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Whole child, whole family, whole community: developing shared problems of practice with Latine families related to STEM learning in early childhood

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Although scholars emphasize the need to gather broad perspectives on the problems of practice guiding educational research and approaches, family voices are rarely included in these discussions. This study explored the potential for identifying shared problems of practice with families through a 2-year discussion group series with Latine parents of preschoolers. The group was part of a project exploring how informal engineering learning experiences can build on Latine family assets and support executive function skills for young children. Through discussions with participating families, several themes emerged that reflect a holistic, family-centered view on children's learning and point to potential problems of practice aligned with family goals and values: (a) supporting collaboration and relationships within families, (b) supporting children as problems solvers, (c) supporting parents as learners, and (d) creating a community of support. These themes serve to both broaden how we think about learning and development in early childhood and push on the ways that problems of practice have traditionally been conceptualized.

KEYWORDS

early childhood, educational policy, collaboration, equity, Latine, parents and families, qualitative research and analysis, problems of practice

Introduction

Researchers conducting design- and implementation-oriented studies often discuss the importance of articulating a jointly negotiated *problem of practice* with educators and other partners (LeMahieu et al., 2017; Farrell et al., 2021). Usually conceptualized as a problem or challenge within educational practice that needs to be addressed or resolved, these shared problems of practice are an important way for collaborators to develop shared meaning and purpose around a study or initiative and ensure that the work contributes directly to improving education and learning (Fishman et al., 2013). The process of identifying problems of practice can also be essential for collaboration, since this process determines whose voices are included and what perspectives shape how problems are identified, defined, and addressed (see literature review).

Much of the work related to shared problems of practice focuses on schools and teachers. Despite a robust body of literature highlighting the critical role of families in children's early development and beyond, parents are rarely included as meaningful

contributors in discussions of educational policies or practices (Ishimaru, 2020). Pervasive deficit-based narratives have positioned families as secondary, and family engagement efforts have often focused more on identifying barriers to family engagement or "fixing" families rather than fostering authentic models of co-learning and communication between home and school (Marchand et al., 2019). Equity scholars, however, have strongly advocated for including families and community members meaningfully to achieve more just and equitable education systems (Gutiérrez and Jurow, 2016; Ishimaru et al., 2018).

The current study sought to help address these challenges through a 2-year discussion group with early childhood educators, STEM learning researchers, and parents of preschool-age children (ages 3 to 5) from Latine communities. Initiated as part of a National Science Foundation (NSF)-funded study, the discussions aimed to amplify the strengths of Latine communities and explore how early childhood engineering learning experiences could support executive function skills for young children. The discussions revealed a unique opportunity for educators, researchers, and parents to share goals and values and negotiate priorities related to children's education. In this article, we explore the themes that were identified through close analysis of these discussions and how these themes point to more family-centered problems of practices that can guide future research and development efforts.

Importance of shared problems of practice

Scholars from a variety of research traditions have emphasized the importance of identifying shared problems of practice to guide collaborative and applied research approaches (Penuel et al., 2011; Bryk et al., 2015; Farrell et al., 2021; Means et al., 2021). The focus of applied research on a clear and pressing problem of practice is often identified as a defining characteristic of these research traditions (Fishman et al., 2013; LeMahieu et al., 2017; Howard et al., 2023). This focus is intended to move beyond what some see as challenges in traditional forms of educational research, such as lack of relevance, poor integration of research findings into practice, and the exclusion of educators and practitioners from the research process (Cobb et al., 2003; Collins et al., 2004; LeMahieu et al., 2017; Ko et al., 2021; Kallio, 2022).

Within these research traditions, many scholars emphasize how problems of practice must be directly *relevant* to the practices of educators and situated within the specific *contexts* within which those professionals work (Horn and Little, 2010; Leach et al., 2021; Kallio, 2022; Leger et al., 2023). Others have highlighted how problems should be *actionable* and oriented toward creating positive *change* in education (LeMahieu et al., 2017; Mertler, 2021; Solomon et al., 2023). At the same time, these problems are often challenging and open-ended given the complex nature of education, learning, and educational systems (Henriksen et al., 2020; Leach et al., 2021; Kallio, 2022). Most discussions of problems of practice focus on teachers, school leadership, and classroom settings. However, recent work has pushed to broaden these ideas, center the needs and goals of other community partners, and focus on change at a systems level, inside and outside of schools (Gutiérrez and Jurow, 2016; Bang et al., 2018; Ishimaru et al., 2018).

Related to how problems of practice are defined, many scholars have pointed out the importance of thinking critically about how problems are framed and whose perspectives are included (Fishman et al., 2013; Gutiérrez and Jurow, 2016). Problems of practice are inextricably linked to the historical, social, and political contexts of education institutions and systems (Bang et al., 2016; Khalil and Kier, 2021; Leach et al., 2021). Understanding this broader framing, therefore, is essential to identifying root causes and understanding how different perspectives and assumptions shape the ways we identify, perceive, and prioritize specific problems of practice (Ishimaru et al., 2018; Leach et al., 2021). The framing of problems can also deeply influence which problems are prioritized, whether or not problems are perceived as actionable, and the types of strategies and approaches that are used to address them (Kallio, 2022; Solomon et al., 2023). Given this, and given the complex nature of educational systems, multiple perspectives and multiple forms of evidence are needed to inform the identification and framing of problems of practice (Khalil and Kier, 2021; Leach et al., 2021). The process of framing problems of practice is also critical, helping all those involved develop trusting relationships, establish shared meanings, and transform historic power inequities (Ko et al., 2021; Kallio, 2022; Solomon et al., 2023).

History of family engagement

One perspective that is often missing from the identification, framing, and addressing of problems of practice is that of *families*. A robust body of literature has demonstrated the central role that parents and families play in supporting children's earliest learning experiences, ensuring their ongoing success in school, and fostering healthy development across the lifespan (National Academies of Sciences Engineering Medicine, 2016; Thomas et al., 2020; Mapp et al., 2022; Aranbarri et al., 2023; Miller et al., 2024). Given these findings, parent engagement and parent-school communication have become central issues for educators and are often integrated into educational reform efforts (Brooks et al., 2019; Kelty and Wakabayashi, 2020; Steen, 2023).

Although well intentioned, equity scholars have highlighted how these efforts are often rooted in histories of oppression, situated within racist and inequitable systems, and founded on deficit-based perceptions of families (Marchand et al., 2019; Duane and Mims, 2022; Ishimaru and Bang, 2022). Ishimaru and colleagues reviewed decades of research highlighting how historical structures of power and oppression, such as forced assimilation and language prohibitions, have evolved into more subtle marginalization policies, including tracking, disciplinary practices, and remediation paradigms (Ishimaru, 2020; Ishimaru and Bang, 2022). Other equity scholars have investigated how histories of racism and prejudice shape "racialized institutional scripts" that guide how schools engage with families (Marchand et al., 2019; Ishimaru, 2020; Melzi et al., 2021). These scripts often locate the "problems" of education and learning with families or assume that parents lack the skills or motivation to support their children's development (Ladson-Billings, 2007; Barajas-López and Ishimaru, 2020; Stoehr and Civil, 2022). These deficit-based assumptions ignore the systemic barriers that influence how children and families navigate education, such as inflexible work

schedules or experiences of discrimination from school staff (Arce, 2019; Marchand et al., 2019; Ladson-Billings, 2021; Graham et al., 2025).

Historic and systemic factors have also fostered narrow understandings of parent engagement, such as volunteering in the classroom, attending school-based events, contributing to fundraising, and joining parent–teacher associations (Barajas-López and Ishimaru, 2020; Ishimaru, 2020; Barajas-Gonzalez et al., 2024). These definitions of what parent and family engagement should look like privilege the practices of White, middle/upper-class, monolingual families and can discount, make invisible, and delegitimize other approaches to and goals for supporting children's education and learning (Kelty and Wakabayashi, 2020; Barajas-Gonzalez et al., 2024; Perez-Brena et al., 2024). Deficit perspectives often lead schools to focus on "remediating" or "fixing" families, rather than learning from and supporting existing family practices or developing deeper, reciprocal models of engagement (Quintos et al., 2019; Barajas-López and Ishimaru, 2020; McWayne et al., 2022).

Along with narrow views of parent engagement, families are almost always excluded from deeper discussions about the goals guiding education and policy decisions (Quintos et al., 2019; Barajas-López and Ishimaru, 2020; Ishimaru, 2020). Families are expected to engage with schools and support their children's education, but only in ways prescribed by schools—what Marchand et al. (2019) called, "deferential support of schools' agendas." Even when educators and school systems work to move beyond these limitations, school-family communication is still often unidirectional, such as sharing information about student performance and classroom activities (Kelty and Wakabayashi, 2020; McWayne et al., 2022; Stoehr and Civil, 2022). Parents who do not engage in prescribed, school-centric activities may be labeled "hard to reach" or assumed to not care enough about their children's education (Ladson-Billings, 2007; Mapp and Hong, 2010). And those that do forward their own ideas or advocate for broader system change may be positioned as angry, troublesome, or disruptive (Marchand et al., 2019). Not surprisingly, parent frustration with superficial family engagement strategies or lack of meaningful involvement can lead families to "disengage" from school-focused participation, thus perpetuating the cycle of broken communication (Ishimaru, 2020).

This research points to the critical need to develop and study new and expanded models of parent engagement that center the goals, knowledge, and experiences of families from institutionally and systemically marginalized communities. New models are slowly emerging (Ishimaru et al., 2018; Kelley, 2020; Mapp et al., 2022; McWayne et al., 2022; Stoehr and Civil, 2022; Gutiérrez et al., 2024). However, meaningful school reform in this area has been slow and sustaining new approaches to family-school partnerships has proven challenging (Quintos et al., 2019; Ishimaru, 2020).

Theoretical framework

Aligned with a need to expand approaches to collaborating with families, this study was grounded in an asset-based perspective on family learning (Pattison et al., 2020a; Pattison and Ramos Montañez, 2023; Ramos Montañez, 2023). This perspective is rooted in sociocultural theory, including the importance of social interactions as drivers of development (Vygotsky, 1978; National Academies of Sciences Engineering Medicine, 2016), the acknowledgment of how culture shapes learning and education (Nasir et al., 2020; National Academies of Sciences Engineering Medicine, 2018; Rogoff, 2003), and a focus on ongoing learning trajectories across settings and over time (Barron, 2006; Bronfenbrenner and Morris, 2007; National Research Council, 2009). From a sociocultural lens, families are central to children's learning and serve as a fundamental structure in human society that shapes the way knowledge, culture, and values are embodied and shared (National Academies of Sciences Engineering Medicine, 2016; Rogoff, 2003). The asset-based family learning perspective also incorporates equity-centered and anti-deficit approaches to elevate the existing knowledge and strengths of families (González et al., 2005; Yosso, 2005; Ladson-Billings, 2007; Ramos Montañez, 2023; Quintos et al., 2025).

This perspective shaped the design and implementation of the discussion groups with parents and informed data collection and analysis in the current study. From their inception, the groups were intended to center the voices of families and position parents as central partners in discussions about education and learning. The structure and the content of the discussion groups was also designed to illuminate, acknowledge, and build on the existing assets of families and explore ways these assets connected with engineering and executive function.

During analysis, the asset-based family learning perspective motivated us to consider the goals, values, and interests that parents articulated during discussions and how those related to broader constructs within education research, such as shared problems of practice. Several elements from this perspective served as sensitizing concepts during coding (Charmaz, 2014). For example, we were attentive to the multiple, interrelated goals that parents and families bring with them to learning experiences (Goldman and Booker, 2009; Setioko and Ding, 2023; Pattison et al., 2025b) and how these might differ from our own lived experiences as researchers and the normative understandings of families and parenting in the research literature (Rogoff, 2003; Wang et al., 2021; Scheidecker et al., 2023). We also brought a systems lens to our understanding of families and learning, remaining open to the multiple ways that children and other family members influence each other and how interactions between families and the systems around them shape their experiences (Broderick, 1993; Cox and Paley, 1997; Pattison et al., 2020b).

Research questions

Motivated by our asset-based perspective on family learning and the need to elevate the voices of parents and families in discussions of educational goals, policies, and practices, the current analysis was guided by the following research question:

> *What themes emerged through the discussion groups that point to potential shared problems of practice reflecting parents' goals and priorities related to their children's education and learning?*

Although the program in which this study was embedded focused on engineering and executive function, in this article we use this as a context for exploring more broadly the themes and ideas related to shared problems of practice that emerged and how these provide insights into the goals and priorities of Latine families. As the conversations evolved, it became clear that these discussions offered valuable insights into the shared challenges and priorities that emerge through ongoing, authentic dialogue processes between researchers, educators, and families and how these suggest new focus areas for problems of practice within education (Ishimaru et al., 2018).

Materials and methods

This study was part of an exploratory research project in partnership with two early childhood programs in a mid-sized metropolitan region in Oregon, USA. Between 2022 and 2023, the project engaged two groups of Latine parents (12 parents total) in a series of conversations, with embedded reflection, data collection, and qualitative inquiry approaches (Civil et al., 2005). These conversations were designed to center the strengths and assets of families and reimagine the intersection of these with STEM learning, particularly related to engineering and executive function. The project built on the team's extended line of research exploring the ways that preschool-age children and their families engage with engineering outside of school and how these experiences can support long-term STEM-related interest development (Svarovsky et al., 2017; Pattison et al., 2020b, 2025a). Through this work, the team was also exploring the promise of leveraging engineering learning experiences to support other aspects of children's development, such as literacy, family relationships, and executive function skills.

In the current study, the topics of engineering and executive function were conceptualized broadly in order to explore connections with family assets and understand what aspects of these topics were important to families in their everyday lives. In general, the focus on engineering included the ways people design, create, and improve technologies and processes to solve specific problems (National Academies of Sciences Engineering Medicine, 2020). For families with young children, engineering thinking and practices are at play every day, such as iterating together on recipes in the kitchen, designing structures with blocks, or even developing and testing procedures for a new bedtime routine. Similarly, the team used a working definition of executive function as a set of self-regulation skills that allow young children, with the support of their parents, to engage in learning activities by focusing attention and ignoring distractions, capturing and retaining new information (i.e., using their working memory), and demonstrating self-control (Diamond and Lee, 2011; Tominey and McClelland, 2014). Young children and parents are continually practicing and developing executive function skills as they interact with others, manage their emotions, and learn to stop, think, and make a choice before acting. Throughout the meetings, we used these broad conceptualizations to explore how these skills connected with the lives of families and the ways that they perceived and valued these concepts.

The meetings were facilitated by three bilingual (Spanish/English) and bicultural (Latine/American) team members, and all data were collected and analyzed in the preferred language of participants (primarily Spanish). In this article, we focus particularly on one of the discussion groups, which included six Spanish-speaking mothers of children enrolled in one of the two partner early childhood education programs: Metropolitan Family Service.[1] Initial analysis during program implementation included data and reflections from a second group of six Spanish-speaking parents recruited from a local Head Start partner. However, due to various challenges, this group was not able to meet as regularly as the first group and participating parents were not able to attend many of the meetings. Therefore, we chose to focus subsequent data analysis on the first group only.

Team positionality

Following Secules et al. (2021), we believe it is important to not only acknowledge our roles as researchers but also continuously reflect on the ways that our experiences, identities, and positionalities influence our research. While each author has unique roles and identities, we approached this work through shared values of equity, reciprocity, and relational accountability. We have chosen to emphasize our collective positionality to reflect the deeply collaborative nature of this project, in which roles were often blurred and decision-making was shared across the team.

Together our team brings expertise in engineering education, family engagement, early childhood learning, program development, and equity. Many of us are parents ourselves, and we draw from our own lived experiences to guide our work with families. We also represent a diversity of ethnic, racial, cultural, and linguistic backgrounds. Several team members identify as bilingual/bicultural and grew up speaking Spanish. Our dedication to working with Latine and Spanish-speaking families is rooted in the cultural and linguistic connections shared by many of our team members and our commitment to addressing the institutional and systemic marginalization of these communities in STEM education.

The three co-facilitators of the discussion groups held particularly important positions within the study, as members of the project leadership team (PI, research assistant, and research consultant), co-researchers (second, third, and fifth authors on this article), facilitators of the group, and individuals with shared identities and lived experiences with participants. All three facilitators are bilingual (Spanish/English) and identify as bicultural. One of the facilitators is the director of the early childhood program through which half of the participants for this study were recruited and had previously served as a teacher for these families.

Study context

The study built on our existing relationship with Metropolitan Family Service (MFS), including a previous project supporting engineering engagement for young children and their families

1 One father participated in the final in-person group meeting.

at home and in the classroom (Svarovsky et al., 2024; Pattison et al., 2025a). MFS is a not-for-profit organization that provides a wide range of family services to low-income, racially and ethnically diverse communities across the metropolitan region of Portland, Oregon, USA. Ready, Set, Go! (RSG) is a research-based early childhood and family engagement program within MFS. Across multiple sites, the program provides free, culturally responsive programming designed to help prepare preschool-age children and their parents and caregivers for kindergarten. The program includes weekly parent-child interaction groups, parent workshops, and home visits. Participants in this study were all currently enrolled in RSG. One of the mothers had also previously participated in programs or studies led by the project team.

Research participants

For the study, we worked with staff members at MFS to select participating sites based on their recommendations related to site demographics and capacity of site participants to engage in the study. Subsequently, staff members recruited parents and caregivers at those sites that had preschool-age children and primarily spoke Spanish at home. The groups were advertised in Spanish as opportunities for parents to support their children's learning and development, connect with other parents, and help develop programs to support other Latine families.

In total, we recruited six parents for the discussion group, all of whom had at least one child between 4 and 5 years that was currently enrolled in the RSG program.[2] By chance, all families also had older children ranging in age from 6 to 15. Participants represented a diversity of cultural backgrounds and identities, although most families were originally from Mexico. Some of the participating parents immigrated themselves, while others were born in the United States. Language preferences varied, including families that spoke only Spanish and fully bilingual families. Participants had been involved in RSG between 1 to 7 years, with several participants having previously enrolled their older children in the program. Based on their eligibility for MFS, all participants came from low-income backgrounds. Each family received a total of $300 in gift cards in appreciation for their participation.

Discussion group structure

For the discussion group, parents, facilitators, and other team members met approximately once a month for 60 to 75 min to build community, share stories, explore cultural assets, and co-develop and test family activities. The group met 10 times between March of 2022 and February of 2023. Given the ongoing global health pandemic, almost all meetings were conducted virtually via an online videoconferencing system. The final group meeting was conducted in person and included food and childcare. All meetings were facilitated in Spanish.

The discussion group structure and format were inspired by participatory and equity-oriented parent engagement strategies (Quintos et al., 2019; McWayne et al., 2022). In particular, we modeled our design on the work of Civil et al., who pioneered collaborative approaches to working with Latine parents in the area of math education to identify family funds of knowledge and co-develop curriculum and program approaches (Civil et al., 2005; Quintos et al., 2019). Building on this work, we developed a flexible meeting structure and content arc that evolved over time as participants got to know each other and as emergent ideas influenced subsequent conversations.

All meetings focused on three goals: (a) building community, (b) highlighting Latine family assets, and (c) exploring connections between executive function and engineering. Earlier meetings focused primarily on relationship building and establishing shared understandings. The conversations shifted as meetings progressed toward exploration of engineering and executive function and the ways these topics connected with the goals and values of parents and the everyday lives of families. Later meetings built on these discussions to collaboratively develop and test a range of activities and resources related to our shared understanding of how we could leverage family engineering learning experiences to support children's executive function skills. During these final meetings, the group also reflected on the full experience and discussed the ideas and resources from the project that would be most important to share with Latine families and other audiences. Both during and in-between meetings, the project team reflected on the ideas that emerged through discussions and adjusted discussion topics, activities, and agendas accordingly to ensure they reflected the interests and goals of participating parents.

Throughout the discussion group, the facilitators regularly introduced hands-on engineering activities for families to try out at home and then discuss during the group meetings. The four activities included in the program focused on engaging families in engineering design practices in everyday problem-solving contexts, building on the team's prior work. For each activity, facilitators delivered families a set of materials along with a one-page, bilingual (Spanish/English) activity guide that included simple activity prompts. When introducing these activities, facilitators emphasized that the prompts were recommendations only and that families could play with the activities in whatever way made sense to them.

The first activity included colorful foam blocks and small, squishy animal figures. Families were asked to use the blocks to build structures in the bathtub or sink that would keep the animals dry and out of the water. For the second activity, families were given a set of child-friendly cooking tools and some everyday ingredients (e.g., sprinkles, crackers, empanada wrappers, beans). Families were encouraged to try cooking different recipes with the ingredients and then make improvements to those recipes based on the results. The third activity was a fort-building challenge for a stuffed animal. Families received fabric, clothespins, a stuffed animal, a small flashlight, and craft sticks. For the fourth and final activity, families received a set of wooden "marble run" blocks that

2 All adult participants in this study were the biological parent of the children enrolled in the partner early childhood programs. Therefore, we use the term "parent" throughout this article. We recognize that caregiver roles and configurations vary widely across families and that the primary caregivers for young children in many families are not their biological parents.

could be connected to create tunnels and ramps. Families were prompted to work together and build paths to move the marbles from one place to another. For all four activities, facilitators gave families time to explore at home and then debriefed about their experiences with parents during the subsequent program meetings. These debriefs were used to build shared meaning with the group and explore the intersections of STEM, executive function, and family goals and assets.

Data collection and analysis

Data collection included enrollment conversations with each parent, detailed group discussion notes, project team reflections after each meeting, and artifacts generated through group activities (e.g., texts and photos sent from parents, chat logs from video conference meetings). Enrollment conversations were conducted as structured qualitative interviews in the preferred language of participants by a bilingual researcher. Interviewers captured near-verbatim notes and audio recorded the conversations as back-up. Enrollment interview questions focused on gathering parent input on their prior experience with the RSG program, their goals for participating in the program, and their preferences related to meeting format and timing. During the group discussions, one bilingual team member took near-verbatim notes in the original language of participants. Team reflections after each meeting were also documented and included with meeting notes.

Appropriate to a qualitative approach, data analysis was iterative during and after data collection (Charmaz, 2014; Patton, 2015). During meetings, we facilitated collective meaning making, documented reflections, and shared emergent themes in a variety of ways (Civil et al., 2005; Quintos et al., 2019). At the outset of the meetings, the group facilitators would often highlight themes that emerged from the previous discussion and encouraged parents to respond and add additional ideas. This approach not only created opportunities for member checking but also involved parents directly in the research analysis process. The team also captured reflections and themes through debriefs after each group meeting and through regular research memos.

After the conclusion of the discussion group, the team followed a grounded theory approach to analyze the data and identify themes relevant to the research question (Charmaz, 2014). First, the whole team reviewed the notes and group artifacts and engaged in a series of discussions to identify promising directions for analysis. At this point, we identified shared problems of practice as a potential lens for understanding the ideas that emerged from parents and facilitators during the discussions and the ways that these ideas reflected shared understandings about challenges, priorities, and goals for young children's learning relevant to both participants and program facilitators. Given this new focus, the team began to explore the literature related to shared programs of practice and develop a deeper understanding of how our discussion process with Latine parents might inform a broader understanding of this concept beyond teachers and schools.

After exploring the literature, two members of the research team conducted an initial coding review of the meeting notes and post-meeting team reflections using shared problems of practice as a sensitizing concept (Charmaz, 2014). This process involved each researcher independently reviewing the data sources and systematically noting evidence of when potential shared problems of practice were mentioned by participants or program facilitators. For the purposes of this phase, the team focused on topics related to the goals that parents or educators had for children's learning and development or the challenges, barriers, or opportunities connected with those goals. These definitions by design were broader than the relevant, contextualized, and actionable problems of practice that are often discussed in the literature (see above) in order to capture promising areas for identifying problems of practice that reflect the shared priorities and values of both families and educators (Ishimaru et al., 2018).

Next, the researchers shared notes and reflections from the initial coding phase and used these to develop a focused coding framework with detailed definitions for each category related to potential shared problems of practice that were observed during initial coding. Focused codes were chosen to reflect ideas that were prevalent within the data throughout the program meetings, were mentioned by both parents and program facilitators, and were most relevant for addressing the research question outlined above. The two researchers involved in initial coding worked together to develop a draft of the focused codes and definitions that were then reviewed with other members of the project team, including the three program facilitators. The focused codes were then revised based on questions and feedback from the group. Subsequently, the two researchers used NVivo qualitative analysis software to independently code three of the ten group meetings. The results were reviewed collaboratively, the coding revised through consensus between the two researchers, and the coding framework updated to clarify code definitions. Subsequently, one of the two researchers coded the remaining meetings.

After focused coding, the two researchers carefully reviewed all comments coded under each coding category and engaged in a series of iterative discussions to identify study themes. These discussions focused on developing a deeper understanding of the themes, the relative prominence of each across the meetings, and connections among themes. As a final member check and way of reconnecting with parents, we facilitated another virtual discussion with group participants. During this meeting, the group reflected on the discussion process, discussed analysis themes, and identified priorities for sharing the results with other families, educators, and researchers.

Other data sources beyond the group discussion notes (e.g., participant enrollment interviews, team debrief notes, and program artifacts) served an important role during analysis. First and foremost, these data informed the development of the program and the focus of group discussions, such as selection of activities to connect to participant interests and the ongoing adjustments to meeting agendas to reflect feedback and lessons learned. These data sources were also reviewed during the initial stage of analysis and helped the team shape subsequent analytic priorities. Because the analysis reported in this paper focuses on themes that emerged during the group discussions, notes from the program meetings were the primary data source used in the coding. In the results descriptions below, we use parent quotes to both ground the

findings in the data and elevate the voices and perspectives of participants.

Results

Through analysis, we identified four themes related to potential shared problems of practice that were repeatedly mentioned by both families and facilitators and were woven into the fabric of the group process: *(a) supporting collaboration and relationships within families, (b) supporting children as problems solvers, (c) supporting parents as learners, and (d) creating a community of support* (see Table 1). These four themes were present across all meetings and seemed to connect deeply with the needs and values that parents prioritized for their families. The four themes were related to the project's focus on engineering and executive function, but they were also broader, reflecting a more holistic view of children, families, and community. Some of the themes were initially introduced by the group facilitators and then echoed and expanded on by parent participants. Others were introduced by the parents themselves and then incorporated into subsequent discussions as the facilitators adapted to parents' interests and priorities.

TABLE 1 Summary of primary study themes.

Theme	Description
1. Supporting collaboration and relationships within families	This theme reflects parent and facilitator comments about the importance or process of (a) supporting or empowering children in being able to play, share, and collaborate with their siblings and other family members or (b) building relationships and connections among family members.
2. Supporting children as problems solvers	This theme reflects parent and facilitator comments about the importance or process of supporting or empowering children in becoming patient, flexible, creative, independent problem solvers.
3. Supporting parents as learners	This theme reflects parent and facilitator comments about how they want to grow and learn themselves in order to better support or empower their children and problem solve challenges for their families. The theme includes facilitators discussing the importance of providing support for or empowering parents as learners.
4. Creating a community of support	This theme reflects parent and facilitator comments about the importance or process of parents and caregivers connecting with other parents, families, and educators to create a community to support and empower them and their children.

Theme #1: supporting collaboration and relationships within families

One of the most prominent themes we identified in the discussion group data was the focus on *supporting collaboration and relationship building* within families. Parents talked about wanting to support their children in being able to play with each other, share, and collaborate. They also emphasized getting along, building relationships, and collaboration as valued skills and a challenge they often identified between siblings. This theme was coded across all 10 meetings and was the second most referenced theme in the analysis. It was especially well represented in the last three meetings, suggesting that it remained an important focus throughout the discussion process.

The focus on collaboration and relationship building was apparent from the beginning, without prompting by facilitators. At the outset of the first meeting, facilitators asked participants to share something that had happened or that they had done with their kids recently that they were proud of. They also asked what participants would like to get out of the discussion group experience. In their responses, parents frequently mentioned collaboration and relationships within the family, such as the importance of spending time together, building relations between siblings, encouraging sharing, and involving children in family activities. One mother talked about how they had been focusing on strengthening the relationship between their two children:

> *"Hemos estado trabajando con los niños para mejorar su relación. Sentimos que hemos hecho un buen trabajo en la comunicación y relación de hermanos entre ellos. Ellos son bien diferentes… Aprender a compartir cosas y pasar tiempo juntos, porque es importante la relación de hermano."* [We have been working with the kids to improve their relationship. We feel we've done a good job in supporting their communication and the relationship between them. They are very different. We've focused on sharing things and spending time together, because their relationship as siblings is very important.] (meeting 1)

Within this theme, parents also extended the focus to the whole family. For example, during the first meeting, one parent talked about how proud she was that the family had been caring for their new puppy together and how this experience had brought them together: *"Todos estamos al pendiente con el perrito. Nos une más y compartimos responsabilidades con él."* [We are all focused on the puppy. It's bringing us together more as we share the responsibility of taking care of it.] In the same meeting, another mother shared how difficult it was for them to find time to talk and how they tried to chat together each afternoon after school: *"Y lo que hacemos con las niñas en las tardes es que nos sentamos a platicar. Conversamos de lo que nos pasó, en el trabajo o la escuela, algo chistoso o curioso… Yo estoy a gusto porque es raro estar así. Se van y regresan a diferentes horas y es difícil sentarnos a comer al mismo tiempo."* [In the afternoons, we sit together and talk with the girls. We talk to them about what's happening, in school or at work—something funny or curious. I love it because it's rare we can take this time. Everyone is going and coming at different times, and it's difficult to sit and eat at the same time.] Several parents explicitly connected this focus to the value they felt for spending time together:

> *"Uno nunca puede comprar el tiempo y se va bien rápido. Nuestro tiempo con los niños es muy importante… Nunca vamos a recuperar el tiempo con nuestros hijos, es bien valioso."* [You can never buy more time. It goes so quickly. Our time with our kids is very important. We can never get it back, it's very valuable.] (meeting 7)

As the meetings progressed, this theme further shaped the prompts and framing by facilitators. In meeting two, the facilitators noted this theme as they summarized conversations from the first meeting: *"Algo que tenemos en común es que nos encanta pasar tiempo juntos como familia de muchas maneras bonitas. Ya sea cenando, escuchando música, yendo al parque, un momento especial durante la cena, o sentarnos y hablar."* [Something that we have in common is that we love to spend time together as a family—whether that's eating, listening to music, going to the park, a special moment at dinner, or just sitting and talking.] Later, the facilitators began to center this theme more directly in the discussion prompts. During meeting eight, the facilitators prompted participants to think about recent collaboration moments in their family as one way of informing activity co-development:

> *"Algo que hemos oído de ustedes durante nuestras conversaciones es lo importante que es fomentar y apoyar la colaboración entre sus niños y cómo las actividades y los materiales que han probado este año proveen oportunidades para hacer esto. Para empezar la reunión nos gustaría pensar y compartir un momento en el cual usted ha visto a sus niños trabajar bien juntos y que estrategias usted ha utilizado para ayudarlos a hacer esto."* [Something that we've heard from you is the importance of supporting collaboration between your kids and how activities and materials that we've tried this year provide opportunities for this. To start, we would like to think about and share a moment in which you have seen your kids working well together and the strategies you have used to help support this.] (meeting 8)

This framing reflected the facilitators' growing awareness that family collaboration was a priority for families that intersected with the project's focus areas. As the group progressed in co-development, the team experimented with approaches to using engineering activities to help parents support family collaboration. For several of the take-home engineering activities, the project team included a paper flier with tips related to collaboration, like encouraging children to share ideas and take turns. In their reflections on these activities, parents talked about their own strategies for helping children collaborate and provided suggestions for making activities work with multiple children, and stressed the importance of families making time to focus on these activities. One mother reflected on the importance of thinking about the needs and interests of children of different ages when designing activities to support collaboration and relationship building:

> *"Poner algo que varía en edades. Que pueda involucrar a los grandes en una idea, o que diga que el niño pequeño va a necesitar ayuda de alguien grande. Como cada niño es diferente, un niño tiene un interés diferente por la edad dependiendo las edades."* [Include something for different ages. Something that can involve the older ones with the idea or that says how the younger kids will need support for the older ones. Each kid is different. Kids have different interests depending on their ages.] (meeting 8).

During the final meeting, both parents and facilitators reinforced a variety of topics related to this theme, including learning about differences and similarities between parents and kids, finding activities for the family to do together, and supporting sibling relationships. One parent reflected on what they felt was the challenge of maintaining these relationships compared to when they were young: *"Me acuerdo que cuando estábamos chicos éramos más unidos los primos, toda la familia que teníamos. Y ahorita pues ya cada quien crece y todos en sus hogares."* [I remember when I was young all the kids and cousins were connected, the whole family that we had. And now, each one grows up and everyone is in their own homes.] Another parent also broadened the focus on collaboration and relationship building to their extended family:

> *"También compartir y pensar en las relaciones no solamente de padres y niños pero abuelos, tíos, sobrinos. Toda esa comunidad que creamos en familia y nuestras familias tienden a ser un poquito más grandes y estamos así más unidos."* [Also sharing and thinking about relationships not just with parents and kids but also grandparents, aunts and uncles, and nieces and nephews—the whole community that we create as our families. Our families tend to be a little bigger. So, we are more connected.]

Theme #2: supporting children as problem solvers

Another theme that we identified in the analysis was the focus on supporting children to become patient, flexible, creative, and independent *problem solvers*. Comments related to this theme emerged in the second meeting and were coded in 7 out of the 10 meetings overall, especially during discussions of daily family interactions.

This theme was originally introduced by facilitators as one way of connecting the focus on engineering and executive function with families' everyday experiences. As noted above, at the end of the first group meeting the team gave families a set of foam blocks and animal figures designed for use in the bath or sink and asked families to build a structure to keep the animals from getting wet. During the second meeting, parents were asked to share their experiences and how their families had used problem solving during the activity: *"¿De qué manera creen ustedes que usaron su creatividad o resolvieron problemas durante la actividad?"* [In what ways did you use creativity or problems solving during the activity?] Later in the meeting, facilitators also prompted families to think about how they approached problem solving in their everyday lives in general.

Throughout the discussion group, parents readily responded to these and similar prompts and shared stories about everyday problem solving with their children. Through their stories, parents expanded on the facilitators' original framing to conceptualize this theme broadly as a set of dispositions they hoped to cultivate in their children, and themselves, to be successful in school and life, including flexibility, independence, and creativity. Parents often used the Spanish word *"paciencia"* [patience] to convey a layered meaning about their hopes for their children as problem solvers. For example, one mother emphasized teaching her son to be patient during a problem-solving moment with the water activity materials:

> *"Al momento de querer formar la ciudad se caían los bloques y se frustraba porque no funcionó. Yo le decía vamos a tener paciencia… Así lo empezamos a hacer. Si se caían, lo hacíamos de otra forma."* [When he wanted to make the city, the blocks fell, and he got frustrated because it didn't work. I would tell him, we are going to be patient… So, we started to do it. If they fell, we would try it a different way.]

For this mother, "*paciencia*" was a critical way for her child to manage his emotions, stay focused, and try different problem-solving approaches. Similarly, other parents stressed the importance of cultivating patience in their children as a foundation for successful problem solving: *"Para que cuando ellos tengan un problema ellos puedan pensarlo un poquito más para poder solucionar el problema*" [So that when they have a problem, they can think about it a little more in order to find a solution] (meeting 4). When asked what the group meant by *"paciencia,"* one mother elaborated on the challenges she was working on with her children:

> *"Ellas son muy desesperadas cuando quieren hacer algo. No importa la hora que sea. No quieren sentarse, esperar, ver las consecuencias… A la mayor le gusta la tienda del dólar. Tiene que aprender que no puede ser cuando ella quiere. Le digo vamos ahorita no podemos ahora porque estamos haciendo algo ahora. Yo trato de explicar las circunstancias."* [They get impatient when they want something. It doesn't matter what time it is. They don't want to sit, wait, or think about the consequences… For example, the older one likes the Dollar Store. She has to learn that we can't always go when she wants to. I tell her that we can't go now because we are doing something else. I try to explain the circumstances.] (meeting 4)

Parents linked this foundation of patience to a variety of other dispositions and skills, such as creativity, flexibility, and independence. For example, one mother during meeting 6 emphasized the importance of independent problem solving for her two children:[3]

> *"Un buen ejemplo que yo puedo dar es cuando se cae un vaso de agua. Porque en el caso de Sarahí es 'Mamá, tengo un problema enorme.' Es la forma en que ella tiene que llamar a mamá y con Esteban no. Porque Esteban agarra un trapo y lo limpia. Entonces como que él es más bien más independiente que ella… Eso le está enseñando también a Sarahí."* [A good example is when a water glass falls. In my daughter Sarahí, she says, "Mom I have a big problem!" She has to call for help from her mom. With my son Esteban, it's not like that. He grabs a cloth and cleans it up. So, he's much more independent than she is… And he's also teaching this to my daughter.]

Parents also highlighted the ways they supported and modeled problem solving and how they adapted this support to their children's needs and ages. For example, one mother talked about how she helped her son deal with frustration: *"Algo que yo hago cuando veo que Manuel se frustra… Siempre trato de bajarme a su nivel, ponerle la mano en el hombro o las dos manos en el hombro. Le hablo despacito con la mejor calma que tenga yo para pensar en el proceso, cómo podemos solucionarlo."* [Something that I do when I see that my son is frustrated… I always try to get down to his level. I put my hand or both hands on his shoulder. I talk slowly to him as calmly as I can to help him think about the process we can use to solve the problem] (meeting 2). Another mother emphasized how she had to be patient herself and adapt her approaches for her two children (meeting 4):

> *"Son diferentes. Con uno tengo que bajarlo en el momento y con el otro podemos esperar. Más paciencia. Necesitamos trabajar en eso. Yo soy muy paciente con ellos. Siempre tienes que darle opciones para que tomen la decisión. Darles la iniciativa de dar dirección a cómo quieren la situación."* [They are different. With one I have to help him calm down in the moment and with the other we can wait. More patience. We need to work on this. I am very patient with them. You always have to give them options so they can make the decision. Help them take initiative for what direction they want to take the situation.]

Through the exchanges of facilitators' ideas and parents' broad conceptualization of the these skills and dispositions, the group continued to integrate this theme into the discussions, including facilitator discussion prompts: *"Pensando en nuestras discusiones este año y su experiencia, ¿qué clase de consejos o sugerencias le daría a otros padres y madres que buscan cómo apoyar a sus niños a aprender a ser flexibles creativos y a resolver problemas?"* [Thinking about our discussions this year and your experiences, what advice or suggestions would you give to other parents that are looking to support their children in becoming creative, flexible problem solvers?] (meeting 7). Facilitators also continued to emphasize the many ways that parents had reflected on these ideas: *"Durante nuestras conversaciones ustedes también han compartido muchas ideas sobre como ustedes apoyan a sus niños a resolver problemas y a ser flexibles y creativos."* [During our conversations, you all have shared a lot of ideas about how you support your children in solving problems and being flexible and creative] (meeting 7). In several cases, parents linked discussions about problem solving to the theme of collaboration and relationship building, such as encouraging older children to be patient and supportive when they collaborate with their younger siblings to solve a problem.

Theme #3: supporting parents as learners

A third theme from the discussions was the importance of *supporting parents as learners*. Throughout the meetings, parents commented on how they want to grow themselves to better support their children and solve challenges for their families. This theme was coded across 9 out of the 10 meetings at a similar level to the *supporting children as problem solvers* theme.

Like the topic of collaboration and relationship building, this theme emerged directly from parents and was gradually incorporated by facilitators into the group discussions. The theme was apparent from the first meeting when parents shared their goals for participating. As one mother stated, she joined the project to *"aprender un poco más cómo ser padre"* [learn a little more about

3 All parent and child names included in this article are pseudonyms.

being a parent] and to find more ideas for *"actividades de ciencia como actividades 'hands on' que puedan usar con sus manos así"* [science activities and hands on activities that they can do with their hands]. In the same meeting, another mother reflected on the ways she was learning and trying to understand her children:

> *"Todos los días vamos aprendiendo cosas con mis niñas. Estoy trabajando conmigo principalmente y tratar de entenderlas y escucharlas más… Estoy trabajando con mi paciencia para poder demostrársela a ellas y escuchando más."* [Every day I'm learning things with my daughters. I'm working on myself mainly and trying to understand and listen to them more. I'm working on my patience in order to model for them and listen more.]

Throughout the meetings, parents shared a variety of ways they felt they needed to take care of themselves and grow their knowledge and skills as parents. One mother stated clearly in the second meeting, *"Tenemos que cuidarnos nosotras mismas pienso para que tengamos esa fuerza y energía para cuidar a nuestros hijos y nuestra familia."* [We have to take care of ourselves I think so that we have the strength and energy to care for our kids and our families.] As the facilitator joked in response, *"es como ponerse la máscara primero en el avión antes de ayudar a otro."* [It's like putting your own mask on first on the plane before helping others!] Again, patience was a theme as parents talked about their own learning and skill building. One mother emphasized the importance of modeling patience for her children: *"Lo que yo a veces hago si me frustro, yo mejor me alejo y respiro. Trato de respirar y trato de resolver el problema. Tratar de ser más paciente es lo que tengo que trabajar yo en mí misma. Es posible ser más positiva porque uno es el ejemplo que ellos ven."* [What I try to do if I'm frustrated is take some space and breath. I try to breathe and resolve the problem. Being more patient is what I have to work on for myself. It's possible to be more positive because we are examples for our children] (meeting 3). In the same meeting, another mother said she had to take time for herself to prepare to be patient with her children:

> *"No debemos imponerles a nuestros hijos las cosas. Lo cometo con mi hija por falta de tiempo. Lo que yo he tratado de hacer últimamente es levantarme más temprano. Tiempo para arreglar las cosas y estar lista yo para después tenerlas listas a ellas."* [We should not force things on our kids. I've made this mistake with my daughter because we were crunched for time. What I've tried to do recently is get up earlier. That gives me time to prepare everything and be ready myself before getting things ready for them.]

Within this theme, parents talked about supporting the different needs of their children and adapting as their children grew older. One mother described trying different strategies with her children: *"Uno como papá tiene que experimentar para ver las necesidades de ellos. De ver que a veces para nosotros son tonterías, pero para ellos es bien importante."* [As parents, we need to try different things to understand their needs—sometimes it could be something small or something that doesn't seem as important to us, but it is very important for them] (meeting 7). Another mother reflected on how she was managing the tantrums her children had started having: *"Normalmente no tengo tanta experiencia con los berrinches cuando eran chiquitos. Están al revés porque antes no hacían eso y ahora me lo hacen. Mi esposo me dice es que los regañas, no tienes que gritarles. Edúcalos."* [I didn't have experience with tantrums when they were little. It's backwards, because before they didn't do it and now they do. My husband says that I scold them, that I shouldn't shout at them. He says I have to teach them.] (meeting 4). This theme of parents adapting and learning was echoed by facilitators: *"Nosotros como padres tenemos que practicar diferentes estrategias con diferentes niños porque no son iguales. Adaptarnos al desarrollo de los niños, la edad y la situación."* [As parents, we have to practice different strategies with different kids because they're not the same. We have to adapt ourselves to their development, ages, and the situation.] (meeting 4).

As the meetings evolved, facilitators increasingly incorporated project strategies to align with this theme, and parents became more vocal about advocating for additional resources. During meeting 5, the facilitators introduced reflection questions texted to parents in between the meetings: *"Esta clase de reflexión nos ayuda a identificar cambios en la rutina, a sentirnos orgullosos del trabajo que hacemos como madre y pensar en cosas que podemos cambiar."* [This type of reflection helps us identify changes in our routine, feel proud about the work we are doing as mothers, and think about things we might change]. This tool was appreciated by several parents: *"Me encantó que mandaran los mensajes por la razón que nos hace pensar. Porque muchas veces pasan días y días y uno no para para reflexionar los cambios que se están dando con nuestra familia o con los niños."* [I love that you sent us messages because they made us think. Many times, the days go by and we don't have a chance to stop and reflect on the changes with our families or our kids] (meeting 6). Parents seemed to become more confident sharing topics they wanted to learn more about, such as strategies for setting limits with children or learning English to volunteer in their children's school. In the second to last meeting, one mother captured this theme for the whole group:

> *"Estoy pensando, sé que esto es como para estar en familia y convivir, pero escuchando a las otras madres, ¿Qué tal una actividad solamente para mamá?... Nosotras las mamás tenemos un poder sobre nuestros hijos, depende de nosotros que nuestros niños triunfen en la vida, que sean unos buenos niños… Que mejor algo para mí que me motive a ayudar a mis hijos."* [I'm thinking, I know this is about being with our families and spending time together, but listening to the other mothers, what about an activity just for moms? We mothers, we have a power over our kids. It depends on us that they succeed in life, that they are good kids. What better than something that motivates me to help my kids.]

During the last meeting, the theme of supporting parents as learners was again echoed by both parents and facilitators. As one parent stated, *"Porque también uno como padre aprende… Uno va aprendiendo con cada etapa del niño."* [Because as a parent you also learn. You are also learning with each stage of your child.] Similarly, one of the facilitators shared her own feelings about making mistakes and learning as a parent: *"A veces es difícil aceptar que uno cometió un error. Y tratar de resolverlo o pensar cómo hacerlo mejor. Es un proceso. Es el trabajo más difícil pero también*

el más valioso." [Sometimes it's hard to accept when we make a mistake. And then trying to figure it out and think about how to make it better. It's a process. It's the most difficult work but it's also the most valuable.] Collectively, participants seemed to agree that groups like this were critical for helping to support parents' ongoing learning and improvement.

Theme #4: creating a community of support for families

Building on the idea of parents as learners, the final theme we identified was the focus on *creating a community of support for parents and families*. In this case, parents and facilitators focused not just on parents as learners but on the importance or process of parents connecting with other families and educators to create a community to support and empower them and their children. For this theme, the team also coded comments related to parents sharing with each other, participating in other community programs, and getting help from extended family. This theme was present across all 10 meetings and was the most prominent among the four themes.

The idea of developing a community of support was evident from the first meeting and seemed to emerge from both facilitators and participants. The facilitators began by hinting at this theme in describing the goals of the discussion group: *"Esta reunión la hacemos para crear comunidad… Todos tenemos diferentes maneras de apoyar a nuestros niños. Respetamos las opiniones e ideas que ustedes tienen."* [This meeting is to help build community. We all have different ways of supporting our kids, and we respect your opinions and ideas.] Echoing these goals, several mothers highlighted community support as a strong motivator for attending these types of programs: *"Me encantan estar en estas reuniones. Siempre observo cosas positivas de ustedes y mamás y papás. Aprendo de sus experiencias, experiencias que no he tenido. Quizás yo también los puedo ayudar con mis experiencias que quizás ellos no han tenido."* [I love being in these meetings. I always observe positive things from you all, mothers and fathers, and learn from your experiences that I haven't had. And maybe other parents can learn from my experiences that maybe they haven't had.] At the beginning of the second meeting, the facilitators emphasized how this theme had emerged as important: *"En cuanto a lo que queremos obtener, hablamos sobre muchas ideas que nos gustaba compartir juntos para aprender una de las otras para continuar apoyando el desarrollo de nuestros niños."* [In terms of our goals for the group, we talked about the many ideas we like to share with each other in order to learn from one another to continue supporting our children's development.]

Inherent to the discussion group format, this theme was also reflected in the structure of the discussions. Activities and topics such as group norms, small group discussions, reflection prompts, hypothetical parenting scenarios, facilitator encouragement, and group brainstorms all supported the idea of community. In retrospect, the idea of building a community of support appeared to be central to the group culture, as expressed both by facilitators and parents. For example, the facilitators emphasized the growing connections among participants when introducing the warm-up discussion in the fifth meeting:

> *"Durante todas las reuniones hemos estado conociéndonos mejor y hemos hablado sobre lo que es importante para nosotros. Algo que hemos discutido es lo bonito que es que cada uno de nosotros trae ideas y perspectivas únicas que son basadas en nuestras experiencias en la vida.* [During the meeting, we have been getting to know each other better and we've seen how important this is to all of us. One thing we discussed is how wonderful it is that each of us brings unique ideas and perspectives that are based in our own life experiences.]

Across all these discussions, parents frequently highlighted the value of feeling like they were part of a community of parents that were working on similar issues and challenges. During meeting 3, when parents were asked to reflect on the most valuable aspects of the group, this theme appeared to be central. As one mother said, *"Pues que no soy la única que batalla con la paciencia. Me siento acompañada con todas ustedes."* [Well, I'm not the only one struggling with patience. I feel we are all together in this.] Another parent talked about how *"todas estamos aquí en lo mismo tratando de aprender muchas cosas. Lidiar con cosas como mamás."* [All of us are here doing the same thing, trying to learn, trying to manage things as mothers.] The participants were even more explicit when they were asked a similar question in meeting 7. As one of the facilitators said in summarizing the discussion, *"Hay muchos recursos. Quizás el recurso más valioso es conectar con otros padres. Saber qué les está pasando. Algo muy bonito para seguir apoyando."* [There are many resources. Perhaps the most valuable is connecting with other parents. To know what is happening with them. It's something wonderful to keep supporting.] In the same meeting, another mother talked about the value of parents connecting and sharing different approaches to supporting their children:

> *"Ha sido muy gratificante porque hemos conocido las situaciones de más familias. Como lidiar con los niños porque los niños son diferentes y los adultos también. Hay diferentes maneras de arreglar las cosas."* [It's been very gratifying, because we have gotten to know the situations of more families. How to manage our children, because kids are different and adults too. There are different ways of dealing with things.]

As parents became more comfortable, they increasingly shared ideas and strategies with each other and expressed appreciation for ways that facilitators supported this process. During meeting 4, one of the facilitators summarized the exchanges in the previous meeting: *"Por ejemplo, en la última reunión Carla nos contó sobre su niña que no le gusta comer verduras y Rosario nos dijo que a veces su hijo quiere comprar muchas cosas cuando salen a las tiendas. Ellas compartieron algunas estrategias y cosas que están tratando de hacer para ayudar a sus niños. También pensamos en consejos que podíamos darle a una compañera que enfrenta retos con sus niños"* [For example, in the last meeting, Carla told us about her daughter that doesn't like to eat vegetables. And Rosario shared that sometimes her son wants to buy a lot of things when they go out to the stores. They shared strategies that they are trying to help their kids. We also shared advice that we could give to a friend that

was encountering challenges with their kids]. During meeting 5, a mother shared how she had also been seeking this type of support outside program: *"Yo lo que hago es preguntarles a otros padres. Yo les pregunto a mis hermanas que también tienen niños chiquitos. Ellas me dicen mis niños hacen eso también… a una vecina, prima o hermana algo que a ellos les funcione."* [What I do is ask other parents. I ask my sisters that also have small kids. They tell me that their kids do the same things as mine… A neighbor, a cousin, a sister—I ask what has worked for them.]

As the group began to focus more on co-development and what they wanted to share with other Latine families, the theme of creating a community of support continued to be central. During meeting 7, the facilitators reintroduced the goal of *"probar y crear una serie de recursos para familias de nuestra comunidad latina que puedan ayudar apoyar el desarrollo y aprendizaje de los niños de edad prescolar."* [Testing and creating a series of resources for families from our Latine community that can help support the learning and development of preschool-age children.] Parents affirmed their focus on creating a broad community of support. One mother highlighted community strengths, especially if families support each other: *"Como Latinos hemos llegado muy lejos. Hemos hecho cosas. Ya hay hasta Latinos en el congreso. Tenemos personas que se están preocupando por los Latinos. Nosotros a veces por el miedo nos ponemos barreras. Si nos apoyamos nosotros mismos y nos damos esa confianza siempre van a haber buenos resultados."* [As Latinos, we have gone far. We have done things. Now there are even Latinos in Congress. We have people who are thinking about the Latino community. Sometimes because of fear we create barriers for ourselves. But if we support each other and have confidence, we will also get good results.] Other participants agreed that the community was strong but also expressed an ongoing need to create intentional connections between families and model for children how building community can ultimately help them be successful in school and life.

Discussion

This study was part of a collaboration with Latine parents to explore ways of leveraging family engineering activities to support executive function development for preschool-age children. Although identifying shared problems of practice with families was not an initial aim of the project, the ongoing dialogic process between facilitators and parents created a unique context for exploring the goals, interests, and values of parents related to their children's education and learning and how these might suggest potential problems of practice that better reflect family priorities. Through close analysis of the meeting notes, we identified four themes that were regularly reinforced by both parents and facilitators: *(a) supporting collaboration and relationships within families, (b) supporting children as problems solvers, (c) supporting parents as learners, and (d) creating a community of support.* Notably, the first and last themes focus on developing relationships and community within and across families, while the second and third themes focus more on skill building for both children and adults.

In this article, we chose to analyze the group discussions through the lens of shared problems of practice to elevate the perspectives of families and help connect their goals and priorities more directly with those within the formal education system (Ishimaru, 2020). There are other ways that the themes within this study could have been framed. For example, Quintos et al. (2019) used cultural-historical activity theory to identify contradictions between the goals of schools and families related to mathematics education. In a different study, Bang et al. (2016) used the notion of "axiological innovations" to understand how co-design with community members elevated the values and beliefs of families to create new possibilities for education research and programs. All these approaches represent critical contributions. Yet, we believe that connecting the group discussions directly with concepts such as problems of practice can play an important role in legitimizing family goals and perspectives in education research, policy, and practice and ensuring that they guide real change and decision-making within education systems (Datnow et al., 2023; McWayne and Melzi, 2024; Quintos et al., 2024).

In making these connections, we acknowledge that we are expanding the boundaries of how the concept of problems of practice has traditionally been defined. And we acknowledge that the work creates tensions as we strive to both maintain the integrity of the ideas as they emerged naturally during the conversations and bridge them with existing academic literature. In many ways, we believe the themes identified in this study can be seen as starting points for further defining problems of practice that better connect the goals of schools with the priorities and values of Latine families. Through ongoing collaboration, each of these themes could be further explored to define the problem that is of central importance, describe the ways it is relevant for both families and schools, and delineate focus areas for action and meaningful change.

As starting points for future problems of practice, the themes we identified from the dialogic discussions reflect the larger project's educational focus areas (executive function and engineering) in many ways. Collaboration is a critical part of engineering and has been identified as a foundational thinking skill that can be developed through engineering learning experiences (Stone-MacDonald et al., 2015; Ruvalcaba and Rogoff, 2022). Collaboration also requires individuals to exercise their executive function skills to regulate behaviors and emotions as they navigate social interactions and coordinate their decisions in conjunction with others (Mesinas and Casanova, 2023). Problem solving is also at the heart of engineering and is a natural way for families to bridge academic conceptualizations of engineering with the ways that they approach challenges and develop solutions to problems in their everyday lives (Wendell et al., 2017; Pattison et al., 2023). How parents talked about problem solving, and especially their ongoing discussions of *"paciencia"* as a problem-solving strategy, connects to executive function skills, including the ways that children develop their abilities to pause, regulate their emotions (e.g., frustration), and make intentional choices (Tominey and McClelland, 2014; McClelland et al., 2019).

Throughout these discussions, parents talked about their own learning related to collaboration and problem solving and the need for building a community of support for children, parents,

and families. These ideas are reflected in both the engineering education and executive function literature, such as the role of adults scaffolding each of these aspects of learning for children (Tominey et al., 2015; Bjorklund and Causey, 2018; Vandermaas-Peeler et al., 2019), the importance of executive function and problem-solving skills for children and adults (Fay-Stammbach et al., 2014; Korucu et al., 2020; Sommer et al., 2024), and the focus on developing programs and resources for both children and adults to support engineering learning (McClure et al., 2017; National Academies of Sciences, Engineering, and Medicine, 2021) and executive function development in early childhood (Diamond and Lee, 2011; McClelland et al., 2017; Ahmadi et al., 2023).

At the same time, the themes from this study also broaden how we think about learning and development and push on the ways that problems of practice have traditionally been conceptualized. What is clear from the four themes is that parents are not thinking about these areas of learning (i.e., executive function and engineering) in isolation but are instead focused on the *whole child, the whole family, and the whole community*. This is in contrast to much of the current education and child development literature, which typically focuses on specific domains or constructs of learning and development, prioritizes the child without recognizing the importance of parents and families, and often looks at a single program or learning context (e.g., school) rather than the broader learning ecology of children and families (Barron, 2006; Azevedo, 2013; Rogoff et al., 2016; Hecht, 2020; Golinkoff et al., 2025). Parents, however, talked about the broad life skills their children are developing, the ways that the whole family (including both siblings and parents) are learning and spending time together, and how these skills and processes can help children in daily life, now and in the future. Parents often described practical learning situations or problem-solving contexts, such as getting ready for school, and discussed the multiple skills and dispositions that their children (and themselves) need to be successful in these situations.

Given this broader focus, the themes from this study create a unique opportunity for re-imagining the goals and priorities of young children's education. This project also provides a model for future research and practice focused on developing shared problems of practice that connect deeply with the goals and values of systemically and institutionally marginalized communities. In our own work with low-income and Latine families, we have heard time and time again that families deeply value opportunities to spend time together and build strong relationships among family members and between families (Pattison et al., 2020a, 2023). The parents we have worked with are committed to their children's success and have often shared with us that they see problem solving as a fundamental skill to help their children navigate the challenges they know they will face throughout their lives (Melzi et al., 2021; Pattison et al., 2023). In many cases, families also connect these goals to other values, such as supporting each other as a community, being strong and resilient, and passing on cultural traditions (Melzi et al., 2021; Pattison et al., 2022). None of these family goals and values are in opposition to educational focus areas such as executive function and engineering. But as educators and researchers, we often fail to connect our work on specific learning domains with the broader contexts of everyday, human experiences. This project suggests that these specific areas of learning may in fact be enhanced when research and practice are framed in ways that resonate for both educators and families.

Implications for research

The outcomes of these collaborative discussions with parents demonstrate the power of authentic, participatory research structures (Bang et al., 2016; Gutiérrez and Jurow, 2016; Ishimaru et al., 2018). The perspectives of parents emerged over time as the relationships among parents and facilitators developed and the group established shared meaning and experiences to support these conversations. We believe that the insights from this work would not have been possible through traditional research strategies, such as surveys, interviews, or focus groups, which are often limited to a single or relatively small number of connection points. The open, collaborative, and ongoing nature of the discussions created space for parents and facilitators to explore experiences and stories outside the project focus areas that then, in turn, provided a deeper understanding of both existing and emergent topics. For example, because the group centered the language and experiences of families, parents were able to share their own perspective on problem solving and engineering, which highlighted a particular focus on the idea of "*paciencia*" and the many ways that parents defined this term. The group was also able to expand beyond a narrow focus on children's learning and development and explore the important connections between children, parent learning, and community support.

For these conversations to be successful, it is important to reflect on the key ingredients that supported the discussion groups. In our case, one of the facilitators had an existing relationship with many participants in the first discussion series, which supported buy-in, created a foundation of trust within the group, and allowed for deeper relationship building across the meetings. In the case of the second group with Head Start families, the staff member that helped recruit families was not part of the facilitation team. Consequently, it was more challenging to connect with participants and maintain consistent engagement over time.

The groups were also facilitated in the preferred language of parents by three bilingual and bicultural facilitators. As "insider researchers" (Blodgett et al., 2024), facilitators were able to create a comfortable and welcoming space for group discussion and make connections between their own lived experiences and those of participating parents. During group discussions, team reflections, and the analysis process, these team members offered a nuanced understanding of the comments and perspectives of families, not only through their fluency with the language but also their shared identities, immigration histories, and appreciation of cultural traditions and perspectives.

Finally, because these discussion groups were framed as collaborations with parents and not solely data collection activities, the team brought a commitment to deeply understanding what is important to community members and reflecting these values in the evolving focus of the group. Flexibility was built into the planning and implementation process so the team could continuously adjust meetings based on feedback from parents and emergent research findings. This commitment to shared

power, flexibility, and co-creation created space for emergent goals and shared problems of practice that would not have been possible otherwise.

At the same time, we also reflect on the limitations of this work and unique elements that may or may not generalize to other contexts or communities. The relationship between one of the facilitators and parents is certainly not possible in every context, and this relationship likely shaped the nature of the discussions and interactions between parents and participants. For example, the parents often referred to the facilitators as "*maestra*" [teacher], which is a sign of respect and evidence of ongoing power dynamics within the group. The early childhood and family engagement program from which these parents had been recruited is also unique in many ways, with a focus on parent learning, reflection, and socioemotional development for children and family members. Recruitment of families engaged in this program certainly informed the discussions and likely helped support the types of reflective conversations and connections to potential problems of practice that we observed in the data.

As with all qualitative work, it is critical that future studies continue to explore the ways that findings from this study may or may be relevant across different topics, contexts, and communities (Patton, 2015). The current analysis captured the ideas and perspectives from a group of six Latine parents and three bilingual/bicultural facilitators. Clearly, this small group does not begin to represent the rich diversity of Latine families in this country, let alone across other communities. We suspect that exploring the intersectional identities of these participants, including gender, class, education, and immigration history, would also highlight the ways the findings are constrained by the specific lived experiences of this group. Furthermore, the focus of the program (engineering, executive function) shaped the emergent themes in ways that may or may not transfer to other programs and contexts. In our own work we have seen that many of these themes resonate across programs and participants. However, it will only be through ongoing studies in close partnership with families that it will be possible to explore the transferability of these themes and identify additional shared problems of practice unique to other communities.

Conclusion

Families from institutionally and systemically marginalized communities are rarely included as authentic partners in discussions about problems of practice, let alone broader discussions of educational policies (Quintos et al., 2019; Barajas-López and Ishimaru, 2020; Duane and Mims, 2022; Ishimaru and Bang, 2022). The dialogue process used in this study, which builds on equity-centered approaches to family engagement (Quintos et al., 2019; McWayne et al., 2022), offers one model for supporting partnerships between educators, researchers, and families. Ongoing dialogic discussions between parents and educators create opportunities for building trust, sharing perspectives, and developing shared understandings (Khalil and Kier, 2021; Ko et al., 2021; Kallio, 2022). Even though identifying shared problems of practice was not an initial goal of the discussion groups, ideas about these shared problems and focus areas naturally emerged as parents and facilitators established connections and learned from each other. These connections, we believe, are critical for transforming education systems to achieve equity and social justice—the type of transformation that is only possible through authentic partnership with families.

Data availability statement

The datasets presented in this article are not readily available because of the need to protect the identities of participants. Requests to access the datasets should be directed to Scott Pattison, scott_pattison@terc.edu.

Ethics statement

The studies involving humans were approved by the TERC Institutional Review Board. The studies were conducted in accordance with the local legislation and institutional requirements. The ethics committee/institutional review board waived the requirement of written informed consent for participation from the participants or the participants' legal guardians/next of kin because researchers obtained and documented verbal informed consent for each participant.

Author contributions

SP: Writing – original draft, Writing – review & editing. SR: Writing – original draft, Writing – review & editing. VL: Writing – original draft, Writing – review & editing. ST: Writing – review & editing. MQ: Writing – review & editing. GS: Writing – review & editing.

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Conflict of interest

SP, SR, and VL were employed by TERC, Inc.

The remaining authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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The author(s) declare that no Gen AI was used in the creation of this manuscript.

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