



***Unique Challenges for
Women of Color in STEM
Transferring from Community
Colleges to University***

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**Marie-Elena Reyes
University of New Mexico Taos**

Community Colleges and STEM

- community colleges - historic corridor for women and students of color entering higher education

- when STEM graduates are asked directly about community college participation - on average 44 % of science and engineering students have at some point attended community colleges, with even higher percentages reported for Hispanics, American Indians/ Alaskan Natives, and Blacks

- low transfer and retention rates have been cited as problematic for STEM recruitment

Complicated data collection priorities (e.g. using 6 year windows to assess persistence rates (Chen, 2009), counting students who do not complete 2 year degrees before transferring as dropouts (Bailey, et al., 2004), and no disaggregation of data (Bailey, Jenkins, & Leinbach, 2005)) have made it difficult to draw an accurate picture of the impact of community college attendance on STEM graduates.



WOC in STEM transferring from community college to university

Valenzuela, Y. 2006. *Mi Fuerza/ My Strength: The Academic and Personal Experiences of Chicana/Latina Transfer Students in Math and Science.*

Chang, J. 2006. *Transfer Adjustment Experiences of Underrepresented Students of Color in the Sciences.*

Reyes, M-E. *Voices of Women of Color in STEM: Transitioning from Community College to University.*
unpublished manuscript

Characteristics of Community College students

- median age of community college students is 24 years old with 35% of students either 30 years old or older (Provasnik & Plant, 2008).
- 59 % of those attending community colleges are women
- Over 35-40 % are students of color (largest proportion being women of color @ 21 %) (National Science Foundation 2009)
- 26% were in lowest income levels compared to poverty thresholds (Provasnik & Plant, 2008)
- 20% were married with children / an additional 15% were single parents (Li, 2007) - a familiar trend for women of color in higher education – working outside the home while attending school part-time;
- Additionally for Women of Color: first-generation status (in education and immigration), extended family and social responsibilities, and culturally based gender-specific expectations (Valenzuela 2006, Chang 2006, and Reyes unpublished)



Challenges for WOC Transfer Students

In addition to challenges facing women of color in STEM fields at universities related to double-bind, i.e. isolation, invisibility, discrimination, not-belonging, disconnects from external social and cultural networks, etc. reported by many researchers –

transferring women of color (WOC) face additional dilemmas...



Challenges for WOC Transfer Students

Transfer shock

Institutional culture differences

Isolation and invisibility

Lack of Social networks and capital on campus

Managing conflicting priorities and expectations

Institutional culture differences

In interviews, transfers compared differences in institutional cultures

- Praised the connections that resulted from positive faculty-student interactions at community college i.e. initiating interest in STEM fields and making material interesting while at university feeling invisible and lost in the larger lecture halls (Chang 2006; Valenzuela 2006; Reyes)
- Chang (2006) "... community college classrooms as breeding grounds for interest in the sciences and their university lecture halls as weeding grounds to relieve impacted majors"
- Hidden vs. transparent curriculum: at university transfers felt that exams did not assess what they knew but only what they could regurgitate in one hour. Because transfers didn't know what would be expected they would skim and try to memorize everything without fully understanding. And expectations for work time outside of STEM classes were often underestimated at the university.
"the fiction that you study 2 hours outside of class for every hour in class is crap for science students. It's literally 4 or 5 hours for every hour in class." (Reyes)



Institutional culture differences

- Collaboration vs. competition. Though collaboration was encouraged at the community college transfers learned quickly that competition was rule at university.

- Grading on the curve was often first encountered at university; breeds competition

“...I took CHEM last quarter and I got a D on my first midterm and a 72 on my second and the final I got a D+ and I ended up with A- in the class. The ambiguity of the curve drives me nuts. Because at the community college, you work hard for an A and you get an A. You know where an A is.”

Isolation and invisibility

Solarzano et al. (2000) describe microaggressions as “subtle unconscious forms of racism” such as racial segregation among in-class study groups or faculty having low expectations about the students’ abilities

Extend definition to include reality of WOC transfers’ lives
minority/outsider status derives from intersections of ethnicity, sex, age, immigration, socioeconomic and first generation status. Impacts are exacerbated – they express confusion about where the microaggressions derive from

Subtle and explicit discrimination from faculty, advisors and peers
e.g. exclusion from study groups, faculty comments about not belonging or being underprepared, restricted undergraduate research opportunities that exclude transfers’ full participation and development as scientists or engineers

“I had a lot of the instructors and people ... who just had this thing with Native-American students, that they were just not smart. You know you always get placed in the back of the classroom and they wouldn’t worry whether or not we were

Isolation and invisibility

From Valenzuela (2006) *"I asked questions...but the students seemed to ignore me"*

An African American woman transfer to the U related this story *"she's 18 years old ...she didn't realize I was as old as I am ... and she started talking about ... those older people they always want to be like the know it alls and they're so serious and ... why are they going back to school anyways? They should be having their careers already, those women with kids and families and stuff.. in class the older students seem to ask more questions and they seem to know most the answers because they study (and that makes the others look bad). I just had to laugh to myself"* (Reyes)

About exclusion from study groups: *"It's hard for me to get into study groups and I don't know if its because I'm older or if it's because I'm a minority or if I just don't fit in or what ever..."* (Reyes)

About being the only one or one of a few *" I also find that when you only have one or two minority women in class, as science class, they tend to compete against each other because they're trying to stand out as being the better of the two"* (Reyes)

Lack of social networks and capital on campus

Social networks and capital (family, friends, and community) are off campus

WOC transfers perceived that they were seen as outsiders transferring into disciplines where cohorts had established in first 2 years; not living on campus or in dorms; first generation without access to role models or mentors who had navigated the higher education system

WOC transfers often had off-campus responsibilities to family, community, and employment so did not spend extended time on campus or initiate social networking with student groups, activities, or faculty.

Resulting in limited access to student services, internships, and resources – out of the information loop

Managing conflicting priorities and expectations

Familial and cultural expectations for WOC of some ethnic groups for college education conflicted with physical moves away from family or community for school. The expectation was that WOC would attend university close to home (maybe even live at home) – from students and family.

Some WOC were expected to return home for ceremony and to fulfill community responsibilities

WOC with spouses and/or children were juggling the roles of caretaker (with responsibilities for children and elderly relatives), financial contributor, and student

Tensions from: unmet childcare needs, study and review session schedules that did not accommodate those living off campus, office hours not held right after class, costly and limited parking hassles, family and community responsibilities, lack of financial support (school vs. family), feeling like a failure

Managing conflicting priorities and expectations

"I find that the U doesn't take into account that women have children. So if your child is sick and you need to stay at home I feel like professors really – they're used to dealing with 18 year olds that don't have these issues – so I think that they don't (understand)... there is no daycare ...they (the U) don't accommodate that."

"I think it is harder when you have a family It's not like you're making decisions for yourself. Your making decisions for 2 other people. My husband is extremely supportive but I know he would prefer that I went to work instead of going on to graduate school and not live like students anymore."

" I would get comments from my family "you are not spending enough time with your daughter"..."

"my great aunt passed away...I had to miss school. In a given year I can have 3 or 4 burials or weddings and in our culture, out of respect and what we believe in, we, I need to be there.. I feel like I am not fulfilling my duties...it is kind of an emotional roll with me during the semester..."

Responses / Recommendations

The good news is that if they get past the first year following transition they will thrive and join the STEM workforce

1. New Programs that target recruitment of Women of Color at Community College and funding for First Year Transition Programs after transfer that include: Mentoring, Building Community, Paid Undergraduate Research, and Workshops for balancing personal & professional/student demands
2. Program and funding that targets undergraduate research opportunities for transitioning women of color
3. Leadership development programs for women of color in STEM academic settings including workshops that promote research and publishing manuscripts
4. Pedagogy workshops for STEM faculty that focus on best practices for STEM teaching including gender equity and working with multicultural transfer populations

•Mentoring

- Building Community
- Paid Undergraduate Research
- Connecting students to student services and other resources on campus as well as discipline specific student groups and professional organizations
- Academic cohort course schedules
- Targeted tutoring and study skill workshops that work for WOC students with demanding schedules
- Workshops for balancing personal and professional/student demands



“I don’t need anything really, but I guess I just need for professors to acknowledge that I am not just going to my dorm room. I have to run a household – its harder ”