Leveraging Familia: Equipando Padres Program Pilot for Hispanic Parents and Caregivers of First-Generation-to-College Engineering Students

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She joined SHPE's staff in 2021, after serving as a faculty member at Northeastern University and a post-doctoral fellow at the James A. Hailey Veterans Hospital and the HSyE Institute. Holding a PhD in Industrial Engineering from the University of South Florida and a certificate in Diversity, Equity, and Inclusion from Cornell University, Dayna is deeply passionate about increasing Hispanic representation and success in STEM. Leveraging her analytical skills and data-driven approach, she is committed to creating and evaluating impactful programs and services for the Hispanic STEM community.

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Esther González is a PhD candidate in the Price School of Public Policy at the University of Southern California (USC). Her research domains are organization behavior and diversity management. Her research is multidisciplinary and applies methods and fields in public policy, management, political science, and sociology. Upon completion of her Bachelors of Arts degree in International Development Studies at UCLA, she began a successful career in banking and finance at Bank of America, Merrill Lynch. She has completed various post baccalaureate certifications through UCLA Anderson and the Harvard Business School; most recently, she completed her MPA at California State Polytechnic University, Pomona, and MBA at Cornell Tech. She has published in multiple academic journals including ASEE, ROPPA, and APPAM. Additionally, her scholarly work has been featured in Forbes magazine. She believes that research can inform diversity, equity, and inclusion (DEI) policies and programs to one day have a workforce that is representative of the society it aims to serve.

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Background and Motivation

Parental support plays a crucial role in the academic success of engineering students, particularly for those who are first-generation college students. Parental support significantly influences the academic achievement and persistence of engineering students. Research finds that parental involvement, including emotional support, encouragement, and guidance, positively impacts students' confidence, motivation, and academic performance [1]. Parents who actively engage in their children's educational journey demonstrate a vested interest in their success, which fosters a sense of belonging and resilience in engineering students [2]. First-generation college students pursuing engineering degrees encounter unique challenges that can hinder their academic success. These challenges include navigating unfamiliar academic environments, financial constraints, and a lack of familial understanding about the demands of engineering coursework [3]. Without adequate support systems, first-generation-to-college engineering students may experience feelings of isolation, imposter syndrome, and difficulty accessing resources necessary for academic achievement [4]. Moreover, Hispanic/Latinx parental involvement plays a vital role in shaping the educational experiences and outcomes of engineering students from these backgrounds. Research indicates that Hispanic/Latinx parents often value education highly and prioritize their children's academic success [5]. However, when they encounter potential language, cultural, and systemic barriers, Hispanic/Latinx parents retract from educational institutions and may lack an understanding of how to support their children's aspirations in STEM fields even though they have a desire to do so [6]. Their involvement can not only provide emotional and financial support but also instill cultural pride and resilience, bolstering their confidence and academic performance [7].

Conclusively, parental support plays a critical role in the success of engineering students, particularly for first generation-to-college students and those from Hispanic/Latinx backgrounds. By providing emotional encouragement, guidance, and tangible resources, parents can positively influence their children's academic trajectories in engineering. However, first-generation students face unique challenges that require tailored support systems to ensure their success in the engineering field. Hispanic/Latinx parental involvement is significant in mitigating these challenges and fostering a supportive environment conducive to academic achievement. Therefore, it is essential for educational institutions and organizations to recognize the importance of parental support and implement initiatives that facilitate meaningful engagement between parents, students, and academic communities.

The Purpose of the Equipando Padres Program

The Equipando Padres program is strategically designed with a threefold purpose: firstly, to fill a critical gap in parent programming by specifically addressing the unique challenges faced by parents who lack college experience; secondly, to focus on the intricacies of navigating the

pursuit of an engineering education; and thirdly, to ensure cultural relevance for Hispanic/Latinx parents. This comprehensive approach recognizes the multifaceted nature of the hurdles that parents may encounter as they support their children in pursuing engineering degrees.

For parents without college experience, Equipando Padres offers targeted workshops and resources to provide essential insights into the academic landscape, especially within the specialized field of engineering. Simultaneously, the program hones in on the specific challenges associated with engineering education, offering tailored support to navigate the complexities of coursework, career pathways, and industry expectations.

Recognizing the importance of cultural relevance, Equipando Padres integrates cultural sensitivity into its framework. By acknowledging and respecting the diverse backgrounds of Hispanic/Latinx families, the program aims to create an inclusive and supportive environment. Through workshops, informational sessions, and community-building initiatives, this program strives to empower parents to actively engage in and support their children's educational journey in engineering.

In summary, Equipando Padres seeks to bridge gaps in parent programming by simultaneously addressing the lack of college experience, focusing on the challenges unique to pursuing an engineering education, and ensuring cultural relevance for Hispanic/Latinx parents. This multifaceted approach aims to empower parents to play an active role in supporting their children's success in the field of engineering.

The Equipando Padres Program's Goals

The goals of the Equipando Padres program are centered around empowering Hispanic/Latinx parents and caregivers in three key dimensions, each contributing to the overall success and confidence of both parents and their children pursuing an engineering education.

1. Increasing College Knowledge
   Equipando Padres aims to enhance the college knowledge of Hispanic/Latinx parents who may not have prior exposure to higher education systems. Through targeted workshops and resources, the program strives to provide valuable insights into the intricacies of college life, academic expectations, and the specific requirements of engineering education. By increasing parents' understanding of the college landscape, the program aims to equip them with the knowledge needed to actively support and guide their children through the academic journey.

2. Increasing Self-Confidence
   The program seeks to bolster the self-confidence of Hispanic/Latinx parents by providing them with the tools, resources, and information necessary to navigate the challenges associated with their children's pursuit of an engineering degree. Through skill-building workshops and supportive community interactions, Equipando Padres aims to instill a sense of self-assurance in parents, empowering them to actively engage in discussions about education, career choices, and the unique aspects of the engineering field. Increased self-confidence contributes to more effective guidance and support for their children.

3. Enhancing Student Success through Familial Engagement
   Recognizing the pivotal role of familial engagement in student success, Equipando Padres strives to foster stronger bonds between parents and their children pursuing engineering degrees. By creating a supportive community and facilitating open communication, the program aims to enhance the overall family involvement in the educational journey. Through workshops that highlight the importance of familial support, Equipando Padres seeks to create an environment where students feel empowered and encouraged, ultimately contributing to increased success rates in their engineering pursuits.

How is Equipando Padres Unique?

The uniqueness of the Equipando Padres program lies in its innovative approach, positioned at the intersection of three crucial dimensions: tailored support for Hispanic/Latinx parents, specialized guidance for parents of engineering students, and assistance for parents of first-generation college students. While various parent programs exist, none seamlessly integrate these three elements to address the specific needs of parents navigating the complexities of engineering education within the context of Hispanic/Latinx family experiences.

1. Holistic Approach to Hispanic Parental Support
   Equipando Padres goes beyond mere translation of materials, offering a program specifically designed for Hispanic/Latinx parents. By considering cultural nuances and tailoring content to resonate with the experiences of Hispanic/Latinx families, the program ensures that the support provided is not only linguistically accessible but also culturally relevant. This holistic approach acknowledges and embraces the unique challenges faced by Hispanic/Latinx parents without college experience.

2. Specialized Guidance for Parents of Engineering Students
   Unlike general parent programs, Equipando Padres narrows its focus to the field of engineering. This specialized approach recognizes the distinctive challenges associated with pursuing an engineering degree and provides parents with targeted information, resources, and skills necessary to navigate the academic and career pathways within this specific discipline. The program acknowledges the technical nature of engineering education, ensuring parents are well-equipped to guide their children through the intricacies of the field.

3. Support for Parents of First-Generation College Students
   Equipando Padres addresses the additional challenges faced by parents whose children are the first in the family to attend college. By providing insights into the higher education system and the unique dynamics of being a first-generation college student, the program aims to bridge the information gap and empower parents to effectively support their children in this pioneering educational journey.

The synergy of these three components sets Equipando Padres apart from other parent programs. It recognizes the interconnectedness of linguistic, cultural, and academic factors, offering a comprehensive and tailored approach that empowers parents to actively engage in and support their children's pursuit of an engineering degree. This intersectional focus ensures that

Equipando Padres not only fills existing gaps in parent programming but does so in a way that is uniquely inclusive and impactful for the Hispanic community with children in engineering education.

Program Design

The foundation of the Equipando Padres program rests on a multifaceted and comprehensive design, meticulously crafted to address the intersecting challenges faced by Hispanic/Latinx parents supporting first-generation-to-college engineering students. This approach draws from three primary sources: a thorough review of relevant research, extensive data analysis, and active engagement with diverse stakeholders through surveys.

In what follows, we briefly outline the program's approach. However, for more in-depth details on the design, readers are encouraged to refer to our previous paper, "Equipando Padres: Apoya el éxito de tu estudiante (Empowering parents to make a difference.)" (Martínez, D.L. et al., 2022).

1. Inventory of Parent Programming at Universities and Colleges
   A thorough exploration of parent programming across various universities and colleges provided an essential inventory. This initial step aimed to understand the existing landscape and identify gaps that Equipando Padres could address.

2. Literature Review on Challenges Faced by Hispanic/Latinx First-Generation Students and Family Dynamics
   A comprehensive literature review delved into the challenges encountered by Hispanic/Latinx first-generation students and explored the dynamics within their families. This phase provided valuable insights into the unique hurdles faced by this demographic, informing the program's design to be responsive to these specific challenges.

3. Exploration of the "Growing What Works" Database by Excelencia in Education
   The "Growing What Works" database by Excelencia in Education served as a valuable resource for identifying proven parent programs. By examining successful models, Equipando Padres aimed to learn from the experiences of other initiatives and integrate effective strategies into its own design.

4. Surveys to Parents, Students, and Faculty
   Surveys were conducted to actively involve three key program stakeholders - parents, students, and faculty. This inclusive approach ensured that the voices of all parties were heard, providing firsthand insights into challenges, aspirations, and expectations. The survey responses played a pivotal role in shaping the program's structure and interventions.

Equipando Padres' Subprograms

The Equipando Padres program encompasses two distinct but interconnected subprograms, each tailored to specific stages of a student's educational journey. These subprograms, Equipando Padres Academy (EPA) and Equipando Padres University (EPU), share a common underlying

approach rooted in comprehensive support for Hispanic/Latinx parents. This paper, however, specifically focuses on the design, pilot implementation, and results of Equipando Padres Academy, a program designed for parents of pre-college students interested in pursuing engineering.

EPA Program Components

EPA employs a diverse range of educational tools, including modules, videos, workshops, and practical resources. Additionally, insightful panel discussions featuring key representation of undergraduate students and professionals enrich the learning experience. This section elaborates on each component, emphasizing their integrated design to empower parents in guiding their pre-college students toward success in engineering education.

1. Modules
   In the development of EPA, our approach to selecting module topics is characterized by a thoughtful curation rooted in extensive research into the distinctive needs and challenges faced by pre-college students aspiring to pursue engineering degrees. The program's initiation focuses on this critical transition period, recognizing the significant decisions parents and students navigate during their pre-college years. Guided by our research, the modules are crafted to align seamlessly with the academic and developmental levels of pre-college students. Each module directly addresses challenges, providing tailored practical solutions and guidance at this crucial juncture. These insights are consolidated into a comprehensive guidebook, serving as a navigational tool for parents to revisit key concepts and strategies at their own pace, reinforcing their understanding. Acknowledging diverse learning styles, the modules are transformed into engaging video presentations, enriched with visual content such as animations and real-life testimonials. To further cater to various learning preferences, the modules are integrated into interactive workshops, offering a dynamic platform for active engagement, fostering community, and equipping parents with the confidence to effectively guide their pre-college students.

2. Tools
   EPA employs a strategic use of tools to ensure a lasting impact on parental understanding and engagement. Central to this approach are carefully crafted worksheets, designed not only as informative resources but as instruments for active learning. Worksheets serve as tangible tools, allowing parents to revisit and reinforce key concepts at their own pace, facilitating a deeper internalization of information. Furthermore, EPA enhances the learning experience by incorporating interactive computer-based tools. These dynamic resources go beyond traditional methods, offering varied and engaging ways for parents to interact with the material.

3. Resources
   EPA places a significant emphasis on providing a wealth of resources to parents, creating a holistic support system for their pre-college students' educational journey. Central to this initiative is the establishment of a dedicated website, and a regular newsletter, both serving as

valuable hubs of information. These platforms not only connect parents with the resources offered by our organization but also extend their reach to other pertinent materials and local initiatives. By fostering these connections, EPA ensures that parents are not only equipped with the necessary tools but are also well-informed and connected to a broader network of support.

4. Community Engagement
   EPA actively promotes community engagement through two key initiatives. First, it organizes panel discussions where students and professionals share their valuable experiences, offering insights into the engineering journey. Additionally, the program establishes a dynamic presence on Facebook and WhatsApp, providing platforms for parents to stay informed, interact with each other, and build a supportive community. These initiatives create spaces for meaningful connections, ensuring that parents not only receive crucial information but also actively engage with a network of peers, fostering a sense of community and shared experiences within the realm of engineering education.

All EPA program components are thoughtfully developed in both English and Spanish, with a special emphasis on the term "developed." This goes beyond mere translation; it entails a comprehensive process where materials are crafted and adapted to ensure cultural relevance and linguistic nuance in both languages. By prioritizing this dual-language approach, the program ensures accessibility and inclusivity, recognizing the diverse linguistic backgrounds of its audience and delivering information effectively to a broader community.

EPA Pilot

EPA underwent its initial pilot phase during the spring of 2023, a crucial step in refining and optimizing the program's efficacy. This pilot initiative unfolded across four in-person locations and one virtual delivery, allowing for a diverse range of experiences and insights. The in-person sessions were strategically held in various locations to capture regional nuances and better understand the localized needs of parents. Additionally, a virtual delivery option was incorporated to accommodate a broader audience, ensuring inclusivity and accessibility. This multi-pronged pilot approach not only provided valuable real-world feedback but also facilitated a thorough assessment of the program's adaptability and effectiveness in different settings.

Participants engaged in half-day activities carefully crafted to optimize their learning experience. The thematic focus was "Transition to College," a deliberate choice aimed at addressing the specific needs of parents with high school juniors and seniors. By concentrating on this critical period in a student's educational journey, the program targeted relevant challenges and considerations faced by parents guiding their pre-college students toward higher education.

The pilot implementation of EPA revolved around three key modules, each designed to address essential aspects of the college transition process for parents. The first module, "Why College?" delved into the fundamental question of the importance of higher education, offering insights into the benefits and opportunities an engineering degree provides. The second module, "How to Choose a College?" provided parents with practical guidance on navigating the complex process

of selecting the right institution for their pre-college students. Finally, the third module, "Preparing for College Visits" equipped parents with valuable information and strategies to make the most out of college exploration trips.

The strategic selection of pilot locations for Equipando Padres Academy was influenced by several factors, including the imperative to ensure geographic diversity and align with the interests of our primary funder, RTX. With the grant funding originating from RTX, the locations chosen—Hialeah, FL; Tucson, AZ; and Ponce, PR—were identified as opportune sites that not only reflected high Hispanic/Latinx population concentrations but also catered to the interests of our funding partner. This approach allowed us to maintain research integrity while strategically positioning the program to reach communities where the need for support and resources is most pronounced. In Ponce, PR, and Hialeah, FL, the program collaborated with NAF and their academies of engineering, fostering a strong school-community relationship. These partnerships allowed for a targeted focus on regions with established engineering programs, aligning with the program's objectives. In Hacienda, CA, and Tucson, AZ, the selection broadened to include areas with distinct educational landscapes and a heavy SHPE presence through student and professional chapters. The deliberate inclusion of a virtual event reflected the program's commitment to assessing the impact of different delivery modes on college knowledge gained and self-confidence. This geographic and virtual distribution aimed to gather comprehensive insights into the program's effectiveness across varied contexts, ensuring a nuanced understanding of the impact on Hispanic/Latinx parents supporting pre-college students in their engineering aspirations.

Partnership relations shifted by location which illustrates the dynamic nature of EPA’s implementation strategy. For example, collaborating with RTX's Santa Isabel location, the program targeted two prominent area high schools—Elvira M. Colón Negrón in Santa Isabel and Benito Cerezo Vásquez in Aguadilla. Given the geographical challenges, a centrally located venue with internet access at Aloft Ponce was strategically chosen. To incentivize attendance, travel gift card incentives were provided to families. While the groundwork for engagement was laid through NAF's national office, most of the support came from volunteer facilitators, including professionals, faculty, students, and local contacts from UPR-Ponce, UPR Mayaguez, and the Federal Program ET^2. This collaborative endeavor ensured effective outreach and engagement, underscoring the importance of local partnerships in tailoring the program to the community's needs.

The marketing strategy for EPA was multifaceted, aiming to maximize outreach and engagement among the target audience of Hispanic/Latinx parents. A comprehensive marketing suite was developed, comprising flyers (an example shown in Figure 1), social media graphics, and "reels," which are short video clips tailored for platforms like Instagram. These materials were strategically shared with key stakeholders, including NAF, school administrators, volunteers, and university partners, to amplify visibility and participation. Additionally, leveraging the listserv from the Puerto Rico Department of Education facilitated broad dissemination of program information across relevant communities. By utilizing a diverse array of marketing channels and materials, EPA effectively communicated its offerings and encouraged participation among

Hispanic/Latinx parents interested in supporting their pre-college students' pursuit of engineering education.

Figure 1 Example Flyers for EPA Pilot

Participant selection for EPA underwent a strategic evolution during the program's implementation. While initial marketing materials predominantly targeted parents of 12th-grade students at partner schools interested in engineering, the graphic design and programming shifted to adopt a more inclusive approach. This adjustment aimed to cast a wider net, encouraging parents from other schools and various high school grade levels to participate in the program. By broadening the scope of participant eligibility, EPA sought to enhance accessibility and ensure that a diverse range of parents could benefit from the valuable resources and support offered by the program.

An example agenda for the day is depicted in Figure 2, illustrating the diverse components and activities scheduled. Among these activities is a session of Kahoot Activities, which facilitated Mind Mapping Discussions between undergraduate students, professionals, and parent participants in intimate groups of five or less. This interactive activity provided an engaging platform for collaborative brainstorming and knowledge-sharing, fostering meaningful dialogue and exchange of insights.

Figure 2 EPA Pilot Sample Agendas

Another example activity featured group discussions with prompt questions, as illustrated in Figure 3, providing structured opportunities for participants to engage in meaningful dialogue and reflection. Additionally, panel sessions were conducted, focusing on connecting unique personal experiences with an engineering education. Panel questions centered on topics such as parent support and community building, allowing panelists to share their own experiences and insights.

Figure 3 Sample Prompt Question for Group Discussion

"What is your biggest dream for your student? What hopes do you have for their future?"

Depending on the location, local universities and organizations were also involved in the program. For instance, in our Ponce, PR offering, guest university presentations and tabling sessions were included. Representatives from UPR Ponce and UPR Mayagüez delivered brief presentations on engineering concentrations and support services tailored to first-generation college students. Tabling activities provided informal opportunities for one-on-one interactions between parents and university admissions representatives following the event, facilitating further engagement and information sharing.

The day concluded with the administration of surveys to gather feedback from parents, ensuring continuous improvement and refinement of the program based on participant input.

Program Evaluation

In evaluating the EPA pilot, a robust data collection strategy was employed primarily through surveys and feedback. The survey aimed to gather comprehensive insights, assessing pilot satisfaction, measuring learning outcomes, and gauging parent self-confidence. This instrument was crafted in both English and Spanish, benefitting from the expertise of an external evaluator. The external evaluator methodically designed the survey to maintain an objective outside perspective in program evaluation. Following this, we administered the survey, collected data, and analyzed the results. This instrument was thoughtfully crafted in both English and Spanish. The survey was also made accessible in various formats, available in print for in-person sessions and digitally on SurveyMonkey for the virtual offering. Featuring a well-balanced combination of quantitative and qualitative data, the feedback survey comprised 10 questions. Notably, the sample size for this data collection effort was substantial, with 126 surveys completed across all five locations. This robust methodology ensured a comprehensive and nuanced evaluation of the program's impact on parents supporting pre-college students in their engineering aspirations.

In addition to surveys, we conducted focus groups on June 29, 2023, facilitated by an external evaluator to complement our data collection efforts, with 4 parents and 12 volunteers actively participating. The focus groups provided a valuable platform for participants to share more in-depth information, offering perspectives on what worked well in the program and areas that could be improved. Notably, 16 parents and 4 volunteers who initially signed up did not attend. The external evaluator suggested that discomfort in group settings or using virtual platforms like Zoom may have contributed to this non-participation. This observation underscores the importance of considering alternatives, such as 1:1 interviews or over-the-phone discussions, in future iterations to ensure a more inclusive and accessible means for participants to share their insights.

Results and Discussion

In this section, we delve into a comprehensive analysis of the outcomes and insights derived from the EPA pilot program. By exploring key themes such as college knowledge, self-confidence, program satisfaction, and the efficacy of various components, this section provides a nuanced understanding of the program's effectiveness and sheds light on areas for potential refinement and future development.

College Knowledge

An essential aspect of our evaluation focused on assessing parents' college knowledge through a detailed 14-item matrix question. Participants were asked to indicate their level of knowledge on various topics, ranging from awareness before the program to a substantial increase in understanding as shown in Figure 4. On average, the results showcased a significant improvement in college knowledge, with 48.88% of respondents indicating that they now know a lot more about the covered topics. Additionally, 20.42% reported knowing somewhat more, 15.27% noted knowing a little more, and 15.33% stated they already knew the information before.

The observed pattern in the results reflects a distinction between instrumental support and emotional support within the context of parental understanding. Topics such as the availability of a college ranking tool, SHPE resources for families, and the availability of a college visit budget template are aligned with instrumental support – practical tools and resources that can directly aid in the college preparation process. It's noteworthy that parents reported significant learning in these areas, indicating a clear benefit from the program's focus on providing tangible, actionable information.

Conversely, topics where respondents were more likely to already have knowledge, such as the impact of college on income, the impact of college on fulfillment, and the influence of parental support on completion, are more closely tied to emotional support. These aspects encompass the broader understanding of the transformative effects of college on personal and familial well-being, emphasizing the emotional and psychological aspects of the educational journey.

This observed difference is expected, as even parents without direct college experience can provide crucial emotional support to their children, fostering a positive and encouraging environment. While they may not possess instrumental knowledge, their understanding of the emotional aspects can play a pivotal role in motivating and sustaining their children's pursuit of higher education. This nuanced insight underscores the importance of tailoring program content to address both instrumental and emotional dimensions, recognizing the diverse needs and strengths of parents supporting pre-college students in their engineering aspirations.

Self-Confidence

The evaluation of self-confidence, gauged through a 10-item matrix question, revealed promising outcomes as shown in Figure 5. On average, participants demonstrated a substantial increase in self-confidence across all items. Impressively, 76.24% of respondents strongly agreed with the statements, while an additional 18.91% agreed. Disagreement was minimal, with only 1.94%, and 2.91% strongly disagreed. Combining the responses of strongly agree and agree, the overall percentage reached an impressive 95.15%.

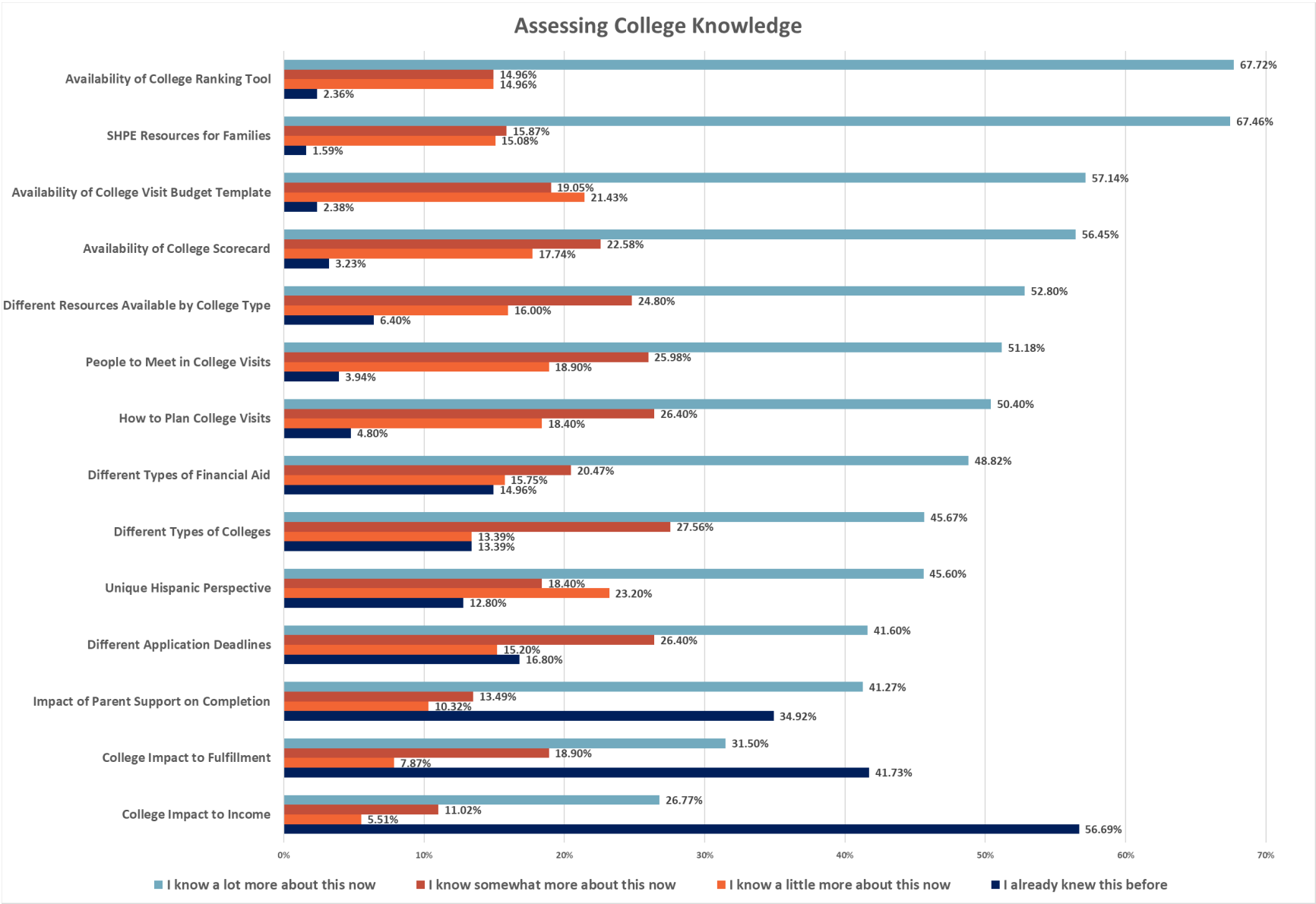

Figure 4 College Knowledge Results

This overwhelmingly positive result indicates that the program significantly contributed to boosting parents' self-confidence. The majority felt well-prepared to support their children throughout the college application process, navigate the intricacies of seeking help, and make informed decisions about choosing a college. The program's success in fostering increased self-confidence underscores its effectiveness in increased sense of ownership of parents supporting pre-college students in their engineering aspirations.

Boosting self-confidence is particularly important as it provides parents with the assurance and belief in their capacity to offer effective support to their children. This heightened confidence is a catalyst for parents to provide strong support as their students navigate forthcoming challenges, playing a pivotal role in their well-being and motivation. Moreover, confident parents are more likely to advocate for their children and guide them through critical decisions, ensuring they access the necessary resources for both academic and personal success. Parents strengthened with increased self-confidence are better equipped to navigate challenges and seek help, serving as a model for their children. This positive influence significantly shapes their mindset, fostering self-assurance and resilience in the face of educational and personal endeavors.

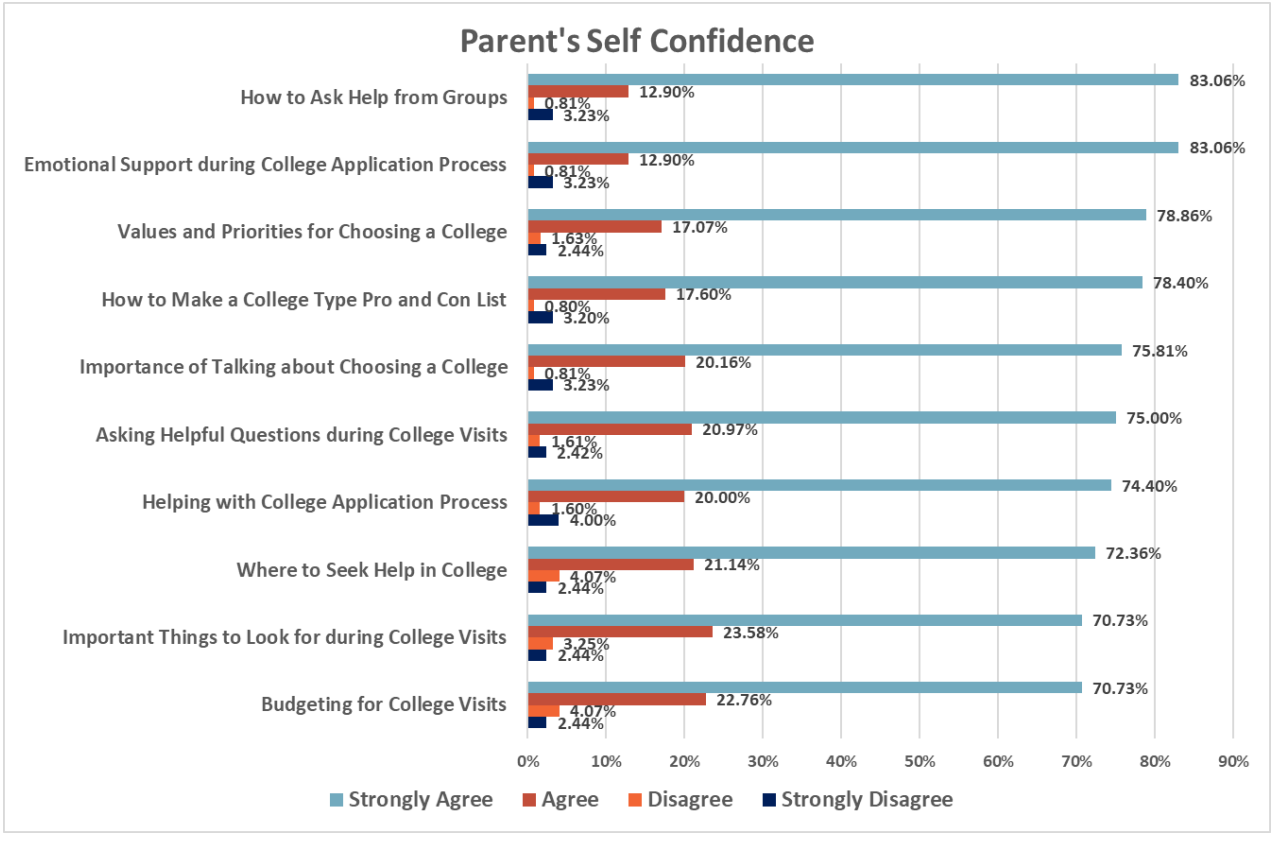

Figure 5 Parent's Self-Confidence Results

Belongingness

The evaluation also revealed a significant impact on the participants' sense of belonging to the SHPE Familia as shown in Figure 6. An impressive 87.20% of respondents rated their feeling of being part of the SHPE Familia between 8 and 10. This high rating underscores the program's success in fostering a strong sense of community and belonging among the participants.

Belongingness to the SHPE Familia is crucial as it signifies more than just participation; it indicates a genuine connection and identification with the SHPE community. A strong sense of belonging contributes to a supportive network, fostering collaboration, mentorship, and a shared commitment to educational and professional goals. This positive outcome not only enhances the participants' overall experience but also contributes to the long-term success and sustainability of the program's impact.

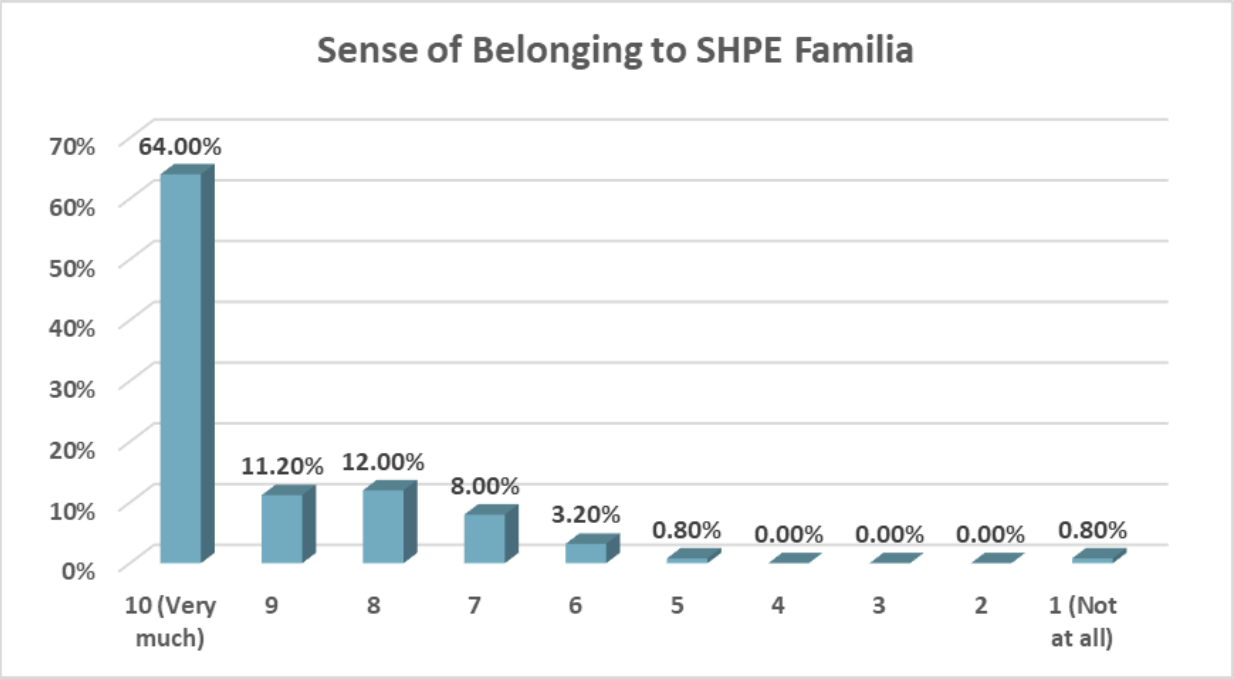

Figure 6 Parent's Sense of Belonging to the SHPE Familia

Net Promoter Score

The Net Promoter Score (NPS) of 95.24 reflects an outstanding level of satisfaction among participants. This metric derived from responses to the question "How likely are you to recommend this event to others?" signifies an overwhelmingly positive endorsement of the program. The comprehensive results with the percentage of detractors, passives, and promoters are shown in Figure 7. A score of 95.24 is extraordinary, indicating an exceptionally high likelihood that participants would recommend the event to their peers and associates.

Such a stellar NPS underscores not only the success of the program but also the participants' enthusiasm and endorsement. A high NPS is a testament to the program's effectiveness, participant engagement, and overall positive impact. This exceptional score not only validates the program's value but also positions it as a recommended and reputable resource within the community, boding well for its future success and expansion.

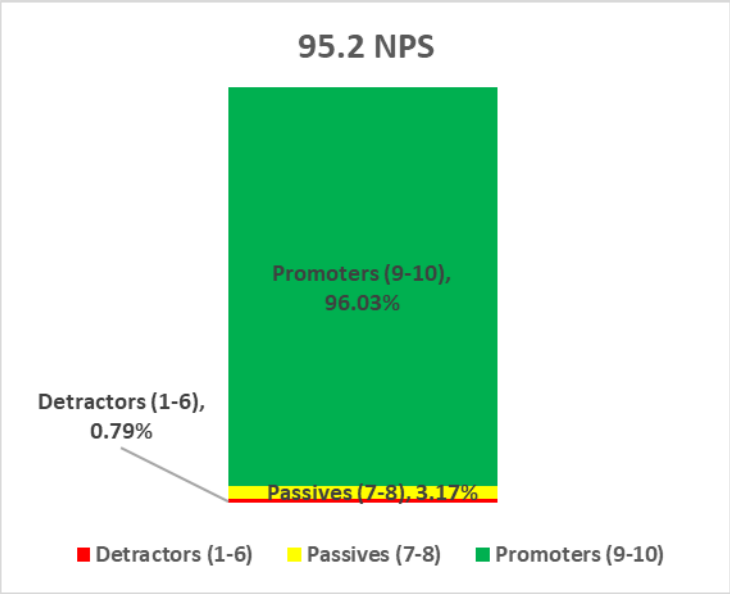

Figure 7 Equipando Padres Academy Net Promoter Score (NPS)

Helpfulness of Resources

Participants found the resources provided during the program to be beneficial as shown in detail in Figure 8. Resources are interconnected with the program's goal of increasing college knowledge and self-confidence. When asked to rate the helpfulness of various resources on a 4-point scale – ranging from not helpful at all to very helpful – the top three identified as the most helpful were the website, guidebook, and campus visit scorecard. This robust endorsement emphasizes the practical value and utility of these resources in addressing participants' needs, further contributing to their enriched experience and success in navigating the complexities of the transition to college process.

Satisfaction with Activities

Graphical representation of participant satisfaction, using a comprehensive 4-point scale (Very satisfied, Satisfied, Dissatisfied, and Very dissatisfied), demonstrates consistently high levels across various event components as shown in Figure 9. Notably, testimonials (panels) emerged as the highest-rated activity. Parents found profound connection and inspiration in hearing from real students and professionals who have successfully navigated the college application process. Witnessing these role models greatly influenced the favorable reception of the program's

activities and enabled parents to envision their own children in similar positions. For instance, a mother expressed how she initially perceived engineering as a field primarily for boys. However, after seeing other girls pursue and succeed in engineering, she is now eager to present this empowering option to her daughter. This poignant example highlights the transformative impact of providing diverse role models in reshaping parents' perspectives and fostering enthusiasm for educational opportunities.

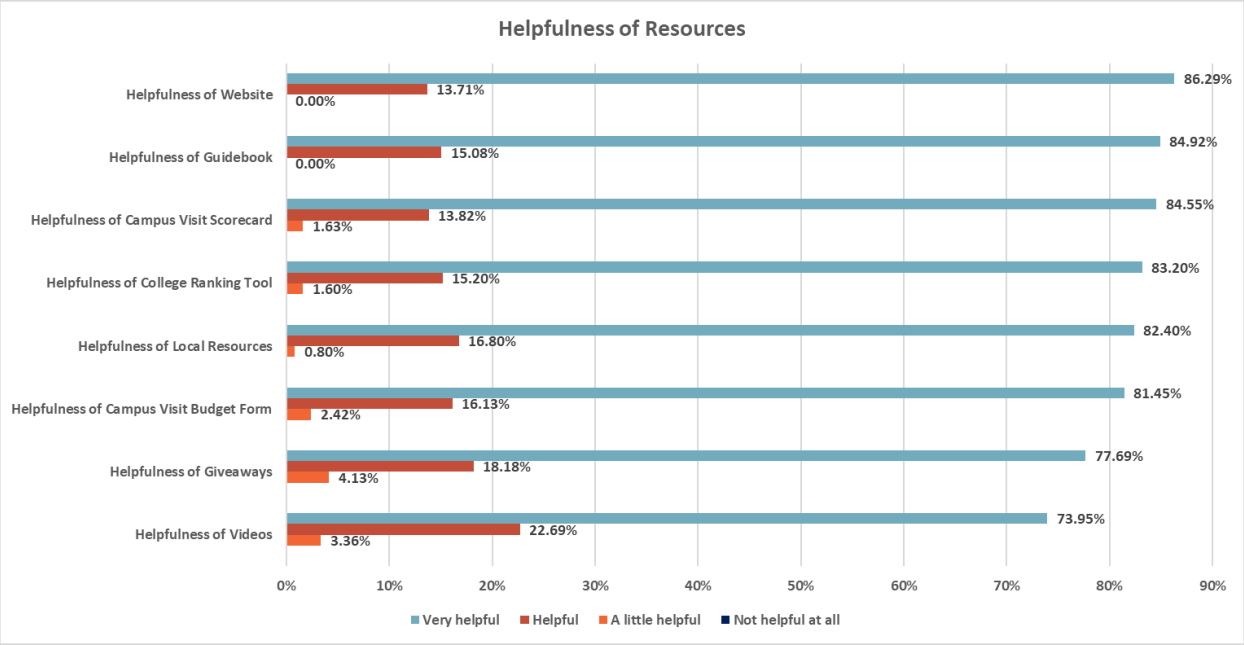

Figure 8 Helpfulness of EPA Program Resources

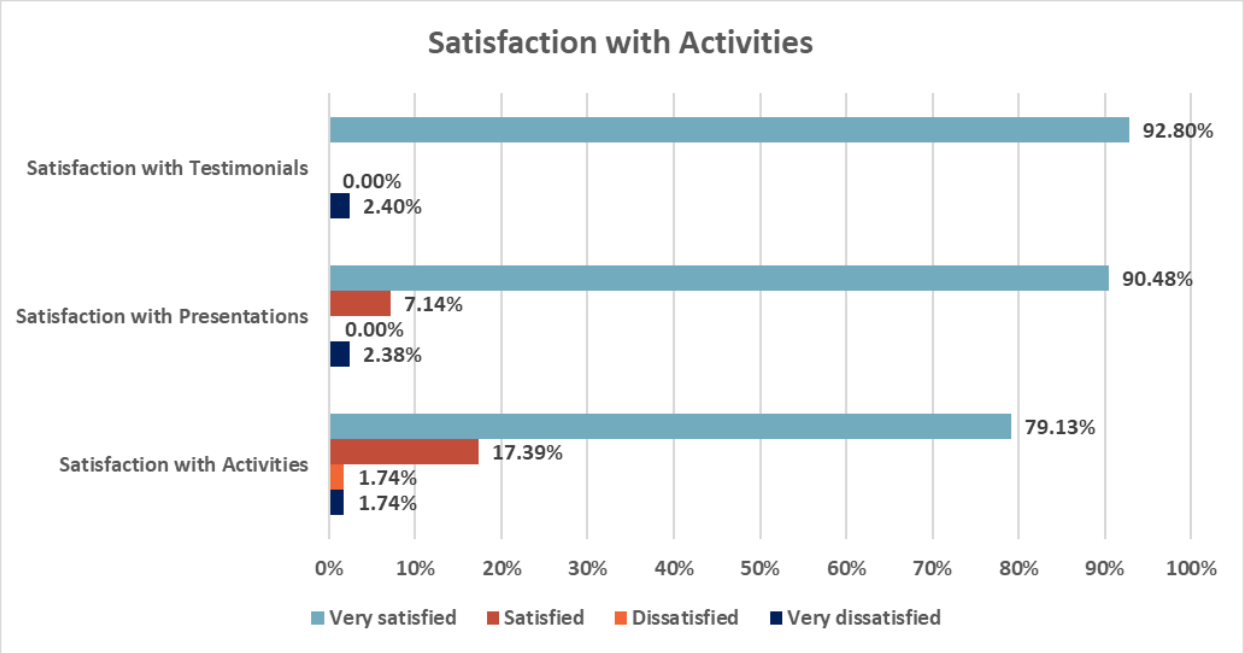

Figure 9 Satisfaction with EPA Program Activities

Focus Groups

As highlighted earlier, the focus groups played a pivotal role in eliciting valuable feedback from both participants and volunteers, shedding light on the program's strengths and areas for improvement.

Commencing with the positive aspects (some of which are shown in Table 1), parents unanimously expressed that the Equipando Padres workshops were not only immensely beneficial but, for many, they were perceived as life-changing for both themselves and their families. An overwhelming consensus emerged as all parents and volunteers expressed a high likelihood (8 out of 10 or higher) of recommending EPA to others.

Participants emphasized the significance of the program being developed by "Hispanics for Hispanics," underscoring a crucial element of cultural relevance that resonated deeply with them. Additionally, participants noted that EPA played a pivotal role in challenging and breaking traditional stereotypes, fostering a more inclusive perspective on engineering education. The positive experiences extended to volunteers, who also reported meaningful and constructive engagements within the program.

Table 1 Select Parent and Volunteer Quotes from Focus Groups (What Worked)

Select Parent and Volunteer Quotes from Focus Groups (What Worked)
"I found EPA really interesting and really helpful. My son is going to be a sophomore this upcoming year, and I studied at a university in Ecuador, South America, same as my husband, but we've been living here for 16 years and we don't know anything about the process for the application for the university here in the States. It's so different from our countries. And our son was the one who started telling us, "Mom, I see these other kids doing these summer programs and they are hiring these people who are helping them to prepare for their applications." And I was like, "What are you talking about?" I had no idea this was a thing." (Parent)
"I've heard from some moms that their kids are in 11th grade now and the kids didn't do any preparation for college. They didn't do any summer programs. They didn't create their resume. So now they are regretting that they didn't have the information before. So the kids are a little bit disappointed that they didn't know about this. So I'm sending all the Hispanic moms I know in our little WhatsApp group to SHPE, like, "Hey, go to this website. Sign up. Because this is really good information. It's free. You don't have to pay for it. And it is really valuable." So I would. I would always recommend it." (Parent)
"One of the things that I remember that was near and dear to my heart was having a parent in one of my sessions say, "Well, my daughter had asked about being an engineer, but I don't know. She came from a Central American country, very small town", and mom said "It just seems like such men's job and I just worry about my daughter". And this mom was genuinely concerned. I mean, some of our experiences, and I could see how she was just so, so worried, and I acknowledged her feelings and we kind of tried to walk through it. But lo and behold, one of the panelists that we had that day was one of the Boeing engineers who happened to be a woman from the same country as the mom, and just the mom's eyes. You could totally see that in the mom's eyes and just the idea and this particular professional, she even volunteered to mentor this young lady, and to me that was like, it was worth the plane ride and the pushing

and shoving. Again, because I work with kids and there's so many others, she wasn't the only one. A lot of the volunteers there, I saw them connecting with parents and just seeing how excited the parents were at the possibility. And think about it as a parent, when you find a new tool that you can give your child, you can give your child what you don't have. It's amazing, especially when you don't have economic resources when you're able to provide that relational resource for your child. It's invaluable. So that right there made it worth me doing again." (Volunteer)
"What I liked most about the experience is that it's made for Hispanic by Hispanics. That's really helpful because they do understand our needs. They do understand our concerns, our culture. I remember in the last meeting, we were talking a lot about how scared the moms were about letting their kids go far away for university. Because in our country, we stay really close to our folks. And the parents are there every single moment or step during our universities, taking care of us, doing our laundry, helping us with meals, and helping us if we don't understand a subject, they can help us. But here is so different. So what I love is the community. It's Hispanic made by Hispanic people, Hispanic people that are prepared in the university in STEM careers, so they have all the knowledge and both experience and they can give us advice. And so I love that the most." (Parent)
"I was a panelist. I loved hearing about each other's experiences and really seeing the innate curiosity of these parents that came to this event, and really want to help out their children do the same things that we achieved in our lives. I find that to be a very rewarding experience to try to know and help these parents and their children get to those places as well. Really, that was definitely the most rewarding aspect of all of that." (Volunteer)

Turning to areas identified for improvement, valuable insights from parents and volunteers illuminated potential enhancements to the EPA program. Some parents shared that they discovered the workshops accidentally or believed that the workshops could benefit from broader advertising. In response, they recommended a more expansive marketing approach, including encouraging students to provide parent contact information upon joining SHPE clubs for future informational outreach. While opinions varied, a subset of participants felt that sessions were too lengthy, prompting a consideration for session duration. Additionally, some parents suggested a more inclusive approach by having students sit in with parents, particularly during sessions featuring college student panels. Notably, a preference for in-person sessions over remote ones was voiced by some participants, indicating a nuanced response to virtual programming. Volunteers offered constructive feedback on the planning and logistics of virtual events, emphasizing the importance of clarifying roles, optimizing break times, increasing interaction in breakout rooms, encouraging camera usage, and ensuring diverse representation in student panels. Further recommendations from volunteers and facilitators centered on improving follow-up strategies for parents' post-workshop, including the distribution of recordings and chat transcripts, offering a more structured follow-up plan, providing actionable items, and assessing the practical application of the information provided. These insightful suggestions, some which are shown in Table 2, contribute to the ongoing refinement and effectiveness of the EPA program.

Table 2 Select Parent and Volunteer Quotes from Focus Groups (What Could be Improved)

Select Parent and Volunteer Quotes from Focus Groups (What Could be Improved)
"I'm glad that I saw the message and I signed up. I email one of them to suggest that the email to the invitation for the Equipando Padres be sent to the parents, because I know other moms from the SHPE club that I send information. They say, "Well, I didn't know about that." Probably because their kids are receiving the email. And my son, yeah, he doesn't see all the emails. I go see his email looking for something and I see the SHPE. I said, "Oh, what is that?" And I said, "Why didn't you tell me?" And, "I don't know." He was like, "I didn't know about that."'
"I feel like there's a piece missing ... of a marketing strategy to get the word out. And I don't know a solution to that. I would ask parents, "How did you get here?" Many times it was just random answers. So I don't know if there is a strategy behind how we market to our parents. I feel like there was maybe a missed opportunity to engage more people. I wish there would've been more folks hearing the message because I'm sure that on every single campus, every single city, there were plenty of folks that would've benefited from hearing the message."
"It was probably too long. I understand maybe for some people it's very useful to have it on a weekend and to do everything in one session of three hours. But for me, it was too long for a weekend. Because on the weekends, I also do my cooking for the week and I do my laundry and I go out with the kids. But maybe if you do the sessions shorter, like an hour, and maybe more days during the week, probably it would be easier."
"I really prefer weekends because, during the week, it's more difficult for me to sit for three hours."
"I would've liked for my kids to be actually present to hear the information. If we were to give the information to our kids, we miss certain important aspects or we can't break it down as much as they would be able to break it down to them if they had a question."
"I feel like it should be structured so the first three hours is just parents and the adults only. And then the last hour includes the students and we talk about what to look for in a college, how to choose the appropriate college for you. I think that's a message they have to hear because a lot of things that we're discussing is we're tasking them to work collaboratively between the child and the parent, but yet the only person to hear that message is a parent. If we can engage students and bring them in with the coding and say, "Okay, this section is over. Now you have to go meet with your parents." I think that would be a good strategy."
"I think it's better to keep it for the parents if it's called Equipando Padres. It makes sense. Because the questions we have or the information we want to know, it's all different from what the kids probably need to know. You could probably make another program for the kids, probably educating future college students, maybe. Yeah, but I think it's better to keep it just for the parents."
"The proof is in the pudding, what they did with all that information. So I think on our end, we need to measure participation and engagement and get that feedback not only from the parents but from the school system or whoever it was that we were supporting."

Limitations and Next Steps

While the Equipando Padres Academy (EPA) pilot program yielded valuable insights and positive feedback, it is essential to acknowledge certain limitations that surfaced during the evaluation. One limitation highlighted was the accidental discovery of workshops by some

parents, suggesting a need for more widespread and targeted advertising. Additionally, varying opinions on session length and the preference for in-person sessions underscore the importance of accommodating diverse preferences and refining the program's delivery format.

In response to the constructive feedback received, the next steps for the Equipando Padres program involve a meticulous refinement of its components. Leveraging the insights gathered from participants, volunteers, and facilitators, we aim to address concerns such as workshop accessibility, session duration, and the balance between virtual and in-person offerings. These refinements are crucial in ensuring that the program remains responsive to the needs of its diverse audience.

Looking ahead, the vision for Equipando Padres extends beyond its initial pilot phase. With the aim of broadening its impact, we plan to scale the program by introducing "EPA in a Box." This innovative approach involves providing our student and professional chapters with comprehensive resources, enabling them to independently facilitate EPA workshops in their local communities. By decentralizing the program and leveraging the strengths of our existing chapters, we aspire to reach a broader audience, fostering a collective effort to empower Hispanic parents in supporting pre-college students pursuing engineering education. The acknowledgment of limitations and the commitment to continuous improvement exemplify our dedication to ensuring the sustained success and relevance of the Equipando Padres program.

Conclusions

In conclusion, the EPA pilot program has yielded significant findings and profound insights into enhancing support for Hispanic parents guiding pre-college students toward engineering education. Key findings include the transformative impact of workshops, the importance of cultural relevance, and the influential role of diverse role models in challenging stereotypes. The program's success in boosting college knowledge and self-confidence among parents underscores its potential for broader impact.

The significance of Equipando Padres extends beyond individual workshops, resonating with the broader mission of empowering Hispanic parents and fostering inclusivity within the engineering field. By addressing the unique challenges faced by parents without college experience and emphasizing cultural relevance, EPA contributes to breaking barriers and reshaping perspectives within the Hispanic community.

As we reflect on these achievements, the journey does not end here. A call to action is extended for continued support and development. The success of Equipando Padres hinges on ongoing refinement, expansion, and community involvement. By rallying collective support, fostering partnerships, and leveraging EPA in a Box to engage our vast network of chapters, we can ensure that the program's impact continues to grow. The transformative potential of Equipando Padres is a testament to the power of collaborative efforts in making engineering education accessible and empowering for all. Continued dedication and support are essential to realizing the program's full potential and bringing about lasting change.

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