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FROM AT-RISK TO SCHOLAR:
TRANSFORMATIONAL LEARNING
AMONG UNDERGRADUATE
RESEARCHERS'

Dayra Fallad-Mendoza

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**“FROM AT-RISK TO SCHOLAR: TRANSFORMATIONAL LEARNING
AMONG UNDERGRADUATE RESEARCHERS”**

BY

DAYRA FALLAD-MENDOZA

**PREVIOUS DEGREES
BACHELOR OF ARTS IN COMMUNICATION**

THESIS

Submitted in Partial Fulfillment of the
Requirements for the Degree of

Master of Arts

Organizational Learning and Instructional Technology

The University of New Mexico
Albuquerque, New Mexico

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DEDICATION

This work is dedicated to El Puente Fellows. You are such an inspiration and I feel truly blessed and lucky to have been a part of your amazing journeys. I am very proud of each and every one of you.

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“From At-Risk To Scholar: Transformational Learning Among Undergraduate Researchers”

By

Dayra Fallad-Mendoza

B.A., Communication, University of New Mexico, 2010

ABSTRACT

How do undergraduate research programs act as effective agents of perspective transformation among underrepresented students? El Puente Fellows is an undergraduate research program that provides a space where underrepresented students are transformed. Its structure is designed to counter the negative Master Narrative at play for first generation, low income, and minority students in higher education. This study looked at the extent to which perspective transformative experiences were at play and guided students to greater academic, personal and professional goals in El Puente. Participants reported to be empowered as a result of the program and have higher levels of self-confidence regarding their education and future careers. The study also supports undergraduate research as a tool for transformative learning leading to the retention, graduation and transition of underrepresented students.

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Chapter 1

Introduction

A growing concern among colleges and universities today, is that of retaining and graduating their students (Gray, 2013). One group considered to be at the fore front of abandoning their collegiate careers are underrepresented student populations. These students are often overlooked and generalized as having the same educational experiences as other underrepresented groups. For the purpose of this study underrepresented students are those who are considered, low income (Pell Grant eligible), first generation and/or self-identify as part of a minority group (often referred to as students of color). The study looked at the extent to which perspective transformative experiences were taking place and how they guided participants to greater academic, personal and professional goals in the University of New Mexico's El Puente Fellows Program.

El Puente Fellows Program

El Puente Fellows Program under The University of New Mexico El Centro de la Raza supports and promotes undergraduate research in multiple academic areas. It offers 20 undergraduate students the opportunity to prepare for graduate level education over the course of two-semesters. Through a cultural focus, El Puente Fellows work closely with graduate mentors, staff and faculty to increase their understanding and experience of academic research. Fellows are encouraged to take their educational experience to the next level and as a result be better prepared for future opportunities in academia, research and their professional careers.

Students must meet the following criteria in order to be eligible for the fellowship:

- Enrolled at UNM for Fall & Spring Semesters
- Have a cumulative GPA of 3.0 or higher
- Undergraduate student with a minimum of 30 credit hours (completed or in progress at time of application).
- Able to commit to one academic year (Fall and Spring) and 10 hours weekly
- Must meet 1 of 3 of the following criteria:
 - Member of an underrepresented group
 - First generation college student
 - Qualify as low income

El Puente Goals



1. Figure - Model of El Puente Focus Areas

Goal 1: Develop academic writing and critical thinking skills.

Goal 2: Development of research skills.

Goal 3 Develop a pathway to graduate/professional school

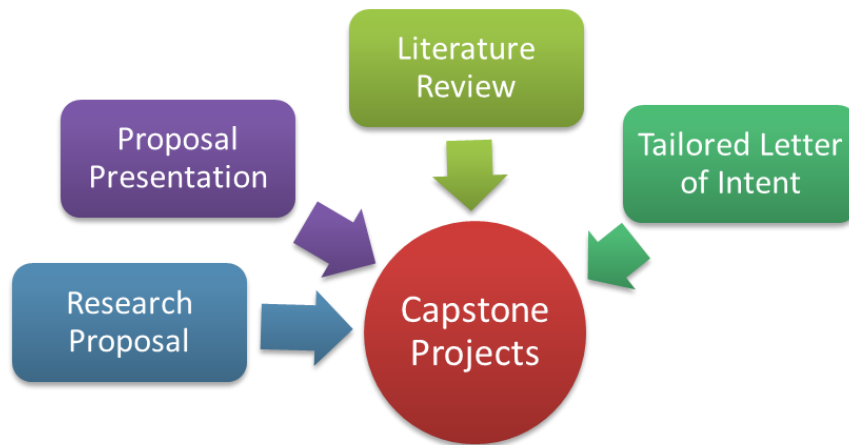
Program Structure

During the program fellows participate in mandatory seminars conducted during fall and spring semesters focused on providing the knowledge and tools to begin the research process, develop a research proposal, and apply to graduate school, among other. As research projects are developed the fellows have the seminar space to rely on their colleagues and instructional team for input and critiques. While the program has been in existence for 10 years, a new curriculum was developed by the Instructional Team (led and managed by the author) for the 2014-2015 cohort. The new structure of the program used High Impact Practices to guide the curriculum (Brownell & Swaner, 2009). It also follows a Self-Directed Learning model whose goals are as follows:

- 1.) Enhance the ability of adult learners to be self-directed in their learning.
- 2.) Foster transformational learning as central to self-directed learning.
- 3.) Promote emancipatory learning and social action as an integral part of self-directed learning. (Merriam, Caffarella, Baumgartner, 2007, pg. 107)

The program requires students to complete four capstone projects by the end of Spring semester (see figure 2). All capstone projects must meet the quality standards set forth in order to be considered complete. The quality standard is a numerical rubric that allows the student to distinguish between poor quality work and excellent work that would be acceptable at the graduate level. All projects have individual instructions and highlight expectations as well as the quality standard points the fellow should be striving toward.

Capstone Projects



2. Figure- These are the four major components of the capstone project fellows are expected to complete.

Instructional Team (IT)



3. Figure- Illustrates the constituents of the Instructional Team.

The purpose of the instructional team is to:

- Serve as a resource for students by providing a space for clarification and guidance.
- To ensure that goals and task are clear and true to follow.
- Develop and provide motivational curriculum that is aligned with program goals (materials, sessions, and environment).
- Provide mentorship that allows fellow to explore the various dimensions and disciplines within research.

Chapter 2

Review of the Literature

Impact of Undergraduate Research Programs

Undergraduate research programs such as El Puente have proven to have positive outcomes (Russell, Hancock, & McCullough, 2007). They tend to be effective in the retention and advancement of students into graduate programs. Studies have shown that students who participate in an undergraduate research program are more likely to complete their undergraduate degree and pursue graduate school (Willis, Krueger, & Kendrick, 2013; Zydney, Bennett, Shahid, & Bauer, 2002). The research experience can maintain or increase a student's interest in continuing their education past the baccalaureate degree. Students who participate in these types of programs have also been shown to gain valuable skills that prepare them for post-secondary education. Through undergraduate research programs participants can improve problem solving, communication and independent thinking skills (Sabatini, 1997; Zydney et. al, 2002; Lopatto, 2004). Undergraduate students are also able to increase their knowledge in regards to research methods and literature (Hakim, 1998; Zydney et. al, 2002). Additionally, studies have shown that the experience of an undergraduate research program may help an individual clarify their career path (Sabantini, 1997; Lopatto, 2004).

Master Narrative and Student Identity

As shown in figure 4, underrepresented students in higher education, are constantly facing the same “master narrative” that has been at play throughout their lives. The master narrative renders the experiences and perspectives of minority/underrepresented groups as illegitimate and deficient in comparison to the

dominant groups. Within the master narrative those who are in power normalize oppressive conditions through stories in order to sustain racial and class privilege (Gildersleeve, 2009, Delgado Bernal, 2002). In many cases underrepresented students in their earlier years find themselves oppressed by poor living conditions, poor education systems and lack of support. Because of this, these students are often associated with bad schools and neighborhoods due to the color of their skin and/or economic status. This only adds to the already existent master narrative within academia that says minority students do not care about education and that they lack the intellectual ability to be successful in college (Delgado Bernal, 2002).

Minority, low income students, if lucky enough to be given information regarding higher education, are too often encouraged to attend a 2-year community college rather than a 4-year university (Yosso, 2006; Jaramillo and Nunez, 2009). This creates a vicious cycle of emotional repression, self-inflicted or externally generated, that dissuades these students from considering or even visualizing themselves as capable of college level academic work (Chen, 2012; Gildersleeve, 2009, Delgado Bernal, 2002). This is the discourse in which many underrepresented students find themselves in the United States school system, damaging self-esteem and causing them to be the most underrepresented communities in higher education (Jaramillo and Nunez, 2009, Delgado Bernal, 2002).

Unfortunately, higher education institutions very often approach underrepresented students in a way that supports this master narrative. Many universities label underrepresented students as “at-risk” and thus these students are treated as immature, challenging and packed differently. They are perceived to act and respond differently than students who have more traditional backgrounds (Stanley, 2007; Gray, 2013).

Before they even step into a university campus these students are already perceived to fail academically as a result of their socioeconomic status, family variables, and academic deficiencies. These are the students that are expected to “wash out of the university.” In many instances underrepresented students are not treated as capable of enriching the university and succeed in college, more so pursue a graduate degree (Stanley, 2007; Pennington, 2012; Gray, 2013). Underrepresented students are also not perceived as being capable of creating knowledge (Delgado Bernal, 2002). This stigmatized identity, aids in the destruction of languages, heritages and cultural pride of individuals. Students may feel inferior and become speechless (Chen, 2012; Gray, 2013).

The Impostor Syndrome a term coined in 1978 by clinical psychologists Dr. Pauline R. Clance and Suzanne A. Imes can be considered the product of this Master Narrative (Clance & Imes, 1978). Even though high achieving underrepresented students have made it into higher education, they experience fear of being seen as phonies or a fraud. They often find themselves feeling inadequate, not worthy of their success, hopeless and unsupported both at home and in college (Peteet, Montgomery & Weekes, 2015). El Puente Fellows program aims at helping students think of themselves differently. It encourages students to consider themselves to be researchers and bright scholars, capable of contributing to the world of academia and pursue a graduate degree.

Master Narrative of Underrepresented Students in Higher Education

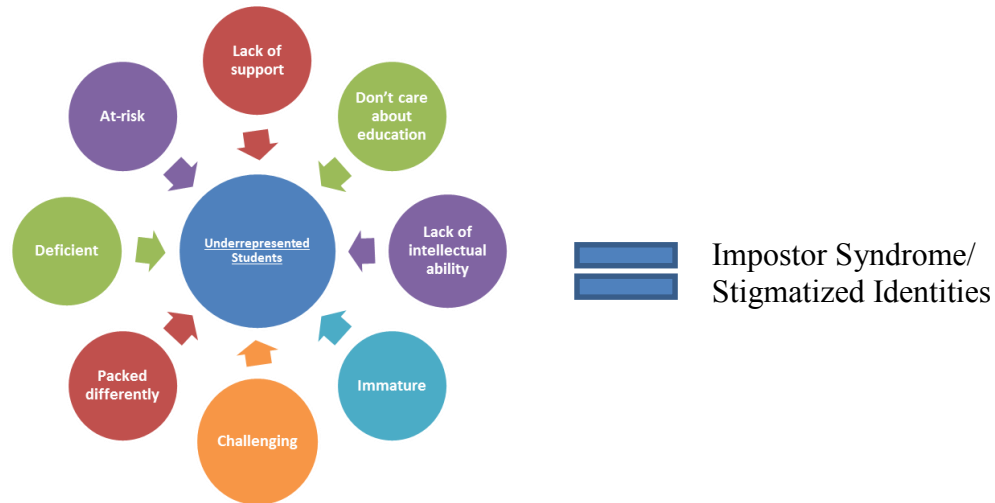


Figure 4-Components often associated with the Master Narrative of Underrepresented Students.

Transformational Learning

Transformational learning is a process by which individuals transform their “taken- for -granted frames of reference and make them more inclusive, discriminating, open, emotionally capable of change, and reflective so that they may generate beliefs and opinions that will prove more true or justified to guide action” (Mezirow & Associates, 2000, p.8). There are four ways for transformative learning to occur: by refining or elaborating our meaning schemes, learning new meaning schemes, transforming meaning schemes and transforming meaning perspectives (Mezirow, 1994, pg. 224). When meaning schemes are transformed resulting from an acute personal or social crisis, perspective transformation occurs. It often also occurs through a series of cumulative transformed meaning schemes, for example: the death of a family member, moving to a new city, the loss of a job, etc. Later research in transformational learning has found that the disorienting dilemma or triggering event may be a long cumulative process instead of a single dramatic event (Baumgartner, 2001). While the El Puente students are not

experiencing a traumatic or extreme life changing event as the result of the fellowship, they are experiencing disorientation as a result of being exposed to scholarly research. As they learn new concepts and terminology that does not fit their existing mental model, cognitive struggle occurs (Pennington, Simpson, McConnell, Fair, Baker, 2013). In the case of underrepresented students, entering the field of research as creators of knowledge is often a new territory that can cause both personal and social crisis (Mezirow, 1994).

Personal transformation presented in the works of Carl Jung is, “a fundamental change in one’s personality involving conjointly the resolution of a personal dilemma and the expansion of consciousness resulting in greater personality integration” (Boyd, 1990 p.522). Some individuals can also experience transformation in terms of identity reformation. Through experiential learning students reflect on their lived experiences and as a result, self-consciousness and identity begin to take on a new shape. Students are involved in a communal meaning making progress in their self-reflections, as well as in their interactions with others. In the case of El Puente students, the community building of the program allows for students to reflect on their experiences as college students and the experiences of those who share similar backgrounds and are facing the same challenges (Chen, 2012). Through this process students are capable of such extreme change, to the point where they consider themselves a new person. While this is the hope of transformational learning, it is important to note that this may not be the case for all students. Through this process some individuals may just become aware of their disadvantage situation and do nothing about it (Boyd, 1991; Chen 2012).

While Mezirow’s transformational learning journey was considered a linear process, latter studies show that the process of transformational learning involves the

thoughts and feelings of the individual, making it a complex process (Baumgartner, 2001). According to Dirkx (2006), there are two fundamental ways in which emotions are involved in the transformative learning process. The first is critical reflection; the second is the journey of individuation. In order for critical reflection to occur, it is imperative that participants recognize, express and work through their feelings (Taylor, 2000; Dirkx, 2006). While an individual is in this process of reflection, he or she may feel guilt, fear, shame or general anxiety. The journey of individuation is affected by a person's unconscious emotional responses to the learning experience, thus suggesting deep involvement of the student's psyche in the transformational process (Dirkx, 2006).

Dirkx (2008) cites various research results and philosophical perspectives that make an argument for emotional support in cognitive transformational development. He offers a "re-visioning of emotions in adult learning. Increasingly rejecting the notion of emotion as a barrier to reason and knowledge" (Dirkx, 2008, pg. 8). Under these conditions, empowerment and confidence levels are examined in order to fully understand the level and extent of transformational development and learning that underrepresented student's experience.

Empowerment Through Transformational Learning

In order to confront the master narrative in higher education we must empower those students being marginalized. Empowered identity construction involves an incremental development of self and collective transformation. This incremental development evolves "from contextual awareness of identity conflicts, identity reformation, and identifying action as a result of perceptive transformation and self-directed learning..." (Chen, 2012, p.175). Mezirow & Associates (2000) through his

cognitive-rational approach to transformational learning, as well as Freire (2000) through his notions of emancipator education assert that adult education should lead to empowerment. Through transformative learning experiences at-risk students can be empowered to reconstruct identity, assess power relationships, raise consciousness and challenge mainstream values. Students begin to see the world around them differently, and are empowered as a result, which creates change in their environments (Chen, 2012, Baumgartner, 2001).

Chen equates the process and effects of transformative learning to those of empowerment for self-efficacy (2012). The recognition and altering of this societal conditioning, which would allow students to begin to perceive themselves as capable of college level work, can only be accomplished through empowerment. Giving underrepresented students the opportunity to engage in undergraduate research can aid in this endeavor. Undergraduate research has been shown to help promote career pathways as well as increase the rate of graduate education among underrepresented students (Lopatto, 2004). Through undergraduate research students can obtain cognitive and skill development, independence and continued intellectual growth (Strayhorn, 2010). Underrepresented students become holders and creators of knowledge and thus, they become empowered (Delgado Bernal, 2002).

Student Programs

Student programs that provide environments where students can build social capital and construct empowered identity to overcome feelings of incompetence, disempowerment, and inferiority, can be conducive for transformational learning. Programs must look at various forces and artifacts, such as curriculum or social

discourses, in order to allow for transformative learning opportunities (Gildersleeve, 2009; Chen 2012). In order to facilitate transformation in a group setting, we must understand what is occurring at the macro and micro levels within the group, as well as the dynamics of the group. Individuals are empowered through collective learning, team building, and collaboration. The group as a social system can “elicit primitive images reflecting primary relationships and emotions” (Boyd, 1990, pg. 525).

Student college programs such as the El Puente Fellows can be instrumental when it comes to reflective discourse and the meaning-making process of transformational learning. It is in this stage of the transformative process that people talk to others about their new-found meanings and seek consensual validation. Social interaction is highly important in the learning relationship (Baumgartner, 2001). Through group discussion and personal reflection, individuals are able to establish commonalities through which meaning is constructed and, critical reflection occurs (Baumgartner, 2001). Student programs allow participants to create support groups that can validate and encourage the transformative experiences of an individual. In Taylor’s study (2000), relationships were the most common factor and important to the transformative process. Transformative learning is a social process in which the learner engages in collaborative relationships with others (Dirkx, 2006). In the case of El Puente fellows, graduate mentors, peers as well as their faculty mentor, are instrumental in facilitating this discourse.

Chapter 3

Methodology

Case Study

In order to best capture the transformative learning phenomenon occurring among El Puente students, a collective case study approach was conducted. Case study research is particularly popular within the psychology, medicine, law and political science fields, although it is widely used across many disciplines (Creswell, 2006). This methodology can be traced back to the fields of anthropology and sociology, in which various modern social science studies were done from the 1920's through the 1950's. Today the methodology has expanded, housing both quantitative and qualitative approaches. In nature, case studies are descriptive, holistic, heuristic and inductive. The case study strategy was highly appealing for this study because of its flexibility to be able to rely on a variety of data gathering techniques, allowing for triangulation. It is important to note that results from this case study cannot be generalized due to the context-dependency of this methodology. Although, their ability to inform current theory still makes them highly significant (Creswell, 2006; Rossman & Rallis, 2011).

The Researcher

The researcher in this study was a Masters student in the Organization, Information & Learning Sciences program at the University of New Mexico. She self identifies as an underrepresented student as it is described in this study. She is also a Program Specialist at El Centro de la Raza, one of three ethnic centers at the University of New Mexico. As a program Specialist she is the lead manager of the El Puente Fellows Program. She has developed and implemented the curriculum that the 2014-2015

cohort were given. Researcher ensured to treat all program participants the same regardless of whether they decided to participate in the study or not.

Stages of the Study

The study was conducted in the following manner:

Stage I of this research focused on writing a comprehensive review of the literature in order for the author to familiarize herself with the topics surrounding the study. The main topics explored were transformative learning, undergraduate research programs and student identity in the context of at underrepresented student populations.

Stage II of this research focused on developing research materials, such as a survey, questions for focus group, submitting a proposal to IRB, and participant recruitment.

Recruitment

Recruitment of study participants from the El Puente Fellows program 2014-2015 cohort was done through a formal invitation letter emailed to program alumni. Once students were recruited, a 15 minute orientation for study participants took place.

In order to engage in triangulated research the following data collection methods were used:

Data Collection and Analysis

This research aimed at identifying the transformational learning experiences of undergraduate minority students if present. Therefore, a structured undergraduate research program which services this population was chosen in order to observe this type

of learning. El Puente Fellowship housed under the University of New Mexico's, El Centro de La Raza, was selected for primary data collection. The researcher worked closely with the El Puente instructional team and students in order to obtain participants for this study as well as any other data that needed to be collected from the program (data such as evaluations done by the program as well as student work). All fellows from the 2014-2015 cohort who completed the fellowship were invited to participate. A total sample of 10, El Puente fellows alumni from the 2014-2015 cohort decided to participate. The case study was conducted eight months after the 2014-2015 cohort had completed the program. This allowed for better reflection of the long-term impact and transformation of student participants.

Survey

A questionnaire/survey with some open ended questions (10%) and some closed ended questions (90%) was created and emailed to participants in a PDF fillable format. A Likert scale was used for the closed ended questions. The survey focused on obtaining information regarding student's critical reflection and any changes in their perception toward: graduate school, higher education, careers and research. A series of objective questions with multiple choice, and fill-in-the-blanks was included to gather information about other factors that may have influenced participants' transformative learning experiences.

Focus Group

The purpose of the focus group was to augment the survey data with further inquiry based on participant answers to survey. The questions used for the focus group

were based on the initial analysis of data gathered from survey as well as some pre-existing questions. The focus group was not a mandatory piece of the study, however all participants were invited to participate. Out of the 10 study participants, 3 participants decided to be a part of the focus group. The focus group was digitally audio recorded and an additional note taker was invited to the process by researcher.

Confidentiality

In order to keep the utmost confidentiality of all participants, all study participants self-select pseudonyms at the time of consent to participate in study. They used these when completing the survey and during the focus group. The pseudonyms also replaced the participants name if any other identifiable documents. This process was done before data analysis.

Stage III of this research focused on the coding and holistic analysis of the data. In the analysis the researcher looked for evidence of transformative learning and the transformation process. The following questions guided the analysis:

- Are there general changes in attitude toward the way participants perceive higher education and their role in it? (self-reported changes)
- Does the El Puente program research experience have an effect on the way participants perceive graduate school, career choices, research?
- If there is perspective transformation occurring, what are the factors behind the transformation?
- Are students being empowered (as individuals, scholars, future professionals etc.) as a result of their participation in this program?

Chapter 4

Results

Overarching and Sub Questions

Both quantitative and qualitative analyses were utilized to obtain a broad interpretation of the data. Ten, El Puente Fellows alumni from the 2014-2015 cohort completed the questionnaire and three participated in the optional focus group.

This research intended to answer the following questions:

Overarching Question

How can undergraduate research programs act as effective agents of perspective transformation among underrepresented students?

Study participants reported various levels of perspective transformation in their personal, professional and academic endeavors. Undergraduate research programs such as El Puente offer students a space where they are able to discover their voice and gain confidence in various aspects of their lives. El Puente Fellows Program was designed in a way that challenged and countered the existing stigmatized identities and master narratives that students brought into the program as a result of past experiences. Students were treated as capable and were expected to perform at the level of graduate students. This proved to be challenging for the participants yet effective in providing positive transformation. Learning about academic research and having to develop their own research proposals was also a challenging part of the program. However, after completing their research projects participants discovered the power that lies within the ability to perform research. They realized that through research they could tackle real world problems that were affecting themselves and their communities. They saw themselves as

contributors and creators of knowledge. Throughout the program participants were reminded of their potential and encouraged to pursue higher goals by their mentors. Peer interaction also proved to be highly effective in this endeavor. Participants reported making strong relationships with peers who were going through similar life experiences. This allowed for discourse and a safe space where participants could question and reframe their views of self, their careers and higher education.

Sub-Questions

What are the general changes in attitude toward the way participants perceive higher education and their role in it? (self-reported changes)

Being exposed to experiences in El Puente: Lead me to question my views on higher education.					
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Female	3	2	0	0	0
Male	4	0	1	0	0
Total	7	2	1	0	0

Table 1

Higher Education Perception

	Before Program	After Program
Common Themes	<ul style="list-style-type: none"> • Not good enough/Felt out of place. • Lack of ability • Bachelor degree was the goal. 	<ul style="list-style-type: none"> • Graduate school is important. • I am capable of the same level of work as my peers regardless of my background. • I belong in higher education.
Sample Narratives	<p>“I felt I did not belong to the scholar life because I am a first generation college student, from an underserved community”- Alpha-1</p>	<p>“Instead of reaching for one degree I will be graduating with two BS in Biology and Psychology with minors in Chemistry and Interdisciplinary Studies (Honors)... future goal is to become a doctor in preventive medicine...”- Alpha-1</p>

	“I had no clue that grad school existed. I was always told, get your degree and find a decent paying job”- Roberto	“I believe that this program really prepared me as a candidate to apply to law school”- Roberto
--	--	---

Table 2

Does the El Puente program research experience have an effect on the way participants perceive graduate school, career choices, research?

Not all students were transformed in all areas. The area where most of the transformation was reported was in the way participants perceived graduate school. The results found a relation between exposure to research and the impact it had on career and graduate school perceptions. Overall 100% of participants agree or strongly agree that their participation in El Puente has had an impact in the way they perceive the world around them and their future.

As a result of being a part of El Puente: I have experienced a shift in the way I perceive the world around me.					
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Female	3	2	0	0	0
Male	3	2	0	0	0
Total	6	4	0	0	0

Table 3

Being exposed to experiences in El Puente: Lead me to question (think differently) about myself and my future					
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Female	2	3	0	0	0
Male	3	2	0	0	0
Total	5	5	0	0	0

Table 4

As a result of being a part of El Puente: The perception of me as a person has changed.					
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Female	2	1	1	1	0
Male	4	0	1	0	0
Total	6	1	2	1	0

Table 5

Graduate School Perceptions

	Before Program	After Program
Common Themes	<ul style="list-style-type: none"> • A bachelor was the goal. • What is a graduate/ professional degree? or • I know I want to go to graduate school but how? 	<p>100% of participants said a graduate degree is a possibility for them.</p> <ul style="list-style-type: none"> ○ 7 have been accepted or plan to apply to a PhD program. ○ 3 Have been accepted or plan to apply to a professional degree.
Sample Narratives	<p>“I often saw getting a bachelor’s degree as the end of the road in education”- Clubber Lang</p> <p>“I felt that I did not belong in graduate school because of my family’s education level.”-Daisy</p>	<p>“Thanks to El Puente, I now firmly believe that obtaining a graduate degree is possible for me, and I will do whatever I can to achieve that”-Clubber Lang</p> <p>“I was accepted into a Ph.D. program.” - Daisy</p>

Table 6

Career Perceptions

The data showed that those students who changed their career goals as a result of their participation in the program, also changed their perception toward graduate school in a positive way. Thus, the participant’s career goals are very much co-related to their

educational goals. For example, entering the program Daisy's goal was to obtain her bachelor's degree and become a teacher. "I had a vague idea of what graduate school was, let alone how I could one day be a student working on her doctoral degree". After the program, she has now been accepted to a Ph.D. program and her career and educational goals now extend further than just obtaining a Ph.D. Her goals now "include a tenure-track position at a Hispanic Serving Institution, maybe eventually returning to the University of New Mexico" (Daisy). Also, John shares, "This has influence my career choices and made me decide to become a professor at a hospital and have my own multi-disciplinary research group, where we can focus in solving complex issues in the Bioengineering field." Before the program, John wanted to become an MD and had no intentions of teaching or doing research as a career.

For other students the ability to realize their own potential also led them to think differently about their future career choices. Roberto shares: "I now second guess my career choices because this program has given me the peripheral view of education and what I am capable of doing with support."

Research Perceptions

Students entering the program had little knowledge of what academic research was. For the majority this was their first opportunity to learn formally about academic research. While learning about academic research and preparing a research proposal was a challenging and stressful endeavor for some. The study found that after their participation in the program the majority of students had a more positive perception of research and their ability to conduct such. Some scholars also reported to now being more

analytical and open minded about the world around them due to their interaction with academic research.

Research Perceptions

	Before the Program	After the Program
Common Themes	<ul style="list-style-type: none"> • What is research? • Academic research is a scary process and I may not be able to do it. • There is a lack of connection between research and my community. 	<ul style="list-style-type: none"> • Academic research has been “demystified.” I am capable of doing academic research. • Research can serve as a tool to tackle the challenges my community is facing. • Research can be a personal endeavor.
Sample Narrative	<p>“I could not conceptualize how the development of a research proposal could have real-world implications”- Daisy</p>	<p>“El Puente helped me focus on research questions that could benefit my community in a practical way. This was a fundamental change in my perception of a researcher’s role. I learned that I could enact positive social change through my personal academic endeavors.”-Daisy</p>

Table 7

Are students being empowered (as individuals, scholars, future professionals etc.) as a result of their participation in this program?

As a result of being a part of El Puente: I feel empowered to act in ways I once never would have imagined.					
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Female	2	1	2	0	0
Male	2	3	0	0	0
Total	4	4	2	0	0

Table 8

As a result of being a part of El Puente: I feel more confident acting on my beliefs.					
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Female	3	2	0	0	0
Male	1	3	1	0	0
Total	4	5	1	0	0

Table 9

* While 20% of the female participants felt neutral in terms of feeling empowered 100% of female participants strongly agreed or agreed with feeling more confident. On the other hand, 100% of male participants strongly agreed or agreed to feeling empowered and 10% felt neutral about feeling more confident. Thus empowerment and confidence were used since it was expected that some participants would identify more with one term than the other.

Areas of Empowerment/Increased Confidence

Overall Self-Confidence

The participants reported to have a higher sense of confidence/empowerment as individuals. For some being able to talk to others whether peers or faculty or facilitating a presentation is no longer intimidating. Below are some sample responses:

Jaz: “Before entering the program, I was shy and did not feel very comfortable speaking in public. As a result of El Puente and the presentations that I presented, I feel more comfortable speaking in public. Also, with the help of El Puente mentors I feel more confident with interviews. Now, I have the confidence of making appointments with different professors to talk about their research. Overall, I feel more confident in any type of social interaction. I am now in pharmacy school, and I feel comfortable and ready to take the necessary steps to get involved with research”.

Katniss- “Through the El Puente program, I was able to gather some confidence and be able to participate in a program that would allow me to express myself and grow as well. I now feel like my ideas, opinions and experiences are valued and worth a lot more.”

My background has value. There is power in my identity.

Participants now see their socioeconomic status, race, and/or family’s education level as a strength rather than a crutch.

Maddie: “I gained an identity that I had lost throughout my education. I felt like I could embrace myself and call myself a Latina... It made me feel like I could be more assertive in stating how my background influences my work.”

Roberto: “We as Latinos have always been looked down upon, especially when it comes to academics. But I can proudly say that I now have the courage to challenge others when debating on certain topic and issues...I realized my potential and worth.”

Alena: “Just because I am from a different ethnicity I felt I did not have the same capacities as others around me...El Puente helped me realize that diversity is an added quality not a disadvantage in my education.”

Making a difference/ Helping others

All of the participants mentioned in their narratives or in the focus group that as a result of the program they are now even more interested in helping others. Some of the participants have used their research to empower and better their communities already, while others plan to mentor students in the role of faculty in the future. Below are some sample responses.

Katniss: “Now, as a college graduate, I am able to mentor younger volunteers and other people through providing them the support that they need, the same support that was never negated to me during my last year of college”.

John: “I can proudly say that El Puente also made my passion for tutoring stronger. While I may not be a tutor per say, I truly enjoy helping people out, people who were at one point or another, in my same position.”

Factors Behind the Transformation

If there is perspective transformation occurring, what are the factors behind the transformation?

The following areas were repeatedly mentioned by study participants to have made most significance in the program. They were also co-related to have served as catalyst for transformation among participants.

Research as a Disorienting Dilemma

The majority of participants reported that having to develop a research proposal was a very stressful and challenging endeavor. It was the difficulty of creating a research proposal that caused students to think critically about themselves, their future and the world around them. For some of the scholars who came from STEM fields, having a multidisciplinary group and being exposed to other research was also helpful. Below are some sample narratives:

Charlie- “The research process served as a catalyst for us to think critically about who we were and what matters to us.”

Katniss: “I also loved the fact that the academic aspect of the program was very challenging. It may have been that I had never conducted research in this way, but for me it was a very challenging experience that made me dig deeper into a subject that really interests me and that I definitely want to continue learning about. The learning opportunities are endless with the El Puente program!”

Jaz- “Because of the interactions with other students from different fields now I have a better understanding of how research is conducted from different areas that are not coming from the STEM fields. I have a deeper understanding of social sciences.”

Being Treated as Graduate Scholars

Those participants who have been accepted to graduate programs or are currently in a graduate program appreciated the way El Puente approached its students. Scholars

were treated as graduate students and were expected to keep high standards of themselves and their work. This helped in building confidence among participants in that they were capable of graduate level work. John shares, “El Puente thought me what it means to be a graduate student and how to enjoy this stage of education. This is something that really confirmed my interest in graduate school and has motivated me to pursue my PhD... I think that if I would have never joined El Puente, I would have entered graduate school with a different mindset and possibly dropped out.” Also, Alpha1 shares: “I learned the value of work and the time and effort it takes to be a graduate student.”

A Community of Scholars

Common Themes:

- Interaction with others who understand me.
- A safe environment where I do not feel judged and can process ideas, successes and frustrations.
- Support System
- Realization that I am not alone.
- My experiences, ideas and opinions are valued.
- Shared ambitions

I rely on discussion with others when I am going through a difficult experience.					
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Female	2	3	0	0	0
Male	0	4	1	0	0
Total	2	7	1	0	0

Table 10

Self-reflection leads me to revise some of the assumptions I used to hold.					
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Female	4	1	0	0	0
Male	2	2	1	0	0
Total	6	3	1	0	0

Table 11

The program provided a sense of belonging for many of the participants. All 10 participants mentioned that being a part of a group of scholars who were of similar backgrounds and were open to them was very impactful. Having a group of individuals with whom they could identify and share their struggles and successes with, provided a safe space where the scholars could be themselves. Participants reported feeling supported, motivated and understood by their peers. Below are some sample responses:

Alena- “When I entered El Puente I realized I was with a very different group. Most of them Latinos most of them spoke Spanish and most of them knew that we generally to give a little extra to stand out. I felt a lot more comfortable in El Puente than I did in the honors program...I realized I was not the only one who felt different from other students.”

Daisy- “Working with fellows who are from the same background as me provided for a safe-space where we could all discuss our fears/doubts about pursuing a higher education degree”-

Jaz- “The passion other students had in their research made me feel more passionate about my research. During the program it was also nice to go through the same struggles of research together. Such encounters made me realize that I should pursue a career, which I am very passionate about. Interacting with other students who were also Latino gave me more confidence in myself and in my research as everyone had great ideas and great work ethic.”

Along with the above mentioned having a team of mentors with similar backgrounds who believed in them was also empowering for students. All 10 participants reported that having a mentor in the program made a difference for them. They were encouraged by their Graduate Mentors and in many instances they served as support pillars for the scholars. Katniss shares: “It is thanks to El Puente mentors who always believed in me and my abilities to succeed that I am now a stronger person who believes in herself”.

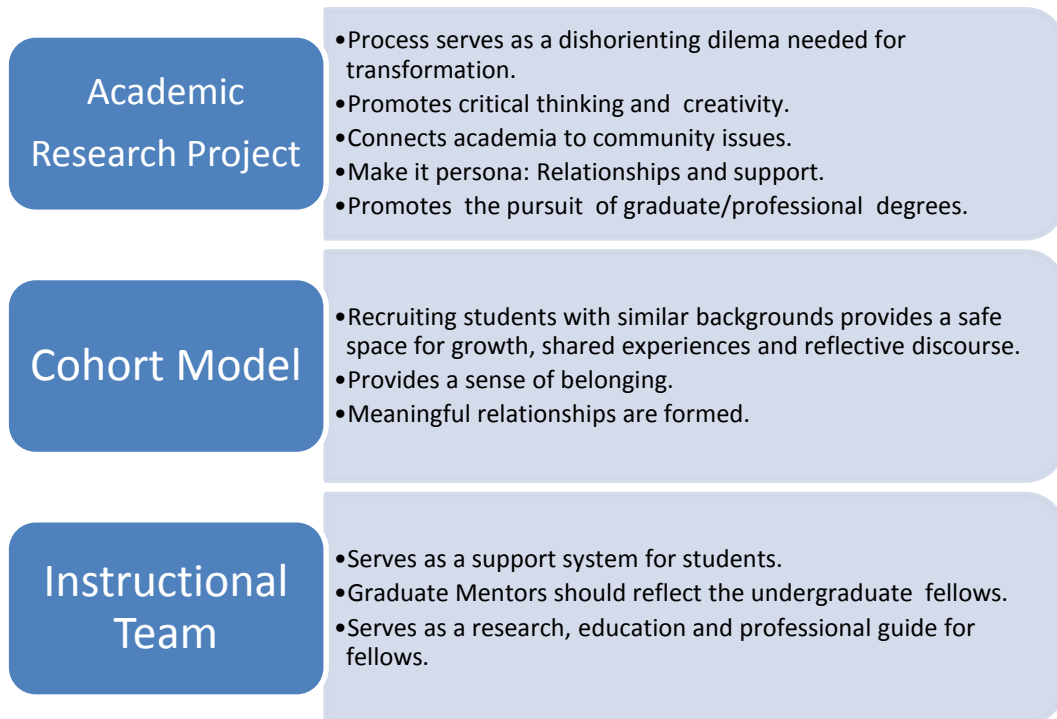


Figure 5- Factors Behind Perspective Transformation Among El Puente Fellows

Counter Master Narrative of El Puente Fellows

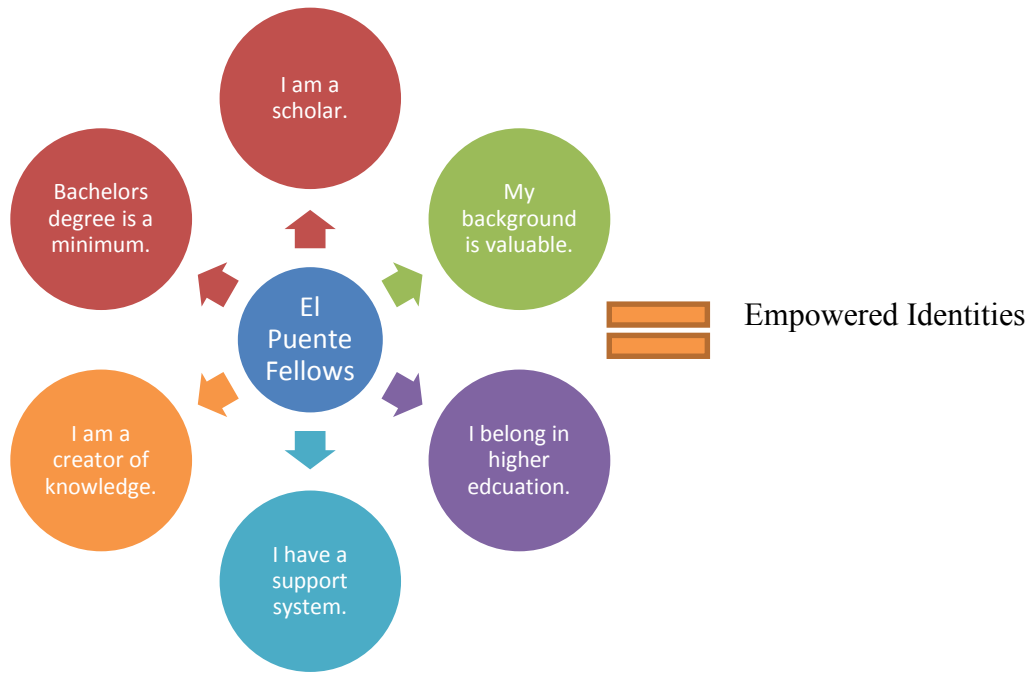


Figure 6- These are some of the changes in perception of individuals who have participated in El Puente Fellows Program.

Chapter 5

Conclusion

El Puente Fellows program at the University of New Mexico is a two semester undergraduate research opportunity for minority, low income, first generation college students. Due to the population it serves, the latest program curriculum was designed to counter the Master Narratives at play for underrepresented students in colleges and universities. This Master Narrative has usually been developed and reinforced throughout a student's academic life (k-12) and continues in higher education (Yosso, 2006; Jaramillo and Nunez, 2009). According to the Master Narrative in higher education underrepresented students will most likely fail academically and “wash out of the university” as a result of their socioeconomic status, family variables, and race. Many colleges and universities label underrepresented students as “at-risk,” a stigmatizing label. These students are perceived and treated as immature, challenging and packed differently; not capable of high academic level work. All of this results in the disempowerment and stigmatized identities on underrepresented students (Gray, 2013, Chen, 2012, Jaramillo and Nunez, 2009, Delgado Bernal, 2002).

In order to counter this Master Narrative in higher education, the goal of El Puente is to empower students through research and prepare them for future research and/or graduate school opportunities. This is done through a strengths based model, focusing on the positive qualities of students with an effort to tackle the stigmatized identities they may bring with them into the program. The program was also designed in a way that fostered Transformational Learning among its participants. Undergraduate research programs throughout the nation have proven to have positive outcomes for

student participants (Russell et al. 2007). They tend to be effective in the retention and advancement of students into graduate programs. However, these studies have not necessarily focused solely on underrepresented students, something this study focused on.

A case study method was used to analyze the academic, professional and personal transformation of participants in this program. This study overall sought to find: Do undergraduate research programs act as effective agents of perspective transformation among underrepresented students?

Past fellows from the 2014-2015 El Puente Fellows cohort, who successfully completed the program were invited to participate in the study. Out of the 16 fellows that completed the program, 10 participated in this study. The participants were given an electronic survey and were invited to participate in a one hour optional focus group. Out of the 10 study participants, 3 decided to participate in the focus group.

Overall the study found that there is academic, professional, personal perspective transformation and empowerment occurring among El Puente Fellows. When asked, 100% of study participants agreed or strongly agreed that being exposed to experiences in El Puente, lead them to question (think differently) about themselves and their future. The level of transformation and areas of transformation differed among study participants.

Types of Transformation

All 10 study participants credit El Puente with giving them the necessary information or tools to pursue a graduate degree and/or influencing their decision to pursue a graduate degree; 100% of the participants plan to pursue a graduate degree. For some study participants the transformation occurred in the shift in perception of themselves as scholars capable of pursuing graduate school. Some examples of this transformation can be seen in Alpha-1's story, "I felt I did not belong to the scholar life because I am a first generation college student, from an underserved community... Instead of reaching for one degree I will be graduating with two BS in Biology and Psychology with minors in Chemistry and Interdisciplinary Studies (Honors)... future goal is to become a doctor in preventive medicine..." The shift in perception of the participant's academic abilities also had an effect in the change of career choices for some of the study participants. All 10 study participants reported interest in pursuing a graduate or professional degree. Some have already been accepted directly to PhD programs or professional programs.

Empowerment was also reported in regard to student's perceptions of self. Empowerment or increase in confidence was found in the following areas: their ability to engage with others and their academics, realizing their potential for impacting their communities in a positive way and empowered identities. In his study of the Formosan community, Chen (2012) talks about this type of empowerment found among stigmatized students once transformation has occurred, where new schemes are made and students perceive themselves as capable.

Some students reported feeling more comfortable approaching faculty, presenting their ideas in front of others and overall feeling more capable as scholars. Jaz, a study

participant shares: “Before entering the program, I was shy and did not feel very comfortable speaking in public. As a result of El Puente and the presentations that I presented, I feel more comfortable speaking in public. Also, with the help of El Puente mentors I feel more confident with interviews. Now, I have the confidence of making appointments with different professors to talk about their research.”

Also, the study found that 100% of participants reported to wanting to give back to others and empower others with the information they have now learned. For example, John a study participant shared, “I can proudly say that El Puente also made my passion for tutoring stronger.” For some their experiences with research gave them a space where they could think critically about the world around them and the way they connect their academics to their community. Thus, some participants realized that they could impact and give back to their communities through academic research.

In addition, students reported to finding their backgrounds and identities as empowering and enriching their academic and personal lives. Students were able to regain and embrace their identities as powerful and important. Alena who is from a minority group shared: “Just because I am from a different ethnicity I felt I did not have the same capacities as others around me...El Puente helped me realize that diversity is an added quality not a disadvantage in my education.”

When asked what aspects of the program were the most impactful for El Puente participants, 100% responded that it was their peers and mentors that made the biggest difference. Dirkx, talks about Transformative Learning as a social process, where the learner engages in relationships with others (2006). The importance of relationships in

the learning experience is also supported by Baumgartner (2001), Taylor (2000) and Chen (2012). Relationships are at the core of learning and transformation among El Puente Fellows. Daisy a study participant shares: “When the program was challenging or the work seemed insurmountable, it was my fellow students who helped push me through those moments. The level of support and encouragement was always so positive and it was great to bond over similar life experiences.”

In addition the study also found that stigmatized identities caused by the previously mentioned master narrative are in fact present among 90% of students who participated in the study. Roberto shares: “I come from a background where you are not good enough and even if you do make it, you won’t last in the big leagues.” Examples similar to these were found among various study participants. Others reported to seeing a bachelor’s degree as the end of their academic career since that is all they knew. As we can see in the above mentioned results El Puente Fellows program served as a tool to change those narratives into positive and empowering ones.

Also, the results support Mezirow’s Transformative Learning process being at play in El Puente Fellows program. In the case of El Puente Fellows, being engaged with academic research served as the “Disorienting dilemma” that Mezirow (1994) identifies as a necessary element for transformational learning experiences. All participants in one way or another referred to the research process as challenging, stressful or confusing and unknown. The process of learning about research and being exposed to new ideas caused a cognitive struggle that created an internalized crisis or disorientation (Baumgartner, 2001). John, a study participant shares: “Having to come up with a research proposal

was hard. It made me think about what really matters to me. I had to think about who I was and what change I wanted to see in the world. Where did I want to go? I thought about the things that really made me mad and were unjust. I had to think about things that have never really crossed my mind before.”

In conclusion, undergraduate research programs can serve as agents of perspective transformation for underrepresented students. Participants of such programs can come to a place where they are empowered to think of their academics in a more positive way, act as agents of change for their communities and overall discover the value and strength that their previous experiences bring to the table. In these ways the Master Narrative in higher education is challenged and underrepresented students transform their stigmatized “at-risk” identities into that of successful scholars.

Master Narrative of Underrepresented Students in Higher Education

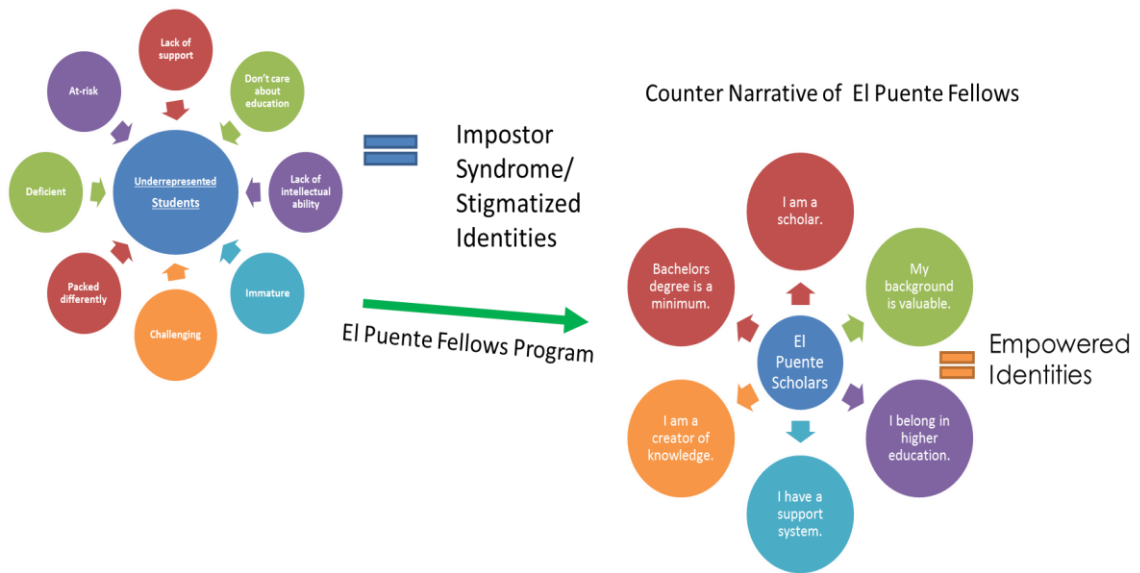


Figure 7- Comparison of the Master Narrative and the Counter Narrative of El Puente Fellows Program.

Chapter 6

Recommendations

When we demystify academic research for underrepresented students they fall in love with the process. Undergraduate research programs that focus on transformative learning practices can be spaces where empowerment and change can occur. Based on the findings in this study and previous research, undergraduate research programs can positively impact underrepresented student's retention, graduation and transition. Programs like El Puente help students discover the power and feasibility of conducting academic research and the empowerment that results from it.

Lack of intellect is not the reason why underrepresented students are not successful in college and/or are not pursuing graduate degrees. It is a lack of tools; such as, the understanding of higher education structures and requirements, knowledge of research and some key academic skills. If these groups of scholars were given the appropriate tools and a supportive team we will be amazed at what they can do. It is important that we rethink the way we develop supportive programs for underrepresented students. As future and current programs are developed careful consideration is given to the Master Narrative that does in fact exist for underrepresented students as it plays a role in the way they relate to higher education. When we are conscious of this we can create programs that focus on breaking down the walls and negative perceptions that have been built over time and are hindering the true potential of our students. Providing spaces where underrepresented students feel welcomed and have peers and mentors with similar backgrounds is important. Also, treating these students as capable and holding them to

high standards (once they have been equipped with the appropriate tools) will positively impact their success in an undergraduate research program.

More studies should be done on this program and its future cohorts in order to identify trends among groups. Also, a longitudinal study can be done in order to see the effects of the program and the transformation of students through their graduate programs or chosen professional careers. In addition, future research should look more closely at the stigmatized identities that are present and how these can be further countered.

APPENDICES

Appendix A:
Consent Form

The University of New Mexico Combined Consent to Participate in Research

Introduction

You are being asked to participate in a research study that is being done by Dr. Patricia Boverie who is the Principal Investigator and Professor, from the Department of Organizational Instruction and Learning Sciences (OILS) as well as Student Investigator, Dayra Fallad who is a Masters student in the OILS program. This research is studying the transformational learning experiences of the 2014-2015 El Puente Fellows.

You are being asked to participate in this study because you successfully completed the 2014- 2015 El Puente program. A maximum of 20 people will take part in this study at the University of New Mexico.

This form will explain the research study, and will also explain the possible risks as well as the possible benefits to you. We encourage you to talk with your family and friends before you decide to take part in this research study. If you have any questions, please ask one of the study investigators.

What will happen if I decide to participate?

If you agree to participate, the following things will happen:

You will be a part of a short case study focusing on transformational learning experiences among the 2014-2015 El Puente Fellows. By being a part of this study you will be expected to complete a short eleven question survey and will have the option to also be part of a one hour focus group. The focus group will be audio recorded so that researcher can review the conversation when evaluating data. A small digital audio recorder will be set up in the room. Only researchers will have access to this audio recording. Investigators will also have access to your El Puente application and program evaluations. Once all data has been evaluated the study will conclude. Your direct participation will only be required for survey and focus group.

How long will I be in this study?

Participation in this study will take 1-2 hours total. The survey should take less than one hour to complete and focus group will take one hour.

What are the risks or side effects of being in this study?

There are risks of stress, emotional distress, inconvenience and possible loss of privacy and confidentiality associated with participating in a research study.

For more information about risks and side effects, ask the investigator.

What are the benefits to being in this study?

By participating in this study you will be able to:

By being a part of this study you will be able to experience firsthand the participant side of research. This will serve as another learning opportunity to further your understanding of research as you prepare future study proposals of your own.

What other choices do I have if I do not want to be in this study?

You have the option not to take part in this study. There will be no penalties involved if you choose not to take part in this study.

How will my information be kept confidential?

In order to keep the utmost confidentiality of all participants, you will select a pseudonym (fake name) at the time of consent to participate in study. This name will be used in every aspect of the research. Only researchers will have access to any personally identifiable data. All physical data will be locked in an office and destroyed upon completion of the research. Electronic data will be in a password protected file.

We will take measures to protect the security of all your personal information, but we cannot guarantee confidentiality of all study data. Information contained in your study records is used by study staff and El Centro de la Raza. The University of New Mexico Institutional Review Board (IRB) that oversees human subject research and/or other entities may be permitted to access your records. There may be times when we are required by law to share your information. Your name will not be used in any published reports about this study.

What are the costs of taking part in this study?

This study will only take a small amount of your time.

Will I be paid for taking part in this study?

You will not be paid for participating in this study.

How will I know if you learn something new that may change my mind about participating?

You will be informed of any significant new findings that become available during the course of the study, such as changes in the risks or benefits resulting from participating in the research or new alternatives to participation that might change your mind about participating.

Can I stop being in the study once I begin?

Your participation in this study is completely voluntary. You have the right to choose not to participate or to withdraw your participation at any point in this study without affecting your participation in any future El Centro activities of programs. If you choose to no longer participate in this study you will need to inform principal investigator or student investigator through email. You can request that your data not be included any longer. If you choose to not complete the survey you will be automatically dropped from the study.

Whom can I call with questions or complaints about this study?

If you have any questions, concerns or complaints at any time about the research study, contact the PI, Dr. Patricia Boverie at pboverie@unm.edu or 505 277-2408.

If you would like to speak with someone other than the research team, you may call the UNM Office of the IRB at (505) 277-2644.

Whom can I call with questions about my rights as a research participant?

If you have questions regarding your rights as a research participant, you may call the UNM Office of the IRB (OIRB) at (505) 277-2644. The IRB is a group of people from UNM and the community who provide independent oversight of safety and ethical issues related to research involving human participants. For more information, you may also access the OIRB website at <http://irb.unm.edu>.

CONSENT AND AUTHORIZATION

You are making a decision whether to participate in this study. Your signature below indicates that you read the information provided. By signing this consent form, you are not waiving any of your legal rights as a research participant.

I have had an opportunity to ask questions and all questions have been answered to my satisfaction. By signing this consent form, I agree to participate in this study. A copy of this consent form will be provided to you.

Name of Adult Subject (print)

Signature of Adult Subject

Date

INVESTIGATOR SIGNATURE

I have explained the research to the participant and answered all of his/her questions. I believe that he/she understands the information described in this consent form and freely consents to participate.

Dayra Fallad Guterrez
Name of Investigator/ Study Team Member (print)

Signature of Investigator/ Study Team Member

Date

Appendix B:
Electronic Survey

Electronic Survey

Please take a moment and reflect on who you were as a person (student, professional etc.) before entering El Puente Fellows Program. Then reflect on where you are now. (then vs. now) . Please respond truthfully. There is no right or wrong answer.

Please read each statement and choose one of the options below:

- 1.) At some point in my academic career I have felt/thought that I don't belong in higher education.

Strongly Agree Agree Neutral Disagree Strongly Disagree

- 2.) I rely on discussion with others when I am going through a difficult experience.

Strongly Agree Agree Neutral Disagree Strongly Disagree

- 3.) Self-reflection leads me to revise some of the assumptions I used to hold.

Strongly Agree Agree Neutral Disagree Strongly Disagree

As a result of being a part of El Puente...

- 4.) I feel empowered to act in ways I once never would have imagined.

Strongly Agree Agree Neutral Disagree Strongly Disagree

- 5.) I have experienced a shift in the way I perceive the world around me.

Strongly Agree Agree Neutral Disagree Strongly Disagree

- 6.) I feel more confident acting on my beliefs.

Strongly Agree Agree Neutral Disagree Strongly Disagree

- 7.) The perception of me as a person has changed.

Strongly Agree Agree Neutral Disagree Strongly Disagree

- 8.) Being exposed to experiences in El Puente lead me to question my views on higher education.

Strongly Agree Agree Neutral Disagree Strongly Disagree

- 9.) I realize that I am a different person now than I used to be.

Strongly Agree Agree Neutral Disagree Strongly Disagree

10.) Being exposed to experiences in El Puente lead me to question (think differently about) myself and my future.

Strongly Agree Agree Neutral Disagree Strongly Disagree

Again take a moment and reflect on the past academic year, who you were, your educational goals, career goals, your perceptions of graduate school, research and yourself as a person before entering the program and now.

11.) What has changed? (please write below)

Appendix C:
Focus Group Script

Focus Group- Storyboarding Style

Focus Group Script

(Note: Participants already know each other and Student Investigator)

Hello, welcome. It is great to see all of you and first of all I would like to thank you for taking the time to be here today. Caitlin Henke is my colleague with the Women's Resource Center and she will be taking notes of our discussion.

What we are going to do today is to talk about your experiences as El Puente Fellows. The objective of this group activity is to gather your opinions and perspectives in being a part of the program and how it has changed you. You are encouraged to say whatever you think is appropriate to answer the questions. Please note that there is no right or wrong answer. We expect that you will have different points of view and we are interested in hearing from each of you. All your opinions are important. If possible, please speak one at a time, avoiding interrupting each other. I will control the discussion time so I may ask you to wrap up a thought if time runs out. This session is expected to last about one hour.

Also, we will audio record this session for analysis purposes. Caitlin will also take notes of your comments. Your opinions and comments are confidential and will be aggregated in the analysis. Your personal information will not be included in any reports. Please help us keep confidentiality and do not share any of the conversations we have in this room with anyone else.

I will go over the instructions for the activity in just a moment (see Storyboarding instructions) .

....Main question we will be focusing on in focus group:

- How have you changed after being a part of this program? (Focus on your identity as a student, personally, career).
 - Sub question
 - If there is a change, please name and describe the main elements of the program that influenced this change.

... Are there any questions?.....If there are no more questions lets get started.

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