Engineering Educators Bringing the World Together
2025 ASEE Annual Conference & Exposition
Palais des congrès de Montréal, Montréal, QC • June 22–25, 2025 ASEE

Paper ID #48687

BOARD # 467: Voices of Change: Supporting Latine Teaching-Focused Faculty in STEM

Eva Fuentes-Lopez, University of California, San Diego

Eva is a PhD student in the Mathematics and Science Education Doctoral (MSED) program at the University of California, San Diego joint with San Diego State University. She received her BS degree in Applied Mathematics with a minor in Education at the University of California, Riverside and an MS degree in Mathematics with a concentration in Applied Mathematics from California State Polytechnic University, Pomona. Her research focuses on examining student experiences in undergraduate mathematics courses.

Mr. Joseph Leon Henry, University of California, Irvine

Sociology PhD Candidate at the University of California Irvine studying inclusion and equity interventions in STEM higher education classrooms.

Prof. Natascha Trellinger Buswell, University of California, Irvine

Natascha Trellinger Buswell is an associate professor of teaching in the department of mechanical and aerospace engineering at the University of California, Irvine. She earned her B.S. in aerospace engineering at Syracuse University and her Ph.D. in engineering education at Purdue University. She is particularly interested in inclusive teaching conceptions and methods and graduate level engineering education.

Alegra Eroy-Reveles, University of California, Santa Cruz
Kameryn Denaro
Erik Arevalo
Stanley M. Lo, University of California, San Diego
Mike Wilton, University of California, Santa Barbara

Voices of Change: Supporting Latine Teaching-Focused Faculty in STEM Through An AGEP UC HIRE Alliance Study

Abstract

Despite increasing diversity across many institutions in the U.S., STEM departments remain disproportionately homogenous (O'Meara et al., 2019). While there have been advances in the representation of various demographics within higher education, the underrepresentation of Latine faculty in STEM positions persists (Bensimon et al., 2019). The NSF-funded UC Hiring Interventions for Representation and Equity (HIRE) Alliance addresses this issue by connecting four University of California campuses to examine current hiring practices in search committees focused on hiring teaching-focused faculty (TFF). The initiative also explores TFF experiences that lead to and shape their current roles in the professoriate. To ensure success, we have established a feedback loop among all teams involved in the grant. Additionally, we employ external evaluation methods to assess the effectiveness of our interventions in improving the hiring process for future Latine TFFs and supporting both current and future individuals in their TFF roles within STEM departments across the alliance campuses.

The UC-HIRE Alliance not only aims to increase Latine faculty representation in STEM departments but also to create a sustainable framework that postsecondary institutions can utilize to navigate the process of inclusive hiring. We have two main teams in our Alliance: the faculty fellows team and the research team. Our faculty fellows team has collected data from multiple iterations of the literature-informed workshop interventions held in our Faculty Fellows Learning Communities (FFLCs). These FFLCs comprise faculty who are currently or recently have been on TFF hiring committees with the goal of empowering our Faculty Fellows to become agents of change in their own search committees. The second team seeks to provide support to both current and future TFFs by illuminating the stories of those who have successfully navigated this career path. Through 19 qualitative interviews with current Latine TFFs across the United States, our research team has taken inductive and deductive approaches to analyze the data. By sharing these stories, our alliance advocates for greater recognition of the vital contributions these faculty make in STEM departments.

There are two primary findings and products that have emerged from this project. First, in conjunction with the FFLCs, we have created a standardized approach to an inclusive TFF search. We developed three rubrics (included in the appendix) that can be utilized as guidelines for search committees to examine multiple hiring materials, including the job advertisement as well as the teaching statement, research statement, and diversity, equity and inclusion statement using existing literature and feedback from our FFLCs. Second, our work dedicated to examining TFF's pathways to the professoriate has revealed the multiple forms of resources that these faculty leveraged to navigate the higher education space. We also highlight the often overlooked labor and additional service commitments these Latine TFFs undertake at their institutions. Furthermore, we found that TFF assume mentorship roles at multiple levels and endure cultural taxation. Our findings suggest that TFFs play a pivotal role in the overall success of STEM departments, particularly in supporting all students as a whole and Latine students in particular.

Keywords: Mentoring, Teaching, Faculty, Inclusive Hiring

Introduction

This paper describes a multi-institutional project across four University of California (UC) campuses, includingSan Diego, Irvine, Santa Barbara, and Santa Cruz, entitled "UC Hiring Interventions for Representation and Equity (HIRE) Alliance" (Supported by the National Science Foundation AGEP Program under Grant No. 2113355). The project uses a design-based research approach to create and test a multi-campus institutional change model aimed at diversifying TFF, in particular, Latine TFF, in STEM departments at the partner UC campuses.

Project Description

Our project aims to increase Latine teaching-focused faculty (TFF) representation in STEM departments, a group that has been historically marginalized in higher education (HE). TFF dedicate 50% or more of their time to teaching, resulting in increased interactions with students. However, only six percent of TFF are from racial and/or ethnic minority groups (University of California, Irvine, 2022), highlighting the lack of diverse faculty at HE institutions. This issue is particularly significant at the growing number of Hispanic-Serving Institutions (Garcia, 2019) where faculty at these institutions are *not* representative of the student population they seek to serve. We characterize this misalignment by examining the current landscape of the hiring process for TFF and the professional experiences of Latine TFF in HE.

The UC HIRE Alliance utilizes the DESIRED model, a processes and outcomes framework encompassing several core components. It begins with *Developing* a multi-campus institutional change model, followed by *Evaluating* collaboration through formative feedback and assessment. *Self-study* reinforces that the decision-making processes are made transparent, while *Implementation* involves faculty learning communities across STEM departments. *Research* focuses on understanding the transition process of Latine STEM scholars into faculty positions. Finally, another phase of *Evaluation* involves a summative assessment on effectiveness. Lastly, the *Dissemination* of insights gained during this process are shared with all relevant stakeholders.

For this paper, we expand upon the alliance's focus on implementation and research. We aim to share the project with the engineering education research community by highlighting the implementation resources we created and our research results.

Implementation: Faculty Fellows Learning Community

To better understand the hiring process, our team developed the Faculty Fellows Learning Community (FFLC), which consisted of individuals who were recently on or currently on a STEM TFF search committee. We had three FFLC cohorts, each ranging in size and discipline across all four UC partner campuses. Our first cohort consisted of six Faculty Fellows (FFs), with one from physical science and five from life science. The second cohort included ten participants, comprising one from engineering, one from physical science, and eight from life science. The third cohort included nine FFs: two from engineering, two from physical science, two from life science, and three from social science departments. This growing diversity within the cohorts provides a variety of perspectives on the search process. Our FFs met with our team monthly and were compensated for their time and participation. Each meeting was recorded and transcribed for further analysis.

The purpose of the FFLC was twofold. First, we wanted to understand the current landscape of the hiring process from the perspective of search committees to co-construct and adapt the use of processes and rubrics to allow for a more inclusive search. Second, we wanted to have these literature-informed workshops serve as an intervention that encourages our FFs to become agents of change in their respective search committees with the hope of changing the culture of the hiring process in STEM. The structure included the advertisement and recruitment of candidates, search committee faculty composition/selection, interviewing, and candidate offers.

Researchers in our faculty fellows team coded and analyzed the transcribed data from these FFLC workshops using inductive and deductive thematic analysis techniques (Auerbach & Silverstein, 2003). There were a total of 18 codes in our codebook, including search logistics, evaluation strategies, challenges, commitment to DEI, corroborated by prior research on inclusive search processes. The research team utilized frameworks on the hiring process as a priori codes and identified overarching themes from the coding to uncover the nuances in responses. An inter-rater reliability level of 80% was reached between two separate coders.

Implementation Resources

Inclusive Hiring Rubrics
Combining insights from the FFLCs with existing literature on the inclusive search process, our team has developed the four rubrics (Arevalo et al., 2025) that can be used to streamline the hiring process while also attending to the goals of being inclusive and staying loyal to the ideal of keeping "rigor" within STEM departments. For the purposes of this paper, we present three of our rubrics, which can be used to evaluate diversity, teaching, and research/scholarship statements. Please note that these rubrics were also inspired by existing rubrics from other institutions (see appendix below).

Conceptions of the Inclusive Hiring Process
As a result of our analysis of the FFLC workshop data, our team has presented findings that address critical questions centered on how hiring practices are understood and applied by search committee members in their current or past STEM TFF searches and how these search committee members conceptualize the inclusive hiring process (Fuentes-Lopez et al., 2024). We found that the implementation by these search-committee members on TFF searches is done at a surface level, emphasizing the tangible representations, such as standardization of the search process and commitment to DEI. Our results indicate that awareness of the barriers historically marginalized candidates face and knowledge of the best practices of effective teaching are critical to an inclusive search. In future research, we plan to disseminate additional findings on faculty conceptions of inclusive searches and their views on candidate fit.

Research Team: Pathway to the Professoriate
To promote institutional change, it's essential to understand why we should care about increasing the number of Latine STEM TFF members. One way to underscore the crucial role of such faculty is by studying their experiences. We conducted 19 semi-structured interviews with Latine TTF in STEM departments across the United States and compensated the participants for their time. Each interview was approximately two hours long and recorded and transcribed for further analysis. Seven of our participants are in engineering, seven in the physical sciences, two in the life sciences, and three in interdisciplinary fields.

These interviews aimed to uncover how Latine TFF navigated the pathway to the professoriate (Henry et al., 2024) and their experiences in their current roles. We aimed to understand these faculty's stories and uplift their voices to elucidate the immense levels of servingness they each bring to the higher education space. The questions were adapted from literature on community cultural wealth (Yosso, 2005) and TFF roles (Buswell, 2017). All interviews were conducted via Zoom and were audio recorded and transcribed using Otter.ai. We conducted qualitative analysis using deductive and inductive approaches (Corbin and Strauss, 1990; Miles & Huberman, 1994) using ATLAS.ti and established an inter-rater reliability of 68%.

We aimed to answer the following questions: *How do Latine TFF navigate the pathway to the professoriate? Additionally, what are the experiences of Latine TFF in their current faculty roles, and how can we serve them better?*

Research Outcomes
Understanding the Latine TFF Experience
Our findings reveal the diverse set of resources that Latine TFF leverage to navigate the higher education landscape, including institutional and personal networks that allow them to be successful in their professional endeavors. Below, we highlight the types of resources utilized by these faculty to be successful in these spaces, and how they contribute to servingness through mentorship and hidden labor they undertake to support their diverse student populations.

Leveraging Resources
Our previous research (Henry et al., 2024) indicates that utilization of the cultural wealth that individuals enter into institutions of HE with, while not necessarily valued by the institution, are integral to the successful navigation of the pathway to the professoriate. Through Yosso's (2005) framework of community cultural wealth, we analyze the use of multiple forms of capital to maneuver through HE and industry experiences. For example, we interrogate how social capital (networks), within and outside of the HE institution, benefit individuals by providing both academic and non-academic support. Additionally, our work looks at the importance of culturally relevant mentorship in navigating the pathway to the professoriate. We also find that TFF often prioritize mentoring Latine students as they transition into faculty roles themselves.

Servingness
Another area of study that our research team addresses is the contributions of Latine TFF towards servingess (Garcia et al., 2019) for Latine students. Through often unrecognized labor, these faculty provide to students unique forms of support that validate their identity in the STEM space using a holistic approach to teaching, learning, and mentoring. Through mentorship, advocating, and arguing for institutional change we highlight that the population of Latine TFF are institutional agents of change that are doing the work of serving Latine students that institutions often cite as their major goal. Our research suggests that, in addition to holding a heavier teaching load, Latine TTF faculty dedicate large portions of their time to service work that is often not understood, valued, or encouraged by their departments. For additional information on these findings and the servingness that Latine TFF bring to STEM departments, specifically engineering departments, please attend our talk titled: "Servingness in Engineering Higher Education: The Crucial Role of Latine Teaching Focused Faculty."

In summary, the UC HIRE team takes a comprehensive approach to understanding the TFF experience by investigating both the hiring process, specifically identifying what factors contribute to the inclusive search process, and the experiences of current Latine TFF in STEM departments. Our research not only uncovers the development of inclusive hiring practices that value the contributions of TFF, but it sheds light on the important role that these faculty hold in serving diverse student populations. Ultimately, this work aims to inform hiring strategies that foster equitable hiring processes and develop supportive departments for Latine STEM TFF to better support the student population.

Acknowledgements

References

Arevalo, E., Sato, B. K., Lo, S. M., & Wilton, M. (2025, April). Equitable faculty hiring: development and implementation of teaching faculty hiring rubrics. In Frontiers in Education (Vol. 10, p. 1560813). Frontiers Media SA.

Auerbach, C., & Silverstein, L. B. (2003). *Qualitative data: An introduction to coding and analysis* (Vol. 21). NYU press.

Bensimon, E. M., Dowd, A. C., Stanton-Salazar, R., & Dávila, B. A. (2019). The role of institutional agents in providing institutional support to Latinx students in STEM. *The Review of Higher Education, 42*(4), 1689-1721.

Buswell, N. T. (2017). *Swimming Upstream: Pathways of New Engineering Faculty at Non-R1 Institutions* (Order No. 10683743). Available from ProQuest Dissertations & Theses A&I. (2008977107). https://www.proquest.com/dissertations-theses/swimming-upstream-pathways-new-engineering/docview/2008977107/se-2

Corbin, J., & Strauss, A. (1990). Grounded theory research: Procedures, canons and evaluative criteria. *Zeitschrift für Soziologie, 19*(6), 418-427.

Fuentes-Lopez, E., Arevalo, E., Wilton, M., Lo, S. (2024). Inclusive Hiring Practices: An Investigation on Current Search Committee Practices for Teaching-Focused Faculty. *American Education Research Association*.

Garcia, G. A., Núñez, A.M., & Sansone, V. A. (2019). Toward a multidimensional conceptual framework for understanding "servingness" in Hispanic-serving institutions: A synthesis of the research. *Review of Educational Research, 89*(5), 745-784. https://doi.org/10.3102/0034654319866265

Henry, J. L., Buswell, N. T., & Fuentes-Lopez, E. (2024, June). Illuminating the Pathways of Latine and Hispanic PhDs into Engineering Teaching-Focused Faculty Positions. In *2024 ASEE Annual Conference & Exposition*.

Miles, M. B. & Huberman, A.M. (1994). Qualitative data analysis: An expanded sourcebook. *Thousand Oaks*.

O'Meara, K., Lennartz, C. J., Kuvaeva, A., Jaeger, A., & Misra, J. (2019). Department conditions and practices associated with faculty workload satisfaction and perceptions of equity. *The Journal of Higher Education, 90*(5), 744-772.

O'Neal, C., Meizlish, D., and Kaplan, M. (2007). "Writing a Statement of Teaching Philosophy for the Academic Job Search." *Center for Research on Learning and Teaching*. University of Michigan.

University of California, Berkeley. (2022, October 16). *Rubric for Assessing Candidate Contributions to Diversity, Equity, Inclusion, and Belonging*. https://ofew.berkeley.edu/recruitment/contributions-diversity/rubric-assessing-candidate contributions-diversity-equity

University of California, Irvine. (2022, March 31). *UCI and 3 other UC campuses collaborate on teaching professor diversity initiative*. UCI News.

Yosso, T. J. (2005). Whose culture has capital? A critical race theory discussion of community cultural wealth. *Race ethnicity and education, 8*(1), 69-91.

Appendix

Teaching Statement Rubric

The Teaching Statement Rubric provides guidelines for a committee to utilize during the search process and should be tailored to the specific needs of the institution.

Criteria include: (1) teaching ideology, (2) pedagogical approach, and (3) evaluation of learning goals.

Each criteria is scored: developing (score = 0), satisfactory (score = 1), or excellent (score = 2).

Criteria	Developing (0)	Satisfactory (1)	Excellent (2)
Teaching Ideology	A candidate does not address any learning goals within their statement or the goals are incomplete or unclear.	A candidate describes goals for their courses and learning but utilizes vague language or is focused solely on the acquisition of knowledge rather than the application of student knowledge in the form of skills.	A candidate describes their goals of learning in a clear and concise manner that are contextualized within their subject matter. The goals of the candidate build on skills that are applicable beyond the classroom and are essential for the subject matter. This can be conveyed through a reflective manner in which a candidate elaborates on key skills that they were taught and how they hope to pass along those skills in their own teaching.
Pedagogical Approach	A candidate articulates an approach to their pedagogy as a list of methods without further description.	A candidate describes their pedagogical approach with detail as to why they utilize these approaches. Furthermore, they address how they enact inclusive practices that support students from marginalized backgrounds.	A candidate explains their reasoning to their pedagogical approach through elaboration on: effectiveness for their discipline, connection to their learning goals, specific examples utilizing their approaches, how their approach supports marginalized students, and reflection of how their approach has changed over time and

			how they plan to continue to grow.
Evaluation of Learning Goals	A candidate does not elaborate on how they assess learning or provides a list of methods without elaboration.	A candidate provides insight into why they choose the assessment methods they enact, both in summative and formative capacities.	A candidate expands on their assessment approaches by reinforcing their choices with concrete examples. Furthermore, they elaborate on how their assessment choices provide alignment between their pedagogical approaches and learning goals. Lastly, candidates elaborate on their perspective on the purpose and use of assessment in the creation of an inclusive classroom.

Teaching Statement Rubric (adapted from O'Neal et al., 2007)

Diversity Statement Rubric

The Diversity Statement Rubric provides guidelines for a committee to utilize during the search process and should be tailored to the specific needs of the institution.

Criteria include: (1) research and scholarly work, (2) teaching and mentoring, (3) service and outreach, (4) influence of personal identity, and (5) understanding of diversity, equity, and inclusion issues.

Each criteria is scored: developing (score = 0), satisfactory (score = 1), or excellent (score = 2).

Evaluation criteria: A description of how criteria should be scored and the definitions of three broad categories for evaluation are described: (1) elaboration and reflection, (2) engagement of the activity, and (3) the role of the candidate.

Criteria	Developing (0)	Satisfactory (1)	Excellent (2)
Research and Scholarly Work	Little or no work in the candidates scholarship that examines or further develops DEI initiatives	Candidate describes scholarly work they have conducted. The description provided by the candidate is at the surface level with not much detail given to the committee.	Candidate provides multiple details about the scholarship they have conducted towards advancing DEI initiatives. This can include the impact or dissemination of their work. Furthermore, the candidates communicate a track record of continued work for DEI.
Teaching and Mentoring	Little or no work mentioned by the candidate in regards to their pedagogical approaches or experiences working with and mentoring minoritized groups	Candidate describes the pedagogical approaches they have conducted as well as the experiences they have had with mentoring students from minoritized groups. The description provided by the candidate is at the surface level with not much detail given to the committee	Candidate describes multiple activities about the pedagogical approaches they utilize in the classroom to create an inclusive space. This can include describing specific methodologies or frameworks and their subsequent impacts. The candidate also describes concrete experiences that they have had mentoring students.
Service and Outreach	Little or no work described by the candidate in terms of their activities of	Candidate describes the service and outreach experiences they have had without providing	Candidates communicate multiple or singular instances of service/outreach activities

	service/outreach in order to advance DEI initiatives	any details on the actions they took to advance DEI initiatives in terms of the service/outreach conducted. The impact of the activities is not elaborated/clearly communicated.	in which they held an active role or a leadership position, including clearly communicating the impact they had in depth and outcomes from the programs or committees.
Influence of Personal Identity	Little or no mention of how a candidate's identity has influenced their approach to their DEI work.	The candidate speaks to the impact that their identity has had on their own personal experience, but does not expand their answer to how their identity influences their approach to their DEI work.	The candidate communicates how their identity has had an impact in their approach to their DEI work. This can be elaborated through their experiences as a member of a minoritized group or as a member of a majority group.
Understanding of Diversity, Equity, and Inclusion Issues	Little or no mention of how a candidate continues to educate themselves on DEI initiatives or there is little evidence of a demonstrated understanding of the barriers that minoritized groups face.	Candidate can communicate an understanding of DEI issues and of the barriers that minoritized groups face, but provide little evidence of actions that they are conducting to combat those issues.	The candidate demonstrates a clear understanding of DEI issues and barriers that members of minoritized groups face. Additionally, candidates communicate how they utilize their understanding to combat these issues.

Diversity Statement Rubric (adapted from University of California, Berkeley, 2022)

Evaluation Criteria:

Category	Description
Elaboration and Reflection	This criteria involves how candidates describe and convey the experiences and activities that they have undergone and conducted. The differentiating criteria involves the language the candidate uses to describe their experiences by utilizing language that does not indicate or imply a deficit perspective with DEI issues. Furthermore, candidates can give differing responses on how they reflect on the experiences they have had with DEI. This reflection can range from how the experiences impacted their current and future work with DEI to keeping the description focused on the activity itself.

Engagement of the Activity	When describing the engagement of the activity, candidates ideally will describe the frequency of the activities and provide specific details on the inclusivity and impact of the DEI. These details can include the stakeholders that the candidate worked with, the focus of the activity, and how the candidates intend to continue similar work in the future.
The Role of the Candidate	Within this criteria, candidates can describe the roles that they enacted within the activities or work that they described. This can include if they initiated the activities in a leadership position or were a participant within the activity or described committee. Furthermore candidates can describe if they were directly working with stakeholders and community members or if they held an administrative position.

Research/Scholarship Statement Rubric

The Research/Scholarship Statement Rubric provides guidelines for a committee to utilize during the search process and should be tailored to the specific needs of the institution.

Criteria include: (1) contextualization of the proposal, (2) clarity of the research plan, (3) plans for funding, and (4) description of collaboration activities with current faculty.

Each criteria is scored: developing (score = 0), satisfactory (score = 1), or excellent (score = 2).

Criteria	Developing (0)	Satisfactory (1)	Excellent (2)
Contextualization of the Proposal	The candidate provides an unclear description of the context of the research proposal that does not convey to the committee why it is a critical issue to investigate or how their work is going to contribute to understanding the issue.	The candidate provides a clear description of the context of their research proposal that conveys to the committee why the research is important to investigate in a larger landscape. However, there are details that are missing that provide a complete understanding as well as a lack of communication regarding the long term implications of their research. There are occasional jargon terms in the proposal.	The candidate provides a concise but thorough description that is able to contextualize their work in the current field and provides the reasoning as to why their proposed work is critical to conduct. Furthermore, the candidate conveys how their work has long-term implications for their field and what is unique about their contribution to the work being proposed. Lastly, the candidate is able to communicate the research and context of the research clearly such that non-specialists can understand the proposal.
Clarity of the Research Plan	The candidate provides an unclear research approach that does not align with the research proposal. Additionally, the candidate describes a research plan that is overly ambitious.	The candidate provides a list of methodologies that are appropriate for the described proposal as well as provides milestones that they are planning to achieve in their research plan.	The candidate describes methodologies for their research proposal that are appropriate alongside reasoning for these approaches. Furthermore, the candidate conveys a research plan that is composed of long term and short term goals.

Plans for Funding	The candidate describes unclear plans to acquire funding or does not address funding at all.	The candidate describes different agencies that they will target to acquire funding.	The candidate describes a plan for funding with specific approaches for each funding agency that are described in short term and long term goals. Furthermore, the candidate conveys how their research proposal aligns with their funding plan.
Description of Collaboration Opportunities with Current Faculty	The candidate does not communicate how they will incorporate the research interests of other faculty members into their future research at the institution or it is unclear.	The candidate describes how they will broadley integrate some of the research interests of other faculty.	The candidate describes in detail how they will be able to create opportunities for collaboration with other faculty by not only integrating their interests into the candidate's research, but also how the candidate's research can provide novel approaches for current faculty.

Adapted from the rubric developed by Gabriele Bauer, Ph.D., Center for Teaching & Learning, University of Delaware, 2011; gabriele@udel.edu