A “Re-Introduction” to Opportunity Matters: Sharing our Research, Practice, and Voice
Abraham E. Peña-Talamantes and Mika Yamashita, Editors

ARTICLES

1 Upward Bound Mythbusters Integrate Knowledge with Skill in Science and Mathematics
Martin Kelly, Benjamin L. Randle III, and Antwan K. Barlow

Using an investigative curriculum, High school students in an Upward Bound Program were taught quantitative processes shared in science and mathematics. The mathematics content was limited to what is required in introductory college biology laboratory courses. The television show “Mythbusters” was used to present the scientific method to summer program participants. A laboratory activity that tested our ability to accurately predict adult human height was used to reinforce student understanding of linear metric units, calculation of averages, estimation of frequency, parts and notation of fractions, calculation of proportions and percentages, the relation between proportions and percentages, the interpretation of proportions and percentages, graphing data, and accepting or rejecting a scientific hypothesis. After instruction, students stated an increased understanding of this quantitative content.

OUR VOICES

17 Dusting Off: Recollections and Reflections from the Field
Carmen N. Veloria

In the process of reflecting on an action-based ethnographic study, the author comments on the process of recollecting and the crucial work of researcher reflexivity before embarking on a new inquiry with a former student. The notion of “dusting-off” represents shifts in thinking long after leaving the field and reflecting on previously collected data. This process prompted the need for a different way of remembering prior to conducting subsequent research. Post-modern perspectives on narrative analysis and Critical Race Feminism (CRF) inform this reflective essay.

CREATIVE WORKS

28 Student Activism on a College Campus: Valió La Pena
Tiffany C. Martinez

Following the rise of social media, we have entered an era where students now have the platform to voice their own concerns. Mainstream media has fallen short, the middle man has been eliminated, and no longer are our words filtered through the lens of corporations. Through this narrative, my words are raw and my experiences are nothing less than valid because they are indeed MY experiences. Today, I am in charge of how this story is told. A version of this piece was initially published on my blog as a way to tell the world what really happened when the McNair Scholars fought Suffolk University in December of 2015. Our story had been silenced. Until now.
From the Editors

A “Re-Introduction” to Opportunity Matters: Sharing our Research, Practice, and Voice

Abráham E. Peña-Talamantes* and Mika Yamashita**

Welcome back to the Opportunity Matters! After eight years of hiatus, the publication has been taken over by the Research, Evaluation, and Data Use Community of Practice of the Council for Opportunity in Education (COE) in collaboration with the Pell Institute for the Study of Opportunity in Higher Education. We have worked tirelessly over the past couple of months to bring back the publication and shift it from an occasional paper series into a full-fledged, open-access, academic and creative journal to be available in digital format twice every year. We are excited to present Opportunity Matters: Journal of Access and Opportunity in Education (OMJAOE) and hope that it will serve as an avenue to share our research, practice, and voice.

The Opportunity Matters journal will continue the vision set eight years ago by our first editor, Jennifer Engle. The publication had been created to provide a scholarly forum for the discussion and dissemination of research related to educational opportunity programs and the populations that they serve. Engle argued that Opportunity Matters would be “the critical juncture in the development of our knowledge base about educational opportunity practice and programs” (The Pell Institute, 2008, p.2). The main goal of the publication was to “help make research more accessible and useful to practitioners in the educational opportunity field” (p.3). While we share the vision and goals of the original editor, we believe that a publication of this nature should not only include high-quality research but also the voices and experiences of the practitioners, the community, the parents, and most importantly, the students. We further agree with Engle that there is a lack of studies on what works to help underrepresented students overcome barriers to their participation in higher education. Yet, we believe that there is much to be learned from the student-side of the equation. We are thus proposing new guidelines for submission and hope that this evolution of Opportunity Matters will allow for a more robust

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understanding of what is happening with our students in higher education. The following paragraphs lay out the new framework for the journal.

**OVERVIEW**

As mentioned earlier, *Opportunity Matters* will serve as a full-fledged peer-reviewed journal where scholars, practitioners, students, parents, and community leaders involved with educational opportunity programs can share their research, reports, ideas, and creative works. The journal is currently set to be published online twice a year in volume format, once in March and once in September; The Pell Institute will make the content available on their website free of charge. To honor the first iteration of the publication, the journal will begin with “Volume 2,” thus the first official issue of OMJAOE would be coded as: OMJAOE 2(1). Forthcoming journal content may be posted online prior to official publication and between issues on the webpage of the Research, Evaluation, and Data Use Community of Practice of the Council for Opportunity in Education. We hope that this early content will be used to fuel discussions and get more practitioners excited about submitting their work for publication.

This publishing venue is designed to provide a forum for the dissemination of research on educational opportunity programs and the voices of the “at-promise” populations which they serve – low-income, first generation, and racial/ethnic minority college students, as well as students with disabilities and veterans. It is our hope that the manuscripts and creative works published in *Opportunity Matters* will influence educational policy and professional practice by shedding light on the challenges, promise, practice, and effectiveness of educational opportunity programs from the perspective of practitioners and practitioner-scholars, as well as the lived experiences and testimonies of the students, parents, and community leaders served by these programs.

Over time, both these student populations and the programs that serve them have been marginalized in larger mainstream publications. In *Opportunity Matters*, we seek to create a space grounded in the experiences and knowledge-base of practitioners and students for practitioners and students. Papers and creative works submitted for publication will be subject to peer-review by the Editorial Board, which will include both scholars and practitioners. We aim to make the journal and its content accessible to everyone involved in matters of access and opportunity in education.

**NEW SUBMISSION CATEGORIES**

While the journal will adhere to the academic groundwork upon which it was originally founded, we are expanding the nature of submissions to allow individuals to publish work that may not meet the academic research standard. Specifically, we are primarily interested in pieces that may serve as narratives and/or reflections about the experiences of students in our programs or individuals who have had the opportunity to work with students in educational opportunity programs. We believe that alongside original scholarly work on the issues our students face and how to better position our programs to ensure continued funding, we should also be privy to the actual experiences of the individuals connected to our programs, whether good or bad. Like in evaluation and assessment, it is
important to take the time to study all aspects of a particular program. Even when the results are not what we would have hoped, they allow us to make our programs better and make the changes necessary to do more in the future.

**Articles**

For those interested in submitting research articles, the following are areas of interest for the journal:

1. The demographic profile and needs of students served by educational opportunity programs, especially targeted populations or subgroups (e.g., immigrant students, out-of-school youth, racial/ethnic minority males, rural students)

2. Factors (e.g., academic, social, economic) that influence college access and success for low-income, first generation college students, as well as, veterans and students with disabilities

3. Programs and practices that improve college attendance and completion rates for underrepresented populations

4. Methods used to evaluate the effectiveness and outcomes of educational opportunity programs

5. The impact of federal and state policy on education opportunity and the delivery of services to target populations

6. The process, practice, and benefits (as well as challenges) of developing and sustaining partnerships between school districts and institutions of higher education as they relate to issues of access and opportunity

Submissions in this category would involve rigorous, innovative, and critical scholarship that aligns with the mission of the journal. We welcome all modes of inquiry including quantitative, qualitative, and mixed methods, as well as, conceptual review papers that are integrative and timely.

**Our Voices**

The “Our Voices” category was designed to showcase the work of scholars, practitioners, community leaders, parents, and students who have important knowledge, research, or tools that may be useful to those interested in issues of access and opportunity. These submissions would primarily entail descriptions, data-driven research reports and case studies, or critical reflections with a theoretical framework. It would also serve to include the communication of evaluation methods or the reporting of strategies that work for individual programs and ways in which these may be applied in other contexts, as well as, letters and reactions to policies/actions, and position papers. Solicited commentaries and interviews with specialists and important figures who have made an impact in the
field or in your local community, as well as the evaluation of materials that may be of importance to other practitioners and students in educational opportunity programs will also be considered. Personal reflections and narratives without a theoretical basis will not be included in this category. We see this category as the section of our journal that allows us to share our practices and report their success, and/or a place to obtain knowledge that may help us better make sense of the issues plaguing our programs and our students.

**Narratives/Creative Works**

This last category includes both personal narratives and creative works. This is because traditionally speaking, these types of content do not make it onto academic journals. Given the nature of educational opportunity programs, we feel that this is a very important component to the story we have to tell. Like success stories in typical newsletters and reports, these works are beneficial to understanding the climate of our programs, how individuals served and affected by our programs may feel, and the kinds of non-scholarly works that our participants and practitioners produce. Thus, this category will serve to showcase alternative forms of expression from our community, alumni, current students, teachers, parents, practitioners, and/or anyone else involved with educational opportunity programs. These may include, but are not limited to, narratives, confessional stories, short stories, artwork, drama, humor, poetry, or other creative work. Submissions that are not narratives or personal reflections should include a short reflection or description of how the work is relevant to the focus of the journal. Submissions will be coded as either Narratives or Creative Works once they are received.

**VOLUME 2, ISSUE 1**

We are excited to present our first full issue of the new *Opportunity Matters: Journal of Access and Opportunity in Education*; one article is featured in each of the submission categories. In the **Articles** section, Dr. Martin Kelly and colleagues present an analysis of the use of the television show “Mythbusters” as the foundation to a summer Upward Bound Program. They find that using the show to teach students core skills in math and science seems to have positive outcomes for students enrolled in their program in two separate years. In **Our Voices**, Dr. Carmen Veloria reflects on the process of conducting ethnographic research with a young Latina woman. Her piece highlights the dilemmas that arise when we are forced to navigate the fine line between being disconnected enough from our participants to be objective, yet connected enough to be authentic. Finally, Tiffany Martínez recounts her experiences as an activist on her college campus in the **Narratives/Creative Works** category. A McNair Scholar, she provides a narrative on her own personal experiences and how she became one of the three scholars that fought against their university administration to keep their space on campus.

These three articles are great examples of the types of work we are looking to publish in the journal, and encourage you to submit your own work for consideration. We are thankful to all of the reviewers who made this issue possible, and to the editorial board for helping us get everything together in such a short amount of time. We hope you enjoy this issue as much as we have enjoyed putting it together.
Upward Bound Mythbusters Integrate Knowledge with Skill in Science and Mathematics

Martin Kelly*, Benjamin L. Randle III, and Antwan K. Barlow

Abstract: Using an investigative curriculum, high school students in an Upward Bound Program were taught quantitative processes shared in science and mathematics. The mathematics content was limited to what is required in introductory college biology laboratory courses. The television show “Mythbusters” was used to present the scientific method to summer program participants. A laboratory activity that tested our ability to accurately predict adult human height was used to reinforce student understanding of linear metric units, calculation of averages, estimation of frequency, parts and notation of fractions, calculation of proportions and percentages, the relation between proportions and percentages, the interpretation of proportions and percentages, graphing data, and accepting or rejecting a scientific hypothesis. After instruction, students stated an increased understanding of this quantitative content.

Keywords: Problem Based Learning, Mythbusters, Upward Bound, Science, Mathematics

Problem based learning (PBL) is one example of an active method of learning; it requires students to question, speculate, generate solutions, and use higher-order cognitive activities (Biggs, 1999). The goal of PBL is to get students to solve problems; the assessment is based on how well students solve these problems. In PBL, the problems are carefully selected and knowledge is acquired in a working context. In this study, to create a stimulating and relevant working context, we used the television show Mythbusters to both present and discuss the scientific method, and demonstrate the process of speculation, investigation, data collection, summation, presentation, and interpretation of evidence.

Mythbusters is now the longest running series on the Discovery Channel; this channel broadcasts to more than 100 million U.S. homes. Mythbusters is recognized as a scientific documentary series by the National Science Foundation and its hosts, Mr. Jamie Hyneman and Mr. Adam Savage, were invited to speak at the 2007 national meeting of the American Association of the Advancement of Science (Yikiligan, 2009). Mr. Hyneman and Mr. Savage are also included as co-authors in a peer-reviewed publication on their show’s experimental investigation of the penetration of arrows with the shaft sharpened into a tip versus the arrow with an attached stone arrowhead (Waguespack et. al., 2009).

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Using the television show *Mythbusters* as a presentation of the scientific method has been adapted by other faculty teaching a variety of students at different levels of education. For example, Burkley and Burkley (2009) successfully used video clips from *Mythbusters* to present multiple research methods in an undergraduate course in psychology. They found that *Mythbusters* helped their students better understand course concepts, apply their knowledge to real-world research projects, and provided an enjoyable educational experience (Burkley & Burkley, 2009). Astall and Bruce (2010) reviewed how the Mentos and Diet Coke demonstration (highlighted on *Mythbusters* in 2006), where a fountain of froth spews upward for meters, was successfully used by teachers to demonstrate the process of science with an open-ended experiment with undergraduate physics students. This same activity was also used in several undergraduate chemistry courses to engage students in an activity with authentic science focus (citations given in Astall & Bruce, 2010). Howarth and Woollhead (2008, cited in Astall & Bruce, 2010) described the use of the Mentos and Diet Coke demonstration with 12 and 13-year old students as a model for volcanic eruption in an earth science class. Astall and Bruce (2010) extended the use of this same activity to primary-school students. Madsen (2011) described his successful effort to teach science to undergraduate students in non-science majors. "Adventures in Physics: Mythbusters" was explicitly based by Madsen on the television program *Mythbusters*; in this course, students make projects to learn about science as a process. Lastly, Zavrel (2011) describes how high school science teachers can use *Mythbusters* as an engagingly accurate cultural representation of science and engineering, and motivate students to enroll in STEM majors at college.

In spring 2009, the Director of the Upward Bound program at Saint’s College asked one of the authors to teach a six-week science course. After discussion about the academic background of the students, the instructor developed a course focusing on data analysis and presentation shared in science and mathematics. This course was taught during the Summers of 2009 and 2013. We present “mythbusting” as an effective practice suited for use by high school and college faculty teaching science and mathematics to the diversity of students in today’s classrooms. Here we summarize this investigative, instructional approach designed to follow the principles of Biggs (1999) and Resier et al. (2003). We report a positive outcome on student’s perceived learning; afterward, students report that they are knowledgeable in the topics taught.

**THE UPWARD BOUND PROGRAM AT SAINT’S COLLEGE**

Upward Bound is a competitive grant-funded program administered by the United States Department of Education. Upward Bound began in 1965 as part of the Higher Education Opportunity Act. The mission of the Saint’s College (SC) Upward Bound program is to provide academic and social support, on a year-round basis, to educationally and socio-economically disadvantaged high school students from a local partner school. They are targeted because their community-specific exposure to information about college education, and individuals with college degrees, is below the national average for secondary school students. To participate in the SC Upward Bound program, a student (grades 9-12) must be a U.S. citizen, permanent resident, or provide evidence of intent to become a permanent resident, and: (a) come from a family meeting the federal low-income guidelines, and/or (b) be a potentially first-generation college student, and/or (c) have a high risk for academic failure – this may
include evidence of low performance on state-mandated standardized tests, a GPA of 2.5 or below (out of 4.0), and low educational aspirations\(^1\) – at the time of application.

On notification of its first grant award in 2006, the Upward Bound Program at Saint’s College began to work with teachers and staff from President High School (PHS) to identify fifty eligible participants. President High School was selected because it was one of the lowest performing high schools in the school district. In an accountability status report from the state’s Department of Education in 2006, the school had been designated “School in Need of Improvement” and “School Under Registration Review.” Over 80% of the families in the area had household incomes below the poverty level\(^2\), and about 10% of the parents in this population had obtained a four-year degree. In addition, more than 90% of the 9\(^{th}\) grade students at PHS had been identified as being at “high academic risk for failure;” they did not meet the proficient level on one or both of the state assessments in reading/language arts and math in grade eight.

The school’s low performance prompted the school district to begin a process to redesign and adopt a “school in a school” model in 2007. The original secondary school was thus converted into a preparatory school, Multinational Secondary School (MSS), to serve grades 5-12\(^3\). Currently, the MSS population includes students from more than 15 countries, with as many different native languages. Approximately 35% of students at MSS are English Language Learners (ELLs) and have been designated as “Limited English Proficient” (LEP) by the school district\(^4\).

During the 2008-2009 academic year, 60 students (grades 9-11) from MSS received services through the SC Upward Bound Program. Of these 60 students, 91.7% met two TRIO Upward Bound eligibility requirements by being both low-income and potentially first-generation college students. Just 6.7% of these 60 students were eligible for the Upward Bound program only as low-income students, and just 1.7% were eligible only as potential first-generation college students. Of these 60 students 61.7% were female and 38.3% were male. In terms of race and ethnicity, 48.3% of these 60 students were Black or African American, 20% were Hispanic or Latino, 16.7% were Asian, 3.3% were White, and 1.7% American Indian/Alaskan Native; 10% of these students reported more than one race or ethnicity. The academic needs of these 60 students was indicated by the fact that 33.3% had limited English proficiency, 11.7% had low achievement test scores, 8.3% had low grade point average, 26.7% had both low grade point average and low achievement test scores, 3.3% had diagnosed learning disabilities, and 1.7% had both low grade point average and low educational aspirations.

\(^{1}\) Low educational aspiration is determined by a student interview and survey. A student who self-identifies that they want to attend college but does not believe they can achieve this goal, or does not aspire to it because of perceived circumstances in their life, has low educational aspiration.

\(^{2}\) In 2006, the poverty threshold for a family of four was $20,614 (Poverty Thresholds 1959-2013, United States Census Bureau).

\(^{3}\) The full conversion to the new Multinational Secondary School into a College Board School was in 2011-2012.

\(^{4}\) Limited English Proficient (LEP) describes a student whose native language is not English and who has sufficient difficulty speaking, reading, writing, or understanding English that this student cannot successfully learn in a classroom where English is the language of instruction. At MSS the school district is responsible for determining if a student qualifies as LEP.
During 2012-2013, 55 students (entering grades 9-11) from MSS received services through the SC Upward Bound Program. Of these 55 students, 91% met two TRIO Upward Bound eligibility requirements by being both low-income and potentially first-generation college students; 7% of these 55 students were eligible for the Upward Bound program only as low-income students, and 2% were eligible only as potential first-generation college students. Of these 55 students 57% were female and 43% were male. In terms of race and ethnicity, 44% were Asian, 40% were Black or African American, and 16% were Hispanic or Latino. The academic needs of these Upward Bound students is indicated by the fact that 56% have limited English proficiency, 3.6% have both low grade point average and low achievement test scores, 7.3% have low achievement test scores, 3.6% have low grade point average, and 3.6% have both low grade point average and low educational aspirations.

THE SUMMER ACES PROGRAM

In the partnership between SC Upward Bound and MSS, college students act as tutors and mentors for Upward Bound participants. In addition, MSS teachers and SC staff/faculty participate in the program as mentors and instructors. During the academic year (September-June) and the six-week summer component (July-August), Upward Bound provides instruction in math, laboratory science, composition, literature, and foreign language through its academic coursework and enrichment services (ACES) program.

In spring 2009, the Director of the SC Upward Bound Program asked one of the authors to teach a six-week science course as part of that summer’s ACES program; this instructor developed a course focusing on data analysis and presentation shared in science and mathematics. The knowledge and skills taught in this ACES course were limited to content required in introductory college biology laboratory courses: an introduction to the scientific method, linear metric units, calculation of simple averages, estimation of frequency, parts and notation of fractions, the calculation of proportions and percentages, the relation between proportions and percentages, the interpretation of proportions and percentages, graphing data, and accepting or rejecting a scientific hypothesis.

To produce the data students needed for associated calculations, graphical presentation, and interpretation, we used a published laboratory activity that tested our ability to accurately predict adult human height as a mathematical product of another measured body part (Leupold, 2006). The knowledge and abilities associated with this ACES course were in the context of the investigative model illustrated by the television show Mythbusters (Table 1). The same ACES course in science and mathematics was also used with Upward Bound students in summer 2013.

In both summers, we showed an episode of Mythbusters (Season 1, Episode 9, “Chicken Gun, Octopus Egg Pregnancy, Killer Washing Machine”). This episode first aired in 2004; it is available on DVD and can be found online. We highlighted the Mythbusters investigation of the question “Can a woman give birth to an octopus after swallowing an octopus egg?” because the Mythbusters explicitly design and present a controlled biology experiment while investigating this question (Hyneman & Savage, 2004).
Table 1: Schedule of Upward Bound Mythbusting Science and Mathematics Activities

<table>
<thead>
<tr>
<th>2009</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Jul. 7 - Looking Beyond Stereotypes</strong></td>
<td><strong>Jun. 25 – Survey given</strong></td>
</tr>
<tr>
<td><strong>Jul. 9 - Introductions to each other &amp; the summer plan</strong></td>
<td>• Looking Beyond Stereotypes:</td>
</tr>
<tr>
<td>• Survey given</td>
<td>• Introduction to each other &amp; the summer plan</td>
</tr>
<tr>
<td><strong>Jul. 14 - Mythbusters DVD</strong></td>
<td><strong>Jul. 2 - Mythbusters DVD</strong></td>
</tr>
<tr>
<td><strong>What do the Mythbusters do? How do they do it?</strong></td>
<td>• Viewed episode 9, season 1</td>
</tr>
<tr>
<td>• Viewed episode 9, season 1</td>
<td>• Students write notes on what Mythbuster team members do to test a myth</td>
</tr>
<tr>
<td>• Students write notes on what Mythbuster team members do to test a myth</td>
<td>• Students share observations with classmates</td>
</tr>
<tr>
<td>• Students share observations with classmates</td>
<td>• Instructor prompts student contribution and summarizes different student observations</td>
</tr>
<tr>
<td>• Instructor prompts student contribution and summarizes different student observations</td>
<td><strong>Jul. 11 - Busting a myth - Collecting information</strong></td>
</tr>
<tr>
<td><strong>Jul. 16 - Busting a myth - Collecting information.</strong></td>
<td>• Working with a partner, each student follows a protocol to measure head size and height, and predict height from head size</td>
</tr>
<tr>
<td>• Working with a partner, each student follows a protocol to measure head size and height, and predict height from head size</td>
<td>• Discussion - is the “myth”: Busted, plausible, or confirmed based on individual results</td>
</tr>
<tr>
<td>• Discussion - is the “myth”: Busted, plausible, or confirmed based on individual results</td>
<td>• Introduction to the meter, decimeter, centimeter, and millimeter</td>
</tr>
<tr>
<td>• Introduction to the meter, decimeter, centimeter, and millimeter</td>
<td>• Calculation of average height and average predicted height for class, all females, and all males</td>
</tr>
<tr>
<td><strong>Jul. 21 - Summarizing information</strong></td>
<td>• Estimating frequency of females and males by fraction</td>
</tr>
<tr>
<td>• Calculation of average height and average predicted height for class, all females, and all males</td>
<td>• Introduction to terms numerator and denominator</td>
</tr>
<tr>
<td>• Discussion on the “myth”: Busted, plausible, or confirmed based on average results</td>
<td>• What a proportion is</td>
</tr>
<tr>
<td>• Estimating frequency of females and males by fraction</td>
<td>• Calculating the proportion as numerator divided by denominator</td>
</tr>
<tr>
<td>• Introduction of terms numerator and denominator</td>
<td>• What a percent is</td>
</tr>
<tr>
<td>• What a proportion is</td>
<td>• Conversion of the proportion into a percent</td>
</tr>
<tr>
<td>• Calculating the proportion as numerator divided by denominator</td>
<td><strong>Jul. 18 – power outage, activities cancelled</strong></td>
</tr>
<tr>
<td>• What a percent is</td>
<td><strong>Jul. 25 – Summarizing information</strong></td>
</tr>
<tr>
<td>• Conversion of the proportion into a percent</td>
<td>• Estimating frequency of females and males by fraction</td>
</tr>
<tr>
<td><strong>Jul. 23 - Presenting information</strong></td>
<td>• Introduction of terms numerator and denominator</td>
</tr>
<tr>
<td>• Graphing frequency data as a pie chart</td>
<td>• What a proportion is</td>
</tr>
<tr>
<td>• Graphing actual and predicted heights as an x-y line graph</td>
<td>• Calculating the proportion as numerator divided by denominator</td>
</tr>
<tr>
<td>• Explanation of terms variable, independent variable, dependent variable, x-axis, and y-axis</td>
<td>• What a percent is</td>
</tr>
<tr>
<td><strong>Jul. 28 - Interpreting information – is the myth busted?</strong></td>
<td>• Conversion of the proportion into a percent</td>
</tr>
<tr>
<td>• Introduced the concept of variation around the average</td>
<td><strong>Jul. 26 - Presenting information</strong></td>
</tr>
<tr>
<td>• 95% certainty in science and difference between averages (actual and predicted heights) greater than ± 4.25 cm</td>
<td>• Graphing frequency data as a pie chart</td>
</tr>
<tr>
<td><strong>Jul. 30 - What new myth can we bust?</strong></td>
<td>• Graphing actual and predicted heights as an x-y line graph</td>
</tr>
<tr>
<td>• Students identify and discuss possible myths to test</td>
<td>• Explanation of terms variable, independent variable, dependent variable, x-axis, and y-axis</td>
</tr>
<tr>
<td><strong>Aug. 4 - What information do we need?</strong></td>
<td>• Survey given</td>
</tr>
</tbody>
</table>
During the approximately one hour of time a student spent in class on a given day, each student worked with a self-selected partner to complete scheduled activities and calculations (Table 1). Because few numbers were used in the calculations, and the operations required addition and subtraction, or multiplication and division, students used paper and pencil for all calculations. During class the instructor circulated through the room to interact with students and evaluate their work. This allowed him to confirm that students understood what to do and how to do it, to identify mistakes and prompt students to recalculate, and to confirm right answers. When needed, the instructor also gave brief presentations and led class discussion in support of that day’s work. The activities (Table 1) were ordered so that the outcome of each day’s work was the basis for the next class’s activities. For example, in order to summarize information students learned to estimate the frequency of females and males by fraction, fractions led to the introduction of the terms numerator and denominator, students were then taught to calculate the proportion as the numerator’s value divided by denominator’s value, and in turn this proportion was converted into its percent. On the following day students graphed their frequency data as a pie chart.

During the summer of 2009, the number of students participating in SC’s Upward Bound program dropped from 60 to 33. Upward Bound scholars that graduated from high school did not participate in the summer program; nor did students who were out-of-town over the summer break. The schedule that we followed during the 2009 Upward Bound summer program is in Table 1. Initially there were two sections of Upward Bound students. A section with 16 students, met from 9-10:30 AM on Tuesdays and Thursdays. A second section met from 10:30 AM – noon on Tuesdays and Thursdays and had 17 students. Altogether, 59.4% of these 33 students were female and 40.6% of the students were male.

In the state where this study was conducted, to receive a high school diploma, a public school student must pass at least five subject specific tests in the areas of English, mathematics, global history and geography, United States history and government, and science; a passing score is 65 or above. After not passing one or more of these standardized exams (June, 2009), 26 of the 33 Upward Bound students were scheduled by their school to use mornings to prepare for and repeat these state examinations in mid-August (2009). Ultimately, seven Upward Bound students (four males and three females) completed the entire ACES course in science and mathematics (completion rate was 21%).

Similarly, the number of students participating in SC’s summer 2013 Upward Bound program dropped from 55 to 36. Upward Bound students that graduated from high school, as well as those who were out-of-town during the summer break, did not participate in the summer program. The schedule that we followed during the 2013 Upward Bound summer program is also in Table 1. There were three sections of Upward Bound students. These sections were scheduled in the afternoon so that students who had not passed state exams (June, 2013), could use mornings to prepare for and repeat them in mid-August (2013). One section with 13 students, met as scheduled from 1-2 PM on Tuesdays and/or Thursdays. A second section with 11 students met from 2-3 PM on Tuesdays and/or Thursdays as scheduled. The third section of 12 Upward Bound students met on Tuesdays and/or Thursdays from 3-4 PM. Altogether, 66.7% of these 36 students were female and 33.3% of the students were male. Ultimately, 24 Upward Bound students (18 females and six males) completed the entire instructional program in science and mathematics (completion rate was 62%).
STUDY DESIGN

The survey created for this study was written before instruction by one of the authors. The survey presented the student with 31 questions to self-report their familiarity of: Linear metric units, calculation of simple averages, estimation of frequency, parts and notation of fractions, the calculation of proportions and percentages, the relation between proportions and percentages, the interpretation of proportions and percentages, and graphing data. Students participating in this instructional program were surveyed twice, before instruction and after instruction. In 2009, we gave and collected the “before” survey on July 9th (N=33). We gave and collected the “after” survey to the remaining students at the end of the summer program, August 4th (N=7). In 2013, we gave and collected the “before” survey on June 25th (N=36) and gave the same survey to the remaining students at the end of the summer program, July 26th (N=24).

Contingency table analysis was done to determine if there is a relationship between categorical variables. Categorical variables identify group membership (e.g. yes, maybe, or no) instead of a quantity (McDonald, 2014, pp. 8-9). Contingency table analysis showed that the frequency of the survey responses for each item (Appendix 1), before this summer ACES course, was statistically equivalent in 2009 and 2013 for all but two of the 31 survey items. Similarly, contingency table analysis showed that after students completed the summer ACES course (2009 and 2013), the frequency of their survey responses was statistically equivalent for all 31 survey items (Appendix 2). Consequently, survey responses from Summer 2009 and Summer 2013 were combined before statistical analyses (McDonald, 2014, pp. 87-88); the combined raw survey responses were then grouped by topic to increase the sample size of the frequencies being compared (Table 2), and to reduce the number of statistical analyses done and reported from 31 to seven (Table 3).

The observed survey responses before any of the work was done were compared to the survey responses given after completing these instructional activities. The null hypothesis was that the activities the students performed during this summer ACES course would not change the survey responses given by students “before” instruction in comparison to survey responses “after” instruction. The hypothesis of interest was that the activities the students performed during the six-week instructional course would increase the number of positive survey responses (yes) and reduce the number of uncertain responses (maybe and no) given by students at the end in comparison to the beginning. All of the probability values associated with the statistical test of the null hypothesis are one-tailed to identify the benefit of this instructional approach.

Fisher’s exact test of independence was used for preliminary data analysis (McDonald, 2014, pp. 77-79). This statistical test is used with categorical variables (McDonald, 2014, pp. 8-9). A categorical variable classifies observations into categories. Our categories were when the survey was given (before or after instruction) and student responses (yes, maybe, and no). The data in this analysis were summarized in a table where R is the number of rows and C is the number of columns. In this case our RxC table was 2x3. Since Fisher’s exact test of independence was originally limited to a 2x2 contingency table, the Freeman-Halton extension of the Fisher exact probability test for a contingency table with two-rows and three-columns was used (Lowry, 2013).
The chi-square test of independence was performed on tabled data (Table 2; Lowry, 2013). When the probability level associated with the calculated value of chi-square was less than 0.05, we rejected the null hypothesis and accepted the hypothesis of interest. The hypothesis of interest was that the activities the students performed in this integrated course of math and science instruction would increase the number of positive survey responses (yes) and reduce the number of uncertain responses (maybe and no) given by students.

FINDINGS

Before and After Surveys

In the first survey of the students (before the summer ACES course) the responses indicate how unsure these students are about their knowledge and ability with regard to linear metric units, calculation of simple averages, estimation of frequency, parts and notation of fractions, the calculation of proportions and percentages, the relation between proportions and percentages, the interpretation of proportions and percentages, and graphing data (Table 2). On average only 45.4% of the students responded “yes” to any survey item, 30.5% of the students responded “maybe”, and 24.1% of the students responded “no”. This indicates that less than half of the time, students were certain in their knowledge and ability. Their lowest certainty is about the numerator and denominator in a fraction equivalent to a percent. For example, only 11 out of 68 students (16.2%) were certain that the fraction equivalent to 16.2% is 16.2 per 100. In contrast, their highest certainty is associated with knowing what an x-y line graph is. Here 57 out of 68 students (83.8%) answered yes to the statement “I know what an x-y line graph is”.

In the second survey of the students, after this summer ACES course, every response indicates how much more certain these students were about linear metric units, calculation of simple averages, estimation of frequency, parts and notation of fractions, the calculation of proportions and percentages, the relation between proportions and percentages, the interpretation of proportions and percentages, and graphing data (Table 3). On average 70.8% of the students responded “yes” to any survey item, 23.2% of the students responded “maybe”, and only 6.1% of the students responded “no”. This indicates that more than two-thirds of the time, students were certain of their knowledge and ability. After this set of integrated science and math activities, their lowest certainty continued to be about the value of the numerator and denominator in a fraction equivalent to a percent; only 16 of 31 students (51.6%) were certain that the fraction equivalent to 51.6% is 51.6 per 100. In contrast, their highest certainty is associated with knowing what an x-y line graph was; here 29 of 31 students (93.5%) answered “yes” to the statement associated with their knowing what an x-y line graph was.

DISCUSSION

It is evident that the students who completed this summer ACES course in science and mathematics modeled on the Mythbusters were much more certain of their knowledge and abilities about quantitative processes shared in science and mathematics (Table 3). Students who completed this integrated set of activities were 1.5 times more likely to answer “yes” to a survey question after instruction. We assisted the students in skill development, and moved the students into the next higher
### Table 2: Survey Responses Grouped across Years and by Topic, Before and After the Mythbusting Activity

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th></th>
<th>After</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>Maybe</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Knowing about the meter and its subunits</td>
<td>57 (44.2%)</td>
<td>34 (26.4%)</td>
<td>38 (29.5%)</td>
<td>83 (57.5%)</td>
</tr>
<tr>
<td>Knowing how to calculate averages and frequencies</td>
<td>59 (45.0%)</td>
<td>45 (34.4%)</td>
<td>27 (20.6%)</td>
<td>89 (72.4%)</td>
</tr>
<tr>
<td>Knowing about fractions</td>
<td>54 (41.2%)</td>
<td>38 (29.0%)</td>
<td>39 (29.8%)</td>
<td>80 (64.5%)</td>
</tr>
<tr>
<td>Knowing how to convert fractions into proportions and percentages</td>
<td>40 (30.3%)</td>
<td>54 (40.9%)</td>
<td>38 (28.8%)</td>
<td>86 (73.5%)</td>
</tr>
<tr>
<td>Knowing what a percent is as a fraction</td>
<td>15 (22.7%)</td>
<td>19 (28.8%)</td>
<td>32 (48.5%)</td>
<td>32 (44.4%)</td>
</tr>
<tr>
<td>Knowing about graphs</td>
<td>178 (61.6%)</td>
<td>72 (24.9%)</td>
<td>39 (13.5%)</td>
<td>224 (80.3%)</td>
</tr>
<tr>
<td>Knowing about dependent and independent variables</td>
<td>40 (41.2%)</td>
<td>35 (36.1%)</td>
<td>22 (22.7%)</td>
<td>57 (62.0%)</td>
</tr>
</tbody>
</table>

### Table 3: Chi Square Test Results Comparing Student Survey Responses Grouped Across Years and by Topic, Before and After the Mythbusting Activity

<table>
<thead>
<tr>
<th>Survey Topic</th>
<th>$X^2$</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowing about the meter and its subunits</td>
<td>24.33</td>
<td>2</td>
<td>0.0000025</td>
</tr>
<tr>
<td>Knowing how to calculate averages and frequencies</td>
<td>23.17</td>
<td>2</td>
<td>0.0000045</td>
</tr>
<tr>
<td>Knowing about fractions</td>
<td>15.33</td>
<td>2</td>
<td>0.00023</td>
</tr>
<tr>
<td>Knowing how to convert fractions into proportions and percentages</td>
<td>60.33</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Knowing what a percent is as a fraction</td>
<td>22.45</td>
<td>2</td>
<td>0.0000065</td>
</tr>
<tr>
<td>Knowing about graphs</td>
<td>26.70</td>
<td>2</td>
<td>0.000001</td>
</tr>
<tr>
<td>Knowing about dependent and independent variables</td>
<td>12.56</td>
<td>2</td>
<td>0.000937</td>
</tr>
</tbody>
</table>
level of skill, a process called scaffolding (Vygotsky, 1997). The incremental sequence of information and activities we followed served as the scaffold (see Table 1). Our scaffolded learning materials helped to reduce complexity, and highlighted concepts and inquiry (Reiser, Krajick, Moje, & Marx, 2003). The incremental sequence of information and activities we followed also helped students who were not native-English speakers, or had other language difficulties (Karp & Howell, 2004).

A concern raised by the data is that our conclusions are based only on the responses of students who completed this program of instruction (2009: 7 of 33 students and 2013: 24 of 36 students). The difference in completion rates is due to changes in scheduling made in 2013 in response to 2009. In summer 2009, both ACES instruction and the school district’s remedial education was scheduled in the morning. This caused 26 of the 33 students who received less than a 65 on one or more of the standardized state exams to withdraw from the ACES course integrating science and mathematics and opt for the school’s remedial education. Consequently, in 2013, summer ACES instruction was scheduled in the afternoon so that any Upward Bound student who received less than a 65 on one or more on the standardized state exams, could participate in the school district’s scheduled remediation during the morning and ACES instruction in the afternoon. While there is concern that our conclusions are based only on the responses of the 31 students, recall that the survey responses from 2009 and 2013 were combined and that the combined raw survey responses were then grouped by topic to further increase the sample size of the frequencies being statistically compared (Table 2). The number of responses per survey topic, from students who completed this program of instruction, ranged from 62 to 279 (average = 131.4, s=69.0). While the concern that our conclusions are based on the responses of the 31 students is real, we believe that some of this should be offset by the larger number of responses per survey topic analyzed.

The activities that the students performed during the five-week instructional course significantly increased the perceived certainty of response given by students after instruction. While this survey provides insight to a student’s sense of knowledge and ability (both before and after instruction), questionnaires answered by adolescent students have been shown to include inaccurate and/or invalid responses (Fan, Miller, Park, Winward, Christensen, Grotevant, and Tai, 2006). Fan et al. (2006) found that it was unusual or exceptional response options (e.g. false adoption status, false non-U.S. born, and inaccurate response to having an artificial limb) that tended to attract inaccurate and/or invalid responses; and then, that the frequency of inaccurate and/or invalid responses was extremely low (e.g. false adoption status = 0.6%, false non-U.S. born = 1.5%, and inaccurate response to having an artificial limb = 1.8%). Given these observations by Fan et al. (2006), we consider that our student survey responses were accurate since none of our response options (yes, maybe, and no) were unusual or exceptional. In addition, while this survey provides insight to a student’s sense of knowledge and ability (both before and after instruction), this study would benefit from data provided by a test to confirm the student’s gain in understanding and skills due to instruction. We recognize this important limitation to our data-based generalizations.

A significant issue that we cannot address, because we lack the data, is the impact that demographic heterogeneity might have had on the students’ perception of learning. The school that our

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5 In 2009, 33% of the Upward Bound students were LEP; in 2013, 56% of the Upward Bound students were LEP.
Upward Bound program draws all of its students includes children of immigrant refugee families from more than 15 countries, with as many different native languages. We know that in terms of race and ethnicity, 48.3% of our Upward Bound students (2009) were Black or African American, 20% were Hispanic or Latino, 16.7% were Asian, 3.3% were White, 1.7% American Indian/Alaskan Native, and 10% of these students reported more than one race or ethnicity. Similarly, we know that in 2013, 44% of our Upward Bound students were Asian, 40% were Black or African American, and 16% were Hispanic or Latino. However, the survey used in this study with students participating in the summer ACES program did not contain any demographic variables (Appendix 1). This is unfortunate because students’ social, cultural, and demographic background may influence the pace at which they learn and acquire new concepts. We think that it is very important to explore if demographic factors like these could influence student learning in the same instructional environment. We recommend that other investigators broaden their assessments to include descriptive, demographic variables to include in analysis.

In addition, while we believe in the strong academic benefit derived from our instructional approach, where mathematics and science are presented and used together, it must be recognized that the significant increase in certainty of response given by students after instruction may also be explained by teacher immediacy. Teacher immediacy (verbal or non-verbal) occurs when a teacher behaves in a way that reduces the physical and/or psychological distance between the teacher and their students (Witt, Wheeless, & Allen, 2004). In our work, the instructor reduced the psychological distance between him and his students by first trying to establish rapport and cultivate a culture of mutual trust and respect. To “surmount the “us and them” syndrome” the first myth busted was “Looking beyond Stereotypes”. We discussed the stereotypes we know and have, and identified how each of us doesn’t fit the “myth”. In addition, everyone shared simple, personal information as a way to see each other as an individual. To reduce the physical distance that separated teacher and students, during class this instructor continually circulated through the room to interact with students and evaluate their work. In a review of 81 published studies, Witt, Wheeless, and Allen (2004) confirmed that teacher immediacy has a substantial and positive relationship with student attitudes and perceptions of their learning. A teacher’s nonverbal immediacy was positively correlated with a student’s perceived learning (r=0.51); a teacher’s verbal immediacy was positively correlated with a student’s perceived learning (r=0.49) (Witt, Wheeless, & Allen, 2004).

**IMPLICATIONS FOR PRACTICE**

We are pleased to have been early adopters of *Mythbusters* as a way to have Upward Bound students experience science and mathematics in an integrated, investigative way (Seki & Menon, 2007 Tobias, 1985). Though the advantages of interdisciplinary curriculum units are present in the educational literature, designing an interdisciplinary unit (based on student needs) remains a challenge (McGehee, 2001). Our study provides evidence for the benefits of integrated science and mathematics instruction with students that have limited English proficiency, demonstrate low academic performance and achievement, and overwhelmingly are both low-income and potentially first-generation college students (Dunn, 2004; Karp & Howell, 2004). Here we outline the steps we followed to create this interdisciplinary curriculum in a way that other faculty can easily adapt or adopt:
To help “at risk” students, the teacher must establish rapport and cultivate a culture of mutual trust and respect (Dunn, 2004; Littky, 2004, p. 55). Before we completed any of the academic activities associated with this instructional program, we first discussed the stereotypes we know and have, and identified how each of us doesn’t fit the “myth”; everyone shared simple, personal information as a way to see each other as an individual beyond apparent race, ethnicity, culture, or religion. We created an environment where diversity was respected and welcomed (Littky, 2004).

Use assessment driven design (AKA backwards design). First identify the learning objectives; these objectives guide the design of the associated curriculum and activities (Reiser et al., 2003). A curriculum organized so that objectives are aligned to learning activities is likely to achieve understanding (Biggs, 1999).

Collaborative and cooperative learning have been shown to be successful teaching and learning strategies (Verdugo & Flores, 2007). Couple explicit instruction with cooperative learning to improve student learning. Another benefit that can be derived from cooperative learning is that students with academic or language deficits can use another student’s resources, skills, and knowledge to improve their learning (Verdugo and Flores, 2007).

If appropriate, use Mythbusters as a model for the scientific method to demonstrate the process of speculation, investigation, data collection, summation, presentation, and interpretation of evidence.

Use a form of active learning (like Problem Based Learning, PBL) that that requires students to question, speculate, generate solutions, and use higher-order cognitive activities (Biggs, 1999). In PBL, the instructor must carefully select the problem. The problem creates the working context for students to acquire skills and knowledge.

To explore if demographic factors influence student learning in the same instructional environment, it is necessary that other investigators broaden their assessments to include descriptive, demographic variables.

REFERENCES


AUTHORS

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### Appendix 1: Student Survey Responses Before the Mythbusting Activity

<table>
<thead>
<tr>
<th>Survey Item</th>
<th>July 9, 2009</th>
<th></th>
<th></th>
<th>June 25, 2013</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I know what a meter is</td>
<td>18</td>
<td>8</td>
<td>7</td>
<td>23</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>2. I know how a decimeter relates to a meter</td>
<td>10</td>
<td>11</td>
<td>11</td>
<td>6</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>3. I know how a centimeter relates to a meter</td>
<td>15</td>
<td>9</td>
<td>9</td>
<td>13</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>4. I know how a millimeter relates to a meter</td>
<td>14</td>
<td>6</td>
<td>11</td>
<td>12</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>5. If I use pencil and paper, I know how to take a set of numbers and calculate the average</td>
<td>19</td>
<td>10</td>
<td>4</td>
<td>20</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>6. If I use a calculator, I know how to take a set of numbers and calculate the average</td>
<td>18</td>
<td>11</td>
<td>3</td>
<td>25</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>7. If I use pencil and paper, I know how to take a set of numbers and calculate the frequency of a group of numbers in that set</td>
<td>10</td>
<td>12</td>
<td>11</td>
<td>16</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>8. If I use a calculator, I know how to take a set of numbers and calculate the frequency of a group of numbers in that set</td>
<td>12</td>
<td>12</td>
<td>9</td>
<td>16</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>9. In a fraction, I know what the numerator is</td>
<td>18</td>
<td>6</td>
<td>9</td>
<td>22</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>10. In a fraction, I know what the denominator is</td>
<td>18</td>
<td>5</td>
<td>9</td>
<td>23</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>11. I know what the line in a fraction represents in words</td>
<td>7</td>
<td>15</td>
<td>11</td>
<td>19</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>12. I know what the line in a fraction represents in math</td>
<td>11</td>
<td>12</td>
<td>10</td>
<td>18</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>13. If I use pencil and paper, I know how to take a fraction and calculate the proportion it represents</td>
<td>8</td>
<td>16</td>
<td>9</td>
<td>15</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>14. If I use a calculator, I know how to take a fraction and calculate the proportion it represents</td>
<td>12</td>
<td>11</td>
<td>10</td>
<td>15</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>15. If I use pencil and paper, I know how to take a proportion and calculate the percent it represents</td>
<td>7</td>
<td>17</td>
<td>9</td>
<td>11</td>
<td>16</td>
<td>9</td>
</tr>
<tr>
<td>16. If I use a calculator, I know how to take a proportion and calculate the percent it represents</td>
<td>9</td>
<td>18</td>
<td>6</td>
<td>13</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>17. If a frequency is written as a percent, I know what the numerator is in an equivalent fraction</td>
<td>9</td>
<td>9</td>
<td>15</td>
<td>3</td>
<td>16</td>
<td>6</td>
</tr>
<tr>
<td>18. If a frequency is written as a percent, I know what the denominator is in an equivalent fraction</td>
<td>6</td>
<td>10</td>
<td>17</td>
<td>4</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>19. I know what a “pie chart” is</td>
<td>18</td>
<td>10</td>
<td>5</td>
<td>25</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>20. If I am given a set of values showing the size of different groups in a set, I know how to use this information to draw a pie chart</td>
<td>8</td>
<td>15</td>
<td>8</td>
<td>14</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>21. I know what a “line graph” is</td>
<td>25</td>
<td>4</td>
<td>3</td>
<td>29</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>22. If I am given a set of 2 related values, I know how to use this information to draw a line graph</td>
<td>18</td>
<td>9</td>
<td>3</td>
<td>21</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>23. I know what an “x-y line graph” is</td>
<td>26</td>
<td>4</td>
<td>2</td>
<td>31</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>24. If I am given a set of 2 related values, I know how to use this information to draw an x-y line graph</td>
<td>21</td>
<td>7</td>
<td>4</td>
<td>26</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>25. In math, I know what the term variable means</td>
<td>15</td>
<td>11</td>
<td>6</td>
<td>28</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>26. If I am given a set of 2 related values, I know how to use this information to decide which variable is the dependent variable</td>
<td>13</td>
<td>11</td>
<td>9</td>
<td>17</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>27. If I am given a set of 2 related values, I know how to use this information to decide which variable is the independent variable</td>
<td>12</td>
<td>13</td>
<td>7</td>
<td>14</td>
<td>14</td>
<td>8</td>
</tr>
<tr>
<td>28. For an x-y line graph, I know what the term axis refers to</td>
<td>23</td>
<td>7</td>
<td>3</td>
<td>23</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>29. In an x-y line graph I know which axis is the x-axis</td>
<td>22</td>
<td>7</td>
<td>4</td>
<td>28</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>30. In an x-y line graph I know which axis is the horizontal-axis</td>
<td>17</td>
<td>9</td>
<td>7</td>
<td>22</td>
<td>12</td>
<td>2</td>
</tr>
</tbody>
</table>
### Appendix 2: Student Survey Responses After the Mythbusting Activity

<table>
<thead>
<tr>
<th>Survey Item</th>
<th>August 4, 2009</th>
<th></th>
<th>July 26, 2013</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I know what a meter is</td>
<td>Yes</td>
<td>7</td>
<td>Maybe</td>
<td>0</td>
</tr>
<tr>
<td>2. I know how a decimeter relates to a meter</td>
<td>Yes</td>
<td>6</td>
<td>Maybe</td>
<td>1</td>
</tr>
<tr>
<td>3. I know how a centimeter relates to a meter</td>
<td>Yes</td>
<td>6</td>
<td>Maybe</td>
<td>1</td>
</tr>
<tr>
<td>4. I know how a millimeter relates to a meter</td>
<td>Yes</td>
<td>6</td>
<td>Maybe</td>
<td>1</td>
</tr>
<tr>
<td>5. If I use pencil and paper, I know how to take a set of numbers and calculate the average</td>
<td>Yes</td>
<td>7</td>
<td>Maybe</td>
<td>0</td>
</tr>
<tr>
<td>6. If I use a calculator, I know how to take a set of numbers and calculate the average</td>
<td>Yes</td>
<td>6</td>
<td>Maybe</td>
<td>1</td>
</tr>
<tr>
<td>7. If I use pencil and paper, I know how to take a set of numbers and calculate the frequency of a group of numbers in that set</td>
<td>Yes</td>
<td>6</td>
<td>Maybe</td>
<td>1</td>
</tr>
<tr>
<td>8. If I use a calculator, I know how to take a set of numbers and calculate the frequency of a group of numbers in that set</td>
<td>Yes</td>
<td>5</td>
<td>Maybe</td>
<td>1</td>
</tr>
<tr>
<td>9. In a fraction, I know what the numerator is</td>
<td>Yes</td>
<td>5</td>
<td>Maybe</td>
<td>2</td>
</tr>
<tr>
<td>10. In a fraction, I know what the denominator is</td>
<td>Yes</td>
<td>5</td>
<td>Maybe</td>
<td>2</td>
</tr>
<tr>
<td>11. I know what the line in a fraction represents in words</td>
<td>Yes</td>
<td>5</td>
<td>Maybe</td>
<td>2</td>
</tr>
<tr>
<td>12. I know what the line in a fraction represents in math</td>
<td>Yes</td>
<td>5</td>
<td>Maybe</td>
<td>2</td>
</tr>
<tr>
<td>13. If I use pencil and paper, I know how to take a fraction and calculate the proportion it represents</td>
<td>Yes</td>
<td>4</td>
<td>Maybe</td>
<td>3</td>
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<tr>
<td>14. If I use a calculator, I know how to take a fraction and calculate the proportion it represents</td>
<td>Yes</td>
<td>5</td>
<td>Maybe</td>
<td>2</td>
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<tr>
<td>15. If I use pencil and paper, I know how to take a proportion and calculate the percent it represents</td>
<td>Yes</td>
<td>6</td>
<td>Maybe</td>
<td>1</td>
</tr>
<tr>
<td>16. If I use a calculator, I know how to take a proportion and calculate the percent it represents</td>
<td>Yes</td>
<td>5</td>
<td>Maybe</td>
<td>2</td>
</tr>
<tr>
<td>17. If a frequency is written as a percent, I know what the numerator is in an equivalent fraction</td>
<td>Yes</td>
<td>2</td>
<td>Maybe</td>
<td>5</td>
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<tr>
<td>18. If a frequency is written as a percent, I know what the denominator is in an equivalent fraction</td>
<td>Yes</td>
<td>3</td>
<td>Maybe</td>
<td>4</td>
</tr>
<tr>
<td>19. I know what a “pie chart” is</td>
<td>Yes</td>
<td>7</td>
<td>Maybe</td>
<td>0</td>
</tr>
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<td>20. If I am given a set of values showing the size of different groups in a set, I know how to use this information to draw a pie chart</td>
<td>Yes</td>
<td>6</td>
<td>Maybe</td>
<td>1</td>
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<tr>
<td>21. I know what a “line graph” is</td>
<td>Yes</td>
<td>7</td>
<td>Maybe</td>
<td>0</td>
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<tr>
<td>22. If I am given a set of 2 related values, I know how to use this information to draw a line graph</td>
<td>Yes</td>
<td>6</td>
<td>Maybe</td>
<td>1</td>
</tr>
<tr>
<td>23. I know what an “x-y line graph” is</td>
<td>Yes</td>
<td>7</td>
<td>Maybe</td>
<td>0</td>
</tr>
<tr>
<td>24. If I am given a set of 2 related values, I know how to use this information to decide which variable is the dependent variable</td>
<td>Yes</td>
<td>6</td>
<td>Maybe</td>
<td>1</td>
</tr>
<tr>
<td>25. In math, I know what the term variable means</td>
<td>Yes</td>
<td>5</td>
<td>Maybe</td>
<td>2</td>
</tr>
<tr>
<td>26. If I am given a set of 2 related values, I know how to use this information to decide which variable is the dependent variable</td>
<td>Yes</td>
<td>3</td>
<td>Maybe</td>
<td>4</td>
</tr>
<tr>
<td>27. If I am given a set of 2 related values, I know how to use this information to decide which variable is the independent variable</td>
<td>Yes</td>
<td>5</td>
<td>Maybe</td>
<td>2</td>
</tr>
<tr>
<td>28. For an x-y line graph, I know what the term axis refers to</td>
<td>Yes</td>
<td>6</td>
<td>Maybe</td>
<td>1</td>
</tr>
<tr>
<td>29. In an x-y line graph I know which axis is the x-axis</td>
<td>Yes</td>
<td>6</td>
<td>Maybe</td>
<td>1</td>
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<tr>
<td>30. In an x-y line graph I know which axis is the horizontal-axis</td>
<td>Yes</td>
<td>6</td>
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Dusting Off: Recollections and Reflections from the Field

Carmen N. Veloria*

Abstract: In the process of reflecting on an action-based ethnographic study, the author comments on the process of recollecting and the crucial work of researcher reflexivity before embarking on a new inquiry with a former student. The notion of “dusting-off” represents shifts in thinking long after leaving the field and reflecting on previously collected data. This process prompted the need for a different way of remembering prior to conducting subsequent research. Post-modern perspectives on narrative analysis and Critical Race Feminism (CRF) inform this reflective essay.

Keywords: Ethnographic approaches, Reflexivity, Narrative Analysis

The stories we tell are those that are available for our telling (Ewick & Silbey, 1995). They permeate every aspect of our lives and shape the way we think, feel, and act (Lopez, 2002). I recall many of my students’ stories ... particularly the girls from El Coro1 Group. I first met them as 7th graders at Urban Middle School. They were all active participants in a college access program that I administered both at Urban Middle School and later at Central High School. The Latina girls named the group El Coro to signal the orchestration of discourses that only we were a part of (Taylor, Veloria, & Verba, 2005). In the midst of storytelling, we bonded over laughter and sometimes tears, a healthy mix of both joy and sorrow. Both ethnic and gendered identities surfaced, but at the time I was preoccupied with concerns of objectivity and with the importance of modeling professional behavior in ways that limited further connections along cultural and gendered lines. This would later haunt me, especially after phasing-out the program and no longer being a part of their daily lives. How invested did I allow myself to become, or not become? Does objectivity really matter when it can potentially limit interactions between participants and researcher? Who decides? Why does it matter? Why would my decisions later haunt me?

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1 The Chorus
In retrospect, I regretted acting on the dominant perception that I could not be both: a researcher who could also relate to their stories because they mirrored mine. This reflective essay addresses the saliency of researcher reflexivity at multiple levels of the research process.

I recollect memories from the field and comment on the process of dusting-off before embarking on a new inquiry with a former research participant from El Coro Group. I take the stance that if researchers are to include the experiences of Latinas and their communities, they also need to examine the relevance of their own life experiences and consider their own values (Hidalgo, 1999). Poststructuralist theory is useful in theorizing multiple selves (Lather, 1991). By foregrounding multiple selves we enact the ways we have been influenced by socio-cultural, political and economic factors, as well as hierarchal power structures and social arrangements (Nieto 1992, Foucault, 1980). Who was I during the research process? Who did I become after leaving the field, dusting off field notes and theorizing about previously collected data, researcher practice and positionality?

Dusting Off: Recollections and Reflections

After El Coro Group was a distant memory, I revisited themes from that study and began to reflect on the multiple selves that were available, yet trapped by the dynamics of positionalities, subordination, and research paradigms. I began to ponder: how did I write about me, them, and us? What decisions were made? What was made visible and what was not? Essentially, I began to critically explore the importance of researcher reflexivity. In the backdrop of conversations about college, I recalled the girls’ preoccupations with issues of respect, societal stereotypes, their relationships with their mothers and their perceptions of schooling practices. These factors are not often associated with college access, yet are important to the process of accessing college as well as to a healthy construction of self (Taylor, Veloria, & Verba, 2005; Ward & Veloria, 2005; Veloria, 2011).

However, during these conversations, I masked myself and insisted on exploring school-based interactions, grades and college exploration. I did this as an attempt at neutrality, as a way of controlling my questioning and presentation, which resulted in both an overwhelming sense of responsibility coupled with an uneasiness in the pit of my stomach (Montoya, 1994). The girls, however, saw right through me. The relational and familiar pull I felt was strong; they knew, but I resisted it. Their stories vividly resonated with me and I secretly took pleasure in knowing that I could relate so well. Their actions signaled an emotional connection and sometimes their words chipped away at my masquerade, “Come on, Miss, you know you were raised like that, too.” Denial of emotion, spiritual needs, and nurturance lead to physical ailments that manifest when one ignores the signals (Hurtado, 2003), and I ignored the signals. It wasn’t until I literally dusted off files and replayed audio tapes that I began to ache for the novice researcher in the field. I began to explore the role I played in eliciting our narratives and through this process the interconnectedness of our stories began to crystallize. Of course the girls had picked up long before I did which is why they drew me in … in ways that would challenge me both as a Latina and as a researcher.
Even back then, Amelia’s narratives captivated me the most, “You know what it’s like, Miss,” she would say whenever we crossed over the terrain of schooling experiences to the more fluid flows of mixed-messages received from our mothers, the duality of living in two worlds, and making-sense of what it means to be Latina (Veloria, 2011). Recollecting became a painful process that evoked painful memories and a great deal of questions. Would it have been beneficial had I shared more about my upbringing and background? Why did I feel the need to keep my distance? I was interested in expanding on my initial inquiry, but where to begin? I knew there was a great deal that I still wanted to explore, but I wanted a student’s perspective; someone who could be honest with me about who I was back then.

Although I kept in touch with all of the El Coro girls, I heard from Amelia the most. I had a lifeline in the form of constant e-mails and phone calls from Amelia. In between chatting about school, we would engage in conversations of the past. I recalled one e-mail in particular in which she had written about her first semester at college in which she commented that everything is going well, except one thing, my roommate’s dust always ends up on my side of the room and I need to mop every other day.” Mop – what the heck? I recall thinking. The issue seemed so trivial to me, but then I recalled the insistence my mother placed on cleaning and the idea no longer seemed absurd. When visiting her at school, a different kind of remembering emerged; one that prompted me to further deconstruct and critique how I had previously written about Amelia and the other girls (Belanky, et.al. 1997).

I went to visit Amelia. It was a clear, crisp, chilly afternoon. The leaves had just started to turn and throughout the scenic view I thought about what a departure this setting was from the familiar, run-down and dreary school where we had carved out a small space to meet for so many months, for almost two years.

The time had finally come for what we had spent so much time talking about, dreaming about, and romanticizing. This typical New England college town represented many years of hard work and dedication. When Amelia met me in the parking lot, I immediately noticed that the infamous “freshman 15” were starting to creep—I dared not make a mention of it. I was eager to go up to her room to see if she really had a mop. I had just recently e-mailed her to find out how things were going, and somewhere between “great” and “I like it here” she made mention of the one thing that was not so “great”— “Somehow my roommate’s dust finds its way to my side of the room . . . I have to mop every other day.”

Who in their right mind brings a mop with them to college? I recall asking myself out loud after a good giggle. I reclined [in a chair] and looked about the sea of paper around me, and recall not having a care if it ever got picked up. But then I remembered. I remembered my mom and what it was like to grow up in a household where there was a huge emphasis placed on cleaning. “Men like women who know how to clean,” my mom would say. All of the sudden, the idea of the mop no longer seemed absurd.

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2 Amelia is a pseudonym used to protect the identity of the student.
Upon entering her room, I immediately noticed the mop tucked into the bucket in a corner. She proudly showed me the laptop she had bought with summer earnings and the stash of snacks she smuggled from the cafeteria to satisfy late night cravings. As she talked about her courses, new friends and former classmates back home, I could not help but think about all of our conversations, all of what she had shared and wondered if there was anything I could have said or done to help her make more sense of the sometimes conflicting messages she received at home, the insane cleaning that is so dramatically emphasized, and the sometimes abusive practices that take place behind the backdrop of maintaining a clean home (Field Note, 10/17/06).

Amelia was physically in a new place, even a new world, but clearly her social position—as defined by gender, race, ethnicity, class—affect her perspective and her sense-making ability at college (Holland et al., 2008). Even my initial reaction—who in their right mind brings a mop with them to college?—later shocked me. Had I not known Amelia? Had I not listened to her many complaints about having to go home and clean the house? How about all of the girls chiming in with similar tales—el corito of tales, interrupted by tears, laughter, and gritos of validation? (Taylor, Veloria, & Verba, 2005). The concept of entering a new world continued to play in my head. While in El Coro Group, Amelia was asked to think about what she would take to college. Following is Amelia’s unedited essay (transcribed from Figure 1; bold added for emphasis by author):

There are many things which I would considered to bring to college. But, my personality, values and experiences are the most important things I would bring.

A strong personality like the one I posses can’t be hidden. Because I am sensitive, strong, laudable, caring, and stubborn. When I fix my mind to an idea I will do anything to make it true. Even though it took me awhile to build such personality, I have mastered it and lately have achieved. I hope that by bringing this to college I would be a step further to achieve my major goal, my career.

Along with my personality comes my background and my culture. Born in the Dominican Republic, raised in the United States by a mom which grew up with old customs, I live between two worlds. One the main focus is the household and school while the other is school. Even though I hate this I am able to multi-task than many people. I am able to attend school in the morning, work in the afternoon, and help out with my other world; clean the house, help with my brothers, and still achieve in school.

I have it twice as hard as my peers, but is not all negative. This is something that I would bring to college, is something that I would pass down with little emphasize. The clash between my two worlds have created values for me that if I wasn’t in this situation, I would have never learned.

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3 The Little Chorus
4 Shouts
Most important my experiences. I have experience what envy does to an adult, friendships, and what it means, love, hate, gossip, and stereotypes. I have a story for everything that I mention above. My experiences is something that would help succeed because I seen and went through so much that it takes a lot to hurt me and put me down.

When I pack my things and make my check-list these things will be my first three. It’s who I am and who I will polish up as time goes by without every forgetting where I come from.

(personal essay, 04/28/05).

Figure 1: Amelia’s Personal Essay

The need for reflexivity arose along with new questions. What had I missed? I wanted to learn more, but I knew that a new inquiry had to go beyond revisiting data. Where would I begin and what did I need to do beforehand? To prepare for my new inquiry, I revisited previously collected data by listening to audiotapes, re-reading field notes, writing analytic memos about previous field notes and by reflecting on my comments on the margins, reading high school papers, and reviewing Amelia’s college admission essay. I did all of this to look for patterns. Patterns are not static maps, schemes, models of closed systems, collections of definitions, or sets of “if-then” relationships among coding categories.
They are descriptions of processes and networks of relationships through which things are moving and changing (Nespor, 2006).

My wheels were spinning, yet I felt anxious about where and how to start. The more I read the more questions I had. However, I was unable to articulate them in a concise, clear manner, and wrestling with so many thoughts, questions, and feelings put me in an almost paralyzed state. To speak is to take up a position in a social field in which all positions are moving and defined relative to one another (Hanks, 1996). What could I possibly contribute if I could not articulate my questions? What position could I possibly take? It took me some time to realize that I was not so much taking a position as stepping onto a moving dance-floor (historically shaped and propelled) where dissonant orchestras of social relations battle to define the rhythms (Nespor, 2006).

Cooper (1998) notes that such a take on the world poses methodological problems:

We are not good at thinking movement. Our institutional skills favour the fixed and static, the separate and self-contained. Taxonomies, hierarchies, systems and structures represent the instinctive vocabulary of institutionalized thought in its subordinating of movement and transformation. (p.108)

The impetus to move forward was the realization that whereas the current body of research has clearly demonstrated that descriptive individual-level characteristics such as race, gender, and socioeconomic status combined with institutional factors, including contextual issues such as the quality and social climate of P-12 and postsecondary schooling provides very useful information; what is often not included is how this occurs, how students make sense of their experiences, and thus navigate figured worlds (Koyoma, 2007).

Amelia’s journey would provide an example of how she negotiated these spaces, the different worlds she entered, and how she was received by the educational system. I hoped she would be able to shed light on what I had missed and could have done to better prepare her to enter these institutional spaces. Following some of Amelia’s movements would allow me to account for her path, not in the fashion of ecological psychology or time geography (Baker & Wright, 1954; Hagerstrand, 1970, cited in Nespor, 2006), but in recognizing that people are simultaneously moving at multiple scales, enacting multiple selves through different circuits, and along different trajectories (Nespor, 2006).

This was my move onto the dance floor. Given our history and the data I had previously collected, I could look at Amelia’s movement over different temporal frames—go back, explore the present, and look ahead—all the while noting differences in what and how things were done at different places and times. Pace and temporality became important, and memory became critical: If setting and place are dissipative articulations, how do they maintain identity over time? How do we remember, delete, and reconstruct the past and its relation to the present and to possible futures (Nespor, 2006)?

By then I understood that to comprehend the issues involved in making the transition to college, one must contend with multiple tensions in education by addressing the connections between culture, society, and learning, and by interrogating broader schooling experiences, rather than examining the singular dimension of the transition to college (Koyoma, 2007). As such, I drew from a previous dataset for themes and topics to discuss. I also surveyed the college access and college transition literature,
looking for ways to complicate the discourse with respect to Latina students and capitalizing on our current conversations as a way to elicit narratives.

I initially had proposed to revisit themes from the action-based ethnographic study during three or four individual meetings. As Carspecken (1996) indicates,

The most effective way to use qualitative interviews with subjects is to get them to describe events they remember taking part in: to begin at a concrete level where a specific action situation is recalled and then to work toward articulation of interpretative schema that the subjects applies in many diverse situation. (p. 39)

I had hoped that in the context of our meetings, our discussions would not only be about revisiting data and recollecting but also about her new experiences. As such, I decided to use a semi-structured interview protocol, hoping to capture what Carspecken (1996) refers to as “social routines, the distribution of routines across related social sites, constraints and resources affecting social routines, cultural forms associated with social routines, subjective experiences, and life history narratives (total or partial).” I embarked on this project by focusing on the “telling” (Connelly & Clandinin, 2005).

**A NEW INQUIRY: EXPLORING MULTIPLE SELVES**

Connelly and Clandinin (2005) recommend that narrative inquiry begins by exploring “three commonplaces: temporality, sociality, and place (or sequence of places)” (p. 479). They posit that what makes an inquiry narrative inquiry is the simultaneous exploration of all three. Due to my multiple roles as former college advisor, teacher, confidant, friend, and researcher, I needed to tailor an inquiry that would be appropriate for the living and the telling (Connelly & Clandinin, 2005). Being aware that my multiple selves would impact my interaction with Amelia, I focused on constructing an inquiry that drew on a postmodern epistemological orientation to conducting qualitative research; that is, a collaborative form of narrative inquiry (De Haene, 2010). My new inquiry marked a shift from a representational to a constitutive conception of language; knowledge is then understood as relationally created in communicative praxis (Anderson, & Goolishian, 1988; Guba & Lincoln, 1995, 2005; Kvale, 1992; Polkinghorne, 1992).

Storied lives function in a dynamic, mutual relationship; narratives are both the way we understand and give context to our experiences as well as a medium through which we shape and construct ourselves, our relationships, and our realities (Chase, 2005). According to Connelly and Clandinin (2005), a more difficult, time-consuming, intensive, and yet more profound method is to begin with participants’ living ...as they go about their everyday life, negotiating spaces, and entering figured worlds. In the end, narrative inquiry is about life and living. They caution, however, that although this approach is rich with intellectual interest and potential, it can sometimes be dangerous for the inquirer because of participants’ control over the living, and their movements in their lives (p. 479).

This was something I had to consider seriously for a myriad of reasons: I no longer had easy access to Amelia, as we found ourselves in different places and our role had shifted. By then she was a
college student, living away from home, continuing to get acclimated to her new surroundings while still trying to make sense of it all. Our e-mails and phone calls continued, but our relationship and our conversations had changed. She talked about the not-so-distant past as if she wanted to forget it, but often brought up relatable memories as if trying to make sense of her past. I wanted to ask so many questions that I had not felt were appropriate to ask while she was my student, but somehow this seemed self-serving and I initially did not ask.

I wrestled with whether or not Amelia wanted to meet and continue to share. What would our conversation consist of? If she decided to meet with me, would it be because she felt a sense of obligation? Why did I have so many questions and unresolved issues, and how could I address them? Was engaging in this project mutually beneficial, and if so, how? The phone calls and e-mails continued, which prompted me to think that she too had questions and could somehow benefit from expanded conversations. Postmodern qualitative researchers firmly embrace the social purpose of their activity (Guba, 2005). By this time I refused the stance of disengaged neutrality, and thus felt prepared to fully embrace the responsibility of conceptualizing research as a moral project (Denzin & Lincoln, 2003).

Nagging at me was the feeling that there were more conversations to be had and more topics to discuss that would help Amelia make better sense of her new environment and some of the contradictions back home. Postmodern ethnographic research approaches strongly embody this call to activism and intervention. Within these practices, research functions as a conversation that seeks to expand the reach of understanding within the interactive context (Ellis, Kiesinger, & Tillmann-Healy, 1997; Gergen, 1999; McNamee, 1994, 2000a, cited in De Haene, 2010).

During one of our conversations, I asked her, “would it have been useful if I had shared more about my experiences back then?” She responded by saying “Miss, we knew. You need to understand that at the time I did not know anyone who had even graduated from high school. In you, we needed to see what was possible. (speaking for the collective).” How would I write about Amelia and our new experiences, the openness of our sharing? The fact is that narratives don’t speak for themselves, offering a window into an essential self (Riessman, 2008). Instead, Reissman, (2008), suggests that when used for research purposes, they require close interpretation. She posits that what a close narrative study of a single case can add is a display of how larger social structures insinuate their way into individual consciousness and identity, and how these socially constructed selves are then performed for (and with) an audience – in this case the listener/interpreter. All research occurs within a society. Therefore, society’s beliefs, ideologies, traditions, and structure all impact the research in multiple ways. Feminist objectivity acknowledges the fact that the researcher is going to bring the influences of society into the project. Harding (1987) proposes the concept of strong objectivity in examining not only the context of discovery, and justification, but also the context of representation. It is a process of disclosing the histories, positions, influences, beliefs, morals, etc. of the researcher at every step of the research project; requiring the researcher to disclose her own subject position throughout the research process.

In subsequent writings, I merged our narratives by accounting for my own sense-making of experiences. Embarking on the journey of retracing the path of my action-based ethnographic study taught me that theory should not come from written text only, but from the collective experience - especially that of women of color - for the purpose of ultimately accomplishing social justice that can potentially lead to liberation (Hurtado, 2003). As Gloria Anzaldúa (1990) so poignantly states:
"Necesitamos teoria [We need theories] that will rewrite history using race, class, gender and ethnicity as categories of analysis, theories that cross borders, that blur boundaries - new kinds of theories with new theorizing methods ...And we need to find practical application for those theories. We need to de-academize theory and to connect the community to the academy ..." (Anzaldúa, 1990, p. xxv in Hurtado, 2003).

By dusting-off and exploring multiple selves, I assumed the awesome burden of remembrance for Amelia and the other El Coro girls, and performed this role with laughter, tears, joy, sadness, melancholy and passion (Williams, 1995). I would go on to write about our sense-making of experiences, the figured-worlds we linguistically entered when narrating events and the multiple selves we both enacted during this journey. In the end, knowing that narratives are open to multiple interpretation; I invite others to read our stories and do so with their horizon of being.

REFERENCES


AUTHORS

Carmen N. Veloria, EdD, is a former urban educator in the P-16 system and a college access program administrator. Currently, she serves as the Director of the Center for Academic Access and Opportunity and Associate Professor of Sociology/Education Studies at Suffolk University in Boston, MA. Her research interest includes urban sociology/education, intersection of race, class, ethnicity, gender, language usage and culture. Her work has been published in various journals including *Humanity & Society*, *The Journal of Pedagogy, Pluralism, and Practice*, and *The Journal of Critical Thought*.

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Student Activism on a College Campus:

Valió La Pena

Tiffany C. Martínez*

Following the rise of social media, we have entered an era where students now have the platform to voice their own concerns. Mainstream media has fallen short, the middle man has been eliminated, and no longer are our words filtered through the lens of corporations. Through this narrative, my words are raw and my experiences are nothing less than valid because they are indeed MY experiences. Today, I am in charge of how this story is told. A version of this piece was initially published on my blog as a way to tell the world what really happened when the McNair Scholars fought Suffolk University in December of 2015. Our story had been silenced. Until now.

Keywords: Student Activism, McNair Scholars, Personal Narrative

As a first-generation college student and U.S citizen, I have navigated the streets of Suffolk University on my toes. Living in the body of a low income person of color on a campus overflowing with privilege, it is radical to live unapologetically as a minority. It is unusual to meet administrators, faculty, and professors that openly ask to embrace my culture and that of people like me in an academic environment unless you were in the arms of the McNair Scholars program. As a McNair Scholar, I was taught to believe my future Ph.D. was less a dream and more an upcoming reality, even as a Latina sin complejos. The program has freed students like myself from fear and lack of access. However, Suffolk University clearly underestimated the power of students and student activism when they proposed the McNair Program be moved to another location on campus in a new “open-floor” layout that threatened our privacy and our ability to be ourselves. We had no other choice but to prove what we, as radically unapologetic scholars, were capable of. This is our story.

The McNair Scholars program at Suffolk University is one of many federally-funded TRIO programs; there are currently about 150 McNair Programs around the U.S. Established by congress to

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increase academic success from underrepresented student populations, TRIO programs serve primarily students with historically disenfranchised identities. This means that most of the McNair Scholars – as well as other TRIO program participants – are first-generation college students and people of color. *En otras palabras, son mi gente*¹. Raised in a family that emigrated from *La República Dominicana*, my skill set is broad but not necessarily tailored to be successful in an American private institution such as Suffolk University. The McNair Scholars program provides mentorship and access to resources that helps people like myself attain the cultural capital and academic preparation needed to pipeline us into Ph.D. programs; a journey that can change the course of our lives forever.

At Suffolk, I consistently find myself negotiating with those in power in order to have some sort of agency on campus. What the higher administration needs to understand is that I should not be negotiating my worth with people who do not care to learn my story, my talents, or my experiences. They should be asking me and my peers what we need. This is a concept that non-first-generation students learn way before stepping on campus. They learn that it is okay to speak to your professors after class when you have a question; they have family members who have been reviewing their resumes since high school; they know to send thank you cards after a job interview… a gesture I learned only last year. After I became a McNair Scholar, I ascended from the “minority of the minority.” Inside the Center for Academic Access and Opportunity², I am treated as a future colleague by the advisors and directors whose main goal is our success. In the Center, we are finally able to breathe. When we speak about our lives and our experiences, we are not pitied. We are empowered. Our “one-down identities”³ don’t feel very down anymore.

In the middle of November, I received a message from a fellow McNair scholar with word about the status of the program we loved (see Figure 1). The administration at Suffolk University had decided to implement an open floor plan transforming a set of departments into an open community for offices on campus to share resources. This would push the entire Center into a tiny corner with absolutely no chance for privacy. Offices for one-on-one student interactions would need to be reserved, and there would be no space for showcasing student research (like we currently had). This setup was not conducive for students who needed one-on-one care and private resources. We knew we deserved an entire center, and they were only giving us a few square feet. Our space, our privacy, and our home would be at jeopardy if the students didn’t do anything about it. This was a clear representation that the importance of our program was not properly acknowledged by the university and our value was being

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¹ “In other words, they are my people”

² The Center for Academic Access and Opportunity (CAAO), or simply “The Center,” is the administrative home of the TRIO programs on campus. These include: The McNair Scholars, Upward Bound, and Veteran’s Upward Bound. As it stands, the Center includes: a reception area, a conference room, a copy and supplies room, a kitchen, an open area with designated space for McNair Scholars and Upward Bound students, desktop and laptop computers for program participants’ use, a separate and enclosed area for Veterans served by the Veteran’s Upward Bound program called the “Veterans HQ,” and private offices for each of the program staff members.

³ “One-down identities” refer to social identity groups that fall under the umbrella of oppression. In this context, the “one-down identities” directly reflect those who have been historically disenfranchised in the United States including but not limited to people of color, low-income people, non-U.S. citizens, differently abled, and LGBTQ+ identified individuals.
Martínez

overlooked. It was my responsibility to respond to that text with action, and so the movement began. If the administrators in the Center had decided to do what I did, or anyone paid by the University spoke up and demanded a change in plans, I knew they could lose their positions. The McNair Scholars thus began communications about how to make the university administration listen to us and give us our space back. We needed to stop negotiating and start demanding. Flowers need space to bloom.

Figure 1. Text Received from Fellow McNair Scholar Alerting Me to the Move

Activism requires vulnerability. Before the McNair Scholars united and acted, I decided to share my own narrative to professionals to make them understand how much the program meant to me and why we were so passionate about keeping the space we had. As a young child, I was told every day by Mami that I could do whatever I wanted as long as I had paciencia and inteligencia. Young, wide eyed, and hopeful, I believed her. When we were priced out of our New York home, I believed a little less. When I didn’t do well in school, I believed a little less. When my dad died, I almost didn’t believe at all. I physically could feel myself lose trust in the potential I had, and learned how much harder I had to work to fight the statistics stacked against me. I needed to mentally build myself back and believe I was capable of escaping government welfare paperwork and worthy enough to not let my experiences define me. I decided what defined me.

I learned about privilege in 2013, when I slept over at my friend’s house and saw their dad doing the dishes. Eating a toasted bagel with strawberry cream cheese, I watched my friend’s mother sipping

4 I use the pronouns “they”, “their”, and “them” in this narrative as singular pronouns to remain gender neutral
coffee and thought about the realities of students who didn’t have to translate their school paperwork for their parents. Some students didn’t have to buy a calling card to talk to their father who was in another country. Some students didn’t walk straight to the clearance rack when they entered the store. Some students didn’t have to try to fit in; they just did. The envy started in my chest. It took years to break down this ugliness and realize that regardless of my background I was still the one controlling my future. I learned to cherish my story and take it with me to the Suffolk University campus the following August. When I stepped in the library for the first time, I remember looking around and thinking that I was literally on the same playing field as all my peers. I believed that neither my background, my income, or my clothes could dictate my future. Unfortunately, I slowly realized I was playing a card game where I never learned the rules. My naiveté was exposed, but the McNair Scholar program caught me when I was falling into a dangerous place.

This is why we, the McNair Scholars, decided to refuse the disrespectful offer to change locations. Too many students like me step onto these campuses with these experiences; I am not scared to demand affirmation rather than invisibility anymore. An individual who never experienced living without the resources we were provided would have never seen the terrible idea of combining our center with other departments in an open floor plan. The first step we took included meeting and deciding exactly what we were going to do. We met in a conference room and wrote out all the plans and timelines. The objective was to maintain the McNair space and receive written confirmation before the Fall semester ended. We would send out an email and ask for support from administrators in the Center, then contact a high level administrator with enough power to request we be allowed to stay in our current space. In addition, we would only allow two days for a response from the high level administrator since we were working with very limited time (less than a month before Winter Break), and had to also meet with the administrator whose decision it had been to move our office. The last resort, if these emails and meetings were futile, would be to organize a sit-in outside the front door of the Center.

The McNair Scholars sent the email to recruit support for our efforts and almost immediately a university administrator got in contact with us to discuss exactly what we were fighting for. Once we had support from faculty and staff the movement was in full motion. The administrator who contacted us limited the meeting to three specific scholars: Stephanie Breen, Isaac Berko, and me. The meeting started off simple, the administrator smiled at us and welcomed us into a conference room on the highest floor of the building. The hallways had windows in place of ceilings, and the sun’s rays illuminated the translucent navy blue and gold ridged doors. It was the most beautiful location I had ever seen on campus. I remember thinking it was ironic that three first-generation people of color walking onto this floor, professionally dressed and significantly prepared, were the ones in charge now. With the support of the McNair staff behind us, Stephanie, Isaac, and I started fighting for our lives.

Before the meeting, Stephanie had sent out an email to the McNair Scholars asking for us to organize and meet in a place where we could discuss a revised timeline and specifically the content of our meeting with the administrator – after all, this person was the one in charge of the move and so we needed to be prepared to make a strong case as to why we should be allowed to keep our current space. Within two days, a handful of McNair Scholars gathered and we talked about the implications that the move would have for our program. We wrote various themes on a white board such as the

5 Written permission was obtained from my fellow McNair Scholars to use their names in this narrative.
Martínez

racial politics on campus and the classist practices that seemed to have been guiding the decision to relocate various departments on campus. This community organizing meeting was a mixture of logistical clarifications and tearful, passionate discussions about our love for the program. Given our deep conversations we came to the realization that this movement was more than just the McNair possible relocation, it was about agency on campus. Our passions grew. In order for this movement to be successful it was imperative that we were all on the same page. When Stephanie, Isaac, and I spoke on the phone the day before the meeting, we created the action plan that a “no” to keeping our space was not an option. It was simple and it was powerful. As long as the three of us rejected any other option but keeping our space, then there would be no space for us to lose.

Figure 2: Post from my Facebook page

When the administrator tried to convince us that we would be “better off” with a smaller space because the new space had more windows than we currently did, Stephanie quickly revoked his statement and said we were fighting for our space not for lighting. When they tried to tell us that the open-floor concept worked at the international campus and that it would be an “upgrade,” we thanked them for the “upgrade,” but politely declined. When they talked about our need for privacy and how privacy conflicts with building a sense of community, we made it very clear that we require privacy to feel safe, especially when people like us cannot be promised safety on this campus unless the right resources are intentionally provided for us. Half an hour into the meeting, it was obvious that the administrator was frustrated; so were we. Surely, they did not expect us to be so prepared and respond to all of their points con paciencia y inteligencia.

In that meeting, we used our personal experiences, our honesty about campus inclusion, and our wit to stand our ground. Together we emphasized our need for privacy, the impracticality of the open floor concept, the importance the McNair program had in our lives, and the disrespect we felt when we
found out our office would be condensed. The administrator responded with bewilderment. They did not understand how much this meant to us. I still do not think they understand how a group of students were able to organize and fight for a few hundred square feet on campus. In all honesty though, how could we ask them, in that hour, to understand the discomfort we feel every day holding the identities we hold? How could we ask of them how important it was for us to feel like our voices were being heard? Universities nationwide take pride in being student-centric, but this becomes a facade when students are not represented in areas on a campus that make the most change. If a university is meant to serve students, then as students we have every right to ask what we need to be successful and expect these demands to be fulfilled.

At the end of the meeting, the administrator told us that since we rejected the “upgrade” (as they put it), we should consult with the other McNair Scholars to compile a list of resources that we needed in order to feel satisfied if we were to be moved. The scholars responded the following Monday with an email that included the following resources for our “dream space”: a kitchen, bare walls for research posters, a conference room, private offices with doors for administrators, a lounge, a couch, a computer lab, an office for the office assistant, a welcome desk, and ample space for gatherings. We strategically decided to send a response in this way because it included all the resources we already had, and we knew it was impossible to replicate in an open floor plan. We were scholars after all. The administrator responded with merely two words: “thank you.” Empty. Brittle. Unproductive.

Given the response, Stephanie, Isaac, and I then decided that the sit-in would need to happen as soon as possible. It was clear that our voices were being silenced, and the McNair Scholars were ready to fight. Immediately, I started to contact various organizations to co-sponsor the sit-in, and right before I had my first meeting with a club interested in helping us get more people participate in the sit-in, we contacted the University President for support.

Below is an excerpt from the letter to the President (see APPENDIX A for full letter):

“When we say “us,” we are the marginalized, minority, historically disenfranchised, underrepresented students in this University who need the most support from people like you. After consulting with other McNair Scholars we do not believe the new space will be worthy of our potential. Consistently campuses nationwide are telling us we don’t matter via budget cuts, vandalized cultural centers, and ignored pleas for action. The relocation decision is supporting the trend these campuses are falling into and we would like to set up a meeting with you to discuss our concerns.”

Shortly after this email was set, we heard back from one of the highest-ranking university officials, a woman who held much more authority than the administrator with whom we had previously met. She told us our voices had been heard. She told us we were keeping our space.

Students rallied, fought, and won this battle. For the next few years, we can be comfortable sitting in our Center knowing it was our activism and our strategy that was able to convince faculty, administrators, and even the President that we are done negotiating. We are announcing our worth and our power on this campus. We knew change was going to happen because we would not stop until we were satisfied. It is imperative for students to realize how much power they really have on campus.
learned throughout this process that while we may have to work harder than anyone else to get what we need, in that hard work comes more reward for the people who will come after us. If I was a university employee, sending these emails and potentially organizing a sit-in would have had me immediately terminated. As students we have power; your status as a student actually protects you on campus. Although we made people angry, sacrificed hours planning, and sent countless emails, the time was anything but lost.

We won.

Valió la pena⁶.

AUTHORS

Tiffany C. Martínez is a Sociology major at Suffolk University with a concentration in Youth & Community and minor in Advertising. She works as a Diversity Peer Educator in Suffolk University and currently holds the title of McNair Scholar. Her research is primarily focused on racial dynamics in the United States, specifically among Latina/o young people.

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We need to all acknowledge the McNair scholars of the 2015-16 academic year. Together we found strength in unity. Together we have been liberated. I want to specifically acknowledge Stephanie Breen for leading this movement with me and sending the text that sparked a student revolution. When women of color join together, our magic ascends all oppression. Soul sisters.

Finally, I want to acknowledge the Opportunity Matters: Journal of Access and Opportunity in Education for finding power in student activism and publishing this piece and mi querida madre. Mami, me enseñaste como ver la luz en la oscuridad. Gracias por todo.

⁶ “It was worth it”
APPENDIX A

Email to President from McNair Scholars

Good Afternoon President McKenna,

The Center for Academic Access & Opportunity is about to face a relocation that will significantly affect all the students that reap the benefits from the center. As you know, the CAAO is an umbrella for various programs aimed to support marginalized communities on campus to succeed and feel supported in the Suffolk community. The center provides us a safe space to learn, acquire mentors, and form community. *The McNair scholars have joined together and discussed the pain we feel from the future relocation.*

The center’s new location, 9th floor of 73 Tremont, will be shared with various departments. There will be no designated closed spaces for McNair scholars, Upward Bound students, Veterans, and other students who benefit from the center. These closed spaces are absolutely vital for these students to succeed. For some of us, the lounge area and closed offices give us the community space to safely spend time together without fear of judgment. The fact that the space is going to be shared will revoke the ability for Upward Bound students to use our resources and relax without fear of other departments dictating their behaviors.

This decision to merge our office’s space with other departments is Suffolk not realizing the impact that the center has to students like us. When we say “us,” we are the marginalized, minority, historically disenfranchised, underrepresented students in this University who need the most support from people like you. After consulting with other McNair scholars we do not believe the new space will be worthy of our potential. Consistently campuses nationwide are telling us we don’t matter via budget cuts, vandalized cultural centers, and ignored pleas for action. The relocation decision is supporting the trend these campuses are falling into and we would like to set up a meeting with you to discuss our concerns. We spoke to a representative in your office this afternoon at 4:30pm who suggested we send you this email directly. We also met with [redacted] about these concerns and would love to extend the conversation with you. Please let us know when you are available.

Thank you for reading.

Sincerely,

The McNair Scholars of Suffolk University

*Tiffany Martinez*
Sociology & Advertising | Suffolk University 2017
McNair Scholar | Social Justice Educator