mathematics teachers must be aware of their individual prejudices and biases (Weissglass, 2000), open-minded in order to develop a critical mathematics education (de Freitas, 2008), and aligned with a reform approach to teaching the subject (Ma & Singer-Gabella, 2011).

According to experiential education theorists, it is clear that for meaningful learning to occur, we must provide purposeful experiences. Experiential learning is a powerful approach that can be used to develop mathematics teacher identities in ways that meet the needs of the field. In particular, a meaningful experience that preservice mathematics teachers can have that can shift identity is education abroad. Education abroad can influence the identity of preservice teachers’ in ways that they become more 1) culturally aware, 2) open-minded, and 3) aligned with the reform approach to teaching the subject. These facets of identity will ultimately prepare teachers to work with students of varying cultural backgrounds and address issues of access and equity in mathematics education.
Therefore, the overarching research guiding this study was: In what ways do preservice mathematics teachers’ identities evolve through participation in an education abroad program? Specifically, I explored:

1. In what ways does the experience of participating in an education abroad program influence the cultural identity of preservice mathematics teachers?
   - How does it influence their understanding of their own cultural identity?
   - What is the nature of their growth process?
   - What experiences, school-based and non-school based, seem to influence their growth?

2. In what ways does the experience of participating in an education abroad program influence the open-mindedness of preservice mathematics teachers?
   - What is the nature of their growth process?
   - What experiences, school-based and non-school based, seem to influence their growth?

3. In what ways does the experience of participating in an education abroad program influence the vision that preservice mathematics have for teaching mathematics?
   - How does their vision of mathematics teaching shift through participation in this program?
   - In what ways does their vision align with the reform figured world of teaching mathematics?
   - What is the nature of their growth process?
   - What experiences, school-based and non-school based, seem to influence their growth?
Chapter 3: Research Design and Methodology

This chapter begins with a description of the research design of this study. Next, because this study was within the context of a specific UConn education abroad program, I describe the program in detail. This contextualizes the study, the case participant, and the research design. I then provide a description of the case, and recount my data collection and data analysis processes and the limitations of this study.

Research Design

The purpose of this study was to describe and interpret a preservice mathematics teacher’s identity development during a semester-long fall education abroad program in Nottingham, England, particularly as it related to their sense of open-mindedness, intercultural perspectives, and beliefs of mathematics teaching. Given that this was a detailed investigation of a particular experience (Grbich, 2013), the use of a qualitative design offered the possibility of uncovering and describing key aspects of this rich case. As defined by Denzin and Lincoln (2005), qualitative research “consists of a set of interpretive, material practices that make the world visible….This means that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them” (p. 3). Through this study, I endeavored to make visible the identity development that occurs within an education abroad program. As such, this research was designed as an inductive case study of a single preservice mathematics teacher, whom I will refer to as Ben (pseudonym). The study began the summer prior to his fall-semester abroad and ended shortly after his return to the United States. This design provided insight into the growth and development of Ben, as data was collected before the program began, through the duration of the program, and at conclusion of the program. Constant comparison methods were applied throughout the study,
meaning data were collected and analyzed on an ongoing basis to inform subsequent data
collection. Multiple methods were used and data was collected from multiple sources in order to
provide a “thick description” (Gertz, 1973) of the case. The study was informed by experiential
and constructivist learning theories, teacher education, intercultural sensitivity and development,
open-mindedness, the theory of lay epistemology, figured worlds, and the traditional and reform
figured worlds of teaching mathematics.

**Program Description**

The Neag School of Education at UConn has a competitive three-year Integrated
Bachelors and Masters (IB/M) program for students seeking to become teachers. Students spend
their first two years at the university focusing on content-specific coursework, and if they are
accepted into the IB/M program, they complete education-related coursework and partake in
clinic placements throughout their junior, senior, and master’s years. Throughout their time in
the IB/M program, there are multiple opportunities to participate in an education abroad
experience. As discussed in chapter 1, there are both short term (2-6-week summer and
intersession programs), and long-term (full 15-week semester programs) options for students.
Since 2017, one of the long-term program options is the Nottingham Mathematics Program, a
collaboration with the University of Nottingham that is specifically designed for preservice
secondary mathematics teachers or preservice elementary teachers whose subject-area
concentration is mathematics. This education abroad program affords preservice mathematics
teachers the opportunity to engage in academic work and an internship during the fall semester
of their master’s year, which is post student-teaching. This Nottingham partnership also has a
secondary social studies strand, but that was not the focus of this research. The mathematics
program runs in congruence with the social studies program—students travel together to
Nottingham, live in the same building, and share the same general program structure, but their classes and internships are separate.

Students in the mathematics program take classes at the University of Nottingham and participate in a split internship—they spend two days per week in a local school and one day per week at the world-renowned Centre for Research in Mathematics Education (CRME) which is located in the school of education building on the Nottingham campus. They also complete what is designated as an “inquiry project,” piece of original research that is designed to help students see and consider deeper issues of schools and schooling.

This education abroad program spans an entire calendar year, beginning the summer before departure to England and extending into the spring semester in which students take a re-entry seminar at UConn. This program would be considered a hybrid program, meaning the home institution (UConn) offers support, services, and some coursework, but students are also affiliated with a local university (University of Nottingham) during their semester abroad (Norris & Dwyer, 2005). The summer prior to departure, students take a class with a University of Connecticut instructor to prepare them for their semester abroad and begin the process of developing their inquiry project. Once in England, students have an internship at a local school and the research centre, and take coursework at the University of Nottingham. During this semester, they also take a seminar class through the University of Connecticut. This course is intended to provide continued support in the development of their inquiry project and a space for students to make sense of their experiences abroad. The instructor meets virtually, online, with the students once per week and visits them in England for about a week sometime in October. During this visit, they tour cultural sites, hold at least one class in-person, and set up individual meetings with each student. Throughout the duration of this study, I was the instructor for both
the summer and fall UConn seminar courses. Because I work so closely with this program, this could be construed as a sample of convenience, and it must be acknowledged that this allowed for ease of access. However, this access was crucial because I was engaging in such qualitative work. Identity development is personal, and the fact that I worked so closely with this group allowed me to form relationships and develop trust with each student. As such, I was able to gain valuable insight into Ben’s experiences and growth throughout the program.

Upon return to the United States, the re-entry seminar is intended to support their intercultural understandings and reflections. This program is aligned with the idea that pre-departure and re-entry experiences are necessary components of an education abroad program (Byram & Feng, 2006). Students are provided support and opportunities for reflection before, during, and after their semester abroad. Table 3.1 provides details about the overall structure of the program.

Table 3.1: Overall Structure of the Program

<table>
<thead>
<tr>
<th>Pre-departure component at home campus (summer session)</th>
<th>Seminar in International Education (3 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I taught this course. I met with students for four full days in May and again for two full days in August. During the time between May and August, students worked independently on course assignments. Course content included the development of their inquiry project (research question(s), literature review, and methodology), team building, preparation for school and research internships in the fall, discussions on intercultural understandings and communication, and other assigned readings (<em>The Teaching Gap</em> by James W. Stigler &amp; James Hiebert and <em>Longitude</em> by Dava Sobel).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Abroad component in England (fall semester)</th>
<th>Student housing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Housing is arranged through the University of Nottingham. Students shared a flat on the Nottingham campus. The mathematics students lived together in one flat with two other international students (one from China and another from Scotland) who were randomly assigned to the same flat. All students had their own bedroom and shared bathrooms and a kitchen/living room.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Internship (3 credits)</th>
<th>Students spend three days per week in a split internship.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Two days per week (Tuesdays and Wednesdays) students are in a partner school. These schools are professional training schools that</td>
</tr>
</tbody>
</table>
regularly support teacher professional development and initial teacher training.

- One day per week (Thursdays) students intern at the Centre for Research in Mathematics Education (CRME). During this time, they learn about the centre’s many research projects and eventually get involved in some aspect of research.

**Comparative and International Education (3 credits) & History of Educational Thought (3 credits)**

These two courses were technically held on Fridays and were taught by mathematics education faculty members at the University of Nottingham. These courses consisted of multiple components: some of the class time was supportive of the research internship, some time was in conjunction with the mathematics teacher education students in Nottingham, some time was used to meet with other faculty members who can share areas of expertise, and some time was used to visit schools and attend conferences and professional developments.

**Seminar (3 credits)**

I was the instructor for this course. Students met every Wednesday evening from 6-9pm in their flat, and I would video into the class. This course supported the development of the inquiry project as well as the general experience of the program. In October, I visited the students for a week. During this time, I oversaw the internships and classes, held an in-person seminar, met individually with each student, and toured cultural sites with students.

Students had a three-day weekend (with Mondays off) which provided time for independent cultural experiences. Students typically spent this time exploring the local area or traveling domestically and internationally.

<table>
<thead>
<tr>
<th>Re-entry component at home campus (spring semester)</th>
<th><strong>Advanced Seminar</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This seminar was taught by a UConn instructor and included IB/M masters students who studied abroad in London, England during the fall semester. Throughout this course, students finalized the last stages of their inquiry project and unpacked their experiences from the semester.</td>
</tr>
</tbody>
</table>

As indicated in Table 3.1, students spent Thursdays at the CRME and Fridays taking classes at the university. However, while in theory this was their weekly schedule, in reality, their research work and coursework were extremely intertwined and often difficult to delineate. Essentially, there were two mathematics education faculty members, whom I will refer to as Mathew and Steve, were in charge of the research that students were involved in, but in order for students to contribute to research, there was groundwork that needed to be laid. So, in a sense, their “research” sometimes looked like “classwork,” because they spent time discussing readings
and unpacking mathematics education topics, instead of jumping right into research projects. For example, one of the research projects at the CRME, “Mathematics in Further Education Colleges,” aims to improve the quality of mathematics education in England’s Further Education colleges, which are schools that are similar to vocational schools in the United States. However, for students to get involved in this project, they need to first understand the educational system in the UK and how these Further Education colleges fit into the educational landscape, and they needed to understand what the CRME considered to be “quality mathematics education.” This was no small task, and students spent much of their time unpacking these ideas with Mathew and Steven prior to getting involved in any research. Additionally, students seemingly went into this program with almost no understanding about educational research in mathematics education; while they knew research existed, they didn’t know what it looked like to do research. Also, while they were in the program, they were sometimes unaware that they were contributing towards research. For instance, teachers at the Further Education colleges participating in the study agreed to implement several mathematics lessons provided by the study, but before Mathew and Steven provided teachers with these lessons, they first reviewed and vetted them, and one way they did this was by talking through the lessons with the UConn students. They asked the UConn students to review the lessons, then they spent time discussing ways in which the lessons could be improved. Then, Mathew and Steven made revisions based on the feedback from and discussions with the UConn students. In this sense, the students were contributing to research, even though they didn’t feel like they were actually “doing” research.

While the schedule varied week to week, students usually spent most of the day on Thursday meeting with Mathew and/or Steven. Fridays were typically their day to attend classes at the university; however, students were not officially enrolled in any University of Nottingham
classes. Instead, they spent Fridays meeting with a range of faculty members at the university. The sessions usually consisted of one mathematics education faculty member and the UConn students, making it a very intimate setting. Two main faculty members they spent time with were Kara and Helen (pseudonyms). One of the main themes in their sessions with Kara was the notion of teacher identity, and these sessions culminated in the creation of an artifact that represented the way they thought of themselves at people and teachers (which will be discussed further in chapter 4). These sessions proved to be meaningful as they came up frequently during student interviews upon conclusion of the program.

Occasionally, Helen met with the students to provide background information that was relevant for their experiences. For example, during their first week in Nottingham, Helen provided students with an overview of the UK educational system and the schools they would be interning in. She also met with students to discuss the notion of “mastery” teaching, an approach stressed in England that “describes the elements of classroom practice and school organization that combine to give pupils the best chances of mastering maths” (National Centre for Excellence in the Teaching of Mathematics, 2019). This was a topic that came up frequently in their research and school internships, so it was helpful that Helen met with them to provide context and details about it. Helen was also in charge of putting together the semester schedule for the students. She coordinated with the other faculty members to arrange the sessions so that students had a schedule to follow.

Some of the students’ time in classes also consisted of joining the Postgraduate Certificate Education (PGCE) mathematics students—in other words, the preservice mathematics teachers from the School of Education at the University of Nottingham—in their didactics (essentially mathematics methods) classes. These classes were taught by two instructors, Helen
and Tom (another University of Nottingham faculty member, also a pseudonym), who were always very welcoming to the UConn students. On the days the UConn students were able to attend the didactic classes, Tom and Helen made sure to involve the students in the lesson. They had them sit at different groups so they could individually engage with the PGCE students, and they would often ask them to share the “American” perspective and approach to a particular mathematical topic. These sessions were wonderful opportunities for the students to see similarities and differences between the British and American ways of teaching the subject, and it also allowed students to meet peers. Throughout the semester, they formed friendships with some of the PGCE students and would occasionally join them in social settings.

Occasionally, Mathew and Steven would also bring the students to visit a local school or attend a professional development or conference. For example, one day Mathew took the students to a school to observe mastery teaching in a classroom. Another day, Mathew brought the students to join a day of professional development for teachers from many different schools in the area. Mathew and Steven also arranged for the students to attend the British Society for Research into Learning Mathematics (BSRLM) conference in Belfast. Students covered the cost of their airfare, and their program fees paid for their conference registration and hotel in Belfast. Students made an extended weekend out of this trip and used it as an opportunity to visit Dublin and other parts of Ireland.

All of the experiences described above were considered either a part of their coursework for two courses—Comparative and International Education (3 credits) and History of Educational Thought (3 credits)—or their research internship. The other aspect of their time in Nottingham consisted of their school internship. They spent two days per week (Tuesdays and Wednesdays) in a local school. The school internship was a post-student-teaching-internship in
which students had the opportunity to take on leadership roles within the school. In the first
couple weeks of the internship, students spent time observing lessons, meeting teachers and
students, learning about the needs of the school, and considering ways to meaningful contribute
during their time there. Developing curricula, implementing mathematics intervention, and
working with individual teachers were some of the tasks that students eventually got involved
with during their time in schools. Table 3.2 below provides an overview of the summer and fall
semesters of this program.

Table 3.2: Overview of the Program

<table>
<thead>
<tr>
<th>Dates</th>
<th>Event</th>
<th>Event Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 6-9, 2019</td>
<td>First in-person meetings for summer course</td>
<td>I met with students this week to begin our summer work together (team building, inquiry project development, cultural discussions, etc.)</td>
</tr>
<tr>
<td>May 9-August 26, 2019</td>
<td>Students worked independently on summer coursework</td>
<td>Students worked remotely on summer course work (inquiry project literature review, assigned readings, mathematics tasks in preparation for work in Nottingham, etc.)</td>
</tr>
<tr>
<td>August 27-28, 2019</td>
<td>Second in-person meetings for summer course</td>
<td>I met with students to conclude our summer work together and finish preparation for the fall semester.</td>
</tr>
<tr>
<td>September 2, 2019</td>
<td>Students left for Nottingham</td>
<td>Mathematics and social studies students traveled from the US to Nottingham. They landed at Heathrow airport the morning of September 3rd and traveled together via bus to their flats on the Nottingham campus.</td>
</tr>
<tr>
<td>September 4-6, 2019</td>
<td>Student orientation in Nottingham</td>
<td>Students spent these days meeting key faculty members (Mathew, Steven, Kara, Helen, etc.), touring the campus and exploring the area, and getting settled into flats.</td>
</tr>
<tr>
<td>Week of September 9th, 2019</td>
<td>First full week in Nottingham</td>
<td>Students spent time with university faculty members, beginning coursework and prepping for school</td>
</tr>
</tbody>
</table>
*I am considering a week to be Monday-Sunday.

<table>
<thead>
<tr>
<th>Weeks of September 16th &amp; September 30th, 2019</th>
<th>School internships began and I arrive in Nottingham.</th>
<th>Students began school internships and settled into weekly schedule of internships and coursework. Friday evening, I arrived in Nottingham for program supervision and participant observation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week of September 30th, 2019</td>
<td>I was in Nottingham for program supervision and participant observation until Friday evening of this week.</td>
<td>Continued weekly schedule of internships and coursework. I shadowed students and gained insight into their experiences in the program.</td>
</tr>
<tr>
<td>Weeks of October 7th and October 14th, 2019</td>
<td>Continued weekly schedule of internships and coursework.</td>
<td></td>
</tr>
<tr>
<td>Week of October 21st, 2019</td>
<td>Students did not attend school internship this week because local schools began their two-week midterm break. Instead, they spent extra time at the university.</td>
<td></td>
</tr>
<tr>
<td>Week of October 28th, 2019</td>
<td>Midterm break</td>
<td>Students traveled throughout Europe for midterm break.</td>
</tr>
<tr>
<td>Week of November 4th through week of December 15th</td>
<td>Continued weekly schedule of internships and coursework.</td>
<td></td>
</tr>
<tr>
<td>Week of December 16th, 2019</td>
<td>Last week in Nottingham</td>
<td>Students concluded their school internship and work at the university and flew home on Friday, December 20th.</td>
</tr>
</tbody>
</table>

**Description of Participants**

In the fall of 2019, four students participated in the Nottingham mathematics program. At the start of the summer course in May, I presented the research project to the participants in the program and explained that they would not be asked to do anything extra if they participated in
the study, because all aspects of the study were considered part of the summer, fall, and spring courses that were associated with the program. I also explained that their grades and education abroad experience would not be impacted by this study, whether they decided to opt in or out of the study, and that they could withdraw at any time. In May 2019, all four students consented to participate.

I was originally planning to include all four students in this study, so I collected data from each of them, but as the program developed, I decided to focus on one student for this case study. I decided that a single-case study would allow me to better offer a rich and thick description (Gertz, 1973) of the type of development that can occur through participation in an education abroad program. Of the four students in the program, three of them—whom I will refer to as Ben, Laurie, and Anna—were in the secondary mathematics program, and one of them—whom I will refer to as Amelia—was in the elementary program with a focus on mathematics. Ben, Laurie, and Anna knew each other and had classes together previously, and Ben and Anna were particularly close as they had overlapping interested and shared campus activities. All three students interned at the same secondary school while in Nottingham while Amelia interned at a local primary school.

The student I decided to focus on for this study was Ben. I chose Ben for several reasons. First, his demographics closely aligned with the demographics of the majority of teachers in the United States: according to the National Center for Education Statistics (2010), 85% of the teaching force in the United States in White and middle-class, and Ben identified as such. He only spoke English and was raised Christian, although he didn’t seem to strongly identify with this religion. He grew up in a suburban majority-white Connecticut town which was within an hour from UConn, and previously, he had limited intercultural life experiences, admitting that he
had not “experienced cultures that were vastly different” from his. The second reason I chose Ben was because he was very willing to share his thinking throughout the duration of the program. He voluntarily sent extra reflections, providing me insight into his development along the way. His reflections were honest and thoughtful and gave me the opportunity to learn about the program from his perspective.

I am beyond grateful to Ben for being willing to share his thoughts and experiences with me. He was open, reflective, generous with what he chose to share. He allowed me to learn from him by answering my countless questions, letting me shadow him, and writing thoughtful journal entries. Ultimately, his experiences provided rich data which has allowed me to tell the story of his identity development throughout the program.

**Data Collection**

Data sources and methods are identified below and were used to guide the study. Three main data collection methods were used allowing for a holistic exploration of the research questions: interviews, participant observation, and document review. A case report was developed throughout the study, with the report serving as the foundation of the within case (Mills, Albert, Durepos, Gabrielle, & Wiebe, 2010) phase of analysis. Two types of triangulation (Lincoln & Guba, 1985) were used: multiple sources and methods of data collection and member checks during the analysis and write-up. In table 3.3 below, I identify the research question that was addressed by each data source. The timeline provides a date range in which each data source was collected.

**Table 3.3: Data Collection**

<table>
<thead>
<tr>
<th>Data Collection Method</th>
<th>Description</th>
<th>Research Question</th>
<th>Time frame</th>
</tr>
</thead>
</table>

62
<table>
<thead>
<tr>
<th>Interviews</th>
<th>Semi-structured interview #1</th>
<th>Question #1</th>
<th>May 6-10, 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Question #2</td>
<td>Question #3</td>
<td></td>
</tr>
<tr>
<td>Semi-structured interview #2</td>
<td>Question #1</td>
<td>October 4-11, 2019</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Question #2</td>
<td>Question #3</td>
<td></td>
</tr>
<tr>
<td>Semi-structured interview #3</td>
<td>Question #1</td>
<td>January, 21-31, 2020</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Question #2</td>
<td>Question #3</td>
<td></td>
</tr>
<tr>
<td>In-country participant observation</td>
<td>This was during my one-week visit in Nottingham</td>
<td>Question #1</td>
<td>October 4-11, 2019</td>
</tr>
<tr>
<td>Documents</td>
<td>Intercultural development inventory (IDI)</td>
<td>Question #1</td>
<td>Prior to fall semester abroad: May 6-10, 2019</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Upon return to the United States: January 21-31, 2020</td>
</tr>
<tr>
<td></td>
<td>My cultural awareness profile (myCAP)</td>
<td>Question #1</td>
<td>Prior to fall semester abroad: May 6-10, 2019</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Upon return to the United States: January 21-31, 2020</td>
</tr>
<tr>
<td></td>
<td>Need for closure scale (NFC)</td>
<td>Question #2</td>
<td>Prior to fall semester abroad: May 6-10, 2019</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Upon return to the United States: January 21-31, 2020</td>
</tr>
<tr>
<td></td>
<td>Student journals</td>
<td>Question #1</td>
<td>Student journals were completed the summer prior to the semester abroad, throughout the semester abroad, and upon return to the United States. Journal prompts included questions pertaining to research questions 1, 2, and 3</td>
</tr>
<tr>
<td></td>
<td>Question #2</td>
<td>Question #3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Question #3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
As you can see from the table above, there were three phases of data collection. Phase 1, the pre-departure phase, was from May 6th until August 28th, 2019. During this time, I held interview #1 with each participant in the program and had students complete the IDI, myCAP, and NFC. Students also wrote their first journal about their beliefs of mathematics teaching. The second phase of data collection occurred between September 2nd and December 20th, 2019, while the students were abroad. During this phase, I visited the students and conducted interview #2. I was also a participant observer (Wolcott, 1992) during my time there. Throughout this phase of data collection, I continued to collect journal prompts written by each of the students. Phase 3, the re-entry phase, occurred between December 20th, 2019 and January 31st, 2020. Throughout this time, I met with each student for interview #3. I also had students complete the IDI, myCAP, and NFC again so there could be a pre/post comparison. Students wrote their final journal prompt about their beliefs of mathematics teaching, and I reviewed their inquiry project and artifact they each created that represented their identity. Below, I will describe each method of data collection.

**Interviews**
As a means of accessing emic knowledge to learn about the perspective of each participant, interviews allowed me to find out what could not be directly observed, such as the meaning participants were making of their experiences (Patton, 1980). Three in-depth, semi-structured interviews were conducted with each participant in the program: prior to departure, during my one-week visit to Nottingham in October, and after returning to the United States. Interview protocol instruments were created (see Appendices A-C) to act as a guide for these interviews, the purpose of which was to illuminate the participants’ shifting perceptions in open-mindedness, intercultural development, and vision of teaching mathematics. Each interview was about an hour in length, and they were audio recorded and transcribed.

The first interview was conducted sometime between May 6th and May 10th, as soon as the consent forms had been signed. It took place in a reserved room on the university campus. The first interview provided insight into each participant’s personal history, particularly relating to their conceptions of culture, mathematics teaching, and open-mindedness. This provided a starting point for learning about each participant. This interview also focused on why the participants chose a study abroad experience and how they thought the experience would impact them personally and professionally.

The second interview took place with each participant during my visit to Nottingham in October. The second interview focused on the meaning the participants were making of their experiences. The goal of this interview was to learn about the education abroad experiences of each participant and their developing conceptions of culture, open-mindedness, and mathematics teaching. In addition to learning about identity development that may have occurred, I was also aiming to learn about what experiences might have led to this growth.
The third and final interview took place with each participant sometime in January. The goal of this interview was to learn about the meaning each participant had made of their experiences abroad now that they were back in the United States. I was specifically looking to gain insight into their conceptions of open-mindedness, culture, and mathematics teaching.

**Participant Observation**

I was a participant observer (Wolcott, 1992) during my one-week visit to Nottingham in the month of October. These observations helped me to form closer relationships with each participant and develop the trust and willingness to share information with me. During this time, I joined each participant at their school placement, attended courses with them, and participated in their daily and evening activities and events. These observations provided the opportunity to understand and describe the context of the study, and it informed all three research questions.

A field note memo was written daily during my time in Nottingham. Any memo written during this visit was used as a source of data as it described observations of each case and added descriptive data to each case report. Before this trip, I reviewed each case report—which at this point included students’ journals, interviews, myCAP responses, and IDI report—so that I had a sense of each students’ prior reflections, but this wasn’t for the purpose of seeking specific evidence during my trip. I wasn’t looking for shifts in student thinking or to confirm prior data. Rather, through my observations, I was simply hoping to learn about their current experiences and what they were making of these experiences.

Memos were written in journal format—I began by describing the events of the day then detailed impressions, questions, and ideas that related to the students’ experiences. For example, on Friday, October 4th, 2019, I wrote:
Today I met Anna, Laurie, and Amelia for dinner at the Rose and Crown…. We talked about different things…. They are learning their way around. They told a story about their first trip into the city center and not knowing that they needed to pay attention to what side of the road they were on when getting onto a bus. They got on a bus that took them in the opposite direction of the city center. Anna said, “And we didn’t know this at the time, but we could have just stayed on it and it would have eventually looped us back to the city center.” They now have a better sense of the area and more experience with public transportation (something they had not had previously).

I asked them if people have been asking them about American politics. They said yes, but they’ll often turn it around to ask them about Boris Johnson. I wish I asked if that’s because they feel uncomfortable talking about American politics. I get the feeling that they don’t follow the news too closely and don’t seem to fully know what’s going on in the US or England. I think I’ll plan to spend some time in class on Wednesday having them get caught up on the news in both countries.

Ben and Anna seem to be the most active and engaged. Tomorrow, they’re going to a roller-skating event in hopes of meeting new people. In our interviews, I’d like to ask if they’ve always been this way (up for anything and wanting to be involved in various events). I wonder if they feel nervous going to these events, how they fit in while they’re there, and if they have any observations/thoughts after. Is interacting with locals making them see culture (their own and others) differently?

The excerpt from my memo on October 4th highlights that memos were a place for me to document what I had done that day and record thoughts and questions. Finally, Table 3.4 provides a schedule of my visit to Nottingham.

<table>
<thead>
<tr>
<th>Table 3.4: My Itinerary in Nottingham</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Friday</strong>&lt;br&gt;October 4&lt;sup&gt;th&lt;/sup&gt;, 2019</td>
</tr>
<tr>
<td><strong>Saturday</strong>&lt;br&gt;October 5&lt;sup&gt;th&lt;/sup&gt;, 2019</td>
</tr>
<tr>
<td><strong>Sunday</strong>&lt;br&gt;October 6&lt;sup&gt;th&lt;/sup&gt;, 2019</td>
</tr>
<tr>
<td><strong>Monday</strong>&lt;br&gt;October 7&lt;sup&gt;th&lt;/sup&gt;, 2019</td>
</tr>
</tbody>
</table>
Tuesday  
October 8th, 2019  
I attended school with Ben, Laurie, and Anna. They took turns letting me follow them around for different parts of the day. We met at their flat in the morning and I traveled to school with them.

Wednesday  
October 9th, 2019  
Same as Tuesday, except I left their school around noon to meet with key faculty members at the university. In the evening, I led a seminar in which we discussed some of their developing cultural understandings. After class, we all went out for dinner together.

Thursday  
October 10th, 2019  
I attended classes with the students. They met with Mathew in the morning and Steven in the afternoon.

Friday  
October 11th, 2019  
I attended classes with the students. They met with Mathew in the morning and attended a PGCE didactics class in the afternoon. After class, I began my travels back home and the students joined the PGCE students at one of the local pubs.

---

**Document Review**

The following documents were collected as a data source for this research:

- **The Intercultural Development Inventory (IDI).** The IDI (Hammer & Bennett, 1998) is grounded in the theoretical framework of the Developmental Model of Intercultural Sensitivity (DMIS) (Bennett, 1986). As discussed in chapter 2, the DMIS “constitutes a progression of worldview ‘orientations toward cultural difference’” that comprise the potential for increasingly more sophisticated intercultural experiences” (Hammer, Bennett, & Wiseman, 2003, p. 421). The IDI measures a person’s intercultural sensitivity across a continuum ranging from “ethnocentric” to “ethnorelative.” It is a 50-item questionnaire that can be completed in 15-20 minutes and is available online. As discussed in Hammer (2013), “The Intercultural Development Inventory has been psychometrically tested and found to possess strong validity and reliability across diverse cultural groups,” and, “Psychometric scale construction protocols were followed to ensure that the IDI is not culturally biased or susceptible to social desirability effects (i.e., individuals cannot ‘figure out’ how to answer in order to gain a higher score)” (p. 9).
IDI was administered to participants during the summer course prior to their departure and again upon return to the United States. This instrument afforded opportunities for students to engage in discussion and reflection about their intercultural learning, and it provided steps that students could take to continue growing in this area. It also served as data for research question #1, relating to their cultural identity.

- **The My Cultural Awareness Profile (myCAP).** The myCAP instrument (Marx & Moss, 2011b) is a 36-item survey that was administered to participants through Qualtrics during the summer prior to departure and again upon return to the United States (see Appendix D). The myCAP is purposefully designed for use by teacher educators seeking to prepare teachers to teach in globally and culturally responsive ways. This instrument served as data for research question #1. Similar to the IDI, the myCAP provided insight relating to the program impact on the participants’ cultural identity, specifically across three dimensions: 1) understanding of cultural and global contexts; 2) integration of cultural and global perspectives in the curriculum; and 3) responsiveness to the influence of culture on teaching and learning.

- **The Need for Closure (NFC) Scale.** Students took the revised version of the NFC (Roets & Van Hiel, 2007) during the summer course prior to their departure and again upon return to the United States (see Appendix E). The NFC measures how strongly an individual longs for closure, or the need for an answer and “some knowledge on a given topic… as opposed to confusion and ambiguity” (Kruglanski & Freund, 1983, p. 450). Respondents select from a 6-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree) for each statement. Some items measure the respondents’ need for closure, and other items measure their need to avoid closure. The latter of these items are
reverse scored, and the need for closure score is calculated by adding all of the individual items, with higher scores representing a greater need for closure (Hasan, Moin & Figen, 2017). The results from the NFC informed research question #2, relating to how the program impacted the participants’ open-mindedness.

- **Student journals.** Throughout the program, I asked students to respond to several journal prompts (see Appendices F and G). This was considered part of their coursework for the UConn seminar they were taking with me. I would provide them with a prompt, and they would then email their responses individually to me. There was one time that I asked them to reflect on what they learned from attending the BSRLM conference in Belfast, but other journal prompts asked them to reflect on their beliefs about successful mathematics teaching at three different points in the program—during the summer, fall, and spring. Their responses to these prompts served as data for research question #3 and provided insight into their developing beliefs about teaching mathematics and how they shifted throughout the program. Other journal prompts asked them to reflect on their cultural identity and sense of open-mindedness, which informed research questions 1 and 2.

- **Reflection on inquiry project.** For the inquiry project, students decided to observe and analyze mathematics teaching in their Nottingham school internships. Throughout the semester, they observed about 20 classes and took notes about the way the subject was taught (i.e., how much focus was on conceptual versus procedural knowledge, ways that teachers incorporated teacher-centered and student-centered activities, and how the lessons were generally structured). Ultimately, in the last section of their inquiry project, they reflected on how these observations fostered implications for their own teaching.
Through these implications, I was able to gain insight into the participants developing beliefs about teaching mathematics which served as data for research question #3.

- **Students-created identity artifact.** From their work with Kara, students created an artifact that they believed represented their teaching identity. This artifact provided insight into their open-mindedness, cultural identity, and beliefs about teaching mathematics, and as such, offered data for all three research questions.

**Data Analysis**

This is a qualitative inductive study that interprets the meaning that the participant made of his experiences. It describes and interprets a cross-cultural experience and its impact on the development of open-mindedness, cultural identity, and mathematics teaching. As a former mathematics teacher, I have found that sometimes the best way to understand what something is, is to understand what it is not. For example, when trying to understand what a triangle is, it can be useful to have a discussion about what a triangle is not. For this reason, I think it is helpful to consider the notion of deductive analysis when trying to understand inductive analysis. Thomas has defined deductive analysis as “analyses that set out to test whether data are consistent with prior assumptions, theories, or hypotheses identified or constructed by an investigator” (2006, p. 238). Because of preconceived conceptions, themes can be obscured or left invisible, and instead of finding new themes, the researcher analyzes the data and decides if the prior assumptions are validated.

Inductive analysis, on the other hand, has been defined as “approaches that primarily use detailed readings of raw data to derive concepts, themes, or a model through interpretations made from the raw data” (Thomas, 2006, p. 238). According to Thomas, the main purpose for inductive analysis is to allow findings to emerge without any restraints. A researcher who is
using inductive analysis has no a priori theories; rather, concepts and theories emerge from the data.

Thomas offers the following purposes behind the development of the general inductive analysis approach:

1. to condense extensive and varied raw text data into a brief, summary format;
2. to establish clear links between the research objectives and the summary findings derived from the raw data and to ensure that these thinks are both transparent (able to be demonstrated to others) and defensible (justifiable given the objectives of the research); and
3. to develop a model or theory about the underlying structure of experiences or processes that are evident in the text data (p. 238).

While this provides a holistic sense of the process behind the inductive approach, Grbich (2013) provides a summary of the stages of qualitative data analysis that I found useful as I went through the data analysis process. She reminds us that the process is recursive, and she indicates that the first step is to become familiar with your data by reading and re-reading it. So, before I did any analyzing, I first printed out each of the documents (journals, the transcribed interviews, etc.) and read each document multiple times.

Grbich says the second step is to keep your research aim, research questions, and theoretical framework in mind as you annotate your data. She suggests that you “seek to let the data speak to itself, allowing you to identify informants’ statements about beliefs, attitudes, values, explicit ideas and ideologies as well as behavior patterns, actions and events” (p. 261). Within this step, I also found it helpful to use *The Coding Manual for Qualitative Researchers* (Saldana, 2016) which provides extensive detail on coding, one way of analyzing qualitative
data. Saldana (2016) defines a code as “most often a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data” (p. 4). While the coding process can vary, it usually consists of several cycles, and within the first cycle, there are various methods that can be used. For this study, I used in vivo coding in this first step, which means I coded the data using the terms that the participants used (Saldana, 2016; Strauss, 1997). As Saldana says, in vivo coding “refers to a word of a short phrase from the actual language found in the qualitative data record” (Saldana, 2016, p. 105). Table 3.5 below from Saldana (2016, p. 105) provides a short description and example of this coding method.

**Table 3.5: In Vivo Coding**

<table>
<thead>
<tr>
<th>Example text</th>
<th>Example codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I hated school last year. Freshman year, it was awful, I hated it. And this year’s a lot better actually. Um, I don’t know why. I guess, over the summer, I kind of stopped caring about what other people thought and cared more about, just, I don’t know. It’s hard to explain.”</td>
<td>Hated school</td>
</tr>
<tr>
<td></td>
<td>Freshmen year awful</td>
</tr>
<tr>
<td></td>
<td>This year’s better</td>
</tr>
<tr>
<td></td>
<td>Don’t know why</td>
</tr>
<tr>
<td></td>
<td>Stopped caring</td>
</tr>
<tr>
<td></td>
<td>Hard to explain</td>
</tr>
</tbody>
</table>

Saldana also provides questions to consider when coding the data. One particular question that I found valuable was, “What strikes you”? (p. 22), which could be expanded to “what surprised me,” “what intrigued me?” and “what disturbed me?” as Sunstein and Chiseri-Strater suggest (2012, p. 115). As I went through the first round of coding, I kept these questions and my research questions in mind as I wrote codes in the margins of each document; so whenever I read something that related to open-mindedness, mathematics teaching, or cultural learning, I made sure to code it. Table 3.6 below shows some examples of how I used in vivo coding when analyzing my data.
**Table 3.6: An Example of In Vivo Coding with my Data**

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Data</th>
<th>Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview 1</td>
<td>Me: How would you describe you and your family’s cultural or ethnic background?</td>
<td>Caucasian</td>
</tr>
<tr>
<td></td>
<td>Ben: I guess the best way to describe it would be… I mean, we are Caucasian, all of us. My dad comes from a mostly Polish family and my mom’s side is mostly Italian. We don’t necessarily take pride in any of that but my grandparents do. So, that would be where the disconnect started happening if that makes sense. So, we’re not very oriented towards any of that. We identify towards those things but they aren’t anything special towards us. Honestly, culturally, it would be more accurate to say my family is a family of helpers over any specific background because my mom is an occupational therapist, my dad is a teacher in an elementary school. So, that would be more accurate for my immediate family.</td>
<td>Polish</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Don’t take pride in it</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grandparents do</td>
</tr>
<tr>
<td></td>
<td></td>
<td>That’s where the disconnect happened</td>
</tr>
<tr>
<td></td>
<td></td>
<td>We identify with those things</td>
</tr>
<tr>
<td></td>
<td></td>
<td>But they aren’t anything special for us</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Family of helpers over any specific background</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mom occupational therapist</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dad teacher</td>
</tr>
<tr>
<td>Journal about</td>
<td>I hope to inspire my students to enjoy, understand, and learn the mathematics in anyway possible. However, from a technical standpoint, I would say a successful math teacher is one that effectively taught their students the material. Specifically, their students have mastered the different standards that they set out to teach. Being fully successful would also require the teacher to get the students entirely engaged and immersed in the mathematics, seeing that the material is also useful, as well as succeeding in getting the students to think more in depth than they had before.</td>
<td>Inspire students to enjoy math</td>
</tr>
<tr>
<td>math teaching</td>
<td></td>
<td>Inspire students to understand math in anyway possible</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Students master the standards</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gets students engaged in the subject</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gets students seeing the material is useful</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gets students to think in depth</td>
</tr>
<tr>
<td>Journal about</td>
<td>First, a crucial set up around being open-minded is willingness to participate. One of my friends has a pin on his headrest in his car that says the words “I am for anything.” While it may not be exactly true, overall, I try to surround myself with people like this, the type of people that are constantly</td>
<td>Willing to participate</td>
</tr>
<tr>
<td>open-mindedness</td>
<td></td>
<td>I am for anything</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Try to surround myself with people like this</td>
</tr>
</tbody>
</table>
During this step, I used different colored pens to indicate the research question that I was coding. When something related to mathematics teaching, I used a red pen; for open-mindedness, I used a blue pen; and for cultural learning, I used a black pen. Also, whenever there was anything else that seemed potentially relevant to my study, I made sure to code that too. I did this because sometimes Ben would share something that didn’t relate to my three research questions, but it seemed important in understanding who he was. For example, in interview 2, he stated: “I could go on for hours about why I wanted to study abroad, the biggest reason to try new things and meet new people. That would be the biggest overarching goal.” Here, I coded, “try new things” and “meet new people,” because although it didn’t relate to any of the research questions, it seemed important in understanding Ben and his experiences abroad.

Once I finished open-coding the documents, I wrote all of the codes onto individual index cards, with the location of the code so that I could go back to the original data source if necessary and the research question that was associated with the code. Once all of the codes were written on index cards—which was hundreds of codes—I separated them by research question, so there were three different piles of index cards. Then, I followed what Grbich determines as steps 3 and 4, organizing similarly coded data into groups or categories that share some characteristic and attaching labels to these groupings. So, for example, “I don’t identify with any of the generalizations of Americans,” “I don’t really consider myself American,” and “Maybe some of my ideologies line up with the stereotypical American but that might not be why I feel that way,”
all fell into the category labeled “I don’t identify as American.” As I was working on this, I met with a critical friend and my dissertation advisor who both looked through the codes and confirmed that they would organize them in similar ways. Once I finished grouping similarly coded data into categories, I typed the codes into a table so that I could easily see all of the groupings and the label, or category, for each grouping. Table 3.7 below shows part of this table for research question 1.

**Table 3.7: Categories for Research Question 1**

<p>| Don’t know what it means to be American (too big to generalize) | Being American means being born in America. Don’t know what else it means. | Interview 1, pg. 5 |
| So many different beliefs in America | Interview 1, pg. 5 |
| 6 million people in America. Too many to generalize. | IDI, pg. 12 |
| Anything I think of about being American, I can think of the opposite (liberal/conservative, etc.) | Interview 1, pg., 5 |
| You can be so many different things in America | Interview 1, pg. 5 |
| So many differences across towns, cities, states. America is too big to generalize. | Interview 1, pg. 5 |
| Don’t know what defines people as American | Interview 1, pg. 5 |
| Every area of the US has its own values, can’t generalize | IDI, pg. 12 |
| There may be things Americans share, but they’re mostly different | IDI, pg. 12 |
| Shouldn’t be looking at culture. Should be looking at individuals. | People have culture all wrong. People make culture (not vice versa) | Identity artifact, p. 9 |
| | We miss things when we just look at culture. How we grow up impacts the way we think. Individual experiences matter. | Memo, May 9 |</p>
<table>
<thead>
<tr>
<th>Category</th>
<th>Statement</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole world inside every individual. I’ve always been interested in meeting and learning about people.</td>
<td>Interview 2, pg. 12</td>
<td></td>
</tr>
<tr>
<td>The individual is the key to seeing the big picture.</td>
<td>Memo, May 9</td>
<td></td>
</tr>
<tr>
<td>I’m struggling to get past the individual and see the group.</td>
<td>Memo, May 9</td>
<td></td>
</tr>
<tr>
<td>We (in high school) saw people for their personality.</td>
<td>Interview 1, pg. 6</td>
<td></td>
</tr>
<tr>
<td>Systems are set up by individuals, not cultures</td>
<td>IDI, pg. 12</td>
<td></td>
</tr>
<tr>
<td>Like to think of people as individuals</td>
<td>Interview 1, pg. 10</td>
<td></td>
</tr>
<tr>
<td>Bad to generalize cultures. Takes away from the individual to be themselves.</td>
<td>IDI, pg. 12</td>
<td></td>
</tr>
<tr>
<td>Hard to distinguish what personal value between cultural value</td>
<td>Memo, May 9</td>
<td></td>
</tr>
<tr>
<td>What’s the difference between culture and personality</td>
<td>Memo, May 9</td>
<td></td>
</tr>
<tr>
<td>Trying to see bigger picture but I value individual experiences.</td>
<td>Email 9/11, pg. 13</td>
<td></td>
</tr>
<tr>
<td>I’m Caucasian, Polish, Italian. Don’t take pride in it.</td>
<td>Interview 1, pg. 1</td>
<td></td>
</tr>
<tr>
<td>Marching band is a definer of who I am.</td>
<td>Interview 1, pg. 5</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Describing self and culture prior to the program</th>
<th>Like trying new things. Don’t like being just one thing. I’m into sports, music, school.</th>
<th>Interview 1, pg. 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Don’t identify with much else.</td>
<td>Interview 1, pg. 5</td>
</tr>
<tr>
<td></td>
<td>I’m privileged that I don’t have to identify with a race.</td>
<td>Interview 1, pg. 1</td>
</tr>
</tbody>
</table>

When possible, I tried to organize the categories in chronological order. For example, these categories came up at the beginning of the program: “describes family as family of helpers,” “I don’t identify as American,” “don’t know what it means to be American (too big to
generalize),” “shouldn’t be looking at culture, should be looking at individuals,” and “describing self and culture prior to the program,” so I put these categories towards the beginning of the table. As the program progressed, other categories like, “beginning understandings of culture,” “starting to see self as American,” “starting to see culture,” “seeing American culture and values,” “seeing British culture,” “seeing Italian culture,” unfolded. I organized each research question in this type of chronological order. Because the codes had been organized in this way, it became apparent that there was a story to tell about Ben’s identity development throughout the course of the program. As such, I began the results section (chapter 4) by describing Ben’s identity at the beginning of the program in relation to his sense of open-mindedness, cultural understanding, and beliefs on mathematics teaching, then I demonstrated his evolution within these three facets of identity throughout the program.

Limitations

There were some limitations in this study. First, there was a limitation in the amount that the program could be observed: I was only able to spend a week in Nottingham observing the participants. I addressed this limitation by selecting a critical time in which the participant observation would take place (October). Based on other education abroad programs at UConn, this has been found to be a time in which participants are deeply immersed in their new surroundings and are actively making sense of their environment.

Another limitation was related to the time period of this study. This study began the summer prior to departure, included the semester abroad, and ended upon students return to the United States. It is possible that much growth will occur in the months and years after the experience; however, I concluded the study in January 2020, just a month after the students
returned home. Later in my career, I hope to conduct studies that include more longitudinal data about the impact of education abroad on teachers.

Another limitation was that this study relied on interviews, journals, and documents that rely on participants self-reporting. This type of data can be biased and subject to participants saying what they think is expected of them. This might have especially been the case because I was the instructor for two of the courses they took as part of this program. Thus, students may have tried to impress me or respond in ways they thought I wanted them to. I had to work with the notion that what participants were telling me and writing to me was true. However, I saw this as a reality of a qualitative researcher, and as discussed above, I used two types of triangulation (multiple sources and methods of data collection and member checks during the analysis and write-up) to mediate this limitation.

Another limitation was my positionality and how I influenced the study. As their instructor. I helped guide their thinking along the way, encouraging them to reflect and grow throughout the experience, and when I noticed that one of them was struggling with something specific, I provided readings and in-class discussions to help them work through their thoughts. For example, Ben consistently spoke about how he valued individual experiences, so at some point in the program, I provided him with readings about individualistic and collectivist cultures. From these readings and our subsequent in-class discussions, he began to realize that America values individualism, which may have been influencing the strong value he was placing on individuals. So, in this sense, I helped guide his thinking, ultimately, influencing the outcomes of the study.

Finally, another limitation was that this was a single-case study. However, although this study merely focused on one student’s development, I am unaware of any other education abroad
programs—such as this one—that are specifically geared towards the preparation of preservice mathematics teachers. If this is the case, this program was a unique opportunity to study how a mathematics-specific education abroad program can influence the identity development of preservice mathematics teachers. In addition, this single-case study allowed me to provide a rich and thick description (Gertz, 1973) of the type of development that can occur through participation in an education abroad program.
Chapter 4: Results

It was a celebration. It was May 6th, 2019, and the outgoing Nottingham group, the group who had spent the fall of 2018 in Nottingham, was celebrating the completion of their master’s year. It had been an eventful year for them: they had spent a semester in Nottingham, completed their inquiry project, would be graduating later that week, and were in the process of seeking teaching jobs for the upcoming fall. Their job today was to celebrate the final product of their inquiry project while welcoming the new Nottingham cohort to the program. The room was full of energy. The outgoing Nottingham group was excited to share their inquiry project and time in Nottingham. They enthusiastically described their experiences abroad, discussed the British educational system, unaware they were using terms specific to Britain—words they had not known this time a year ago—and relayed all aspects of the program that this new group would experience. The incoming group sat nervously, clearly overwhelmed, not knowing what to expect throughout the next year of their lives, but knowing that this time the following year, they’d be different people; they would be the “experts” in the room, sharing their experiences of the program with a new group. This was the start of our summer class together—an experience that I would lead them through—and this was just the beginning of their adventure throughout the next year.

This was also the first time I met Ben. He immediately struck me as thoughtful, reflective, and willing to participate and engage during in-class discussions. Throughout this chapter, I will describe his journey throughout the program, beginning with his thoughts and reflections before leaving for Nottingham, and ending with our most recent conversation in January 2020.

Ben
Ben is a white male who turned 22 years old during his time in Nottingham. He grew up in a small rural town in Connecticut. Prior to studying abroad, he admitted that he didn’t have much experience with vastly different cultures. He describes his hometown as mostly white and ranging from “lower-middle-class to upper-middle class,” and shared a story of having one black friend in elementary school who moved away because his mother felt he was being discriminated against by teachers in school. Ben describes that peers in school “saw each other for who they were.” What is your personality? Are you a funny person? What sport are you good at? These were the ways he said they judged each other, rather than looking at cultural or racial differences. In fact, he also shared that in 3rd or 4th grade, his mother asked him if he noticed anything different about his black friend, and after thinking for about a minute, he said, “oh, his hair is different.” Although it is not uncommon to hear stories of younger children not noticing color, it appeared as though this represented Ben’s way of seeing others throughout his childhood and teenage years. He shared that he used to wonder why everyone didn’t learn one language, because, as he put it, “one language would make it significantly easier for everyone to communicate,” and he considered this a logical way of viewing language. He looks back at his high school days and is aware of the fact that he was less interested in the differences that existed between people. As he put it, “I thought, people are just essentially the same, and they’re so different that it doesn’t really matter because their differences kind of line up,” and he mentioned that he felt this way about culture too.

He describes that in his first few years of college, he had no plans of ever studying abroad. It was expensive and he was comfortable with his life at UConn. He was an active member of the marching band and had many close friends on campus. Furthermore, his belief that people and cultures are essentially the same and their differences are irrelevant suggested
that he didn’t see the point of spending a semester overseas. As Ben put it, “I was cool with traveling, but it wasn’t something that I wanted to go out of my way to do.” However, sometime in his junior year, he “started to realize that there was actually a lot to learn from different cultures.” One of the turning points was when his multicultural education class required him to attend a couple of events for Metanoia, a UConn tradition of convening around critical issues of the time. Ben attended a talk from the great-grandson of Sitting Bull, a Native American leader who died in 1890 after years of fighting against the United States which was forcibly removing native tribes from their land after discovering gold. As Ben puts it, “I actually learned a lot from it… he talked about how people think in language and that his people had a certain language” that was different from English and other western languages. This speaker discussed that western languages, like English, are instilled in fear, which Ben described as:

Even something like the word “love.” He was saying that there isn’t something called love in his language. You could essentially really like someone but the idea of love isn’t really something that’s real. It’s something that we created. One of the things he talked about with love is that it kind of comes from fear. You talk about love because you want something a step up… It’s something that’s more physical, that’s going to be more consistent. So, if you’re just saying that you like someone, you might start getting afraid that they aren’t going to like you. But if you love someone then you’re not going to be afraid about that.

This was a pivotal moment for Ben, because as someone who used to think that everyone should learn one language, he realized that differences in language can offer new perspectives. As he put it, “Languages are ways of thinking,” and he became more interested in seeing other ways of viewing and approaching the world. This concept became one of the reasons he developed
interest in studying abroad. In the next section, I will describe some of Ben’s thoughts and reflections from the summer before leaving for Nottingham.

**Over the Summer**

When I sat down with Ben for our first interview, he had trouble describing himself and his culture. He described himself as “Caucasian,” “Polish,” and “Italian,” but indicated that these weren’t identities his family prided themselves on or felt very connected to. Instead, he described how “culturally, it would be more accurate to say my family is a family of helpers over any specific background because my mom is an occupational therapist and my dad is a teacher in an elementary school.” He acknowledged that his family was privileged to not have to identify with “race,” or “culture,” and that they could identify with something else entirely, like being “helpers.” Ben described himself as reflective, saying, “I’ve always been of the mindset that I should try my best to figure out the type of person I want to be, and try my best to be that person, so I’m constantly thinking of new things to do.” For example, he had recently decided that it would be “interesting” and “cool” to make sushi, so he had done so a few days before our interview. Saying, “I don’t like being just one thing,” and that he gets bored from focusing on one thing for too long, he described how in high school, he played an instrument, played two different sports, and excelled in all of the subjects. When I asked him if there were any types of organizations, events, or other types of affiliations that helped define who he was, he discussed that marching band was probably the biggest definer, saying, “I’m very much into music…. I listen to everything from rap to jazz to rock” and that he had many close friends from marching band. He indicated that there wasn’t much else he really identified with.

Ben discussed that he didn’t really consider himself American, and that he had trouble determining what it meant to be American:
Ben: I guess I consider myself American in the sense that I was raised in America, but I feel like America is too broad of a thing for me to consider myself as. Like, I honestly think, I look at the different high schools and I can see how different every single high school that I’ve been to is. Even town to town, city by city, and then state by state. There are a lot of things that are relevant in one place or another. So, like, I would say in a manner of speaking, I identify as American because I grew up in America. But I don’t really identify with anything that I know could be a generalization of Americans, that I’m aware of. Maybe I’ll find that that’s true as I interact with people in Nottingham and in England.

Me: So, what do you think it means to be American? To you, does it just mean being born here and living here? Do you have other conceptions of what that could mean?

Ben: To me, it only means being born in America. But that doesn’t mean that it means that to other people. Maybe there are some things that line up with my ideologies that line up with what someone might think a stereotypical American is, but that doesn’t mean that’s why I feel that way. So, I don’t know…. But the thing about America is that anything I can think of, I can also think the opposite, and that’s kind of where I run into an issue with what defines people as Americans. You can define yourself as the red neck hillbilly that thinks black people are the devil or something like that, but you can also see Americans as people that think that there are 7,000 different genders and all of them are equal. I’m not trying to dismiss that side of it. But there are two sides of the spectrum…. Oh, I guess, … I don’t really know what my political affiliation is currently, but in high school, I definitely identified as libertarian, and I think that libertarian is very American, with the idea of government being useless except for protecting someone from stabbing
me. I haven’t really put enough thought into it recently, so I don’t know how I would line up politically right now, but that is still part of who I was and who I kind of am, in that I’m constantly thinking about how much is too much. How much should we have to be able to choose what we can do versus how much of the government can tell me what to do.

To Ben, America was too multifaceted to generalize, and he had trouble articulating what it meant to be American. These ideas also came up in the short-answer section of the IDI questionnaire, where he discussed that the United States is a huge country consisting of millions of people. Although he had the incorrect population of the US (6 million), his description of this number is interesting:

This number on its own is unfathomable by the human brain. While we might think that we can understand how big that number is, such as the fact that it is six times larger than a million, we cannot truly grasp how many different people that is. For some perspective, the highest number anyone has ever counted to as an individual is one million, and it took the man 89 days to count this high.

His point was that, “There may be things those six million people in the US share, but a majority of those people have vast differences. The culture of the US is close to not being generalizable at all.” This is particularly interesting from Ben, because while he described himself in high school as being someone who thought people were essentially the same and didn’t care to see or notice their differences, he had developed into someone who was keenly aware of the differences that existed between people. He now reasoned, “We can consider region by region, state by state, city by city, there are significant cultural differences,” going on to say, “even each and every high school in the country has its own culture, norms, and precedents that change the way individuals
think,” ultimately arguing that “systems are set up by the individuals at the end of the day, rather than the cultures themselves.” This became a recurring topic for Ben. He believed that people had culture all wrong; instead of culture defining people, we should look at people defining culture. Another way he put it was, “People make culture, not vice versa.” He liked to think of people as individuals and felt there was no positive value from stereotypes. As he wrote in the IDI, “Generalizing cultures, in my opinion, is a bad thing as it takes away the ability for the individual to be themselves.” This aligns with his response to the following prompt on the myCAP: “Talking about common cultural characteristics is different from stereotyping,” to which he responded, “somewhat disagree.” Interestingly, when looking back at a memo after class on May 9th, I had written the following:

In class, we had a conversation for about an hour about the IDI and culture. During this conversation, Ben asked, “what’s the difference between culture and personality?” implying that people can have personalities that cause them to behave and act in certain ways. He isn’t convinced that culture determines how a person will think or behave… he thinks their personality is what determines this.

This became a topic of reflection and conversation throughout the course of the semester, which I will come back to later in this chapter.

When Ben first completed the IDI, his developmental orientation indicated that his primary orientation towards cultural difference was within minimization, with the exact number being 92.83 (see figure 4.1). As reported in his IDI profile, minimization reflects “a tendency to highlight commonalities across cultures that can mask important cultural differences in values, perceptions, and behaviors,” (Ben’s IDI profile, pg. 6). It may seem surprising that Ben fell within the minimization category because of his tendency to focus on and value the differences
between individuals, but upon further consideration, this makes sense because of his lack of awareness towards culture. As the IDI report states:

This [minimization] can often take one of two forms: (1) highlighting commonality that masks equal recognition of cultural differences due to less cultural self-awareness, more commonly experienced among dominant group members within a cultural community, or (2) highlighting commonalities that masks recognition of cultural differences that functions as a strategy for navigating values and practices largely determined by the dominant culture group, more commonly experienced among non-dominant group members within a larger cultural community (pg. 6).

At the beginning of the program, Ben focused on differences, but this was in the form of looking at differences among individuals, rather than differences among cultures. Ben avoided seeing culture because he felt it would prevent him from understanding the individual person at hand. I believe the fact that he lived within a dominant cultural group in America perpetuated this way of viewing the world. He could choose to ignore culture. He could choose to be viewed for his individual traits rather than his cultural traits, and in turn, he focused on the individual traits of others, unaware that individual traits can be profoundly influenced by cultural values. He saw the world through the lens of his own culture, and, being part of the dominant cultural group, he didn’t need to see culture. This is evident from his response of “somewhat disagree” to the myCAP statement, “My cultural identity shapes how I perceive the world.” Minimization makes sense for Ben, because subconsciously he was closing himself off from noticing cultural differences—which is the definition of minimization. Specifically, Form 1 of minimization, described above, aligns with Ben’s way of viewing the world: stressing commonality across
cultures and subsequently not seeing cultural difference due to a lack of awareness of one’s own culture, most common among dominant group members within a cultural community.

**Figure 4.1: Ben’s Developmental Orientation (Prior to the Program)**

The IDI also provides a “perceived orientation,” which reflects how one rates their ability to understand and adapt to cultural difference. Ben’s perceived orientation fell within acceptance (see figure 4.2). Acceptance is “an orientation that recognizes and appreciates patterns of cultural difference in one’s own and other cultures” (Ben’s IDI profile, pg. 6). Research indicates that it is common for teachers to overestimate their intercultural sensitivity (Cushner, 2009), as is the case with Ben.

**Figure 4.2: Ben’s Perceived Orientation (Prior to the Program)**

Because Ben’s developmental orientation reflected minimization, he became aware that he was not noticing cultural differences, and this became a constant point of reflection for him throughout the semester. After receiving his IDI report, he decided one of his goals in Nottingham would be to look for differences between cultures. He was excited to learn about other cultures and understand the world better, which came up frequently during his semester abroad. See Appendix H for the IDI reports of all students in the 2019 program.
During the summer course, Ben’s descriptions of mathematics and mathematics teaching most aligned with what I have defined as a reform approach to teaching the subject. In a short introductory biography he wrote for faculty at the University of Nottingham, he described that he aimed to make mathematics relatable and realistic for his students. Noting that “in the United States, math generally has a negative connotation to it,” he also indicated, “People believe they are good or bad at math based on the memorization and recall of procedures that more often than not don’t relate to the skills needed in the real world.” He explained that his hope as a teacher was to develop different ideas about the subject so students could see its value. He wanted to help students learn how to think logically and apply the mathematics they were learning. He saw mathematics as a puzzle and viewed procedures as “pure labor,” saying in a journal, “Humans shouldn’t be trained to follow directions or do what a calculator does.” He valued opportunities to explore, create, and approach problems from different angles, and he wanted to inspire students to enjoy and be engaged in the subject. Ben wanted students to discover concepts for themselves rather than be told what to do. He appreciated an inquisitive style of teaching, which he described in his first interview as,

thinking and processing and trying to figure out what’s going on and … adding personal thought processes and ideas into how to solve the math, rather than being told methods of how to do it, then practicing how to do it, then being able to do it.

He mentioned that he views traditional mathematics instruction as teaching procedures in a step-by-step process and that “there are a lot of things in math ed that probably need to be changed because so many people just keep doing the same thing.” This was actually one of the reasons he decided to study abroad. He was excited that the University of Nottingham is home to highly regarded researchers in the field of mathematics education, and he was eager to work with
faculty who could help him learn about how to improve the field. He stated, “I think if we didn’t run the Nottingham program, I probably wouldn’t study abroad. The fact that they have such a good math ed program is a big selling point for me.”

Ben described that he wanted students to process how the mathematics worked. This was an important point for Ben. He shared that when he was a child, he was good at math because he was good at following directions, but that this eventually became the reason he struggled to enjoy the subject. As he said in a journal written during the summer class, “My process of memorizing steps felt almost impossible to keep up with, as it was taking more and more of my time to be able to consistently get correct answers through memorization.” He saw procedures as “mindless” and a “tedious waste of time,” and he hated the redundancy of the subject. Even during his K-12 schooling, he sought conceptual understanding and inquiry. He took it upon himself to understand the concepts behind the procedures, remembering being in high school classes and focusing on why the mathematics was working. He made it a point to not sound ungrateful towards his mathematics education, writing in his journal;

I credit my high school math teachers with giving me logic and reasoning skills that I take for granted to this day, and one of the reasons I wanted to be a math teacher was because my math teachers in high school were some of my favorites. The task of making math seem fun is an incredibly tall one which they at least achieved some of the time, and they certainly achieved in making math feel easy, understandable, and above all else, I always felt like math was my favorite subject in general.

However, he described that math felt like work, saying, “I did math because I was supposed to,” and that ultimately, it was “an easy way to make money.” He started at UConn as an Actuarial Science major, with the goal to graduate and be financially successful, but quickly
realized that he wasn’t motivated in his classes. He said, “I found myself without motivation to try and learn the math in general, I was sick and tired of doing things that did not interest me.” He lacked the desire to become an actuary, saying, “I could see the fact that actuaries can use the mathematics to manipulate unknowing people for their own benefit, which was not in my nature to do.” Realizing that he had a great deal of experience working with people who were younger than he (i.e., through parks and rec jobs, sports clinics, and tutoring), he decided he wanted to become a mathematics teacher. When he switched his major to secondary mathematics education and began taking mathematics methods classes, he felt that his understanding of the subject had been reaffirmed. His methods classes stressed the idea that mathematics should be about “explaining phenomena and creating the tools that help us do the steps, rather than just following what we have been told” and that “it is just as important to think about the math as it is to hear and be told what to do.” From these classes, Ben realized that he does not learn well from lecture-style teaching, which explained why he struggled to enjoy mathematics: “People telling me what to do doesn’t work nearly as well as me thinking about it. It’s easy to not understand or even to forget something that a teacher says if you don’t apply it to problems.” This impacted his philosophy of how to teach the subject. He said, “I don’t lecture” and “It’s important to give the material in many different methods over a period of time to get the students to understand what is going on.”

During the summer course, when I asked Ben to describe a successful mathematics teacher, this is what he said:

I hope to inspire my students to enjoy, understand, and learn mathematics in any way possible. However, from a technical standpoint I would say a successful math teacher is one that effectively taught their students the material. Specifically, their students have
mastered the different standards that they set out to teach. Being fully successful would also require the teacher to get the students entirely engaged and immersed in the mathematics, seeing that the material is also useful, as well as succeeding in getting the students to think more in depth than they had before.

When I asked him to reflect on how his culture had impacted his experiences as a teacher, Ben indicated:

I think that my culture has influenced me in a way different than most. I often finding myself fighting against who I am supposed to be. Instead of following what I am expected to do, I tend to attempt to challenge the norm of the people around me by asking why we do certain things, and inevitably coming up with my own thoughts of how to act or behave in different settings. Naturally, this comes out in my teaching style as well. I constantly am trying new strategies and ideas that I have come up with using my resources available to me. At the end of the day, my culture, upbringing, and my own reflection has led me to try and push the norm rather than just follow what I have already seen in the past.

While some of Ben’s descriptions during the summer aligned with the reform-minded approach to teaching the subject (e.g. a focus on inquiry and conceptual understanding), his descriptions did not include a recognition of “students’ backgrounds, experiences, cultural perspectives, traditions, and knowledge,” (2014b, p. 1), which NCTM has said is necessary in order to promote a culture of access and equity. His descriptions focused around what he valued within the subject and didn’t include any acknowledgement of his students’ culture, experiences, or background. This is evident by his response of “somewhat disagree” to the myCAP statement, “Student’s cultural identity influences the way they experience school.” His descriptions also
lacked an awareness of his own culture and how it would influence his teaching (e.g., for the statement, “My cultural identity will impact my teaching,” he responded, “disagree”). Before participating in this program, Ben struggled to see cultural differences, and he lacked an understanding of his own culture. He also indicated that he didn’t try to incorporate global perspectives into his teaching, responding “somewhat disagree,” to the myCAP statements, “I try to find global aspects in most topics I plan to teach” and “I plan to design and teach curricular units that explicitly address global issues.”

The summer before the program, I asked the students to reflect on the notion of open-mindedness. In his reflection, Ben stated that being open-minded is hard to pinpoint, but he broke it down into three ideas. “First,” he said, “a crucial piece around being open-minded is a willingness to participate.” He described that he tries to surround himself with people who are “constantly interested in trying and experimenting with the world around them.” He saw this as an important aspect of open-mindedness. He went on to say, “The second piece… comes down to being able to view the world from another person’s perspective.” His last point was slightly more elaborate:

I would say that when someone approaches a new experience that is different from the norm (such as us studying in Nottingham), do you approach it with a "learning" disposition or a "judging" disposition. Unfortunately, I am unsure if judging is the proper word for it, so I will try to explain. I would figure that a person who is open-minded is trying their best to understand or comprehend the world around them. If there is something they are not used to, rather than call it "annoying," they would use it as a learning experience. I would think that open-minded people are constantly trying to learn about new experiences, so they spend their time in a place where they normally are not
and they attempt to understand the why behind each concept in a positive manner so they can get a better grip about how the world works. On the other hand, someone who is not open-minded might easily get annoyed by differences in cultural understanding.

Ben shared that he attempts to be open-minded every single day, just like he attempts to be “many different things such as humble and relaxed.” He considered it an important part of his personality to “try to understand things from other people’s viewpoints to get a better grasp of the world.” Indicating, “I try really hard to get comfortable around all sorts of people because I know they all have different experiences to offer,” he admitted that he spent a considerable amount of effort to keep himself from judging people around him. Saying that he could not consider himself to be completely open-minded, he wrote, “One of the reasons I decided to go to Nottingham is to test how open-minded I could be, and learn how to be more open-minded in the process.” He went to Nottingham eager to see new views and perspectives and learn about cultural differences. He was also eager to try new things, meet new people, and get out of his comfort zone. As he put it, “it will be an opportunity to expand my horizons, meet new people, and practice being in settings where I don’t have a lot of people that I’m super comfortable with.”

Arriving in Nottingham

When Ben first got to Nottingham, he seemed to experience a honeymoon phase. After being there for a week, he emailed me saying he was having a “fantastic time” and that he only regretted “having to sleep, since that meant less time exploring the city and meeting locals.” During this part of the program, much of his time consisted of touring the city with the other UConn students and attending classes that focused on understanding the educational system in
Britain. His emails to me were less reflective, simply just providing a list of everything he had been up to. For example, on September 9, 2019, he emailed me the following:

You asked how everything was going, so I figured I would give you some details! Some cool things we have done so far include going to Pitcher and Piano Pub, hanging out with the history cohort, got Kebabs at Marios, and got our bus cards all set… We also went on a Robinhood tour the other day through the city, where a guy dressed as Robin Hood brought us around the city giving recommendations and talking about history. At the end, we got a drink with him at a pub called Ye Olde Trip to Jerusalem, and that was quite fun.

He also shared that when he was alone, he would listen to English music albums, such as “Help,” by the Beatles, to “feel more engulfed in the culture.” He was clearly excited to be there and was loving everything about it, describing most experiences as “fun,” “cool,” and “nice.” He also indicated that his only problem was “not wanting to miss anything this city has to offer.” He wrote, “By the time I leave in December, I want this city to feel like a second home.” He seemed concerned about booking too many trips to other European countries because he wanted to develop a real connection to Nottingham, and he made it a point throughout the semester to immerse himself in activities that would allow him to meet locals, which was a different mentality from the other students in the group. For example, on the weekends that he wasn’t traveling, he would attend a brass band meet-up group in which participants would spend time playing their instruments and then do something social together. He also occasionally joined a rollerblading meet-up group and, at some point in the semester, went Christmas caroling with other locals. He was continually seeking out new things to try that would allow him to meet people in the area. He also made it a point to spend time alone, every so often going for a walk.
through a park, checking out a new area of the city, or spending time in the music building on campus that provided a space for Ben to play his trumpet.

**Traveling to Amsterdam**

His first trip outside of the country was to Amsterdam. A couple of weeks into the semester, on September 14\textsuperscript{th}, 2019, the four mathematics students traveled there together for a weekend. Ben was immediately struck by how different Amsterdam was, saying, “Amsterdam was one of the more unique places I have ever been.” In an email to me, he reflected on surface level differences (i.e., a city filled with people riding bicycles, buildings that have existed for centuries, no skyscrapers, more people smoking cigarettes), while also noticing deeper levels of cultural differences, including differences in values and belief systems. For example, he noticed that the city had a whole system for bicycles and that “there were many paths and roads that cars were not allowed to drive down.” He hadn’t noticed any gas stations, perceiving that it was a culture that cares about the environment. He also made a comment about being uncertain of some of the cultural norms, saying that although it is legal to smoke marijuana, he didn’t know if it was acceptable to do so in public.

Ben’s written observations align with his statements in some of the conversations about culture that we had had as a group. During the summer class, we discussed the concepts of objective and subjective culture. We discussed that objective culture reflects the observable aspects of culture (i.e., rituals, traditions, observable behavior, aspects of language and non-verbal communication, arts and artifacts), and subjective culture reflects the meaning behind the surface-level cultural differences (i.e., values, attitudes, beliefs, behavioral norms, social rules, and the meaning behind language and communication). Ben’s reflections from Amsterdam
indicate that he was noticing mostly the objective aspects of culture, but he was also beginning to see subjective aspects. He recognized that belief systems regarding the environment likely influenced the way of life in Amsterdam. And, even though he was unsure of all the cultural norms, he was aware that there were social rules and behavioral norms that were different from other places he’d been.

Ben also expressed that he and the other UConn students felt challenged during this trip. For example, he shared a story of walking around Amsterdam with the other students for over an hour looking for a place to have dinner. Everything was so new—they were unfamiliar with the city, didn’t know what to make of the red-light district, couldn’t speak or understand the language, hadn’t previously been exposed Dutch cuisine, and were unsure of the cultural norms. They had trouble deciding where to eat, and once they did eventually find food, they ate quickly, returned to their hotel room, and were in bed by 8:30 pm. This, to me, indicated a sense of denial—they were withdrawing from the cultural difference that they were experiencing. At some point, each student expressed to me a sense of frustration from this night. It appeared as though they were out of their comfort zones and had trouble navigating as a group within this new environment. One of the students was upset because she didn’t want to be in bed at 8:30 pm—she wanted to explore the city but the others were ready to end their night. Two of the other students shared that they were frustrated with the experience of traveling as a group and struggling to make everyone happy; therefore, spending a significant amount of time deciding on a place to eat. And, Ben felt like the trip hadn’t run smoothly and was “less than ideal,” leading to a moment of crisis for him.

He wrote to me, “Amsterdam’s culture definitely was one of the first times I was feeling shocked at the discrepancy, and this put me in a weird spot over the past week.” While he
enjoyed Amsterdam and the tourist attractions that it offered, he shared that he found himself frequently thinking of how he missed his closest friends from home. Because he was in a completely unfamiliar environment, he wanted to be with people he trusted and could rely on. It appeared as though he missed the support that his friends provided. He wrote, “Un fortunately, I won’t always be able to lean on them in times of struggle,” and this trip seemed to be a moment in which he wanted their support. He also expressed that it would be more fun to enjoy the various aspects of the city with his friends. This led to him taking the following weekend in Nottingham to relax and reflect by himself, and this was one of the first moments that Ben took a break from seeking out new experiences, saying, “If I take some time to myself, I can find the answers I need and the changes I need to make” in order to make sense of the uncomfortable trip he had just experienced.

Ben came to some important conclusions that weekend that he shared with me. He said, “First and foremost, in terms of meeting people, I need to put myself out there and attempt to join a few clubs,” which propelled him to join the brass band and rollerblading meet-up groups. He also realized that he wanted to keep in better touch with his friends from home, saying, “This should help a ton since I will still continue to connect with them while not relying on them entirely like I have in the past for my genuine social interactions.” His third realization was that he needed to be patient:

When I start a semester, I have a habit of wanting to rush head first into everything. I find it all so exciting and interesting, particularly this semester since it is all so new. If I relax and let things come with time rather than forcing my way into everything, I know I will get better results.
His last realization was the most important to him. He wrote to me:

I need to practice embracing that not everything is going to be perfect. I have a habit of thinking a lot, and I don’t think this is a bad thing. Thinking about how everything works together results in me having much more positive experiences than I would otherwise. Unfortunately, if things play out incorrectly or less ideal, I find myself overthinking and second guessing my actions. It isn’t the end of the world if I don’t get along with someone or if something doesn’t play out perfectly the way I envision it…. I don’t have my closest friends to back me up in uncomfortable situations at the moment, but that’s okay. I shouldn’t blame myself or get down because things aren’t perfect. Instead, I should laugh it off and maybe adjust ever so slightly for next time. That’s the beauty of new experiences. They don’t, and shouldn’t, work out perfectly. Dealing with obstacles is a way of learning as well, and one of the reasons I came here.

Before the trip to Amsterdam, Ben was in tourist mode. He spent his time touring the area with other UConn students, remaining in an insular bubble, and taking new experiences at surface level, describing most things as “cool,” “fun,” and “nice.” His observations and reflections were more about being excited and loving everything he was doing, rather than noticing or thinking critically about cultural differences. In turn, there wasn’t much of an opportunity for growth. It was when he traveled to Amsterdam that he was challenged and forced to take a step back and reflect on his experiences. This was a turning point for Ben, and from here on out, his emails were more thoughtful and reflective. He also consistently came back to using coping strategies that he found helpful, such as meditating and taking time to himself when he was feeling overwhelmed or needing extra time to process everything he was going through.
My Visit to Nottingham

I visited the students in Nottingham from October 4th to 11th, 2019. During this time, I conducted individual interviews with each student, shadowed them in their school internships, accompanied them to their classes at the university, participated in some of their daytime social events (e.g. joining them at a local fair), and led an in-person seminar class in which we discussed some of their experiences abroad. During our class together, Ben shared that he was still struggling to recognize aspects of culture and “see the bigger picture” because he “values individual experiences.” He made statements like, “Individual experiences matter,” implying that he valued learning about people’s individual perspectives because, “How people grow up impacts the way they think.” He admitted that he was struggling to get past the individual and see “the group” and discussed that it was difficult to distinguish between a personal value and a cultural value. One point he brought up was that in this day and age, people can pull from other cultures to create their own lifestyles, and he didn’t know what to make of this.

However, at the same time, he was expressing a desire to understand cultural difference. He talked about how it’s easier to observe objective aspects of culture and that we can miss the more subtle pieces of culture. For example, one of the other UConn students had discussed that part of her family culture involved getting together on Sundays for dinner, to which Ben responded, “that might feel like a big piece” of culture, but other aspects of culture, like the family sayings, can strongly impact the way we think and be difficult to observe. He felt unsure of how to notice these fewer observable aspects of culture, concluding, “The individual is the key to seeing the big picture…the better you understand yourself, where you come from, the better you will understand the culture around you.” I believe what he was getting at here is, the
better you understand yourself as an individual, the better you will understand both your culture and other cultures.

When we met for our interview on October 6th, 2019, he reiterated his desire to pay attention to individual differences. He discussed that he found people fascinating and was very interested in the idea that “there’s a whole world inside the head of every single individual”:

One of the.... random thoughts that came to my mind the other day is how we think about the vast array of the stars and how huge the universe is. But I get that same feeling of looking up into the sky when I'm having a conversation with someone and how vastly different some of the thoughts in our brain chemistry are and how vastly different each individual person is.

However, in this conversation, he appeared to begin to get past the “individual” and view others through a cultural lens, saying:

But I’m also interested in how people share the same in terms of a culture, like in the US and in England. And then England and the US share some of the same values because of how connected we are. And then you go to the Netherlands and there's completely different things and then it's awesome that we have a Chinese exchange student because she has different values as well.

For the first time, he shared that he was starting to see the concept of culture and the differences that exist across cultures. One of the examples he discussed involved the Chinese exchange student, whom I will refer to as Sara, and with whom they were sharing a flat. He described that Sara made dinner for the flat one night, and when the food was ready, he and the other UConn
students fixed themselves an individual plate of the food she had prepared, which caught Sara off guard. As Ben put it, “She didn’t really know how to respond, and said, ‘Oh, I can see the cultural differences already,’” because she was expecting each person to take a small bowl of sticky rice and eat out of a larger shared bowl throughout the meal. He related this to another misunderstanding that the UConn students were having with Sara: the UConn group had decided that they would each have their own individual shelf in the refrigerator for the items each had purchased, but Sara kept putting her belongings on the incorrect shelf, which frustrated one particular member of the group. Ben reflected on this:

She keeps complaining that something ended up on her shelf that isn’t hers, and I’m just sitting back thinking, “It’s probably because Sara doesn’t understand it.” It’s probably a cultural thing. The same idea of, we put all our food onto our plate, and she was going and picking up from the main plate as she ate. The refrigerator thing might be because she’s used to food being more of a shared, communal thing.

In this instance, Ben was making sense of a subjective cultural difference. Instead of getting frustrated by Sara’s behavior, he attempted to understand the meaning behind her behavior. She wasn’t putting her food on other designated shelves to be rude; rather, she had different belief systems and lived by social norms that made this unnatural for her.

In this interview, Ben also shared that he was starting to see himself as American. He wrote, “There are some things that are just me, and then some of the ways I act are based off of American values.” He realized that one thing he really liked about America was that “we get the opportunity to expand our horizons and try new things.” As he put it, “The beautiful thing about
America is you have options,” recognizing that he especially had options being a white male. However, he also went on to say:

You get opportunities here (in England) as well, but at the same time, it’s culturally not only acceptable, but encouraged to try new things for some of us back home. There's very much an emphasis on us being ourselves and getting to choose what we want to do, rather than necessarily trying to follow a script.

It could be argued that in this moment, Ben was resembling the IDI category of defense: not being critical of your own cultural values while being overly critical of others. However, while he was speaking highly of American culture, he wasn’t being overly critical of British culture. He was starting to see that America values individual expression and emphasizes that each person is unique. While he lacked an understanding of systemic challenges in American society, he was recognizing American values in a way that he hadn’t previously. He also started to identify aspects of British culture, observing that the brass band club was more laid back than what he was used to, not requiring try-outs and letting anyone participate. He perceived that the schedule in his school internship was more relaxed, sharing a story of speaking with a teacher who was late to class but still kept talking to him—something he didn’t think he would see back home. He recognized that his university classes were more easygoing with longer “tea breaks,” and less need to begin on time. He laughed as he shared a story of Mathew, one of their University of Nottingham professors, arriving to class late, then, instead of rushing to start class, leaving to fix himself tea before they began. He noticed smaller food portions and differences in attire, saying the Brits didn’t seem to wear shorts. He was aware of different beliefs on alcohol, noticing that there was bar in the university’s student union, something Ben knew didn’t exist at UConn. He shared that the British humor was more “aggressive,” saying, “Aggressive being not
a bad thing, aggressive as in it's more roasting each other,” and that he had recently roasted someone in a way that he “wouldn’t even think about doing back home,” teasing someone for a shirt they were wearing, but saying that the group he was with “loved it.”

In this interview, he also talked about some of the things he was learning in his school internship. While he acknowledged that teachers still resorted to teaching procedures, perhaps even more so than back home, he appreciated the “conceptual undertones” in their system and curriculum. He discussed that they use different words that created more of a conceptual understanding. For example, for an equation like 2(X+4), in the United States, we might tell students to distribute the 2 or multiply the terms by 2, but this wouldn’t give them a real grasp of what they were doing and why. In Ben’s school internship, instead of saying “distribute,” or “multiply by 2,” teachers said that there were “two lots of X plus 4” or, in other words, “2 groups of X plus 4.” Ben liked this way of talking about the problem because it provided a conceptual understanding of the mathematics.

He was also seeing other ways of approaching problems. For example, for a problem like (X-2)(X+4), instead of distributing, teachers in his Nottingham school internship were using the “box method.” Ben shared that when he had previously substitute taught at his old high school back home, one of the teachers he was working with had said, “I’m going to give them the students the distributive method and then the box method and have them choose between the two, and hopefully most of them just do the distributive method because it’s a lot quicker.” Ben shared that he didn’t think much about this teaching approach and was “inclined to agree” at the time, but now, after working with a teacher in Nottingham who always taught the box method, he reconsidered this approach, saying:
I was thinking about how I could frame it in terms of just simply getting area.... making a block and developing that into two times X minus four, or something like that, and then saying, "Oh, well we're getting the area." Even framing it in terms of length with counting blocks first and then having an investigation lesson slowly based around that is relating it back to concepts.... And then all of a sudden now they actually understand what's going on, and most of them will probably actually use that box method and then over time we can develop into the distributive method for those that want to do it. But honestly, when the teacher that I was working with back home said that distributing using the arrows is faster, it's not that much faster. It might take five, ten seconds less and I don't think that that amount of time should make that much of a difference.

Being exposed to other methods of teaching was encouraging Ben to reconsider what he had done previously. Ben also described a different approach to teaching sine, cosine, and tangent that he didn’t necessarily love, but had caused him to consider that “we kind of just made up sine, cosine and tangent. We could have just as easily defined sine as hypotenuse over opposite.” He liked that one of the Nottingham teachers had explicitly helped students see that sine, cosine, and tangent are relationships that mathematicians noticed and defined, which could be important for students to understand.

Ben also discussed the relationships between teachers and students and how they were different from those back home. He described the relationships as more formal, with students referring to their teachers as “Sir” and “Miss.” He said the students were quiet and focused and that teachers reprimand their students “a bit too publicly,” sometimes “even almost humiliating students,” saying, “which I know is very bad from what I’ve seen in behavioral management
classes back home.” However, Ben liked that teachers addressed student behavior immediately and shared that he would take that approach home with him.

**Continued Reflections**

On October 11, 2019, after I had left Nottingham, I received an email from Ben in which he continued to reflect on the concept of individualism in American society. He started the email by saying,

I am trying to keep a sense of who I am and my values, a person who values the individual case study, while still seeing the big picture, and it leads me time and time again to another question: what does it mean to be me?

But he went on to say, “There is a reason I ask this question, and I believe it is rooted in American culture. The more you understand yourself, the more you understand others.” Ben had come to the conclusion that it is an American value to emphasize an understanding of self. He wrote that “unpacking who we are and what we want to be is something I see in everyone who is successful and happy” in the United States. People who are considered “popular, special, funny, interesting, strong, and tenacious, understand themselves well and use that to their advantage in social situations.” Recognizing that maybe not everyone in the states would agree, he felt that having a strong sense of self was “valuable to American culture,” saying, “Whether this value is strictly American or something different remains to be seen, but at the very least, I think it is fundamental to American culture.”

The next week, on October 17th, 2019, I received another email from Ben in which he explained he had reached a turning point in his view on culture. The UConn professor who runs
the Nottingham program had visited Nottingham the week after me to check in on the students. During her visit, she led a discussion on communities of practice with the group. Ben recollected:

She led our discussion around topics like the give and take between the community and individual, how growth in identity is directly linked to learning and understanding, and how the community has many pieces built into it other than just the individuals in the group.

The students discussed the groups they were a part of, such as the schools they were interning in and the groups they spend time with, such as bands or athletic teams. Ben wrote that he spent some time “reflecting on how this concept applied on a larger scale in terms of nationality, race, socioeconomic class, etc.,” and that it brought him to some conclusions about culture. He wrote:

I was harshly stuck on cultural values being unanimous driving forces that make us who we are on a fundamental level. I searched hard for an answer to this, ideas that would sweep through the culture like language or individualism. But what I was missing wasn’t these deep-seeding roots in our culture, rather some of the general options and doors available due to how our culture works. Combining this concept with the articles you sent me last week [on individual and collectivist societies], I came to some interesting conclusions about American culture.

Continuing, he discussed in more depth his perceptions of the subjective aspects—or the values, attitudes, beliefs, behavioral norms, and social rules—of American culture. He described America as the “land of opportunity,” saying:
Never played an instrument before? Want to speak a new language? Our culture is fundamentally designed to leave room for these ideas. Whether you’re interested in dancing, athletics, meeting new people, or drinking to your heart’s content, people are encouraged to dip out of their comfort zone. Naturally, not everyone feels this way…. and this idea is far from perfect. There are groups that exist to exclude others from their ranks… but they call us the land of opportunity, and in some cases, it is certainly correct.

Other American values he reflected on include the idea that “every person is entitled to their own opinion,” which he wrote, “is incredibly powerful and allows Americans to voice controversial opinions,” but also has “inherent flaws” because “people can also choose to be unaware of a situation or do absolutely no research and still have their voices heard.” He also wrote that, in America, religion is often not something to be discussed, and political discussions can lead to issues if not in the right setting.

A couple weeks later, on October 25th, 2019, I received yet another thoughtful email from Ben. He wrote about being in Cambridge for an excursion with one of the professors with Nottingham, and that during some free time he had decided to go for a walk alone through the city to reflect on differences between American and British culture. It was during this walk that he came to the realization that America has a “spirit of rebellion.” He wrote,

I believe the spirit of rebellion is deeply rooted and valued in our culture comparatively to here in England. I don’t think it’s a good or bad thing inherently. There are positives and negatives to having this trait, but overall, I think that it is an important aspect to consider.
Ben brought up how America was founded on “sticking it to the man,” and “standing up for itself at a time where they felt taken advantage of.” He acknowledged that there is a spirit of rebellion in England, saying “there is plenty of public protesting” relating to Brexit, but that he sees this value as being more prevalent in American society. He wrote, “Here in England, being rebellious is not seen as something valuable,” giving as examples, “Students wear uniforms to class, rather than getting to express themselves in different ways,” and “They have a formal relationship with their teachers that revolves around the teacher being the head of the classroom.” He also described how there was no desire to own a weapon in England, but that America was “founded on the ability to rise up against oppression and rebel,” and that “We have a right to bear arms in America so that if we are oppressed, we can take appropriate measures to challenge what is there.” He went on to say, “I would argue that the times have changed and we need to reconsider this value,” but at the end of the day, the right to bear arms comes from “the spirit of rebellion, a crucial piece of our founding virtues.”

The next email I got from Ben was a couple weeks later on November 8th, 2019, after he had traveled to Italy for midterm break. He had been very excited for this trip because he was meeting a few close friends from home, and he had spent much of the semester thinking his study abroad experience would be better with them. To his surprise, traveling with his friends wasn’t as easy as he had anticipated. Long story short—one of his friends was excited to see the sights and take in as much as he could, while another friend wasn’t necessarily there to see Italy, but to spend time with his friends. This created tension within the group that caused Ben to see his friends differently. He had previously said that he and his friends had “very similar mindsets,” and that if they were abroad with him, it would be “awesome,” and it would be “four best friends running through the city.” In reality, he found himself trying to mediate between his
two friends opposing views of how to spend time on their trip. In addition, one of his friends expressed that he disliked Italian customs and found Italian people to be rude, constantly complaining about the culture. Ben seemed to struggle with his friend’s criticisms because he was making such an effort to understand, and not judge, cultural differences. In the end, Ben wrote that he realized he had put his friends on a pedestal, and this realization helped him see his Nottingham flatmates differently. He said, “I was comparing them to my friends back home, the magical people I put on a pedestal that couldn’t ever do any wrong or have any issues,” and that he had been unfair. He recognized, “It’s not a bad thing that they’re different, rather it’s a good thing that I can try new things and get a different perspective on the world.”

In this email, Ben acknowledged that it was difficult not having a local person to guide them through the expected behaviors. He and his friends made many cultural mistakes, like eating dinner too early, ordering cappuccinos at the wrong time of day, and trying to order takeout pizza from a restaurant. They had trouble finding places to eat, and they seemed to be unsure of how to navigate the culture. Ben also shared some of his observations about Italian culture. He noticed objective differences such as the rituals and traditions around meals, wine, cappuccinos, public displays of affection, etc., but he also noticed differences in beliefs, attitudes, social rules, and behavioral norms. He suggested that the Italian culture has less care for order and a different relationship with uncertainty:

After being in a place for a week, I couldn’t begin to fully understand how uncertainty works exactly; however, I do think that I have some comprehension of what it looks like… Being at a bar is a perfect example. People were throwing out their orders left and right with no regard to who was first, second, etc. On top of this, in some places the food wasn’t even given a price, you just order and have some idea of how expensive it’s
supposed to be…. The same with the host/hostess situation. In the states, hosts are expected to seat you and give a menu. In Italy, if the place had a clear host or hostess it was likely a tourist trap rather than a refined establishment. It invites more uncertainty to the environment… and you have to be proud and assertive rather than shy and timid.

He admitted that “being assertive is a trait you see in many Americans and some Brits,” but that American and British cultures don’t require you to be assertive in order to, for example, “get a seat at a restaurant.” Being in Italy made Ben notice that American and British culture is often designed around order—you wait in line to get a drink at a bar, there are usually prices listed on menus, a host/hostess seats you at a table—there are systems and processes in place to create structure. He went on to say, “It’s not as if people [in Italy] are aggressive all the time,” but that there are different ways of behaving: “While I can’t say for sure, at the very least, cutting people off isn’t considered rude and is instead an expected behavior in Italy.”

Ben also attempted to make sense of Italian culture by reflecting on their history, but this resulted in him making some sweeping assertions:

I think there is still semblance of fascist culture underpinned in Italian culture. My rationale comes from a comparison to English and American culture. For example, having maximum prices to charge for different coffees, there is a 3-euro tax for visiting Venezia, and waiters and waitresses aren’t as warm as in the states and instead act almost as if they are above you. I think this comes from an inherent pride in themselves, as well as a control over the economy we wouldn’t imagine in other groups. I even think charging for water can land in this category a bit. People might look down on drinking
tap water as a pride thing, even though there are fountains of tap water all throughout the city.

These statements demonstrate that Ben was using his American culture to understand Italian culture, and in turn, it appeared as though he was in “defense” mode, being critical of the cultural values of others.

Less than a week later, on November 13th, 2019, Ben submitted another journal entry that included several reflections on culture. He shared that since he started to recognize cultural values, he had made an effort to not only see the negatives in a culture, but also the positives. He argued that people see “much more ‘bad’ when looking at culture,” because bad things are easier to notice. He gave the examples of his friend seeing many aspects of Italian culture as bad and his Nottingham roommates feeling negatively about American culture because of negative perceptions of the current US president and issues around race. Ben also discussed a video he had seen recently that showed someone in the United States holding up a line in a store because they didn’t speak English, and someone from the back of the line shouting, “if you want to live in America, then learn the language!” Ben wrote:

I hear all the time about stories where people are put into uncomfortable situations through catcalling, racist remarks, and other forms of bigotry. I understand why these situations stand out to Americans. Many people would claim that “rape is part of our culture” or that Americans are all racist bigots, particularly the white males that dominate the society. I honestly refuse to believe this. While people are disadvantaged, and many situations are blatantly unfair, I reject the notion that part of American culture is bigotry. Personally, I deny that extreme circumstances are an absolute truth to a culture, and I
want to propose a couple of counter arguments to this idea in hopes of defending the negativity I have sensed around America from all sorts of different people.

He continued by suggesting that we suppose that 2 percent of Americans are actual bigots, which he defined as someone who “is about putting a group of people not in the majority down.” That would mean that, “1 out of 50 people would look down on others,” which he argued felt like a small amount. As he put it, “I would not say being a bigot is part of American culture. Maybe in some subgroups it would be, but it’s such a low number that I would argue it isn’t part of the larger culture.” But on the other hand, he wrote:

Cross check this with the amount of people at the supermarket on any given day. Then check how many people go to a supermarket regularly. Then find how often you’ve gone to the supermarket in your lifetime. I could do the math out, but my point is that it’s essentially the birthday paradox - although there is a small percentage of bigots in the world, the odds a female, or an African American, or someone homosexual would run into one are impossibly high. In fact, I could keep reducing the percentage. Even if it were a .002 % of people in Connecticut that are bigots, I would argue that chances are most females will find one that will catcall them, or most non-native English speakers will find someone throughout their lives to bully them for not speaking the “correct” language.

Now looking back to that video I mentioned, this would assume the person in line is a bigot in the first place as well. I think you and I would agree that time has a very interesting place in American culture. Time is something to be taken advantage of, not to be wasted. “Every minute counts” is a saying that every child will hear growing up. The
person in line might have just been annoyed or frustrated. Maybe they were late for a meeting, and just shouted out the first thing that came to mind. Maybe that person reflected a half an hour later and regretted their decision. Or perhaps it took weeks or months or years and now they would never dream of saying something like that, but at the time it seemed like the correct behavior. This doesn’t lend itself to being bigot culture. This lends itself to a culture of speed, and a dislike of wasted time. It also comes from a culture of assertiveness that allows for opportunities to grow and change. The problem that our “bigot” had wasn’t the language, it was the time that they felt was being wasted. The circumstances revolved around the language barrier, but the culture might reflect something entirely different than racism.

I would go out and say that people make this mistake all the time. People tend to be dumbfounded by the rise of Donald Trump. They make an overwhelming assumption that people who voted for him are backwards and racist. But this is not true. I would argue that, while the heavy Trump supporters are that 2%, blatantly bigoted and proud of their own incompetence and wearing red MAGA hats unaware of how it’s making the people around them uncomfortable, this does not mean that everyone who voted for him is bigoted. It means that what they value the most lined up with Trump over Hillary Clinton. The biggest place I could see this lining up in is economic policy. I would wager that a large portion of the popular vote that went to Trump was not for some Wall or because he is a bigot that toots his own horn. It was because they felt Trump’s plans made sense economically, and they don’t value the social aspect of the presidency. At the end of the day, if Trump was pro-abortion or against it, for building a wall or open borders, those people didn’t care—they cared about holding onto their money, which they
saw as the most important facet of the presidency. Many surely disagree with me on this position. Many will claim if you don’t do anything about a problem then it’s as good as supporting the opposition. Many proclaim that a vote for Trump is the same as supporting the Ku Klux Klan, supporting negativity, supporting hatred and injustice. Maybe it’s my white male Americanness, but I don’t agree. A person making a decision that they feel aligns with their ideals lies in their intent, and an assumption that America has a culture around bigotry because of the rise of Donald Trump I think is a gross overgeneralization of a specific situation.

Of course, that’s not all there is to it. I think that this country does have an education problem that falls at the root of these issues. I think that our education around culture is inefficient. I think that many people aren’t encouraged to think about the world from another angle until far too late in their educational careers. Many things should change. I would argue every adult in America should at least be fluent in at least two different languages, starting from the very beginning of grade school. This is because everyone thinks in language in some regards. Words reify our conceptual thoughts into something tangible. Some words have a meaning in one language that cannot be translated into the other due to the subjective culture and the connotations they are used in, rather than the specific denotation of the word. I do think there is room for growth in the US so that we can change the land of opportunity into the actual land of opportunity, rather than a place where some people have advantages over others.

Where I am going with is this: while it isn’t perfect, I would argue that a couple of bad apples does not spoil the whole batch. I would argue that it’s much rarer than one would think to find someone racist in our American culture, but the odds show that chances are
you will have some sort of run in if you are in a disadvantageous position. It isn’t fair nor correct, but that doesn’t mean it represents American culture. I think it’s better to think of it like this. America’s fundamental value is a land of equality, a place where everyone can get by if they put in the correct work to rise to the top. Our culture is designed to give people as much opportunity as they can, based around a predominantly white male experience… However, as time has passed, it’s now clear that the designs to open opportunity to the white male majority does not necessarily apply to other subcultures. People who speak Polish alone struggle to get by as other people dismiss their situation. African Americans struggle to succeed due to lingering racism from the past century. Women continue to be ostracized by a double standard that they should be feminine, yet to get by in a white man’s world they need to act like a white male. We know this as a society now… But Rome wasn’t built in a day. If there was a magic switch that could change the world overnight to be a better, more equal place for everyone, I am sure all Americans would switch it. Our country still prides itself on these principles. Even those who push for a wall to “keep immigrants out” deep down think that they are doing something good. They say if you want to come into the country, it should be through legal means. They think that undocumented immigrants are getting benefits such as voting without paying taxes. They would argue that a percentage of people that sneak into the country will be criminals, and even if it’s just 1 percent of those people that sneak in, it would be better to keep the entire group out, as it means the country is less safe. People who counter affirmative action to go to university aren’t thinking it’s making it fair for those disadvantaged, they are thinking about the individual people that worked
hard for a spot at a university, and get that spot taken away by someone less qualified for the position simply because they had a different situation growing up.

Others would say the land of opportunity should be an opportunity for all. They would say the people that are here should get a chance to live here. They would say that you shouldn’t be inhibited by your language if this truly was the land of opportunity. They would say that it’s impossible to immigrate here due to unrealistically high demands, which is why there is an issue with illegal immigration in the first place. They would say that in spite of issues growing up in a difficult socio-economic background, that disadvantaged person has defied the odds and has nearly as good a record as this middle-class person, so he deserves more than someone in a more privileged position. These are generally the accepted thoughts of people at the university level, which is why I haven’t offered as much detail.

I think both sides are still working under the same subjective culture pretense. It’s not a culture of racism that the left will preach, and it’s not a culture of “whining” or “being childish” like many on the right would suggest. Both are looking to satisfy the same crucial cultural value: all men are created equal, and all should have equity as an American citizen.

In this journal, Ben was arguing that American culture is not all bad, and he was instead attempting to understand the varying social and political views that Americans have. He tried to explain how people on both sides of the spectrum—liberal and conservative—might feel, without demonizing either side. And, he didn’t want to see a man’s shouting to speak English as behavior that represented all of America, so he supposed that 2 percent of the population might
actually feel that way, and argued that even a number this small could be felt throughout society, but that didn’t mean that it was a large percentage of people that actually felt or behaved this way. These reflections suggest that Ben may have had an underdeveloped understanding regarding systemic challenges in American society, while underscoring that he didn’t want to judge aspects of society as “good,” or “bad;” rather, he wanted to understand where people might be coming from.

In this journal, Ben also reflected about how his views on the subject of mathematics and successful teaching of the subject had changed. He shared that, overall, he was starting to look for math in more places—that he was “seeing math in music, ballistics, and taxes,” saying that his work in his school internship (including in a secondary mathematics class dedicated to the teaching of real-world quantitative and problem solving skills) and his travels around Europe had helped him see these real-world applications of the subject. He gave the example of visiting the Galileo Museum, considering “how the slow introduction of mathematics reverberated throughout the world, changing the way everyone thought about and perceived the universe.”

He wrote about how he was appreciating the Japanese and English ideas of “heavy representations, careful lesson study, and precise use of language,” topics the students had been discussing in their university classes. He wanted to incorporate these ideas into his teaching back home. He also wrote about his current view on the subject of mathematics, which he admitted lined up with his past beliefs on the subject, but that he could now articulate it better:

I would compare mathematics knowledge to a tool box. People have a list of tools in their head they can execute or use. Some tools are given to the student directly through lectures, notes, and examples, and some tools can be created by the students using other
tools they already have. The tools in the tool box are not the mathematics, it’s using the tools that is doing mathematics. An understanding of mathematics would be similar to understanding when to use a hammer versus using a wrench, or using a mix of tools to get a complicated job done.

When he described successful mathematics teaching, he still discussed the fact that a teacher should push high level thinking, but he also, for seemingly the first time, began to reflect on how his students’ backgrounds and experiences would impact his teaching. Saying, “I think that my understanding of cultural diversity is fundamental to the way I approach teaching,” he wrote, “People have vastly different experiences than I do, and they also have different values.” He realized that part of the disconnect between him and his students during student teaching was that he wasn’t recognizing their values and experiences. He had valued a conceptual understanding of mathematics and believed if you’re only doing procedures then you’re not really doing mathematics, but his students didn’t see it that way. As Ben put it:

I can say my time in Europe has changed what I enjoy about math. I still believe in what I said previously, that the best piece for me is problem solving and the conceptual. I also think that’s the most important piece of math. But I think that I’ve missed something crucial about math. Reflecting on different cultures and understanding of the world has helped me understand some of the disconnect between my students and I back when I was student teaching. The truth is, they valued getting a correct answer. They didn’t care how. It was the beauty and relief of finishing a problem with a tool they had that pushed them forward. It wasn’t their skill, but their ability to use a tool that connected them to the mathematics. Up until studying here and thinking deeply about cultural differences I failed to see some people fundamentally don’t feel the way I do.
He went on to say that people don’t make the decision to see the subject in the way that they do; rather, “It’s their circumstances, subculture, and nexus of membership that leads them to act different ways in different situations.” In his student teaching placement, his lessons targeted conceptual understanding, when his students valued procedural fluency. He was realizing now that this was part of why there was a clash between him and his students during student teaching. He wasn’t recognizing or valuing what his students appreciated—or didn’t appreciate—about the subject. As Ben put it, “Their nexus told them they are good at math because they get things right,” and he realized that if he wanted them to think with a conceptual mindset, then he needed to lead them there slowly and not disregard what they enjoyed about the subject:

Looking at what my students’ value, how my students view math, how my students view education, and applying it to my own understanding to grow and change my teaching style overtime is going to be fundamental to my practice…. I will be careful to not push my own view of the mathematics on the students, rather I will shape my strategies and methods to what they enjoy, value, and believe. Over time, after gaining my students trust, I will offer different options to pieces already in place…. Careful reflection on my students and their situations [and what they value] will lead me to become a better, more effective, efficient teacher that can reach out to students in many different ways rather than simply through the mathematics.

Ben admitted that he could see the joy in solving simple problems now, and that “Having an understanding of the math and being able to do it quickly and efficiently can be fun” in certain circumstances. While the examples he gave of understanding his students better were focused around considering their views of mathematics and that they likely valued a procedural approach to the subject, the fact that he was now emphasizing his students’ previous experiences shows
growth. Before participating in this program, Ben didn’t mention his students when he talked about his views of successful teaching and learning. He only talked about what he valued and deemed important. He was now considering his students’ backgrounds, experiences, perspectives, and knowledge when discussing what successful mathematics teaching looked like.

He went on to describe a successful mathematics classroom as one that has “a good balance between the student and teacher,” and that he wants to be “firm, clear, and articulate” with his students. I think these beliefs are a result of Ben trying to make sense of the classroom management styles that he was observing in his school internship in Nottingham. During our second interview, which took place about a month before this journal entry, Ben discussed how the school had “very good behavioral management,” and “less disruptive classrooms,” but he was also trying to make sense of it:

And when I say good behavioral management, that doesn’t necessarily mean teachers are getting students to do what they want them to do. It means getting students to be quiet. And I think that’s how the teachers in the school view behavioral management. They view it as getting students to not talk out of turn and focus on their work…. I really struggle with correcting behavior and specific prompting, and it’s something that I need to master a bit. And, I think that being here and seeing some of how the teachers do it is probably adding to my understanding of it a little bit. When students are really out of turn, making sure that you address it immediately, and that you’re consistently addressing it. And it doesn’t have to be how they do it because they do it a bit too publicly so sometimes it’s even almost humiliating, which I know is very bad from what I’ve seen in my behavioral management classes back home…. For example, when I was in class the other day, there was a student next to me and the teacher kept berating him for essentially
slouching, and it seemed to me like he was very tired. And the teacher just kept berating him and saying, “You have to focus. You have to be in the class.” And I thought that it would have been better if she took him out of the classroom and had a conversation about it. That’s something that my cooperating teacher was very much about and I’m going to apply it into my classroom.

Previously, during our second interview, Ben was observing classroom management styles with an American perspective, comparing it to what he had learned about and seen back home, and ultimately, judging it as negative because it didn’t align with his previous beliefs about classroom management. He believed that teachers should take students out of the classroom to speak with them privately when an issue arises, and that teachers should try to understand why their students are acting in a particular way. As such, he perceived a teacher to be “berating” his student, saying it would have been “better” if the teacher took the student out of the classroom to have a conversation about the behavior. Ben wasn’t recognizing that his American perspective was influencing his view on classroom management. However, throughout the semester, Ben became less critical of the teaching styles that he was observing, trying to understand why teachers were interacting with students in certain ways, and attributing it to the formal relationship between teachers and students. Additionally, Ben was attempting to see the positive aspects of their classroom management styles. As he wrote in this journal entry, he liked that teachers were “firm, clear, and articulate;” these were traits he believed could be valuable in his own classroom, because “a classroom where the expectations are unclear is doomed for failure.” He also believed there should be a balance between the teacher and the students, which I interpreted as him saying there should be a balance of power. He felt that a teacher “leads the class forward,” but is “not a boss,” and instead “a guide.” Ben also discussed that he wants to
support students in relieving math anxiety, a topic he became interested in after attending a session at a mathematics education research conference.

This excerpt from Ben’s journal summarized his beliefs about mathematics teaching and how they’ve shifted through participating in the Nottingham program:

The biggest change for me here is around understanding of the students. A successful teacher doesn’t just have solid personal beliefs to lead the classroom forward—the teacher must also have a clear understanding of the goals of their individual students. Establishing a strong and clear connection with their students, one of leadership yet comfortable and understanding is pivotal to a successful teacher. Simply pushing an agenda is not enough… Understanding where a student is coming from in the long run is just as important to getting them to commit to the material as having firm beliefs. Adapting lessons and mindsets around cultural differences between student and teacher to help both grow together overtime, that is what an ideal teacher should hope to achieve.

While Ben didn’t provide ideas on what it might look like to adapt lessons and mindsets around cultural differences, these are now concepts that he’s aware of and thinking about which was not the case before participating in this program. And, I later followed up with him about some of these comments regarding a new understanding of his students, which I will discuss later in this chapter.

In the last week of the semester, on December 19th, 2019, students presented an “identity artifact” as part of one of their classes at the university. The artifact was intended to represent their identity and how it was influenced by their time abroad. For this project, Ben decided to write a song that reflected his growth from participating in this program. In this song and a
PowerPoint presentation, he articulated that now he’s much more interested in culture. He described that he is curious about the world, its people, and how these two things work together; that he values conversation and understanding people on a deeper level; and that he now keeps culture and identity in mind, rather than solely the individual, which I asked him about in our final interview and I will come back to later.

He also reflected about how he used to think he was someone that was good with uncertainty, considering himself who was a “go with the flow” kind of person. However, he realized this semester that he had trouble with uncertainty. He shared that he would enter restaurants and be concerned about what to do, be stressed if there was a weekend approaching in which he didn’t have formal plans, be anxious when a professor would show up late for class, and fear that he wasn’t getting enough out of his school internship. Upon reflection, he realized that he’s “not actually 100% comfortable with being uncertain,” and that it makes him feel more comfortable being in an uncertain situation if he’s with people he’s comfortably relying on for support. He shared that he needs to be certain with the people around him, otherwise, his “world will get turned on its head.”

Returning to the United States

I met with Ben for our last interview in January 2020, after he had been back in the United States for about a month. During this conversation, we discussed many things, including the fact that he was happy to be back home with his friends. In this conversation, Ben also articulated his developing understanding of the concept of culture. He shared that the framework of communities of practice (Wenger, 1991) had helped him make sense of culture, saying, “When you join a group, whether it's the trumpet section that I'm a part of in the marching band
or it's the faculty workplace at your school, you don't necessarily just have yourself.” Rather, “You come in and take your own personal nexus of identities, and you try to fit in your pieces of your identity into the workplace. Then, people at the same time slot you into places where people have been before.” In other words:

People come in and have an impact on the group, but the group also impacts them. And, it changes the way you see yourself, and it also changes the way the people in the group see others. So, you leave a piece of yourself and you also take a piece from the group, and that changes and shifts who you are.

Ben had a strong feeling that groups created identity, and he used this understanding to describe American culture. He hypothesized that there might be more jumping between groups in America, saying that one of his UConn professors had recently spent her sabbatical in India, and, according to Ben, she had discussed that “in India people place a very big value on their close interpersonal relationships, but if you’re out of that interpersonal range, they don’t value you as much.” So, “If you know someone through someone else, people will be very nice to you, but you can’t just have a conversation with someone on the street,” which he contrasted to what he had heard about California, where “you can just have a conversation with someone on the street.” Ben suggested that, in California and the rest of America, there might be more people jumping between groups, than in, say, India; and that jumping between groups and learning from various subcultures, could be an aspect of American culture. He also described how complex America is:

If you look at the map of a town, the town looks really big. You can see the very specific, very different, even geographical differences, whether they're different demographic lists
[or] what communities sit where. Then, as you zoom out to look at the state of Connecticut… The town was already so complicated, and then Connecticut, it’s even more complicated, but you can’t see those small little differences because you’ve zoomed out so far. Then you can zoom out further to the Northeast and then to the West and to North America, and then to just America… I guess the way I'm viewing it is that you have your very specific practices within the groups in Connecticut, and then if you were to zoom out there'd be a lot of distinct differences between the Northeast versus the South versus the West versus the Midwest, and this and that. Then you zoom out further and then you get the US, the different places in the US. Now all of a sudden Cheshire, Connecticut looks really small; all of the cultural values and different nexus of identities of each individual are really small, but they fall under a set cultural framework. They’re all within the US framework, and they share a lot of different things.

Before participating in this program, Ben felt that “the culture of the US is close to not being generalizable at all” because of its size. Now, he believed there were different cultures across the United States, but that there was also a US cultural framework that influenced the “big-frame sets of mind,” or in other words, the overarching beliefs and ways of behaving.

At the start of the spring semester, on January 24th, 2020, the students took the IDI again. Ben’s developmental orientation showed growth, with him falling on the higher end of minimization at 112.62 (see figure 4.3). Ben’s perceived orientation (see figure 4.4) reflected adaptation, which is the ability to “deeply understand, shift cultural perspective, and adapt behavior across cultural differences and commonalities” (Ben’s IDI report, pg. 6).
The students also completed the myCAP, and some of Ben’s responses were very different this time around. Table 4.5 below shows Ben’s responses to select statements on the myCAP before the program versus after the program.

<table>
<thead>
<tr>
<th>myCAP Statement</th>
<th>Response before the program</th>
<th>Response after the program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Languages differ but non-verbal cues are universal.</td>
<td>Somewhat agree.</td>
<td>Disagree.</td>
</tr>
<tr>
<td>My cultural identity shapes how I perceive the world.</td>
<td>Somewhat disagree.</td>
<td>Somewhat agree.</td>
</tr>
<tr>
<td>I often access media about international or global issues.</td>
<td>Somewhat disagree.</td>
<td>Somewhat agree.</td>
</tr>
<tr>
<td>I try to find global aspects in most topics I plan to teach.</td>
<td>Somewhat disagree.</td>
<td>Somewhat agree.</td>
</tr>
<tr>
<td>Student’s cultural identity influences the ways they experience school.</td>
<td>Somewhat disagree.</td>
<td>Agree</td>
</tr>
<tr>
<td>My cultural identity will impact my teaching</td>
<td>Disagree.</td>
<td>Agree.</td>
</tr>
</tbody>
</table>
I also asked the students to complete one more journal entry at the start of the spring semester. One of the prompts was to look back at the journal entry they wrote about open-mindedness at the beginning of the fall semester and reflect on whether their understanding of open-mindedness had shifted. In response, Ben wrote:

I think the general gist of my ideas on open-mindedness has stayed the same, but some of the specifics have diversified. In my last entry, I stated that it has to do with the ability to see things from another perspective, specifically “to put yourself in another's shoes.” I think that statement, however, is going a hair too far in this context.

He shared a story of his current school internship in Connecticut, which was with a secondary social studies teacher. Recently, they had been talking about truth machines, or the ways in which humans come up with what they consider to be “true.” As Ben put it, “Basically, the concept works like this: when coming up with an idea or thought, humans use four different machines to come up with their “truth.”” The four approaches to determining one’s truth are: “intuition (basically instinctual thoughts), reason (inductive or deductive thoughts, and what we overall value the most in our educational sphere), emotion, and faith.” In order to discuss this idea, Ben’s teacher asked him to put various statements into different groups, and when Ben sorted them, he put certain statements into a category he called “facts,” and other statements into a category he called “opinions.” In response, Ben’s teacher asked him to define a “fact,” and Ben realized: “based off my background, I would see a fact as something verifiable, that has to be proven through reason.” He said, "Inherently, through my upbringing and culture, I would see a fact as something that is more true than anything else, as you know it to be true because of specific and clear evidence.” In this moment, he realized:
But to someone else, that IS NOT THE CASE. To someone else, reason [one of the truth machines] may not be as strong as faith [one of the other truth machines]. To another person, God could be more of a real force than something I considered to be a fact… and then this “fact” group I had, then in a way, gets included with my “opinion” group; the only thing dividing them is that how we come to the conclusion.

Ben concluded that this activity related to open-mindedness, saying, “Being able to understand the different ways people come to their truths and thoughts is powerful and important to being open-minded.” He articulated that an aspect of being open-minded is to understand that people can use any of the truth machines to come up with their truth, and that they’re all “equally viable.” When reflecting on his own sense of open-mindedness, he wrote, “I think overall, I see myself on a spectrum of open-mindedness,” and that being exposed to other cultures and participating in activities like this helped him see other ways of thinking and behaving that he hadn’t previously considered. He felt like this contributed in making him more open-minded than he would have been in his very first journal entry, but that he could never claim to be 100 percent open-minded. He said, “There are many times where I find myself trying to describe a topic or idea to a group of people, and I expect them to understand where I am coming from without an in depth and precise explanation.” He noted that he needed to work on this as a teacher, but that being aware of this would help him to be more open-minded and address it. As he put it, “In a way, simply because I notice my shortcomings, I slowly reach that overarching goal of being a completely open-minded individual ad infinitum.”

In this journal, Ben also wrote, “I think that my understanding of culture will help me respect an even wider range of student understanding,” which he went on to say:
I’ve decided that school atmosphere and previous upbringing play an even more central role to the classroom than I first realized. Since I am also working in a social studies class, I can see the difference in energy from student to student in the math class centered around the right answer versus a classroom where students are focused on in-depth thinking.

Finally, he ended his journal by saying that since he’s been home, many people have jokingly asked why he doesn’t have an accent. For someone who previously felt that stereotypes are bad and we shouldn’t pay attention to culture because it “takes away the ability for the individual to be themselves,” he explained this by saying, “It might say something about how stereotypical and sweeping our humor tends to be in America, although I’m still working to figure this out.”

One Last Conversation

Upon reviewing Ben’s journal entries and interviews, one question kept tapping on my shoulder. Ben had said several times that he now understands culture and that his understanding of cultural diversity would be fundamental to the way he approached teaching, but he had not described how. I kept wondering: Was Ben’s understanding of culture superficial, or was there a true change of understanding that would transform his practice? Ben was using all the “right” words to describe his understanding of culture: nexus, identity, subculture, etc., but how much of this was from hearing his teachers and professors discuss it versus an understanding that would influence his teaching moving forward. So, I followed up with Ben. I asked him to describe some of the statements he had made previously, starting with this statement: “Adapting lessons and mindsets around cultural differences between student and teacher to help both grow together overtime, that is what an ideal teacher should hope to achieve.”
He elaborated on this statement by giving an example from a school internship. He described how one of his teachers asked students to introduce themselves to the class by bringing in an artifact that they felt represented them. But this wasn’t what Ben discussed. Instead, he said:

The teacher wanted the students to come up to the front to get them comfortable standing up and talking in the front of the classroom to everyone which can be a scary thing, so to incentivize that, he said you’re allowed to give the presentation from your seat but the highest grade you’re going to get is an 80. But, if you come up to the front, you could get the full 100 points. His idea was “oh it’s 20 percent that’s easy points.” So then what ended up happening was most of the students didn’t get up, and the students that did, most of them were the, it was actually specifically all the white female students in the classroom got up and went to front to get the points, and then maybe like one or two of the male students and then the rest of the class didn’t stand up at all. And it really did get me thinking, and I was trying to think of ways around that other than using grades because clearly while to me and the teacher and a couple of the students, that was a good incentive that got the kids to come up to the front, a lot of the students I would argue, it was cultural, that they didn’t want to do that. So, I was running it by my multicultural ed professor and he was saying how that’s actually really bad because it’s actually setting it up as a scary thing. Setting it up as, “oh if you go to the front you get 20 points” it’s building it in a way that says you shouldn’t want to come up here necessarily. And a better idea that he talked about was having a poetry slam, when everyone gets up and is cheering each other on and standing and really happy and encouraging the person that’s talking rather than framing it in a way that’s supposed to be scary or people won’t want
to do it. So, I guess what I’m kind of getting at is that just because something lines up with my upbringing and my cultural values, doesn’t mean that it will motivate or speak toward the students. So that’s definitely not an individual thing. It’s not like 18 of the 22 students or whatever there are in the classroom all individually said, “no, I really don’t want to go up to the front of the classroom even if it’s for 20 points.” It was a cultural mindset around that it’s such a scary thing that even 20 points isn’t worth it, or the 20 points don’t matter so much that I will just present from my desk instead.

Ben recognized that what had motivated him as a student might not motivate his own students. He described that when he begins teaching, he will want to take “it slow and not make assumptions based off my prior experiences.” As he put it, “I have my upbringing where I was in top classes and a school that was predominantly white, so I have my mindset of what’s kind of expected but that’s not necessarily what’s going to be expected from all the students.” He was aware that his mostly white high school had a particular culture, a way of seeing things and behaving—something he had not recognized previously. So, when describing how this would influence his teaching, Ben said:

Instead of framing my teaching in a way that’s like, it’s my way or the highway, or going to individual students looking for suggestions, I will try identify big aspects of the subculture of the school, or even just the culture in general. I can only know so much right now [about culture] because of my limited experience, but I will really try to learn what works and what doesn’t work by playing around with ideas, rather than making bigger assumptions like “this is the way it has to be” or only trying that strategies that worked on me as a kid. So, I will try to be as observant as possible rather than just trying to force my ideas down their throat.
When I asked him to elaborate on another statement he had made: “I now keep in mind culture and identity in conversation rather than the individual alone,” he said he now keeps these things in mind when he’s trying to understand the “underlying reasons of why people think in certain ways,” giving the following example:

So, if students are being rebellious, keeping in mind that there is some sort of inherent piece of our culture that’s giving into that. That it’s not just the student trying to act out, it’s them trying to fit this piece of their culture into the classroom. So, I guess, it’s not as if I would have held it against people anyways in the first place, but I have more of a context of where it comes from now.

I believe what he meant here was that there’s an aspect of rebellion in American culture—something he had discussed previously—and that students would bring this way of behaving into America’s classrooms, which might be different than how students would behave in other countries. He also said that being in England, Italy, and other cultures helped him see and reflect on “differences and where they come from,” and that certain behaviors and ways of thinking in the United States were not “just human nature,” as he used to believe. Ben made sure to emphasize that he is aware that he doesn’t know everything about cultural difference: “It’s almost that I’m knowing everything that I don’t know at the moment, so I’ll keep learning more about culture when I start teaching,” but that the first step in learning more was to be aware that he still has more to learn.

When I asked, “So, when you go into teaching, you’re not going to know everything about your students and their backgrounds, but just knowing that there are other subcultures and ways of growing up will influence your teaching?” he responded by saying:
Yeah, and it’s not that I didn’t acknowledge that already, it’s just that now I have a better understanding of just how complicated it is. So, in the past, I would have accepted that there are lots of different cultures and people are all really different, but I guess in the past I would have credited it more to the individuals rather than a cultural set up, whereas now, I acknowledge that a lot of it might actually be culture.
“Evolution doesn’t follow a preordained, straight path.” That’s what Wheeler, Valdecasas, and Cánovas (2019), three scholars of biodiversity and biology conclude. They reflect on a common image (figure 5.1 below) we have all seen that suggests otherwise—an image that depicts evolution as a linear progression—of a chimpanzee “gradually straightening up and progressing through various hominids all the way to a modern human being” (para. 2). The authors argue that these images misrepresent how evolution actually works. These representations promote the incorrect notion that evolution is a smooth path from “simple to perfect” (para. 8) and “primitive to modern” (para. 8), and that each stage along the continuum is a straightforward “watertight compartment of similar complexity” (para. 9). In other words, each category along the progression is a perfect move forward with no room for transitional stages in between.

**Figure 5.1: A Common Depiction of the Evolution of Man**

In chapter 4, I shared Ben’s story of participating in a mathematics-specific education abroad program. The chapter illustrated how his thinking evolved throughout the program. But, just like the actual processes of biological evolution, his thinking didn’t progress in a linear and purposeful way. He didn’t begin the program with naïve ways of thinking about the world and
end the program fully proficient regarding open-mindedness, cultural understanding, and reform approaches to teaching the subject of mathematics. Rather, his thinking and reflections demonstrated that he was growing and changing—evolving—sometimes making a step or leap forward, other times moving backwards, and perhaps sometimes merely moving laterally. I am not claiming expertise on complexities underpinning evolution, but the analogy is useful in a broad sense to set the stage for a discussion of this research. His learning most certainly did not unfold in a linear manner, and there wasn’t a singular or ideal endpoint that I was looking for him to achieve. In reality, we’re never done learning (or evolving) and those complex processes will lead each individual to an undetermined place grounded in both experience and perspective.

In chapter 4, I shared some of Ben’s story; a story of how his identity, relating to culture, open-mindedness and reform approaches in mathematics, evolved throughout the program. In this chapter, I will discuss these findings adding context to his story and address the implications of this work. What can we learn from Ben? What does his journey tell us about how education abroad programs can influence the identities of preservice mathematics teachers? Why does this matter within the field of mathematics education? These are some of the overarching questions I will unpack throughout this chapter. But, first, I will recap key points from previous chapters.

Recap

I first met Ben in May, 2019 when he had just completed his senior year and a semester of student teaching. He was one of four students admitted into the Nottingham mathematics education abroad program, a program designed specifically for preservice secondary mathematics teachers or preservice elementary teachers whose subject-area concentration was in mathematics. This program officially began in May 2019, and students were enrolled in a summer course that prepared them for their fall semester abroad. I was the instructor for this
course; as such, I had the opportunity to get to know the students during this time. We began working on their masters’ research inquiry project, engaged in discussions relating to cultural understanding, and prepared their school and research internships in the fall. During this time, I also began data collection, writing memos after each class, meeting with the students for individual interviews, and collecting journal entries and other documents (i.e., the IDI, myCAP, etc.). We met as a group for four full days in May and two full days in August, about a week before their departure to the United Kingdom. During the months between these meetings, students worked remotely on coursework that included writing the literature review of their inquiry project and completing assigned readings.

During their semester abroad, students spent two days per week (Tuesdays and Wednesdays) interning in a local school and one day per week (Thursdays) interning at the Centre for Research in Mathematics Education (CRME). Fridays were designated for their courses that were taught by mathematics education faculty members at the University of Nottingham. Students also participated in an online seminar with a University of Connecticut instructor, and I was again the instructor for this course. Students met every Wednesday evening from 6:00 to 9:00pm in their flat, and I connected into class through two-way synchronous video. This course supported the development of their inquiry project as well as served as a forum to discuss the general experience of the program. In October 2019, I visited the students for a week, and during this time I oversaw their school internship and classes, held an in-person seminar, met individually with each student, and joined them in some of their social activities (i.e., I attended a local fair with them and joined them for dinner several times). During this segment of the program, I conducted in-country participant observations, writing daily memos, and I met with students for individual interviews. Over the course of the semester, I collected journal entries
from each student and communicated with them regularly. Other coursework, such as their inquiry project and an artifact that each student created to represent their identity at the end of the fall semester, were also included as data for their analysis. Upon their return to UConn in their spring semester, I met with each student for a final interview and to collect the last round of data (final journal entries, the post IDI and myCAP, etc.). I initially began this study planning to conduct a multiple-case study, as all four students had consented to participate in the study, but as the semester progressed, I shifted focus to one student, Ben. I did this purposefully for several reasons: his demographics closely aligned with the demographics of the majority of teachers in the United States; he voluntarily sent me extra reflections, providing me insight into his development along the way; and I decided that a single-case study would afford me the opportunity to provide a rich and thick description (Gertz, 1973) of the type of development that can occur through participation in an education abroad program.

As we saw in chapter 4, the journey of Ben’s experience and learning was complex. His thinking didn’t always progress in a linear way, but his perspectives did indeed evolve and ultimately, he appeared to be on a path toward becoming a more open-minded, reform-minded, and culturally aware educator in relation to the definitions that I employed in this study. In the following sections, I will discuss Ben’s thinking in relation to the three research questions. Finally, I will address the implications and next steps.

**Cultural Identity**

Ben’s journey throughout this program demonstrates the evolution that may occur in one’s cultural identity through participation in an education abroad program. While his reflections sometimes demonstrated little or no change in terms of his cultural understanding, overall, by the end of the program, he had evolved to become more culturally aware with
a better understanding of his own cultural identity. Following, I will highlight some of Ben’s many reflections relating to culture prior participating in this program, during his participation in the program, and at conclusion of the program to illustrate the cultural growth that unfolded through his participation in this program.

**Ben’s Thinking Related to Culture Before the Program**

When Ben started the program, he was very disconnected from his racial and cultural identity, choosing to describe his family as “a family of helpers over any specific background,” given his mom was an occupational therapist and his dad a teacher in an elementary school. He struggled to describe his culture, saying he was “Caucasian,” “Polish,” and “Italian,” but that these weren’t identities his family prided themselves on or felt connected to. He didn’t describe himself as American and had trouble articulating what it meant to be American, saying things like, “I guess I consider myself American in the sense that I was raised in America, but I feel like America is too broad of a thing for me to consider myself as,” and “I don’t really identify with anything that I know could be a generalization of Americans that I’m aware of.” When I asked him what he thought it meant to be American, he reiterated that, to him, “it only means being born in America,” recognizing that “it doesn’t mean that it means that to other people” but struggling to describe what it does mean. When I asked Ben if there were any types of organizations, events, or other types of affiliations that helped define who he was, he discussed that marching band was probably the biggest definer and that many of his close friends were from marching band. He indicated that there wasn’t much else he really identified with.

Ben felt that America was too multifaceted to generalize. While he incorrectly believed the population of the United States to be 6 million, he stated, “There may be things those six million people in the US share, but a majority of those people have vast differences. The culture
of the US is close to not being generalizable at all.” Ben had described that previously, in high school, he believed that people were essentially the same and he didn’t care to see or notice their differences—a classic minimization of difference (Bennett, 1986). However, at the start of the program, he appeared to be overwhelmed by the differences that existed between individuals, believing that “even each and every high school in the country has its own culture, norms, and precedents that change the way individuals think,” and that “systems are set up by the individuals at the end of the day, rather than the cultures themselves.” Ben didn’t believe that culture defined who people were; instead, he said, “People make culture, not vice versa.” He believed that people can determine and define the culture they are a part of, appearing to not appreciate the influence culture has on people’s behaviors, mindsets, ways of thinking, etc. He wanted to think of people as individuals and felt there was no positive value from stereotypes, saying, “Generalizing culture, in my opinion, is a bad thing as it takes away the ability for the individual to be themselves.” While he may have seen his own view as aspirational in that it would eliminate stereotyping, it allowed him to ignore how everyone, including himself, does often categorize and compare according to their own cultural identities. Ben is part of the dominant cultural group in America as a white male. This dominance could allow him to ignore culture and believe that he should be viewed for his individual traits rather than his cultural traits. This, in turn, was how he appeared to view others. Ben appeared unaware that these individual traits that make up the ways in which a person views the world and behaves in society are profoundly influenced by cultural values (West, 2007).

As I stated in chapter 4, I believe minimization best captured Ben’s orientation to cultural difference at the beginning of the program, because he believed that cultural differences didn’t matter very much. He seemed to actively avoid noticing culture, and looked at people as
“individuals,” downplaying their different cultural identities. Once Ben was administered the IDI at the outset of the program and we reviewed his results, which led to his realization that his orientation to cultural difference fell within the minimization part of the scale (Bennett, 1986), he became motivated to begin noticing culture, and throughout the program, he started to look for and acknowledge cultural differences.

**Ben’s Thinking Related to Culture Throughout the Program**

Ben experienced a “honeymoon” phase when he first arrived to Nottingham, describing most things as “cool,” “fun,” and “nice.” It wasn’t until a couple weeks into the semester that he traveled to Amsterdam and first experienced a significant cultural challenge. He felt out of place, overwhelmed from the cultural differences, and in need of support from close friends. This appeared to be the first time that Ben really experienced the feeling of a cultural outsider (Merryfield, 2000), and it was after this trip that he began to reflect in more meaningful ways, such as trying to notice and appreciate aspects of culture that were different from his own.

While Ben expressed that he still felt interested in the idea that “there’s a whole world inside the head of every single individual,” and he valued how an individual person might think, he began seeking cultural differences. He noticed that his Chinese flatmate followed certain social norms that were different from his own, viewing food and shared space as communal aspects of society. Ben also started to notice differences among aspects of British culture. He observed that the brass band club he was participating in was more laid back than back home—they didn’t require tryout and let anyone participate. He noticed that teachers in his school internships were more relaxed, sharing a story of a teacher who was late to class but still kept talking to him, something he didn’t think he would experience in American schools. He was
aware of different beliefs on alcohol, and more formal relationships between teachers and students.

When traveling to Italy, he noticed objective cultural differences, as the rituals around meals, wine, cappuccinos, and public displays of affection, while also noticing subjective differences, suggested that Italian culture had less care for order and a different relationship with uncertainty than American culture (see page 111). He began to see himself as “American,” ultimately concluding that potentially one of the reasons he was always so apt to look at people as individuals was because America values individualism, and he chose to read articles about individualist and collectivist societies which helped him understand this concept further.

**Ben’s Thinking Related to Culture Upon Return to the United States**

By the end of the program, Ben was discussing that he believed *groups* created identity, which was a big step forward from originally thinking that only the individual determines the type of person they will become, and that we shouldn’t look at culture—we should instead just view people as individuals with inherent or self-developed traits. He also described how complex America is, saying:

If you look at the map of a town, the town looks really big. You can see the very specific, very different, even geographical differences, whether they’re different demographic lists [or] what communities sit where. Then, as you zoom out to look at the state of Connecticut…. The town was already so complicated, and then Connecticut, it’s even more complicated, but you can’t see those small little differences because you’ve zoomed out so far. Then you can zoom out further to the Northeast and then to the West and to North America, and then to just America… I guess the way I’m viewing it is that you have your very specific practices within the groups in Connecticut, and then if you were
to zoom out there'd be a lot of distinct differences between the Northeast versus the South versus the West versus the Midwest, and this and that. Then you zoom out further and then you get the US, the different places in the US. Now all of a sudden Cheshire, Connecticut looks really small; all of the cultural values and different nexus of identities of each individual are really small, but they fall under a set cultural framework. They’re all within the US framework, and they share a lot of different things.

Before participating in this program, Ben felt that “the culture of the US is close to not being generalizable at all” because of its size. Now, he believed that there were different cultures across the United States, but that there was also a United States cultural framework that influenced the “big-frame sets of mind” or, in other words, the overarching beliefs and ways of behaving. For the myCAP statement, “Languages differ but non-verbal cues are universal,” he had originally responded, “somewhat agree.” Now, he responded with “disagree,” indicating that he was now seeing culture in more nuanced ways. For the statement, “My cultural identity shapes how I perceive the world,” he now responded with “somewhat agree,” an important shift from “somewhat disagree.” Ben’s post-IDI score makes sense in light of these shifts. By the end of the program, he fell within the higher end of minimization and on the cusp of acceptance, a category that involves recognizing and appreciating cultural differences both within one’s culture and across cultures. Ben’s story in chapter 4 shows that he became more culturally aware and sensitive throughout his participation in this program, and it demonstrates the type of evolution that may occur in one’s cultural identity.

Conclusions
I believe there are three important conclusions about Ben’s cultural development throughout this program. My first conclusion is that Ben’s cultural identity evolved in a way that wasn’t always linear. Additionally, I found that there were key programmatic components that helped Ben develop his cultural identity, particularly the design and arc of the program and explicit discussions relating to culture. Finally, I believe that the DMIS and IDI both supported and stunted Ben’s cultural growth. In the sections following, I will elaborate on these three conclusions.

**Conclusion 1: Ben’s Cultural Identity Evolved in a Non-Linear Path.**

My initial conclusion centers around the notion that through participation in this program, Ben’s cultural identity evolved in a non-linear way. Although Ben demonstrated growth toward becoming more culturally sensitive—as he was more culturally aware by the end of the program than he was at the beginning of the program—his progress was grounded in his experiences across the program and thus evolved organically. I believe this is a critically important aspect underpinning Ben’s story. As mentioned previously, evolution isn’t always a linear process, sometimes we take steps backwards and/or sideways before we’re able to grow. For example, throughout the program, Ben sometimes struggled to make sense of cultural differences, at one point forming an unnuanced conclusion about Italian culture still having semblance of fascism:

I think there is still semblance of fascist culture underpinned in Italian culture. My rationale comes from a comparison to English and American culture. For example, having maximum prices to charge for different coffees, there is a 3-euro tax for visiting Venezia, and waiters and waitresses aren’t as warm as in the states and instead act almost as if they are above you. I think this comes from an inherent pride in themselves, as well as a control over the economy we wouldn’t imagine in other groups. I even think
charging for water can land in this category a bit. People might look down on drinking tap water as a pride thing, even though there are fountains of tap water all throughout the city.

Within this reflection, Ben appeared to exhibit a Defense orientation—not being critical of one’s own culture but being overly critical of others—when he drew upon his American perspective to criticize aspects of Italian society, claiming it to be fascist. While these reflections might demonstrate a regression in Ben’s cultural awareness and sensitivity on the DMIS scale, I believe it is important to remember that before this program, he had limited experience noticing and discussing cultural difference at all. Given his inexperience, it makes sense that he would sometimes arrive at unsubstantiated or controversial conclusions, and I believe we should consider this part of the cultural learning process, ultimately representing an important and perhaps necessary step.

Ben ultimately benefitted from the experience of feeling like a cultural outsider, unsure of his surroundings and struggling to make sense of what he was experiencing, in order to further develop his cultural identity. Before this program, Ben didn’t want to acknowledge someone’s culture because he feared it would take away his understanding of the individual person at hand. Now, he was seeing that although culture is not tangible, it exists and has a profound influence on the way in which people view and behave in the world. He was acknowledging culture and trying to make sense of the cultural differences he was experiencing, but because of his inexperience, he would sometimes use his American viewpoint to judge what he was experiencing. Although his conclusions occasionally reflected a Defense orientation, he was at least beginning to notice and attempt to make sense of cultural difference, rather than ignore it. I believe Ben needed to wrestle with these ideas as he was learning to notice, understand, and
discuss culture, and that ultimately, these reflections helped him develop his cultural understandings and identity.

Also, in order to move forward in his unfolding notions of culture, he needed the space to think through these ideas. His reflections to me weren’t always representative of tangible growth. He didn’t consistently take seamless steps towards becoming more culturally aware—processing takes time—but he was working towards noticing and understanding cultural differences, something he did not value before the program. Ben needed a safe space to think through these ideas, where he could reflect without feeling judged; the alternative would be to let these ideas stir in his head without the opportunity to explicitly think and work through them. So, while some of his reflections were raw, honest, vulnerable, and demonstrated a step back in his thinking, they are a testament to the fact that he felt comfortable enough with me to work through his ideas, and they are a reminder that evolution is not a preordained straight path from simple to perfect.

**Conclusion 2: Programmatic Components Contributed to Ben’s Evolution.**

My second conclusion to stem from this research is that there are specific programmatic components that fostered the evolution of Ben’s cultural identity, specifically the design and arc of the program and explicit discussions relating to culture.

Research tells us education abroad programs should follow a particular programmatic arc with a predeparture phase and a re-entry phase upon return from the program (Cushner & Karim, 2004; Martin & Harrell, 1996). The predeparture phase should include “providing students with country-specific information, language training, institution-specific information, available support systems, understanding of the local academic system and its requirements, and cultural adjustment training” (Cushner & Karim, 2004). The summer course for this program included
most aspects of these recommendations, except for language training which wasn’t necessary because this program was based in England. These preparations nicely set the stage for Ben’s learning throughout the program.

The re-entry phase was recognized by Wilson (1998) remains relevant today: “Reentry is not only the end of the cross-cultural experience of an exchange student or study-abroad student but the beginning of interpreting that experience to others and using the experience at home” (p. 197). Although Ben’s cultural identity evolved, this is just the beginning of his journey, and this study underscores the need for continued support upon returning home.

Research also informs us that in order to facilitate intercultural growth within an education abroad experience, programs must make it a priority for students to reflect on what they are encountering (Cushner, 2018). These reflections and explicit discussions relating to culture were an important part of Ben’s experience. As Cushner (2018) described, “Culture operates on two levels—a visible objective level and an invisible subjective level” (para. 7). Objective culture refers to “the tangible elements of a culture—the artifacts people make, the clothing worn, the food eaten, and sometimes the names given to things” (para. 7). However, “the more profound and meaningful levels of culture operate at the subjective level” (para. 8). These include attitudes, beliefs, values, behavioral norms, social rules, and the meaning behind language and communication. At the beginning of the program, we defined and discussed these two levels in which culture can operate so that students could begin to understand the different ways culture manifests itself. Then, throughout the program, we kept coming back to these ideas, reflecting on the objective and subjective aspects of culture they were noticing and experiencing overseas. Without explicit discussions around cultural differences, Ben could have missed the subjective aspects of culture, and as Cushner (2018) says, “Understanding this is fundamental to
the success of any intercultural interaction” (para. 9). Simply going overseas isn’t enough to develop one’s cultural identity. Ben became more culturally aware through guided and consistent discussions around culture following key experiences facilitated by the design of the program.

**Conclusion 3: The DMIS and IDI Supported and Stunted Ben’s Cultural Growth.**

Relating to explicit discussions around culture, the IDI was also a powerful instrument in developing Ben’s cultural identity. During the summer course, we discussed each category within the DMIS (Denial, Polarization (Defense or Reversal), Minimization, Acceptance, and Adaptation). These definitions helped students think about the different ways in which people can respond to cultural difference. After these discussions, which are often among the first substantial and theoretically grounded discussions these students had ever had relating to culture, they received their IDI report and saw which category they fell into. Ben came into the summer course with limited experiences discussing the notion of culture and little understanding of his own culture and background. This is not uncommon; often, students enter these programs saying they don’t have a culture. However, through the categories represented in the DMIS and IDI report, Ben was provided with vocabulary to begin understanding and discussing the way he responds to cultural difference. This suggests that leveraging the IDI’s reports in the pre-departure work is one important step to becoming more culturally aware because it affords students the language and concepts to begin exploring culture in a systemic and guided way. Also, upon realizing that he fell within the category of minimization (which was a surprise to him—he thought he would fall within acceptance), he became motivated to become more culturally sensitive. In this sense, the IDI’s impacts were twofold: it helped him understand behaviors around cultural difference, and it encouraged him to become more culturally sensitive.
However, I believe the DMIS and IDI also served as a limiting element to Ben’s cultural growth. Throughout the program, Ben avoided criticizing aspects of American society, not wanting to believe that America could be racist, sexist, homophobic, or bigoted. In order to do this, he conjured up his own statistic, asking us to suppose that two percent of the population are actual bigots, which he defined as someone who “is about putting a group of people not in the majority down,” and explained that while even a percentage this small might impact society, it still showed that a large number of Americans were not bigoted. He also tried to understand and justify why a person might yell at someone for holding up a line because they weren’t speaking English (see page 113).

I posit that Ben’s unwillingness to openly criticize American society is because he wanted to be seen as holding beliefs within the DMIS category of Acceptance. Throughout the program he would articulate that he wanted to improve his IDI score and become more culturally aware, and in interview three he explicitly said, “I wanted to get closer to this acceptance and adaptivity level because I want to fit in with and understand more groups of people.” These categories are about recognizing and appreciating cultural differences within and across culture, so throughout the program, Ben was attempting to do just that. He made consistent efforts to notice cultural differences, something he had not done previously; and he tried to understand and appreciate these differences. I am not certain that Ben actually believed it was okay for a person to yell at someone for holding up a line because they don’t speak English. I think Ben was trying to understand the various perspectives that people may have, even people with whom he disagrees. Ben wasn’t a Donald Trump supporter, but he was trying to understand why people may have voted for him (see page 115). These reflections suggest that the DMIS and IDI may have stunted some of Ben’s growth. The goal isn’t to blindly accept and appreciate other
viewpoints. While we want teachers to notice and appreciate cultural differences, we also want them to know when to challenge someone’s perspective. As such, I believe that discussions around not misinterpreting the DMIS category of acceptance (i.e., recognizing when to NOT merely accept appreciate one’s viewpoint) would be a valuable addition to this education abroad program, and potentially other programs as well.

Ben’s reflections suggest he may also have had a developing understanding regarding systemic challenges in American society which could have contributed to his attempt to understand particular behaviors in America (i.e., justifying why a person would yell at someone for holding up a line because they weren’t speaking English). In our first interview, Ben stated that in high school he aligned with the Libertarian political party because, at the time, he believed the government is “useless except for protecting someone from stabbing me.” While he wasn’t sure if he still believed that, these statements suggest a naïve understanding about systemic challenges in American society. He didn’t appear to have a developed sense of the inequities that exist within American society, and he didn’t appear to see why or how government should take a larger role within society. These reflections suggest that a next step in Ben’s evolution towards becoming more culturally aware, perhaps in re-entry and beyond, might be to more explicitly explore the inequities in American society and the types of oppression that often exist to broaden and deepen his perspectives.

Why This Matters

Ben’s journey throughout this program suggests that through participation in education abroad, preservice teachers can work to develop their cultural identity, thus becoming more culturally aware and sensitive. This is especially important for teachers in the United States, because while student populations have grown more diverse, the demographics of teachers have
remained mostly the same, with the vast majority being “European American, middleclass, and monolingual in English and, thus, culturally different from many of the students they teach” (Marx & Moss, 2011a, p. 36). In many settings, these cultural differences extend to religious beliefs, language, and country of origin, with the result being that “too many teachers are inadequately prepared to teach ethnically diverse students” (Gay, 2002, p. 106).

Proponents of culturally responsive teaching argue that “Explicit knowledge about cultural diversity is imperative” (Gay, 2002, p. 107) to meet the needs of the diverse student population. At the beginning of this program, Ben had little understanding of his own cultural identity, and he avoided noticing cultural difference. If teachers “must be sensitive to their students’ cultural backgrounds” (Mahon, 2003, p. 5) in order to ensure an equitable education for all learners, then Ben was far from achieving this. On the myCAP questionnaire, he indicated that he somewhat disagreed with the statement, “Students’ cultural identity influences the ways they experience school,” and disagreed with the statement, “My cultural identity will impact my teaching.”

Ben’s orientation of minimization is a reflection of the orientations of many teachers across the country. For example, Mahon (2003) studied 155 teachers in the midwestern US, and found that 100% of them fell at minimization or below, and this perhaps shouldn’t be a surprise because Americans are taught to ignore cultural difference (Higgins, 2015). We’re told from a young age that America is a melting pot and our differences don’t matter, so of course, when students come into a teaching program, they tend to think in these ways.

However, these views are problematic on many levels. When we avoid noticing culture, it’s the dominant culture that is assumed to be “the” culture, and any other cultures may be ignored, or even worse, shut down or demonized. For example, I have a same-sex partner, and
while we want the same rights as straight couples, I don’t want to, for example, attend a keynote address at a conference in which the speaker assumes everyone in the room is straight. I don’t want to be pointed out for being different, but I want to feel as though my differences are noticed and valued. Rather than ignoring culture, we want our teachers to understand that there are various cultural perspectives that exist, which impact teaching and learning in the classroom. Because Ben fell within the dominant cultural group in America, his culture was never challenged: he could exist thinking that he didn’t have a culture, and that culture was a construct that existed for other people—people not in the dominant culture (Ahmed, 2007; McIntyre, 2002). But, once Ben was administered the IDI at the outset of the program, he became motivated to begin noticing culture, and throughout his time abroad, he started to look for and acknowledge cultural differences, ultimately becoming more culturally sensitive and aware. This suggests that participation in an education abroad program can positively influence the cultural identity of preservice teachers.

**Reform Approach**

In chapter 2, I used the concept of “figured worlds” to explain two distinct approaches to teaching mathematics: traditional and reform. “Figured worlds” are “a socially and culturally constructed realm of interpretation in which particular characters and actors are recognized, significance is assigned to certain acts, and particular outcomes are valued over others” (Holland, et al., 1998, p. 52). Figured worlds encompass activities, discourses, performances and artifacts, and are made up of people who carry out its tasks. Ma and Singer-Gabella (2011) write, “Artifacts and signs are attributed meaning that might differ from how those outside of the figured world interpret them,” and “People, actors in the figured world, have expectations for how events unfold and how others will behave in these events” (p. 8). Figured worlds mediate
behavior and inform participants’ outlooks. People build understandings of themselves as agents in their figured worlds, but “these understandings—these identities—are unstable, especially as people are first inducted to a figured world, and they continue to undergo heuristic development in concert with people’s acclimation to new spheres of activity” (p. 65).

While the figured worlds of traditional and reform mathematics teaching both have children, parents, teachers, faculty, administrators, curriculum developers, etc. who participate in them, and they both value learning, their ideas of what constitutes learning are vastly different. The routines within classrooms and the relationships and responsibilities between teachers and children are also very different within the two worlds. Table 5.1 below provides a summary of what is included in each figured world.

**Table 5.1: Traditional and Reform Figured Worlds**

<table>
<thead>
<tr>
<th>Traditional Figured World</th>
<th>Reform Figured World</th>
</tr>
</thead>
<tbody>
<tr>
<td>• “I do, we do, you do” approach in which the teacher demonstrates a procedure, then asks the students to practice similar problems (Stigler &amp; Hiebert, 1999)</td>
<td>• Asking students to use and create their own strategies (Ma &amp; Singer-Gabella, 2011)</td>
</tr>
<tr>
<td>• Focuses on procedures memorizing facts (Ma &amp; Singer-Gabella, 2011)</td>
<td>• Students make sense of relationships between quantities and mathematical ideas (i.e., a focus on conceptual understanding) (Ma &amp; Singer-Gabella, 2011)</td>
</tr>
<tr>
<td>• Students thought of as receivers of knowledge instead of active participants in creating knowledge (Ma &amp; Singer-Gabella, 2011; Boaler &amp; Greeno, 2000).</td>
<td>• Offers students opportunities to actively discuss their thinking (Ma &amp; Singer-Gabella, 2011; Boaler &amp; Greeno, 2000)</td>
</tr>
<tr>
<td></td>
<td>• Students make connections within and beyond the discipline (Ma &amp; Singer-Gabella, 2011; Nicol &amp; Crespo, 2003)</td>
</tr>
<tr>
<td></td>
<td>• Teachers are “responsive to students’ backgrounds, experiences, cultural perspectives, traditions, and knowledge” (NCTM, 2014, pg. 1)</td>
</tr>
</tbody>
</table>
In the section following, I will explore in what ways Ben’s identity as a mathematics teacher shifted throughout his participation in this program, using the lenses of reform and traditional figured worlds to frame this discussion.

**Ben’s Identity as a Mathematics Teacher Shifted Throughout the Program**

When Ben first started this program, many of his beliefs on mathematics teaching already appeared to align with the reform figured world. For example, the summer before leaving for Nottingham, he wrote: “People believe they are good or bad at math based on the memorization and recall of procedures that more often than not don’t relate to the skills needed in the real world.” He wanted his students to see how the mathematics they were learning could be applied, and he wanted them to understand the concepts behind the procedures. He spoke often about how he disliked procedures, describing them as “pure labor” and saying: “Humans shouldn’t be trained to follow directions or do what a calculator does.” As a student, he valued opportunities to explore, create, and approach problems from different angles—he had a real inquisitiveness about the subject—and he wanted to pass this along to his students. He wanted his students to discover concepts for themselves rather than be told what to do, and he viewed traditional mathematics instruction as teaching procedures in a step-by-step process, saying, “There are a lot of things in math ed. that probably need to be changed because so many people just keep doing the same thing.” He was eager to work with highly regarded researchers in the field of mathematics education at the University of Nottingham so he could learn about how to improve the field.

The summer before leaving for Nottingham, I asked Ben to describe a successful mathematics teacher, and he wrote:
I hope to inspire my students to enjoy, understand, and learn mathematics in any way possible. However, from a technical standpoint I would say a successful math teacher is one that effectively taught their students the material. Specifically, their students have mastered the different standards that they set out to teach. Being fully successful would also require the teacher to get the students entirely engaged and immersed in the mathematics, seeing that the material is also useful, as well as succeeding in getting the students to think more in depth than they had before.

While some of Ben’s comments above align with a reform figured world (engaging and immersing students in the mathematics, helping them see that the material is useful, and encouraging them to think in more depth than they had previously), other comments align with a traditional figured world (i.e., “a successful math teacher is one that effectively taught their students the material.”)

Also, while many of his beliefs about the subject aligned with the reform figured world, he was missing one big aspect of this identity. Not only was Ben not discussing the importance of being “responsive to students’ backgrounds, experiences, cultural perspectives, traditions, and knowledge” (NCTM, 2014b, pg. 1) which NCTM has said is necessary in order to promote a culture of access and equity within mathematics education; he barely mentioned his students within interviews, journals, and in-class discussions. He would discuss that he wanted his students to see the value of the subject, and that he wanted to inspire them to “enjoy, understand, and learn mathematics in any way possible,” but he never articulated the importance of understanding his students, their prior experiences, backgrounds, values, or traditions.
Instead, he appeared focused on his own values, prior experiences, and what he deemed important; and he wasn’t giving much thought to where his students were coming from. He didn’t like the redundancy of procedures; he valued inquiry learning and multiple ways of approaching problems; he appreciated an understanding of the concepts behind the procedures—so these were the teaching practices he planned to use in his classroom. These are considered good teaching practices, and they are part of the reform figured world, but Ben appeared to be missing a desire to incorporate his students’ voices into his classroom.

It is possible that he believed he made connections with individual students during his student teaching experience—he occasionally shared stories of specific students—but he appeared to never pause and think about where his students as a whole were coming from. What was their prior knowledge? What were their previous experiences? What did they value? What were their backgrounds and traditions? These were not topics that Ben discussed or reflected on at the beginning of the program. He also seemed to believe that his cultural identity and his students’ cultural identities would not impact the way they experienced school, as evidenced by his response of “somewhat disagree” to the myCAP statement “Student’s cultural identity influences the way they experience school,” and “disagree” to the statement “My cultural identity will impact my teaching.”

When Ben submitted a journal in mid-November, his reflections on teaching had shifted slightly. He still discussed that he valued conceptual understanding, an inquiry approach to the subject, and opportunities to apply mathematics to real-world problems, but he also reflected on how his students’ backgrounds and experiences would impact his teaching. Saying, “I think that my understanding of cultural diversity is fundamental to the way I approach teaching,” he also wrote, “People have vastly different experiences than I do, and they also have different values.”
He appeared to now realize that part of the disconnect between him and his students during student teaching occurred because he hadn’t recognized their values and experiences. He had valued a conceptual understanding of mathematics and believed that if people only focused on “procedures” then they were not really doing mathematics, but his students within his student teaching experience didn’t see it that way. As Ben put it:

I can say my time in Europe has changed what I enjoy about math. I still believe in what I said previously, that the best piece for me is problem solving and the conceptual. I also think that’s the most important piece of math. But I think that I’ve missed something crucial about math. Reflecting on different cultures and understanding of the world has helped me understand some of the disconnect between my students and I back when I was student teaching. The truth is, they valued getting a correct answer. They didn’t care how. It was the beauty and relief of finishing a problem with a tool they had that pushed them forward. It wasn’t their skill, but their ability to use a tool that connected them to the mathematics. Up until studying here and thinking deeply about cultural differences I failed to see some people fundamentally don’t feel the way I do.

He went on to say that people don’t make the decision to see the subject in the way that they do; rather, “It’s their circumstances, subculture, and nexus of membership that leads them to act different ways in different situations.” In his student teaching placement, his lessons targeted conceptual understanding, while his students appeared to value procedural fluency. He was realizing now that this was part of why there was a clash between him and his students during student teaching. He hadn’t recognized or valued what his students appreciated—or didn’t appreciate—about the subject. As Ben put it, “Their nexus told them they are good at math because they get things right,” and he realized that if he wanted them to think with a conceptual
mindset, he needed to lead them there slowly and not disregard what they enjoyed about the subject:

Looking at what my students’ value, how my students view math, how my students view education, and applying it to my own understanding to grow and change my teaching style overtime is going to be fundamental to my practice…. I will be careful to not push my own view of the mathematics on the students, rather I will shape my strategies and methods to what they enjoy, value, and believe. Over time, after gaining my students trust, I will offer different options to pieces already in place…. Careful reflection on my students and their situations will lead me to become a better, more effective, efficient teacher that can reach out to students in many different ways rather than simply through the mathematics.

Ben admitted that he could see the joy in solving simple problems now, and that “Having an understanding of the math and being able to do it quickly and efficiently can be fun” in certain circumstances. While the examples he gave of understanding his students better were focused around considering their views of mathematics and that they likely valued a procedural approach to the subject, the fact that he was now emphasizing his students’ previous experiences shows growth. Before participating in this program, Ben didn’t mention his students when he talked about his views of successful teaching and learning. He only talked about what he valued and deemed important through the lens of his own teaching. He was now considering his students’ experiences and values when discussing successful mathematics teaching.

This excerpt from Ben’s journal summarized his beliefs about mathematics teaching and how they’ve shifted through participating in the Nottingham program:
The biggest change for me here is around understanding of the students. A successful teacher doesn’t just have solid personal beliefs to lead the classroom forward—the teacher must also have a clear understanding of the goals of their individual students. Establishing a strong and clear connection with their students, one of leadership yet comfortable and understanding is pivotal to a successful teacher. Simply pushing an agenda is not enough… Understanding where a student is coming from in the long run is just as important to getting them to commit to the material as having firm beliefs. Adapting lessons and mindsets around cultural differences between student and teacher to help both grow together overtime, that is what an ideal teacher should hope to achieve.

When I met with Ben during the spring 2020 semester after he had returned home, we further discussed some of his thinking about mathematics teaching. I was curious how these new understandings of teaching would play out in his classroom. During this conversation, he shared a story of a teacher in one of his internships who had asked students to introduce themselves to the class by bringing in an artifact that they felt represented them. The teacher wanted to encourage the students to speak to the class about their artifact from the front of the room, so he told the students that if they did the presentation from their seat, the highest grade they could earn was an 80 percent. Ben said:

So then what ended up happening was most of the students didn’t get up, and the students that did, most of them were the, it was actually all the white female students in the classroom got up and went to the front to get the points, and then maybe like one or two of the male students and then the rest of the class didn’t stand up at all. And it really did get me thinking, and I was trying to think of ways around that other than using grades because clearly while to me and the teacher and a couple of the students, that was a good
incentive that got the kids to come up to the front, a lot of the students I would argue, it was cultural, they didn’t want to do that. So, I was running it by my multicultural ed professor and he was saying how that’s actually really bad because it’s actually setting it up as a scary thing. Setting it up as, “oh if you go to the front you get 20 points” it’s building it in a way that says you shouldn’t want to come up here necessarily. And a better idea that he talked about was having a poetry slam, when everyone gets up and is cheering each other on and standing and really happy and encouraging the person that’s talking rather than framing it in a way that’s supposed to be scary or people won’t want to do it. So, I guess what I’m kind of getting at is that just because something lines up with my upbringing and my cultural values, doesn’t mean that it will motivate or speak toward the students. So that’s definitely not an individual thing. It’s not like 18 of the 22 students or whatever there are in the classroom all individually said, “no, I really don’t want to go up to the front of the classroom even if it’s for 20 points.” It was a cultural mindset around that it’s such a scary thing that even 20 points isn’t worth it, or the 20 points don’t matter so much that I will just present from my desk instead.

This story from Ben illustrates three key elements of growth. First, he recognized what had motivated him as a student might not motivate his own students, and he made a point to say that in his own teaching he will take “it slow and not make assumptions” about his students based on his prior experiences. He said:

Instead of framing my teaching in a way that’s like, it’s my way or the highway, or going to individual students looking for suggestions, I will try identify big aspects of the subculture of the school, or even just the culture in general. I can only know so much right now [about culture] because of my limited experience, but I will really try to learn
what works and what doesn’t work by playing around with ideas, rather than making bigger assumptions like “this is the way it has to be” or only trying that strategies that worked on me as a kid. So, I will try to be as observant as possible rather than just trying to force my ideas down their throat.

Second, he recognized that there was something more complex happening than just 18 out of the 22 students individually deciding not to speak in the front of the room. He realized that the teacher had created a culture in the classroom that made speaking from the front of the room a non-preferred task. Ben was realizing that even individual classrooms have a culture, and that the teacher plays a huge role in the dynamics within the classroom. Lastly, he noticed that only the white females fully participated in the activity—something he may not have noticed or pointed out previously but is an important observation about the students—and he decided to discuss it with his multicultural education professor. Through discussing it with his professor, he realized that there could be other, more positive, ways of encouraging all students to participate in an activity. All of this shows that Ben was noticing his students’ cultures and reflecting on teaching in ways that he hadn’t previously.

When Ben took the myCAP questionnaire after returning home, some of his responses had changed. At this point in his development, he responded with “agree” to the statements “Student’s cultural identity influences the ways they experience school” and “My cultural identity will impact my teaching” indicating an important shift in his perspectives and adding a dimension to his notions of a reform figured world. These findings succinctly summarize his growth in this area.

*Why This Matters*
At the start of this program, Ben somewhat aligned with a reform approach to teaching the subject, but he was missing something very important: an acknowledgement of his students’ perspectives and a goal to include their voices within his classroom. Also, through the myCAP findings, he indicated a belief that his cultural identity would not impact his teaching and that his students’ cultural identities would not influence the way they experience school. This aligns with his reflections, interviews, and the IDI which showed he had little understanding of his own culture and little desire to pay attention to or acknowledge cultural differences out of fear that it would take away the ability for an “individual to be themselves.”

However, by the end of the program, he was recognizing that culture influences the experiences, values, beliefs, and perspectives that people have, and he was aware that his students’ culture, specifically their experiences and values, were different from his own. He indicated that he now believed his, and his students’, cultural identities would influence their experiences in the classroom, and he discussed a desire to incorporate his students’ perspectives and values into his teaching. He said that within his teaching, he would take “it slow and not make assumptions” about his students based on his prior experiences, and that he would instead consider his students’ prior experiences. He was also noticing race and gender in ways that he hadn’t demonstrated previously, observing in his current school internship that only the white females had participated in a particular classroom activity. Rather than brushing it off as an unsuccessful lesson in which individual students lacked interest, he wondered if there was more to it—perhaps a cultural difference that was contributing to the lack of student participation and enthusiasm, ultimately resulting in the majority of students receiving lower grades.

These shifts within Ben’s mathematics teacher identity are hugely important in meeting the needs of mathematics education. As discussed at the beginning of this dissertation, there is a
long-standing problem in mathematics education in terms of supporting equitable outcomes. For example, in 2014, NCTM published *Principles to Actions*, in which they advocated for eliminating “racial, ethnic, and income achievement gaps so that all students have opportunities and supports to achieve high levels of mathematics learning” (p. 2). They also stressed that we must shift from “pockets of excellence” to “systemic excellence” (p. 2), stating, “The difference in average NAEP mathematics scores between white and black and white and Hispanic 9- and 13-year-olds…remains between 17 and 28 points” (p. 2).

In 2014, NCTM also released a position statement on access and equity in mathematics education. Within this statement, they stressed that “Creating, supporting, and sustaining a culture of access and equity require being responsive to students’ backgrounds, experiences, cultural perspectives, traditions, and knowledge,” and that “Addressing equity and access includes…. increasing the numbers of students from all racial, ethnic, linguistic, gender, and socioeconomic groups who attain the highest levels of mathematics achievement” (2014b, p. 1). In addition, a position paper from NCSM and TODOS (2014) defined four components of what social justice would look like in mathematics education, one of which being “eliminating deficit views of mathematics learning” (p. 1).

All of this underscores that mathematics teachers must not disregard their students’ cultures, perspectives, values, and experiences. A minimization mindset of seeing all humans as essentially the same while ignoring cultural differences would limit our ability to create an equitable mathematics education for all students. In order to address issues of racial, cultural, and socioeconomic inequity, we need to see race, culture, and socioeconomic status. Moreover, teachers must be aware of their own cultures and their students’ cultures, otherwise, we cannot meaningfully address issues of access and equity within mathematics education.
This points to the fact that we must consider alternative methods of preparing mathematics teachers, methods that encourage teachers to recognize their own, and their students, backgrounds experiences, perspectives, traditions and knowledge. As Neumayer DePiper has said, “Developing a repertoire of effective mathematics teaching practices is not enough. Teacher education must also prepare teacher candidates to enact these practices while navigating the many social, political, and institutional dynamics in mathematics classrooms and schools” (2013, p. 9). If we are to carry out the vision of successful mathematics teaching that is articulated by NCTM, NCSM, TODOS, and others, we must seek to train mathematics teachers with a developed sense of their cultural identities, and they must learn to be “responsive to students’ backgrounds, experiences, cultural perspectives, traditions, and knowledge” (NCTM, 2014, pg. 1). Ben’s story across the arc of this program demonstrates that preservice mathematics teachers can evolve to principles that are more closely aligned to a reform figured world through participating in an education abroad program.

Open-Minded Identity

Riggs (2010) defines open-mindedness as “being prepared to take seriously the views of others, especially when those views are in conflict with one’s own” (p. 177). Adler (2004) writes that the typical demands of open-mindedness are “to be responsive to the criticism of one’s belief and to the fair consideration of rivals” (p. 128). Hare (1993) writes, “A person must be both willing and able to revise his own position if he is to be open-minded” (p. 8). These definitions all stress the willingness to consider the views of others, and according to these definitions, Ben came into the program with an open-minded identity. At the start of the program, Ben recognized the importance of considering the views of others, writing in a journal during the summer before leaving for Nottingham that open-mindedness “comes down to being
able to view the world from another person’s perspective.” He also wrote that he tries to be open-minded every single day, as he considered it an important part of his personality to “try to understand things from other people’s viewpoints to get a better grasp of the world.”

While Ben came into the summer course already demonstrating an open-minded mindset, the program provided him opportunities to practice being open-minded. Throughout the program, I noticed Ben practicing a willingness to consider the views of others when he, for example, attempted to understand his Chinese flatmate’s views on food and shared spaces; when he tried to understand the views of a Donald Trump supporter; and when he attempted to notice and appreciate aspects of cultural difference in England, Amsterdam, and Italy. He would often view other cultures with his American perspective, such as trying to understand Italian customs by reflecting on their history as a fascist country and looking down on particular behaviors of waiters, as I described previously. However, he continued to reflect on other ways of seeing the world, and upon returning to the United States for the spring semester, he was thinking about open-mindedness in more nuanced ways.

In one of his journals at the start of the spring 2020 semester, he shared a story of his school internship in Connecticut, during which he was working with a social studies teacher. Recently, they had been talking about “truth machines,” or the ways in which humans come up with what they consider to be “true.” As Ben put it, “Basically, the concept works like this: when coming up with an idea or thought, humans use four different machines to come up with their “truth.”” The four approaches to determining one’s truth are, according to Ben: “intuition (basically instinctual thoughts), reason (inductive or deductive thoughts, and what we overall value the most in our educational sphere), emotion, and faith.” In order to discuss this idea, Ben’s teacher asked him to put various statements into different groups, and when Ben sorted
them, he put certain statements into a category he called “facts,” and other statements into a
category he called “opinions.” In response, Ben’s teacher asked him to define a “fact,” and Ben
realized: “based off my background, I would see a fact as something verifiable, that has to be
proven through reason.” He wrote in a journal, “Inherently, through my upbringing and culture, I
would see a fact as something that is more true than anything else, as you know it to be true
because of specific and clear evidence.” Because of this, he realized:

But to someone else, that IS NOT THE CASE. To someone else, reason [one of the truth
machines] may not be as strong as faith [one of the other truth machines]. To another
person, God could be more of a real force than something I considered to be a fact… and
then this “fact” group I had, then in a way, gets included with my “opinion” group; the
only thing dividing them is that how we come to the conclusion.

Ben concluded that this activity related to open-mindedness, saying, “Being able to
understand the different ways people come to their truths and thoughts is powerful and important
to being open-minded.” He articulated that an aspect of being open-minded is to understand that
people can use any of the truth machines to come up with their truth, and that they’re all “equally
viable.” Again, I think because Ben had a goal of becoming more culturally sensitive, he claimed
all viewpoints to be “equally viable,” and that a fuller sense of systemic challenges would help
him see that it’s not always appropriate to accept someone’s viewpoint. However, this reflection
demonstrates that Ben was taking his sense of open-mindedness a step further from just wanting
to consider the views of others; he also wanted to understand how people come to their views.
Ben had opportunities to practice being open-minded throughout the program, and now at the
end of the program, it appeared as though he was more seriously considering the views of others
by attempting to understand the ways in which people come to their beliefs.
**Self-Knowledge and Self-Monitoring**

While the literature tells us that being open-minded is essentially a willingness to consider the views of others (Riggs, 2010; Adler, 2004; Hare, 1993), it also informs us that two components can improve our capacity to be open-minded: self-knowledge and self-monitoring. Riggs (2010) writes, “It is through gaining self-knowledge, which one applies in the moment of challenge through self-monitoring, that the open-minded person makes her awareness of her own cognitive fallibility efficacious in her cognitive practice” (p. 183). In other words, the more we understand and monitor ourselves, the more we are able to examine and revise our beliefs and opinions based on new evidence. Self-knowledge can be refined, and self-monitoring can be practiced. As Riggs (2010) says, “One nice feature of this understanding of open-mindedness is that it makes sense of how…to become more open-minded” (p. 183).

Riggs (2010), writing about the problem of our biases and tendencies being hidden from us, gives an example: “If we have a bias, say, to the effect that people under thirty don’t know anything, we shall dismiss testimony from such sources as even being relevant to anything we believe or are considering” (p. 184). In addition to affecting how we consider various hypotheses, these biases also affect what we consider to be evidence. If we are unaware of our biases, we do not have the option of seeing different points of view. Through exposing ourselves to a multitude of ideas and worldviews, we can become better at discovering our own biases. Riggs (2010) says, “Closed-mindedness can be the result of taking one’s own assumptions to be obvious and universal, hence incontrovertible,” and “To discover that those assumptions are not shared by people across time, place, and culture can help one see that one’s assumptions are controvertible after all” (p. 183-184). Increasing our knowledge of self and becoming aware of our biases are steps toward becoming more open-minded.
Before traveling to Nottingham, Ben had little concept of his own culture or other ways of viewing the world. He had grown up in a small, rural, majority-white town in Connecticut and then went to UConn, which was within an hour of his home. Throughout his undergraduate college experience, he mostly surrounded himself with white, like-minded people his age. While he may have argued that his friends offered different perspectives and were unique individuals, 76% of the UConn undergraduate student population is from Connecticut (University of Connecticut Fact Sheet, 2019), and Ben had little exposure to other cultural perspectives. With such limited experiences and perspectives, he may have considered himself open-minded—and in certain ways he was because he was already interested in considering the views of others—but in order to improve his capacity to become open-minded, he needed to increase his self-knowledge. Through exposure to other cultures, he could begin to explore his own cultural identities while also learning new perspectives.

However, as Riggs (2010) says, “Gaining the knowledge may be the hardest part, but having it is not enough” (p. 183). Self-monitoring must come next; one must monitor for signs that indicate they are in a situation in which they are likely to be biased. Riggs (2010) gives examples of what these signs might look like: the subject matter of a discussion, “the tone of your voice as you respond to someone” (p. 183), or even gestures or body postures you adopt when overconfident. He when you catch these signs, you “should take whatever prompted the habitual response seriously” (p 183), examine your biases, then be open to revising your beliefs based on new evidence. Given that self-monitoring is a personal process and challenging for researchers to uncover, I cannot be sure if or when Ben practiced it, however, throughout the program throughout the program he demonstrated a willingness to examine and reconsider his beliefs. While abroad, he was constantly seeking out cultural differences, and rather than merely
judging other cultures as inferior to his own, he attempted to understand the various perspectives. This strongly indicates that he may have practiced self-monitoring at key points throughout his education abroad experience.

By the end of the program, Ben emphasized that he was aware he didn’t know everything about cultural difference, saying, “It’s almost that I’m knowing everything that I don’t know at the moment, so I’ll keep learning more about culture when I start teaching,” suggesting a sense of self-awareness and self-monitoring. Upon return to the United States, I asked students to review and reflect on a couple of their earliest journal entries. After doing this, Ben reflected on his own sense of open-mindedness, saying, “I think overall, I see myself on a spectrum of open-mindedness,” and that being exposed to other cultures helped him see other ways of thinking and behaving that he hadn’t previously considered. He felt like this contributed in making him more open-minded than he would have been in his very first journal entry, but that he could never claim to be 100 percent open-minded. He said, “There are many times where I find myself trying to describe a topic or idea to a group of people, and I expect them to understand where I am coming from without an in depth and precise explanation.” He noted that he needed to work on this as a teacher, but that being aware of this would help him to be more open-minded and address it, really indicating a sense of self-awareness and an ability to self-monitor. As he put it, “In a way, simply because I notice my shortcomings,”—a big step in becoming more open-minded (Riggs, 2010)— “I slowly reach that overarching goal of being a completely open-minded individual ad infinitum.” Although he still recognized that one could never be 100 percent openminded. He had previously compared being open-minded to a limit: “You’re approaching this level of, “Oh, you’re fully open-minded,” but no one’s every going to fully touch it. But the closer you get to it, the better off you are,” because you’re able to relate to and
understand more people and better understand the world in general.” Being exposed to other cultures, with the support of this program, gave Ben more perspective and the opportunity to refine his self-knowledge and practice self-monitoring, ultimately becoming more open-minded.

Finally, I think it’s important to note that Ben became more open-minded because of the new perspectives and knowledge he was developing and that he developed new perspectives and knowledge because of his open-mindedness. He came into the program already willing to consider the views of others. This willingness allowed him to gain more perspectives and increase his knowledge of self, the world, and others. But, at the same time, through gaining more knowledge and perspectives, he was able to further develop his open-mindedness. By exposing himself to other worldviews, he increased his self-knowledge and practiced self-monitoring. Figure 5.2 below illustrates my thinking regarding these reciprocal notions. It’s a two-way street: being open-minded allows one to consider new knowledge and perspectives and new knowledge and perspectives allow one to become more open-minded. So, I believe these traits interact, and that ultimately what matters is that throughout this program, Ben developed new knowledge and perspectives while also developing his sense of open-mindedness.

Figure 5.2: Relatedness of Open-Mindedness and Knowledge & Perspectives

Why This Matters

As discussed at the beginning of this dissertation, “Mathematics…has a huge image problem” (Boaler, 2015, p. 4). Timed tests, a focus on the memorization of facts and figures, and little application or connection to students’ lives has fostered an environment in which many
students experience math anxiety and a dislike of the subject (Boaler, 2015). I have proposed a different vision for mathematics teaching; a vision that considers a new, reform-minded approach to teaching the subject, but this vision is different from the type of mathematics education that most of us have experienced. Most preservice teachers have had traditional experiences as students, and because teachers tend to teach in the ways they were taught (Ball, 1998; Lortie, 1975), it is especially important that teacher education programs produce teachers that are open to considering a new approach.

De Freitas has described that mathematics teachers can be particularly guilty of a closed-minded approach to teaching: “Those frequently heard comments—‘I’m just a math guy,’ ‘I’m one of those people who likes math for the sake of the math only,’ ‘I’m not one for social justice’” (2008, p. 50) are comments we’ve all heard, and they demonstrate an identity that is fixed and closed. We must encourage mathematics teachers to be open-minded and willing to think outside of the box. She has suggested that “Alternative visions of identity are required” in order to change the fixed, closed mindsets of mathematics teachers and begin to develop a critical mathematics education (2008, p. 49). This study has shown that through education abroad, we can foster cultural reflection and promote identities that are more suited to meeting the 21st century needs of the field.

**Implications**

This study has echoed the core beliefs of many experiential educators—that for meaningful learning to occur, we must provide purposeful experiences. In Ben’s case, experiential learning—specifically in the form of education abroad—influenced his identity in ways that became more 1) culturally aware, 2) open-minded, and 3) aligned with a reform
approach to teaching mathematics. This has important implications for the preparation of mathematics teachers and for teacher education programs in general.

Given the rich narrative uncovered and reported on in this research, there is clear potential and possibilities for shifting the way we prepare mathematics teachers. If we look to NCTM, NCSM, TODOS, and others, we can see calls for addressing issues of equity, access, and social justice in mathematics education. NCTM has argued that teachers must be “responsive to students’ backgrounds, experiences, cultural perspectives, traditions and knowledge (2014b, p. 1). Others, like Weissglass (2000) have argued that mathematics teachers should have an understanding of how their individual prejudices and unaware biases influence teaching and learning. De Freitas has suggested, “Alternative visions of identity are required” in order to change the fixed, closed mindsets of mathematics teachers and begin to develop a critical mathematics education (2008, p. 49). Ma and Singer-Gabella (2011) have worked to encourage mathematics teachers fall within what they call a reform figured world. In other words, there have been calls to develop mathematics teachers that are culturally aware, open-minded, and reform-minded. Throughout this study, Ben’s beliefs and perceptions evolved across these three facets of identity, demonstrating that bringing education abroad to the forefront of mathematics teacher preparation can respond to the calls for reform within the field of mathematics education. Perhaps this type of cultural-rich programming is what has been systemically missing in the preparation of mathematics teachers and we should endeavor to create more experiences for this type of experiential and immersive learning.

This study also has implications for teacher education abroad programs more broadly. All teachers—not just mathematics teachers—should be equipped to address issues of culture within the US. As discussed previously, in 2011, 84% of teachers in the United States were White, 7%
Black, 6% Hispanic and 4% “other” (Feistritzer, 2011). According to the National Center for Education Statistics (2019), in 2015, the demographics of public-school students in the United States were as follows: 49% White, 15% Black, 26% Hispanic and 9% “other.” These cultural differences have resulted in teachers being insufficiently prepared to work with ethnically diverse students (Gay, 2002), and it has been argued that “Explicit knowledge about cultural diversity is imperative” (Gay, 2002, p. 107) in meeting the needs of a diverse student population. This study demonstrated that through participation in an education abroad program, Ben’s identity had evolved to become more open-minded, culturally aware, and aligned with a reform approach to teaching the subject. While the reform figured world that I have described applies uniquely to mathematics, open-minded and culturally aware identities are beneficial and necessary for teachers of all content areas. As such, teacher education programs in general should consider culturally rich programs, such as education abroad, for all of their teacher candidates, however, this is with the caveat that education abroad programs are done in the “right” way, meaning, they must continue to draw on research to inform their implementation.

While there are many models for incorporating education abroad (short term, long term, within student teaching, or pre/post-student teaching), the Nottingham education abroad program was designed strategically, drawing upon research to inform its implementation. For example, research says that in order to facilitate intercultural growth, programs must make it a priority for students to reflect on what they are encountering and discuss their experiences (Cushner, 2018). Therefore, the Nottingham program made sure students had opportunities for ongoing and facilitated reflection relating to objective and subjective aspects of culture across the full arc of a program. In addition, considering the programmatic arc, research also indicates that education abroad programs should have a predeparture phase and re-entry phase upon return from the
program (Cushner & Karim, 2004; Martin & Harrell, 1996). The predeparture phase should prepare students for their semester abroad, and the re-entry phase should help them with the transition back into their home culture. This program followed this guidance. So, while Ben demonstrated an evolution in terms of his identity, it is not guaranteed that this type identity shift would have occurred without purposeful implementation of previous research on education abroad programming. This implies that education abroad programs should continue to be informed by research and best practices when planning and implementing such programs.

**Implications for Further Research**

This study also has implications for further research regarding the preparation of mathematics teachers. Recently, I gave a research talk at the University of Northern Iowa, where I will happily begin my career as a mathematics educator in August 2020. After my talk, we discussed how many of the faculty members—they have a team of eight math educators—work with their preservice teachers to prepare culturally relevant tasks, but following my research talk, they were now questioning in what ways they could most impactfully help prepare preservice teachers to engage in these types of tasks if they have only emerging understandings of culture. Clearly, Ben’s understanding of culture evolved through participation in this program, but what if he attempted to create culturally relevant tasks prior to participating in this program? Likewise, how might participation in this program influence his ability to prepare meaningful culturally relevant tasks? The ability to create culturally relevant mathematics tasks materials was not a focus of this program, which led me to wonder: what would happen if participation in a culturally-rich program was coupled with explicit work on culturally relevant pedagogy? This is a very interesting and timely implication for further research given current recommendations for the reform of math teaching and learning.
Furthermore, this study also implies that teacher preparation programs should include opportunities for guided reflections around cultural identity, reform approaches, and open-mindedness within US based field placements. There is much to learn from the diversity that already exists in schools across the nation, and although students could still benefit from an education abroad experience, what would happen if we included aspects of education abroad programs within the context of a US based placement? Specifically, what are the possibilities for reform if we included the following: explicit discussions around objective and subjective aspects of culture; opportunities for students to reflect on their culture, their students cultures, and how these dynamics impacts teaching and learning in the classroom; and language to begin understanding the notion of culture and cultural sensitivity (i.e., the IDI). Would we still see students evolve in ways to become more culturally aware, reform-minded, and open-minded? These implications are areas for further research that I look forward to pursuing.

Final Words

The reason I was initially drawn to this topic is because I had the opportunity to study abroad years ago, and I felt as though it was an experience that changed me. It impacted the way I saw the world; it impacted my views on teaching; and it impacted my views on students, along with so many other things that I couldn’t really pinpoint. When I came back to pursue a PhD, I knew I wanted to learn more about the profound influence that education abroad can have on its participants, and I feel so fortunate to have spent the past several years exploring these ideas. Thank you to Ben for allowing me to share your story and for showing me just how meaningful an education abroad experience can be for preservice mathematics teachers.
References


Cushner, K., & Karim, A. U. (2004). Study abroad at the university level In D. Landis, J. M. Bennett & M. J. Bennett (Eds.), Handbook of intercultural training (3rd ed.).


practices in mathematics methods (pp. 11-37). Charlotte, North Carolina: Information Age Publishing.


Hammer, M. R. (2013). Why should you consider using the Intercultural Development Inventory (IDI)? Berlin: Intercultural Development Inventory.


Appendix A: Semi-Structured Interview #1 Protocol

Sample guiding questions:

1. How do you describe your and your family’s cultural or ethnic background?

2. Tell me about the friends you had as a child and the friends you have now.
   - Have you ever had a close friend who was of a different culture, ethnicity, or race?

3. How would you describe yourself?
   - What type of organizations, events, allegiances, or other types of affiliations define “who” you are?
   - If asked, how would you describe your culture?

4. Do you consider yourself American? What does that mean to you?

5. If you ever lived anywhere where you felt culturally different than the majority of the people, can you describe that feeling to me?

6. Tell me about the different schools you attended as a child.
   - Would you describe them as diverse in any ways?
   - Describe how culture might have impacted your schooling.

7. Tell me about the schools you have interned in.
   - Could you describe the culture of the school? The teachers? The students?

8. In general, how do you think U.S. might differ from schools in the U.K.?
   - What do you think makes U.S. schools “American”?

9. Can you remember why you wanted to apply to this program?
   - How do you think this will impact your teaching?

10. Tell me more about some of your responses on the NFC scale.
    - You answered _____ for question #____. Can you tell me more about that? Why did you respond that way?

11. Tell me more about your vision of teaching math.
    - What do you like about math?
    - Why did you go into teaching math?
    - What do you believe defines good math teaching?
    - How has your philosophy of education changed in the few years you have been in the teacher ed program?
    - How do you think this trip will change your teaching beliefs or who you are as a teacher?
Appendix B: Semi-Structured Interview #2 Protocol

Sample guiding questions:

1. How are you doing in the experience?
   • What were your first impressions of Nottingham? Your apartment? The schools? Your classes?
   • What things have surprised you? What things made you, or are making you, anxious?

2. How has the experience progressed for you?
   • Have things gone as expected?
   • Have there been any glitches? What were they? What caused them?
   • How have you felt in situations that haven’t gone as expected?
   • Can you describe any events that stand that have made an impact on you?

3. Tell me about the culture of where you are living.
   • How would you describe the British culture?
   • Do you find yourself comparing it to home? Are you seeing things that are different? Similar? What is standing out for you?
   • How has your understanding of British culture changed since you first got here?
   • Are there events you can point to that have impacted your perspectives?

4. Has your sense of being an American changed?
   • If so, how? What impacted you?
   • How do you describe/see American culture now?

5. Tell me about the school you are interning in.
   • How has your impression of the school changed over time?
   • How does it feel different from American schools? How does it feel the same?

6. How is your work at the university going?
   • What’s going on in your course-work?

7. Do you feel that you have changed or grown since you first got here?
   • Are you noticing any changes in yourself?
   • How would you describe any changes or growth? Were there events that you could point to that seem important to your change or growth?

8. Tell me about some of your experiences with math this semester. Have you had any new experiences or learned anything new that has impacted your way of thinking about the subject?

9. Have you had any experiences this semester that have impacted the way you want to teach math?
   • Have you had any experiences that have impacted your opinion of what it means to be a good teacher?
Appendix C: Semi-Structured Interview #3 Protocol

Sample guiding questions:

1. How has your return home been?
   - Did you want to come back?
   - What were you expecting on your return home?
   - Have there been any big surprises?
   - Can you describe any events over the past month or two that stand out to you?

2. How has your sense of being an American changed?
   - How do you describe/see American culture now?
   - Are there events you can point to that have impacted your understanding on any of the things you just discussed?

3. How has your thinking about culture developed? What was your understanding of “culture” before as compared to now?
   - What impacted this growth?
   - Are viewing cultural difference any differently? Do you see more reason for paying attention to cultural difference?

4. How else have you changed or grown?
   - Were there events that you could point to that seem important to this growth?

5. Are you thinking any differently about how to teach math?
   - What do you think changed this for you?

6. Is the program what you expected it to be?
   - Were there been glitches? How did you handle them? What did you learn about yourself through these unexpected moments?
Appendix D: My Cultural Awareness Profile (myCAP)

The myCAP questionnaire (Marx & Moss, 2011b) was administered in the summer course and again upon students’ return to the United States, in January, 2020. This instrument is designed to provide a sense of where students are in their journey toward cultural and global awareness. Students respond to statements on a 4-point Likert scale ranging from disagree to agree. Below are sample statements from the myCAP:

- Attending to students’ cultural backgrounds is essential to facilitate learning.
- Languages differ but non-verbal cues are universal.
- My cultural identity shapes how I perceive the world.
- I often access media about international or global issues.
- I try to find global aspects in most topics I plan to teach.
Appendix E: The Shortened Version of the Revised Need for Closure Scale

The shortened version of the revised need for closure scale (Roets & Van Hiel, 2011) was administered in the summer course and again upon students’ return to the United States, in January, 2020. This instrument is designed to provide a sense of one’s open-mindedness. Students responded to statements on a 6-point Likert scale ranging from strongly disagree to strongly agree. Below are sample statements from the questionnaire:

1. I don’t like situations that are uncertain.
2. I dislike questions which could be answered in many different ways.
3. I find that a well-ordered life with regular hours suits my temperament.
4. I feel uncomfortable when I don’t understand the reason why an even occurred in my life.
5. I feel irritated when one person disagrees with what everyone else in a group believes.
6. I don’t like to go into a situation without knowing what I can expect from it.
7. When I have made a decision, I feel relieved.
8. When I am confronted with a problem, I’m dying to reach a solution very quickly.
Appendix F: Journal Prompts Relating to Mathematics Teaching

Students responded to three guided prompts relating to their vision of teaching mathematics.

1. The first prompt they responded to was during the summer course prior to their departure abroad.
   - What have been your experiences learning math as a student? How have your experiences changed over time?
   - What do you like about math?
   - Why did you go into math teaching?
   - How would you like to teach math?
     - What is your vision of a successful math classroom? In as much detail as possible, describe the type of math classroom you would like to have.
   - What do you think are characteristics of a successful math teacher?
   - How has your own culture impacted your experiences as a teacher?

2. The second prompt was given sometime in early November.
   - Now that you’ve been in Nottingham for some time, describe how your experiences with math have changed. As a student, have you had any new experiences with the subject that have impacted your way of thinking about it?
   - What do you like about math? Has this shifted at all since your last response to this question?
   - What do you think is the role of a math teacher? Why is this an important job in society?
   - How are you thinking differently about your own culture? How do you think your culture and your understanding of culture and diversity will impact your teaching?
• Over the summer, you responded to the following questions, but I am curious if your answers have changed at all. Please respond to the following questions again, and you may use some (or all) of your response from the summer if you feel as though that answer still applies.
  o How would you like to teach math? What is your vision of a successful math classroom? In as much detail as possible, describe the type of math classroom you would like to have.
  o What do you think are characteristics of a successful math teacher?

3. The third prompt was given after their return to the United States, in January, 2020.
• Now that you are back home, describe how your experiences with math have changed. During your semester abroad, did you have any new experiences with the subject that impacted your way of thinking about it?
• What do you now like about math? Has this shifted at all since your last response to this question?
• Do you have any new or developing thoughts about the role of a math teacher?
• You have previously responded to the following questions, but I am curious if your answers have changed at all. Please respond to the following questions again, and you may use some (or all) of your earlier responses if you feel as though that answer still applies.
  o How are you thinking differently about your own culture? How do you think your culture and your understanding of culture and diversity will impact your teaching?
  o How would you like to teach math? What is your vision of a successful math classroom? In as much detail as possible, describe the type of math classroom you would like to have.
  o What do you think are characteristics of a successful math teacher?
Appendix G: Journal Prompts Relating to Open-Mindedness

Students responded to two journal prompts relating to open-mindedness. The first journal prompt was given during the summer course and the second journal prompt was given after returning to the United States, in January, 2020.

Journal Prompt #1:

a. What does it mean to be open-minded? Please describe and provide an example.

b. Do you see yourself as open-minded? Explain why or why not.

Journal Prompt #2:

a. Before you left for Nottingham, you wrote a journal about what it means to be open-minded. Do you have any new thoughts about this? You may choose to reflect on this in any way that makes sense to you. You can redefine or develop your original definition of open-mindedness. You can provide new examples of what it means to be open-minded. You can choose to explain why your original definition and examples still resonate with you.

b. Do you see yourself as open-minded? Explain why or why not. And, explain how your experiences in Nottingham may have impacted this. Feel free to provide specific examples from your time in Nottingham.
Appendix H: Pre- and Post-IDI Scores for All Students in the 2019 Program

Amelia:

“Pre” perceived and developmental orientation scores:

“Post” perceived and developmental orientation scores:

Anna:

“Pre” perceived and developmental orientation scores:

“Post” perceived and developmental orientation scores:
Ben:

“Pre” perceived and developmental orientation scores:

“Post” perceived and developmental orientation scores:

Laurie:

“Pre” perceived and developmental orientation scores:

“Post” perceived and developmental orientation scores: