

The Emotional Labor of Public Librarians Becoming STEAM Facilitators

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## **The Emotional Labor of Public Librarians Becoming STEAM Facilitators** **By Nancy Price**

### **Background & Rationale**

There is a growing trend for public librarians to go out into the community and support the community members in ways that go beyond their traditional day-to-day duties within the library buildings. Libraries are currently facing threats to their continued relevancy and solvency from many fronts, including staffing, budget cuts and the perception that libraries are no longer relevant. Libraries are working hard to change the public perception that they are outdated and only relevant as places to get books and take classes. Modern libraries are working to help people understand the libraries' role in defending free speech, protecting the privacy of users, supporting lifelong learning, and creating an informed citizenry who can participate in the democratic process (Aspen Report, 2014). To expand their impact, libraries are looking for ways to reach out and provide educational opportunities beyond their walls by developing partnerships and providing programs in the communities around them rather than waiting for patrons to come to them. Partnerships with local community centers and organizations, museums, and universities are giving librarians pathways to broaden their areas of expertise beyond being "knowledge connectors" and to connect with their communities in new ways, including bringing services to people who might not otherwise have the means to easily travel to the brick and mortar buildings. This can be thought of as the new mission of librarians being to improve society through facilitating knowledge creation in communities they serve (Lankes, 2012).

According to the *National Center for Children in Poverty*, 21% of youth live in families with incomes below the federal poverty level. Youth from low-income families are less likely to

have access not only to the latest digital tools at their school, but also to individuals who are experts in using those tools. Libraries bridge this gap for youth from poverty impacted communities by providing access not only to digital tools and the Internet, but trained adults and peers who can help them learn how to use these tools efficiently, ethically and effectively. (Lloyd, 2018). Librarian leaders are being asked to become experts in their communities and they are realizing that they will need fewer staff to put books on shelves; they increasingly realize they need more staff to be educators and need to shift away from building collections to building human capital, relationships and knowledge networks in the community. As the library's roles change and expand, library staff must refine and broaden their skills to meet patrons evolving needs and to define the library's continuing value to the community. They serve many roles (coaches, mentors, facilitators, and teachers)—beyond being 'sources of information' (Hildreth & Sullivan, 2015). Within occupation groups, librarianship rates high as one requiring an extent of emotional labor (i.e., the work involved in managing one's own emotions in support of others' needs). The profession, workplace organizational culture, patron expectations, and generational norms dictate the need for regulating emotions on the job (Matteson & Miller, 2012). In addition, the library's new policies and community outreach programs require that librarians learn to do this emotional work in unfamiliar places while building new relationships and extending the library's reach and traditional mission.

Libraries are becoming very effective at supporting informal learning, connecting diverse learning experiences, filling gaps between learning opportunities and offering new learning models that may not be feasible in schools, which typically face tighter expectations and management controls. Public libraries are stepping up to provide afterschool and summertime learning programs with well-designed curricula—such as engaging, participatory learning

experiences created in partnership with Universities, and other community learning resources (Aspen Report, 2014). While makerspaces in libraries represent a growing STEM-related initiative within libraries (Moorefield-Lang, 2015), many questions remain about how best to provide librarians and other library staff with the resources, professional development, and disciplinary expertise necessary to deeply engage learners with science phenomena and engineering design practices (Tzou, et al, 2018).

Organizations are finding that by focusing on subject matter educational goals like STEM, youth programs can strengthen their involvement in the community as partners in education (Hopwood, 2012). Libraries are enacting a commitment to the goal of making their services available to all as they realize that not everyone is comfortable within traditional library contexts. To some, the buildings are imposing, the amounts of information are overwhelming, and unfamiliar cultural practices are threatening. Communicating with community members gives the librarians the chance to observe and listen to the population intended to be served, so that the barriers can be overcome (Trotta, 1993). In addition, librarians typically don't have a long history of providing sustained programming or STEM programs lasting longer than a day or an hour. In the context of this history, an apprenticeship model of facilitation support and emotional reflection around the work and their daily lives might help to scaffold them into a longer-term facilitation role focused on disciplinary learning.

This paper shows what urban librarians who went out in the community to work with families in communal spaces learned about going outside the library walls and how they emotionally processed the experience. Few studies have considered the emotional burden placed on informal learning providers as they take up new practices and organizational goals. Although it is widely recognized that informal learning spaces are valuable to help children and families

learn new skills and develop STEM interest (NRC, 2009), little thought and effort generally goes into the curriculum and reflection practices necessary to support facilitators who provide such programs. Since these workshops are important sources of learning for people who might not otherwise have access to STEM learning outside of a classroom, the project team involved in this study felt was important to fully support facilitators in the learning and execution of the work.

In this analysis, I compare two case studies to consider facilitation roles in informal workshops. The TechTales workshops are a multi-institutional design-based research initiative—inviting families to transform their family stories into scenes using roboticized dioramas. Families engage in narrative-based, Art and Engineering design work over the course of five nights (fifteen hours) and learn how to bring their stories to life by programming robotics components (LEDs, motors, sensors) with Scratch. Unlike organized robotics teams or programming workshops designed mainly for youth where technology learning is the focus, TechTales begins and ends with families’ stories, with those culturally meaningful stories centering the intergenerational engineering work and learning and providing the impetus for deep agency with the technology (Tzou, et al, 2018).

### **Research Focus and Questions**

The purpose of this research is to understand the particular scaffolds that can help librarians emotionally process the work they are being asked to do, i.e. facilitate multi-day workshops of families from diverse backgrounds and cultures. This work is quite different from the normal responsibilities of librarians and places particular stressors and demands that require emotional labor. My research questions and sub-questions are as follows:

*Research Question: What is the emotional labor of librarians learning to engage as facilitators in informal STEAM programs?*

- a. What is the range of work they prioritize? How does this change over time?
- b. How do they view the program and the families participating in the programs?

- c. What is the influence of their institutional context and personal history on how they take up facilitation?
- d. What is the emotional labor associated with these dimensions of their evolving practice?

### **Conceptual Framework**

In this work I am focusing on the affect of librarians while they learn to facilitate STEAM program experiences for families—and the emotional labor associated with this professional learning. Affect broadly refers to a person’s tendency to experience a particular mood or dispositional trait (O’Toole, 2017). Massumi (2015) defines affect such that they would be feelings brought into a given space that have to do with modes of activities that change as the facilitators move through spaces; it is the co-presence of potentials. When people affect something, they are at the same time opening themselves up to being affected in turn and in a slightly different way than they might have been the moment before. They have made a transition and stepped over a threshold.

An affect is a non-conscious experience of intensity; it is a moment of unformed and unstructured potential. Of the three central terms in this essay – feeling, emotion, and affect – affect is the most abstract because affect cannot be fully realised in language, and because affect is always prior to and/or outside of consciousness (Massumi, 2015). Affect is the body’s way of preparing itself for action in a given circumstance by adding a quantitative dimension of intensity to the quality of an experience. Affect plays an important role in determining the relationship between our bodies, our environment, and others, and the subjective experience that we feel/think as affect dissolves into experience (Shouse, 2005).

For clarity’s sake, I differentiate emotion and affect as I use those terms in this paper. An emotion is a display of a feeling. Emotions depend on the subject’s viewpoint, appraisals, and personal attributions of meaning. They are subjective in that each subject may have different

emotions in response to the same event. Emotions are interactive events that have to do with the relationship between two entities, a subject and an object. Emotional experience is a combination of experience of the works with a particular meaning structure (Frijda, 2001) Emotional labor is the effort involved with dealing with other people's feelings, a core component of which is the regulation of emotions (James, 1989). The awareness of the emotional expressions required of a job and the strategies used to express those emotions. (Matteson & Miller, 2012) I think of emotional labor in the way Arlie Hochschild defines it: "Emotional labor, as I introduced the term in *The Managed Heart*, is the work, for which you're paid, which centrally involves trying to feel the right feeling for the job. This involves evoking and suppressing feelings. Some jobs require a lot of it, some a little of it. From the flight attendant whose job it is to be nicer than natural to the bill collector whose job it is to be, if necessary, harsher than natural, there are a variety of jobs that call for this. Teachers, nursing-home attendants, and child-care workers are examples. The point is that while you may also be doing physical labor and mental labor, you are crucially being hired and monitored for your capacity to manage and produce a feeling" (Beck, 2018).

So, for the purposes of this paper, emotions would be a response to a mood meter scaffold (i.e., that names a range of possible emotions being experienced) during an interview regarding the feelings being experienced by a librarian about the workshop or the librarian's daily responsibilities while affect is the way the librarian, serving as facilitator, projects themselves during the session regardless of the emotions they might be feeling. For example, a librarian may be significantly worried and nervous about engaging a group of families in a particular activity, but may affectively engage them with humor and a calm sequencing of

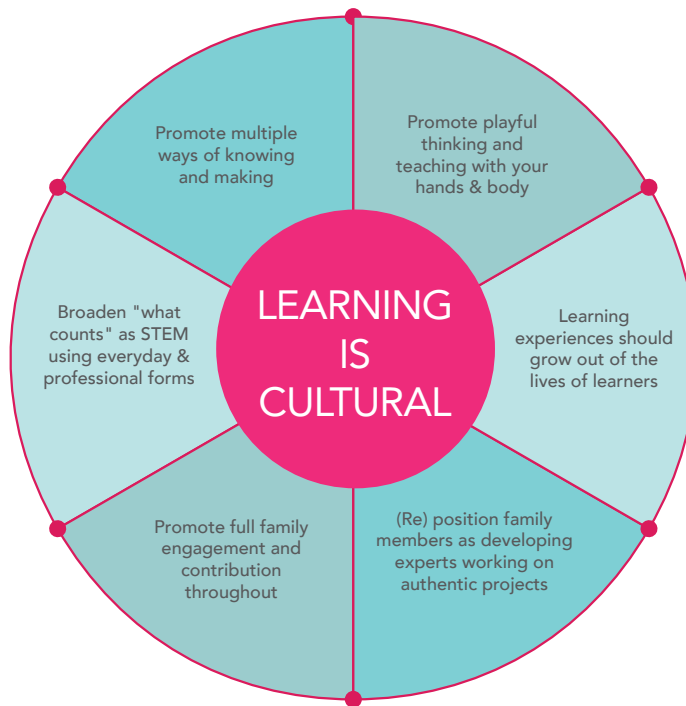
complex STEM material. That highlights the kind of emotional labor involved with librarians learning to do STEAM facilitation.

Such shift in practice as we are requiring of librarians involves significant professional and personal identity work. “The formation of identity, or even fundamental change in attitudes or habits of reasoning, cannot take place on short timescales. Even if short-term events contribute toward such changes, it is only the fact that they are not soon erased, do not quickly fade—that subsequent events do not reverse the change—that makes it count. It is the longer-term process, including the effects of subsequent events, that determines for us the reality of basic human social development” (Lemke, 2000). *How People Learn II, Learners, Contexts and Cultures* discusses the importance of attending to people’s emotional state in the learning process. “People are willing to work harder to learn the content and skills they are emotional about, and they are emotionally interested when the content and skills they are learning seem useful and connected to their motivations and future goals. Conversely, emotions like anxiety can undermine learning by causing worry, which depletes cognitive resources and activates brain regions associated with fear and escape rather than with academic thinking” (National Academies of Sciences, Engineering, and Medicine, 2018). Supporting the librarians by apprenticing them into the work of facilitation to become more adept and comfortable in their practice allows them, by extension, to make the learning experience more fulfilling and fun for the workshop participants.

The TechTales STEAM Program partners with as librarians as facilitators and with the local Science Center as technology experts. Our research group has developed five-week family workshops for four or five families around robotics and circuitry, holding the workshops mostly in community centers rather than libraries in order to allow families to attend without the burden

of traveling to the library. The community centers also serve as a common place for the non-dominant, low income families, which can be less intimidating than a library. The goal of our project is to broaden participation in STEM and provide a model for library-community center workshop. In addition, we have designed professional development opportunities for librarians to learn the coding, robotics and circuitry necessary to facilitate the workshops. The design principles for this project (graphic below) highlight the equity stance that we are asking librarians to enact in the workshops and to convey during professional development sessions.

Librarians generally do not consider themselves to be teachers, so apprenticing them into STEM practices is important work. “While public library youth services are generally viewed by the community as supportive of formal education, youth services librarians are not recognized as educators, even by those on the library staff.” (Danley, 2003). Librarians are being asked to take on new identities in their work and in this particular project are faced with the daunting task of presenting accurate, useful information to families that is enjoyable and relevant to their lives, while at the same time, librarians are learning these skills themselves. Of critical importance is how a learner is positioned within contexts and as part of participation in various activities (e.g., positioned as someone capable of doing STEM-related work). People are assigned positions, using “storylines” that others (or they themselves) construct in relation to images of the “kinds of persons” socially available in any context (Bricker & Bell, 2014). As the librarians learn the curriculum, engage and build relationships with families and work to understand new culture, not to mention working within a Research Practice Partnership, they are stepping outside of the traditional “librarian” work and growing with their community partners.



*Figure 1: Design Principles for TechTales Program (NRC, 2012)*

### **Research Methods & Data**

This data was gathered during three years of workshop enactments across four sites of informal workshops held at community centers. The project engages a blend of diverse communities, expanding professional development for facilitators in family engagement and learning, and engineering and computer science and builds a unique collaboration through informal learning institutions and local community libraries and community non-profits to ensure broader impacts.

The research team videotaped the facilitators at each workshop and during booster days. In addition we interviewed the librarians prior to each set of workshops and before most workshops began in the evening.

My interviews included an emotional component using the Mood Meter to help identify emotional regulation and emotional labor during interviews prior to each series of workshops and at the beginning of each of the sessions (see Appendix A for details on the Mood Meter interview). The facilitators were able to show how they were feeling by circling the appropriate emotion on the chart. The four-quadrant grid represents two dimensions of core affect: valence (unpleasant to pleasant, represented by the X axis) and arousal (low to high energy, represented by the Y axis) (Nathanson, et al., 2016). The tool was designed by The Yale Center for Emotional Intelligence in 2015 to create emotionally literate learning environments and develop a set of skills to help people be more engaged in learning (Kremenitzer, 2011). Emotional regulation is the process by which people manage the emotions they have and how they express the emotions (O'Toole, 2018). I used the mood meter to allow myself the opportunity to see the emotional condition of the facilitators prior to each workshop and interview and then jointly reflect with the librarians on the way the emotions influenced facilitation.

Two librarians were selected for a comparative case study in order to illustrate the emotional labor and trajectory of their affect throughout the three years of enactments. During the course of the three-year study I collected the following data:

- Video data from workshop enactments: ~105 hours
- Video data from Professional Development Sessions: ~24 hours
- Videotaped interviews of facilitators prior to workshops: ~15 hours
- Videotaped interviews pre and post workshop enactments: ~15 hours
- Mood meters, emails and physical artifacts including dioramas, papers and artwork from workshops that facilitators made in conjunction with the families.

The first librarian I studied, Olivia, is a children's librarian with technical background. She was the first facilitator for the workshops and she helped to shape the curriculum throughout the three years of the enactment. The second librarian, Susanna, began facilitating one year into the project. She is the head librarian at a small community branch. Olivia's priorities in her large urban library focuses on the "listening initiative" that is being enacted by her library to re-imagine how the library could better serve the diverse youth population in our city given community feedback on library services as well as new research findings on learning, including expanded digital media tools and programs. Susanna's priorities in her community library is to make the library more of a presence and a means of support for the local immigrant community. Susanna conducts outreach in the community to help families understand school city policies. These priorities have been a constant undercurrent throughout the workshops at both locations.

Susanna views the workshops as opportunities for the underserved families in her community to learn STEM. She is also very conscious of the cultural norms in her close-knit communities and she works to maintain those within the workshops, including having Hispanic caterers in the community serve food so the families can enjoy healthy meals that are comforting. Olivia views the workshops as a way for the library to grow and support the larger community outside of the library's walls. She also sees her work as a way to support all of the libraries and librarians in the system. Her position in the project has grown from facilitator into a project partner and she is now directing the TechTales program for the library.

Each workshop is video-taped and the facilitator has a dedicated microphone to record her movements and talk during the session. "If a researcher can be present during recording, then he or she can make time-indexed field notes that provide a basic outline of the events or

possible examples of phenomena of interest that occur while also potentially filling in relevant complementary information that is difficult to discern from the video itself” (Derry, et al., 2010). I was present during most of the workshops over the three year period, so I was able to field note interesting and complicated moments and timestamp them for later reflection. Video is transcribed using transcription conventions (Appendix 1) and analyzed using conceptual tag list (appendix 2) coding scheme (appendix 3), and facilitator support role rubric (4) Facilitator Interviews took place prior to each workshop and after each completed set of workshops. In addition I interviewed each facilitator prior to their first workshop to learn their history, education and work background, future trajectory and feelings about working in the workshop.

## **Findings**

### ***Conceptualizations of the Commitments and Organizational Context for the Librarians***

The librarians that I partnered with and studied during the three-year run of the program are Olivia, a children’s librarian with some technological grounding, and Susanna, who is the head librarian to a small neighborhood branch library, with less technical background and who is Spanish/English bilingual to support her Spanish-speaking community. Olivia is enacting a large urban library’s institutional race and equity commitment to the city by going out into the community and strengthening ties with racial minoritized members of poverty-impacted communities while Susanna is deeply involved in her small, ethnically diverse community and wants to strengthen her library’s support of the people who live in her community. They both see the TechTales workshops as a way to help their communities by providing STEM opportunities that the economically disadvantaged families that they serve might otherwise not be able to have. The notion that the personal value of our lives is determined largely by the social relations that take place in the communities to which we belong reflects a classic Aristotelian perspective on

human nature. Building an engaging community is not just a strategy to improve academic outcomes; it is essential to education itself (NRC, 2003). By recognizing the intersecting roles of families, communities, organizations, and institutions in nurturing young learners, we are better positioned to attend and leverage local forms of expertise and to attend to how histories of structural inequities, economic circumstances, discrimination, and associated stresses can constrain access to learning opportunities (Barron & Bell 2015).

The librarian facilitators I am studying feel deep connections to the communities they serve, and they understand the need for libraries to align their services more directly with the priorities of community members and organizations at a time when emerging technologies create a demand for digital literacy, new learning opportunities, job skills, and more opportunities for people to collaborate face-to-face. “Public libraries have the potential to establish personal connections that help define community needs and can serve as an anchor for economic development and neighborhood revitalization,” said Nashville Mayor Karl Dean. “The digital age is an opportunity for public libraries to take advantage of their unique ability to draw people together around knowledge, creativity and culture for the benefit of individuals, families and the community” (Aspen Report, 2014, p. 57). Expanding access to education, learning opportunities and social connections for all is one of the great challenges of our time. We are living in a digital networked world and digital literacies are becoming increasingly central to civic and career participation. These workshops are one path for families to acquire these skills.

It is a time of particular opportunity for public libraries with their unique stature as trusted community hubs and repositories of knowledge and information (Hildreth & Sullivan, 2014). The librarians in this study take these changing roles and responsibilities very seriously

and work hard to see that they expand the reach of their branches. In an interview with Susanna, I asked her about the ways she sees her library supporting the local community:

Susanna: But it's the providing access to information and experiences that you wouldn't normally have because of where you live or where you're from or what language you speak or how much money you have.

Nancy: You think that's changed over the years and become more important of a-?

Susanna: I don't know that that's not been part of the library to a certain extent always. I feel like I'm definitely more aware of it, and more challenged by it, and how do I do this? But I do think libraries as things are changing, and things became more digital. Libraries were always going, "Okay, what's our role here?" Every time somebody tells me, "Oh, libraries are still open?" I just die a little inside. I'm like, "You don't understand. Have you stepped foot in one lately?" Because libraries are changing what they offer and how they offer it. I was finding more in the community, and what the communities needed versus what our perceived need of the community is. Does the community need more book groups or does it need ASL classes? What does your community need more of? And then how do we respond to that? Every little tiny library in a big system can be completely different on some level.

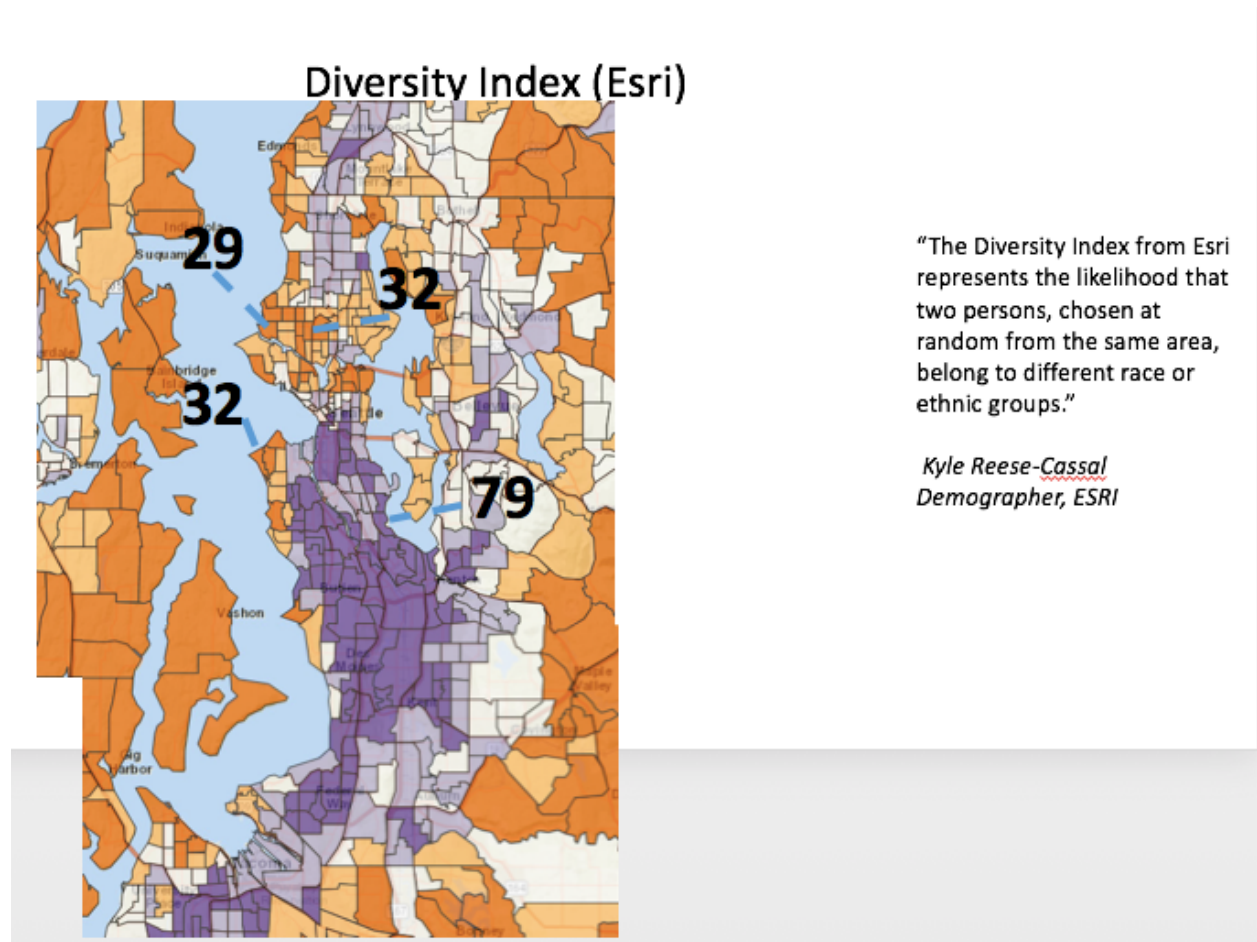
I also asked Olivia about her own commitment to the community and her enactment of the library "community listening" initiative.

Nancy: Talking to the community. How does that show up besides SouthLake Community Center for you? Then is it showing up in the libraries? How do you feel about that stuff? That's a pretty big deal and a pretty major shift in the way libraries are working.

Olivia: Yeah, I think most people are on board with it. I think logistically it's not really caught up to what is required. I was the community listening lead for my department when we did it last summer, so it was 2016 summer. We did a bunch of meetings, our whole team did. Everyone on my team is totally onboard with that. Then we come back and we find that we're listening to people. We find that we're trying to come up with services or joint services. Or we come up with ideas with them about different ways the library can help them. Then you come back to the library, and it's still the same amount of time, the same amount of resources, the same amount of obligation to stay here. So, it's a big issue what we're all feeling, because there's this push from above to get out and do community listening and to be out more in the community. But we still have to keep our buildings open, so that means we have to be here [too].

Both librarians see the mission of libraries to be centered on the evolving needs of community in a shifting society. During a meeting with the library's community and engagement director, we asked about the listening initiative mentioned by Olivia and what the librarians brought back as their main priorities/concerns across all the branches. Addressing homelessness, serving immigrant communities and youth and families of color rose to the top in every community. The

graphics below show the results of the research done by the library to better understand the diverse communities they serve.








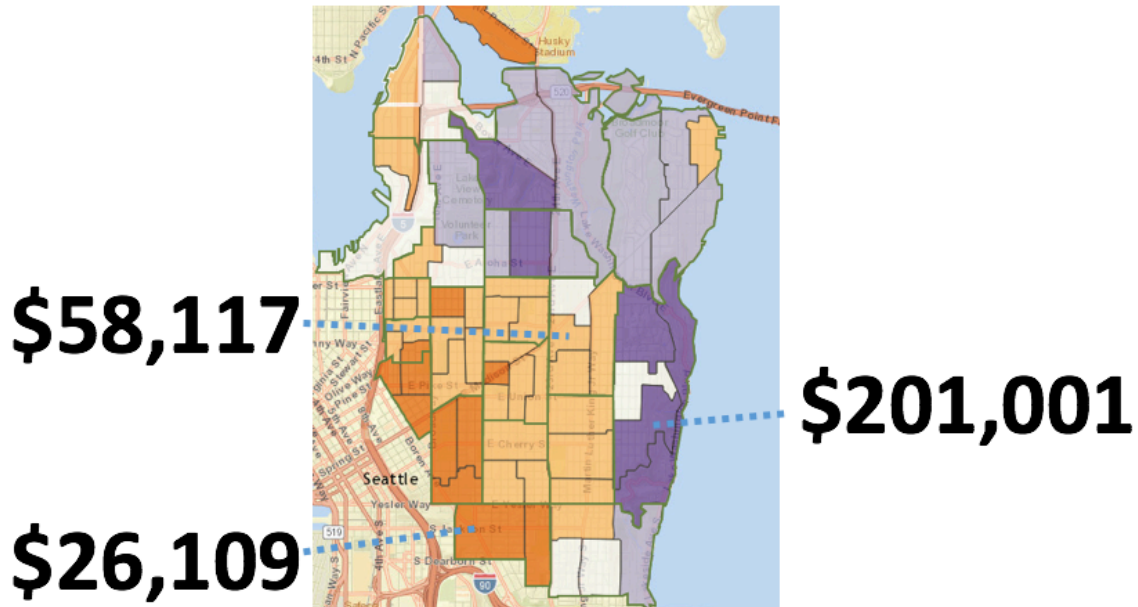
	72.4	to	84.1
	62.4	to	72.3
	52.3	to	62.3
	36.7	to	52.2
	16.6	to	36.6

Figure 2: Map of Seattle Diversity Index by Block Groups

# Median Household income



*Figure 3: Median Household Income in South-East Seattle by Block Groups*

In the workshops families are asked to build a diorama that represents a place or a story that is important to them. During professional development sessions prior to the workshops facilitators were asked to build a diorama of an important place to showcase at the sessions they were leading. The complex ways that the facilitators think of their communities and their roles in their work at the library are reflected in the dioramas they chose to make. Susanna's community lives next to a SuperFund site, a fact that affects all the members of the community. She and her community partner, LaDonna, who co-facilitated at the first RiverPark workshop, built their diorama together and describe it: "We just wanted to reiterate (that this is this city's) only river that goes through that community and how important that bridge is. And we are praying that our salmon come back and the clean-up continues. We are on 7 years and we have 10 more years of cleanup before it will get pretty close back to it's natural habitat. We wanted to

strengthen our community by having our bridge, that connects us, that connects us, by having the river, and having the salmon.”

Olivia chose a diorama scene of the library where she works. She described it as her favorite place and talked about how much she loved the library when she was growing up and how she enjoys her work as a librarian and loves the place where she works. She also talked about picture books she loves to read at story time and included scenes from many of her favorite children’s books including *The Very Hungry Caterpillar*, *Harry Potter*, and *the Runaway Bunny*. She describes it to the families at the first workshop:

Olivia: I'm in the library, cause I work at the library. What? Its shocking. Okay. So this, I chose some books that were my favorites when I was growing up. The library was very important place for me and my family. Um So I think you guys recognized some of the stories that I referenced. What do we have? We've got ... Do you know that one?

Child 2: Oh yeah

Olivia: What's that one called? Do you know that one?

Child 2: I forgot its name. I forgot its name.

Mr. Diamond: The Hungry Caterpillar.

Olivia: The Very Hungry Caterpillar. And then we got-

Joseph: It looks like the books are right here, right?

Olivia: Yeah, we got the books back there. We got back here. Does anyone know what's going-

Child 2: Harry Potter?

Olivia: Yeah. Harry Potter. Yup. Love that one. And the one that gave me the most trouble is, I, okay so let's ... Who wants to demonstrate this? Joseph.

Joseph: I think I got it.

Olivia: So ...

Joseph: Why didn't anything move? (touches the sensor)

Child 2: You weren't supposed to do that. I was gonna do it.

Olivia: So what happens is the um ... Whenever the mother gets close to the baby bunny-

Joseph: Oh the baby bunny's right here.

Olivia: The baby bunny hides. That's from the *Runaway Bunny*. Do you know that story?

Joseph: Yeah my sister has that book.

Olivia: Um, so that one was really hard for me because what I wanted it to do rather than have the bunny on this stick, I wanted the bunny to be on a motor and for it to move on its own. And I spent like an hour or two working on that yesterday and it just didn't work. So I had to revise and try something else. And this works okay. I'm okay with it.

Mr. Diamond: Can I ask you what didn't work? Did the motor not trigger? Or did...

Olivia: No. I couldn't figure out how to set up a pulley so ...yeah (laugh)

Mr. Diamond: Oh okay.

Olivia: Yeah the motor was working fine. So what we have here...

Joseph: This bunny isn't coming back up.

Olivia: Let me just show you some of the components we have here. And we're gonna talk about components but we've got a motor back here. So that's something that we can think about, maybe as you're drawing your scene-

Joseph: Yes up there.

Olivia: We've got some motors back here too. I don't know if you can see that. We've got the LED light changing colors.

Joseph: Really beautiful.

Olivia: See it? And then we've got this thing here, which is called a sensor. So anytime something gets close to it, that's when the bunny hides.

Joseph: Ah.

Olivia: So those are just some of the things that you can do in your scene. You can do something similar, you can do something completely different. It's just kind of to give you an idea of...

Joseph: That's cool.

The differences in the way the librarians see their roles is striking. Olivia centers her work around the community outreach message her library is supporting, and Susanna's sense of her library as central part of her small community that helps the families in that community are clearly shown by the way they built and described their dioramas. Olivia's diorama was a depiction of the library itself and the books she has enjoyed and read to children. Susanna's (made in conjunction with LaDonna) was of the SuperFund site near the library and showed how important the river was to the community.

Both of these facilitators were very thoughtful and political people trying to stay within the boundaries of the rules attached to the work they do. They used their positions and their librarian roles to further their socio-political agendas in various ways. Massumi (2015) writes that affect is proto-political. It concerns the first stirrings of the political, flush with the felt intensities of life. Its politics must be brought out. He further states that the conceptual project running through the *Politics of Affect* is to bring out the politicality of affect, constructing for it an expression that honors its processuality. The librarians talked to me about the ways in which

their sociopolitical agendas played out in their work, particularly through story time. Olivia spoke to me about the importance of the expertise of telling stories in a librarians work:

“Oftentimes, members of the public will ask to volunteer at the library by reading to children or offering a story time. Typically (though not always), such volunteers will not have any experience working with young children (other than their own, perhaps) and little knowledge of the early literacy principles and background that serve as the foundation to library story times. I think that proprietary feeling kicks in when this happens because it can be seen as an indication that library work with children is undervalued, misunderstood, or something that anyone can do without any training. Probably many early childhood caregivers/educators feel something similar, which may attest to a larger cultural devaluation of early childhood education. As we all know, just because something looks effortless from an observer’s standpoint, doesn’t mean that it is effortless. Careful thought and planning goes into every story time and most of what we do has roots in early literacy theory and helps with brain development.

That being said, I wouldn’t say that storytelling in general is considered proprietary in the library. Stories are just one avenue for us to insert ourselves into a project like this where we tend to have less experience with the STEM skills and background. Of course, I value the power of stories very much and that view is probably shared among most librarians. I know that stories help kids learn to love reading and learning, as well as understand more about themselves and the world around them. The strength of stories as a learning tool is well-established and it also fosters the ability to empathize, which we really, really need in the world. We know that it is important to contextualize learning, and the story element of the workshops helps to do just that. I think this is a big part of why strong comradery is built in the workshops at Compass.

During a quiet moment at a booster day event, Olivia and Susanna talked to me about the ways in which they use story as a messaging tool in their own libraries. We talked about storytelling and what it means to them, and how they choose books to read for their libraries. Both librarians lead story-time with young children and they talked *Maybe something beautiful: How art transformed a neighborhood*” a book about adding art to a neighborhood that makes children think about how one little thing can start something else and “*The Curious Garden*”, about a boy who find an ugly old trestle and plants it with flower seeds to become a really beautiful place. This helps children to see how little things can make a big difference in their own neighborhood.

Susanna talked about reading “*The Day the Crayons Quit*”, a story about crayons going on strike for unfair labor practices. She read the story during at teacher strike that happened in

the local school district to help the children understand why their teachers were not in the classroom, and the importance of action when being treated fairly in the workplace. Olivia talked about “*A Day in the Life of Marlon Bundo*” a book about a homosexual bunny that wants to just be himself and be free to love whomever he wants. Incidentally the book was written in response to the book “*Marlon Bundo's A Day in the Life of the Vice President*” which was about traditional family values and was written by Charlotte Pence. They both spoke about their feelings that reading children’s books can also impact and interest adults and allows storytellers get messages to multiple generations.

In the public sector, libraries have become community-building forces of civic engagement, economic development, neighborhood revitalization and workforce progress (Christian, 2015). This puts stressors on librarians as they struggle to accommodate their current work load with the time and energy it takes to go out and do work in community spaces. With the rapid emergence of the digital environment and the quick shift in user expectations, librarians have been forced to learn new skills every year in order to serve their patrons effectively-even as they struggle to accomplish all the things they have traditionally done in the past. In many library systems, there are too few hours in the day to do the research necessary to find the means of training and much less to accomplish it (Palfrey, 2015). The librarians in our study frequently discussed the challenges around getting time away from the front desk to learn the curriculum and the anxiety it caused them. The administrators in the library that we partnered with had “pillars of focus” that librarians (particularly children and teen librarians) were asked to adhere to the guidelines in Table 1.

Continued focus on youth programming and services beyond library buildings through <b>community listening and partnerships</b> .
Continued focus on <b>multiple literacies</b> (reading, STEM, DML, Info, SEL) Increase focus on a couple more?
Programs and services that <b>are developmentally appropriate</b> , with a special focus on increasing <b>intergenerational experiences</b> .
Equity/RSJI, prioritizing audiences, resources, content, and
Youth voice, community centered, agency
In these areas, our team will provide the following:
Leadership and vision
Training and support
Partnering with staff in direct service
Program and service design
Internal and external advocacy for youth, families, and communities

*Table 1: “Pillars of Focus” Librarian Guidelines of the Seattle Public Library*

When Olivia and I talked about the way the library is changing she said:

“Everyone that I work with, that’s our priority-getting out of the building. You’re working with non-dominant audiences and using the equity lens, but the reality is that we still have to staff the building, so how do you do that and then how do you do that without...I don’t know. You could bring in paraprofessionals to staff the buildings, but then you need less librarians in general and then it is a scary cycle.”

The stress of the library’s changing expectations that librarians go from straightforward service providers to facilitators and teachers requires deep emotional labor on the part of the librarians, particularly as they are juggling multiple roles in their work with the facilitation added onto an already full work schedule.

Supporting the librarians by apprenticing them into the work of facilitation to become more adept and comfortable in their practice allows them, by extension, to make the learning experience more fulfilling and fun for the workshop participants. Research on the emotional labor required of informal facilitators suggests that helping librarians and others to process their

perceptions of the work is proving to be useful in environments where people are asked to go above and beyond their daily work environment. By recognizing the intersecting roles of roles of families, communities, organizations, and institutions in nurturing young learners, we are better positioned to attend and leverage local forms of expertise and to attend to how histories of structural inequities, economic circumstances, discrimination and associated stresses can constrain access to learning opportunities” (Barron & Bell 2015). Not giving adequate support to the facilitators can result in turnover. The facilitators can become burned out or feel disconnected to the work and often don’t continue with the program. As our group has seen in other science learning programs, if not sufficiently supported, facilitators will leave the program after a session or two, which is detrimental to the workshops and to future facilitators who do not have the support of the expertise of experienced facilitators.

Olivia took a course titled “Promoting Rich Learning with Technology” as part of the work at the library. At one point in the class she wrote about the feelings she had about facilitation in the beginning of the project:

I came to this understanding through a very special project that I’ve had the privilege to work on for the past two years. I’ve served as the lead children’s librarian on a National Science Foundation funded project, Backpacks for Science Learning (or “robot backpacks,” as we all affectionately call it), which aims to study and implement family learning around robotics and computer programming. As you might assume, I am not a computer programmer. I am not an engineer. But, guess what? I am a learner.

I felt a mixture of excitement and intimidation as I prepared to facilitate my first series of robotics workshops with an intergenerational audience, especially one where the curriculum was still in development. I received excellent support and training leading up to the sessions, yet I still feared that I’d reach a point early in the lesson when I would be baffled by someone’s technical question. In my mind, I wondered what I would do if I couldn’t quickly provide options for a problem, meanwhile (also in my mind) that person is becoming more and more frustrated. What if that failure to fully understand the content of the workshops that I was leading caused folks to shy away from robotics, computer programming, or, dare I say it, the library?

These thoughts were a smidge dramatic, don’t you think? Leave this librarian alone with her worrying for too long and things might spiral. So, let’s just skip ahead a little bit and get to the point. With the guidance of colleagues and families participating in the workshops, I came to more deeply understand that acting as a facilitator never meant that I had to know all the answers. While I have many parts to

play in my job as children's librarian, my primary role is to facilitate the learning process of the families, not to be an expert. It is also to engage in my own learning by being a co-learner, or learning partner. Once I realized and began to practice this, I was untethered from the bizarre and flawed notion that told me I had to know it all.

### **Learning to Manage Program Enactments: *The Pinnacle of Bonkers*, or what we discovered when we followed facilitators through the process of managing and facilitating informal workshops**

The stress of their expanding roles showed up clearly prior to the third workshop in the first year when I interviewed Olivia and she marked her responses on the upper right-hand corner of the mood meter (page 39), the "red" section, which indicates stress. She had not done that in the previous workshops, and her general affect in the entire interview was anxious. I asked her why she marked the red section, in particular why she marked "apprehensive. The following edited transcript shows Olivia's feelings on that day.

Nancy: Apprehensive? I've never had anyone answer that.

Olivia: Yeah, I guess anxious is really what I'm going for. It's a combination of nervous and apprehensive.

Nancy: Okay. What happened today?

Olivia: I just feel really unprepared for today. I don't know. I feel like I'm a little bit overwhelmed by ...

Nancy: By a new session?

Olivia: Everything. Yeah.

Nancy: Do you think you feel like that at the beginning of every new workshop or is it this one particular

Olivia: Yeah. I guess it has to do with communication always. I understood that I was going to be taking the lead on this one, but then I guess I just put too much... I thought that having seen it several times now that I would have needed to prepare less. I just didn't have time. I just did not have time. It's just been a really busy time in general, which is kind of why.

Nancy: It is seasonal?

Olivia: It's not just this project. Yeah. It's hard to say. I think over winter break that was constant, and I was there a lot. We were doing programs almost every day, but they were passive programs. Yeah, seasonally because so many people take vacations our time is just more scarce because we're more on desk. We're trying to keep up with whatever programs we have. Anyway, I felt like personally that that's part of why just in general being at work. For the stretch, has just been difficult. The pace might be too rigorous. the turnaround time. We've been really different. I was trying to figure out. We finished up in July. We had about two and a half months before we started in October, right?

Nancy: Yeah.

Olivia: Then we had another two and a half week break. It was at least the same spacing, but something about this one felt, and maybe because it was the booster day that was right in front of it. We had to figure out all that and learn that and then jumping into this just the next week. It was too much.

Olivia: Yeah. I don't know if I've ever used any numbers with you, but my time is about between 30 and 40% on-desk. That's time I do not have at all. I'm out there. If I'm lucky I can respond to respond to emails, but that's when I'm supposed to be available for the public.

As we left the interview room Olivia told me that she was feeling “burned out” and tired and that the whole project felt like the “pinnacle of bonkers”. I watched Olivia’s facilitation affect closely after this interview. She was her usual, extremely professional self throughout the session. Her facilitation style and affect were normal and did not change from previous sessions and if I had not been aware of the concerns and stress she was feeling I would never have been able to tell that she was upset. She was able to regulate her emotions during the session, a skill librarians must use every day to be able to be courteous and work with customers in the library. In the days following the workshop she spoke to administrators at the library and the planned Spring sessions of the workshops were canceled so that Olivia would have time to regroup. We later discussed that decision and the relief that she felt when the administrators and our research team supported her in taking that much-needed break.

Three years into the project Olivia and I discussed how she was feeling about facilitation so far into the project:

Nancy: Do you feel better about the facilitating? You feel like it is running smoothly?

Olivia: Yeah, I do. I think I’ve come a long way in terms of my emotional state before those things. Yeah, definitely. I mean going back and thinking about e-textiles. E-textiles just seem so straightforward and I think that’s because so much work has gone into it and streamlining and stuff.

As our team iterated on the curriculum for the workshops, we kept in mind that informal workshop facilitation differs from the instruction you might see in a classroom, building easy to read, colorful formats for each day of the workshop, in both an in depth version and a “day at a glance” version. (Appendix C) The people being asked to do the facilitation tend to be working professionals who have other job responsibilities outside of the STEAM facilitation role (i.e., unlike classroom teachers who are heavily in instructional roles). The librarians I worked with

were very clear that they did not think of themselves as teachers, but more as “connectors to knowledge”.

Susanna: “I once toyed with becoming a teacher. I really liked the idea of being a teacher, but what I like about being a librarian more is that I get to have that sort of teaching experience, but with all different kinds of people and with all different kinds of topics. So I do, but I see it as sort of a more ... I feel like teachers are so awesome, because they have a group of kids that they have to guide through this whole thing for long periods of time, whereas I get people for an hour. And sometimes it's stuff that they've chosen to learn about. Sometimes it's just five minutes that I'm teaching somebody something. You know, "Here's how you do this." or "Here's a way to search for this." Or "Here's how to-"

In many cases facilitators in informal STEM workshops are handed a curriculum a few days prior to a session and asked to step into a role where they may or may not have experience or the technical knowledge needed to instruct the people in the workshop, which can be very stressful. Our apprenticeship model and gradual expansion to the facilitation role seemed to help to alleviate that stress in our librarians.

### **Co-Facilitation as Emotional Scaffold and Learning Platform**

The design of our project involves a co-facilitation model with a more experienced facilitator working with the new facilitators until they feel comfortable, much like a pre-service teacher apprenticing into teaching with a more experienced teacher. In our case we started working with Olivia as the first facilitator and one of the faculty members on the research team attended each workshop to facilitate with her. Olivia and the faculty member talked before each session to decide which pieces she needed help with and how the faculty could best support her instruction. This co-facilitation professional learning practice provided a safety net for Olivia as she came into the new practice of STEAM facilitation (e.g., supporting families in their project design process, teaching about circuits and programming, building community). This model also helped Olivia develop confidence and skills in a less fraught manner and kept her in a space to be able

to do the work and to not worry as much if there were pieces of the curriculum with which she was not familiar.

Olivia: Yeah, I mean everyone is very helpful. Kind of just knowing who to ask about it. And I think I also learned this session, or this whole new curriculum, I finally understand now that I could change it if I don't want to follow it. I didn't change anything too drastically, but I would just make changes if I didn't feel like that was the way I would do it.

Nancy: Definitely.

Olivia: I don't know what the thoughts on the team were about that, but I felt empowered to do that.

### **Leveraging the Expertise of Librarians**

The research team also worked to bring the librarian's personal skills into the curriculum, which increased their confidence in the process. The first set of workshops ran simultaneously with an Indigenous Robotics workshop, where we had a Native storyteller come in and tell a story each night. We realized that telling a story was a perfect way for the librarians to integrate their own skills into the work. Olivia was uncertain at first how a storybook could fit into the robotic sessions where so much technology was highlighted. The Native storyteller gave this advice about telling a story:

Roman (Indigenous Storyteller):

“Traditional stories that tell us who we are. You are all storytellers. From the littlest one to the oldest one we are all storytellers.

The stories tell us something changed. Something changed and our feelings changed. It is about change and about feelings.

There is a big difference between a story and a report. A story tells us what changed and how people felt and helps us understand how the people in the story felt.

One reason to tell stories to keep the stories alive.

Something changed and it had feelings

Storytelling is teaching. Whenever you hear a story it is teaching.

Make sure you're covering the feeling. Talking about a story you should use the five W's

Who, When, Where, What, Why

Why is the hard part to explain because it is about feelings.”

Olivia searched for books about productive frustration, girls working with technology and the importance of trying many times before the characters succeed. The stories and their message were enjoyed by everyone in the workshops. At the fourth set of workshops, she brought books

written in Amharic from the library and set them out on the book table that was set to one side in every workshop for the kids to check out books of interest. The children in the workshop were so excited to see books written in their native language that Olivia decided to turn the tables and have the kids read the books to their parents during story time, which was a great success.



*Figure 4: Picture of book time activity organized by Olivia*

Our design of the learning environment works to decentralize dominant forms of STEM practices while privileging diverse community forms of practice and supporting those engagements through collaborative design (Bell, et al., 2012). Lave and Wenger (1991) describe the work as a Community of Practice which can evolve naturally because of the members' common interest in a particular domain or area, or it can be created deliberately with the goal of gaining knowledge related to a specific field. It is through the process of sharing information and experiences with the group that members learn from each other, and have an opportunity to develop personally and professionally.

## **Promoting Family Learning through Relationship Building**

The building of relationships is important to the librarians that are supporting knowledge creation in informal spaces. We know that all social learning begins with trust and care, which only happens when you are in relation with one another (Bell, 2018). We have seen our facilitators building relationships with community organizations, research partners and most importantly, with the families that are engaged in the workshops. The likelihood that students will be motivated and engaged in learning is increased to the extent that their teachers, families and friends, as well as others who shape the instructional process support their engagement. Programs for youth promote positive development in adolescents by addressing their needs for safety, love and belonging, respect, power and accomplishment (NRC, 2003).

The workshops are multi-day events so the librarians have a chance to learn about the families and build community in a deeper way than traditional one-day or one-hour library events. Communities are built over time, through shared experiences and by providing multiple opportunities for students to know themselves, know one another, know the teacher, and interact in positive and supportive ways (Sapon-Shevin, 1992). Susanna makes phone calls to all workshop participants prior to each set of workshops to help them understand the space and feel comfortable on their first day. When I asked her about her reasons for speaking ahead of time to each family she responded:

Yeah. I think it's like. I mean I didn't want to just leave it at, this person "There's this program that this other person is doing and you should go do it," and now you're signed up without closing the loop on that. So I called her, and just like wanted to know if she had any question and she was very, she was like, "Yeah, that sounds great. We'll be there." She said, "But I'm not going to be able to be there because I'll have the baby, and so is it okay if my mom brings them." And I was like, "Well actually, we would really like ... We'll have child care. You can bring... We want everybody to come." I think it was a very new concept. I think it is for a lot of people. But I think particular them, they didn't really think of it as a family affair. They kind of understood it as this is for the kids, and we're going to be there to, I don't know, be the parent or something.

Olivia has discussed the importance of connecting with the families in the workshop and the difference between working at the library and the workshops:

Yeah. Yeah. I mean it's the thing that I've felt lacking at the central library is those ... I mean I have it here and there ... but the relationships. Because when you're at a branch (not at a large central library), it's easier to make those relationships. People come in at the same times. They maybe come to your story times, and you're the one doing all the story times. So, you're meeting people and seeing people a lot. Whereas here, you know it's not really a neighborhood. We get a lot of school groups, so we don't really get to know the kids. This is sort of like filling that gap here is being able to get to know people.

Both of these librarians have worked to develop relationships with the families in the workshops through their facilitation. They encourage the families while they are working on their projects:

Olivia: Can I ask about your project? What are you working on? Camping? That's what makes you feel calm? Is the whole family doing ... are you doing camping? What piece are you doing?

Child 1:Trees.

Olivia: The trees? Are these your drawings?

Child 1:This one is.

Olivia: Can I take a picture of it?

Child 1:Sure.

Olivia: Take a picture of your cool drawing. Is this you?

Child 1:No.

Olivia: No? Who is it? Just a person.

Olivia: It's true, the hair. It's got nice, thick hair.

Interpreter: And the same haircut.

Olivia: Yep. And the sun is shining down on you. And it looks like his is a loaf of bread.  
(laughs)

Olivia: Just kidding. Is it a log? Yeah. Is it the fire?

Child 1:Yeah.

Olivia: Yeah. Very cool. Nice work. Um, so how are the trees going to fit into the project? Is this a drawing of the whole project here? Let me take a look at that. It looks awesome!

Olivia: (Gets up to walk around the table.) This is amazing! Check it out! Who drew this? Did you draw this? (asking child beside child 1) Nice work! Will you tell me about it? What's going on in this picture?

Child 2:Camping trip.

Olivia: The camping trip? Can I take a picture of your picture? So cool. Check that out. What is uh, what's that?

Child 2:That's just the moon.

Olivia: That's the moon. Okay. You've got an actual building for the cabin?

Child 2: Yeah

Olivia: Maybe a unicorn's coming down the hill?

Child 2:That was a horse.

Olivia: (laughing) Just kidding. So like, you got a snake? Gotta stay away from that one. Is this the dog?

Child 2:Yeah.

Olivia: And different tents? Is everyone going to have their own tent?

Child 2:Yeah.

Olivia: Share a tent? Campfire? Are you playing soccer here?  
Child 2: Yeah. I dont really know what this is, I'm still drawing.  
Olivia: Yeah, it looks great!

### **Expanding Participation in STEAM Learning Through Positioning and Support**

“Patterns of participation and exclusion can echo broader societal norms, but they can also challenge them” (Esmonde, 2017). Our facilitators routinely try to break out of the constraints around who is allowed to participate in STEM activities by engaging everyone in the family in the work. In the excerpt below Olivia invites older brother Badger into the coding work that is being done with his younger brother, Joseph.

Olivia: Where's your motor? Let me see it, let me see your motor.

((Olivia reaches for the motor))

Joseph: Unintelligible

Badger: We need one of these.

Olivia: We shouldn't need that, actually, right now...

(Doras and Joseph speaking in Amharic about the motor)

Olivia: I think it's a different port, I don't think there are four ports for the motors.

Badger: Yep

Olivia: There are?

Badger: Yep

Olivia: Is there number four? You're sure

Badger: Yep

Olivia: There are?

Badger: Yeah, this one is...oh no, there not this.

Joseph: Unintelligible

Badger: Wait, which one, oh, ok, no, don't put it anymore (speaking to Joseph). We can move the sound later.

Olivia: Let me see. ((reaches for the motor from Joseph)) Oh, OK, so he put it in the LED port.

Joseph: No, (unintelligible)

Olivia: Let me see the tool. May I see the tool, Joseph? ((Holding motor))

Badger: What do you mean?

Olivia: He put it in the LED port. It needs to go in the motor port.

Badger: Oh, OK.

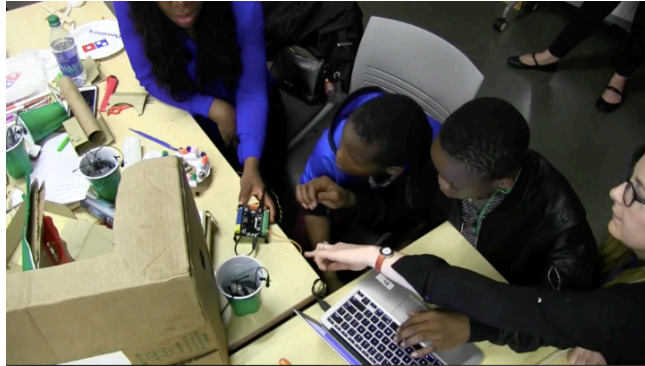


Figure 5: Olivia working with family members



Figure 6: Olivia working with family members

Olivia: Do you want to move it? ((holding motor to Badger))

Badger: Yeah

Olivia: OK

Olivia: So Joseph, you want to match up, since this is a motor, you want to match it up with the right port. Those are called ports. And so if you put the motor in the LED or the light port, it won't work. So that is what Badger is doing, he's moving it from the light port to the ((pause while watching Badger work)) to the motor port.

((Olivia & Badger & Joseph all have hands on the motor))

Olivia: Want to hold that up?

Joseph: It can go in any of the these? Any of these? (Holding motor up)

Olivia: So you want to make sure it mat...this is one, right here. So you want one to go in this one, and one to go in that one. Did that make sense?

Joseph: I thought you could put it in any one.

Badger: Wait (to Joseph) (unintelligible)

Joseph: (unintelligible)

Silently working together

Badger: Wait. Which port?

Olivia: Did they get in?

Badger: Wait, which one was it?

Olivia: So you put it in...

[Badger: Which one was this one?]

Olivia: (Looks at the motor) Let's not worry about that one right now.

[Joseph: unintelligible]



*Figure 7: Olivia working with family members*

Olivia: That's the distance one.

Badger: Oh, distance, ok.

Olivia: Let's do number 2 for the motor port first. Cuz we're gonna test the motor.

Olivia is pointing, gesturing, using her hands and positioning herself and the children as part of her facilitation. Goodwin (2000) talks about pointing gestures show not only the region indicated by the talk surrounding the gesture, but the item being pointed at is a “built environment for the production of meaning and action”. Gestures are often taken as evidence that the body is involved in thinking and speaking about the ideas expressed in those gestures. That is, gestures are taken as evidence that the knowledge itself is embodied. A second theme of contemporary research in the learning sciences is the importance of analyzing teaching and learning in authentic settings. An embodied perspective offers a unique lens for considering aspects of learners’ and teachers’ behavior in ecologically valid, real-world settings, such as classrooms and tutoring sessions (Alibali & Nathan 2012). Escude, Vissoughi and Hooper (2016) write about the nature of hands-on activities within a maker space and embodiment and embodied assistance and the body as a resource for meaning. Olivia is careful to have the children do the work, while assisting with a light touch. In the transcript above we can see that Olivia is sustaining joint activity by helping but not completing the activity for the children and frequently holds her hand back to allow space for the learners to be encouraged to do the work (Vossoughi, Hooper, & Escudé, 2016). Olivia is demonstrating innate instructional skills while supporting the children’s learning.

I spoke to Olivia after this session to ask her where she picked up the knowledge to bring the older brother into the work and how to use hands-on methods while she instructed the

children. She explained that it was a librarian area of expertise, telling me that anyone who has taught computers to people knows, which is something many librarians are asked to do in the course of their work. Olivia told me during our very first interview that she had taught computers in her entry position at the library.

### **Expanding the Roles of Librarians to Engage Community Members**

Facilitators in informal STEM learning settings often have no formal classroom experience. They can be scientists, librarians, community leaders or artists with little or no formal teaching experience. In contrast to classroom teachers who have a year of apprenticeship in a classroom before being in front of a class by themselves, informal instructors can be dropped into the space with very little support beyond a knowledge of the subject matter to be taught. But informal spaces are important sources of learning for communities, and they deserve well-informed and pedagogically adept instruction (Bevan & Ryoo, 2016). Informal learning spaces can allow children to have opportunities that are not available in formal school settings, and support families that might not have access to the spaces and equipment for deep STEM engagement.

As libraries are changing to focus more on communities, they are asking librarians to change with them and take on new roles. In the public sector, libraries have become community-building forces of civic engagement, economic development, neighborhood revitalization and workforce progress (Christian, 2015). This puts stressors on the librarians as they struggle to accommodate their current work with the time and energy it takes to go out and do work in community spaces. The librarians in our study frequently talked about the challenges around getting time away from the front desk to learn the curriculum and the anxiety it caused them. The stress of the identity change from straightforward service providers to facilitators and teachers requires deep emotional labor on the part of the librarians, particularly as they are

juggling multiple roles in their work with the facilitation added onto an already full work schedule, of assisting customers in the library, which is an already emotionally intensive job that requires librarians to deal with people who may be uncertain or have unrealistic demands.

In her article studying the empathic services of librarians, Abigail Philips (2017) discusses the role of empathy and emotion in librarians' service work.

“Librarians are increasingly promoting social services, including connecting patrons with mental health services, providing assistance services for homeless patrons, and hiring social workers as employees of the library. The social and community-driven role of librarians is becoming more apparent as librarians push the boundaries of librarianship, providing services that previously have been ignored in scholarly literature. Working as a connector between patrons and needed services, librarians rely upon softer skills that they rarely are prepared for in master's degree programs in Library and Information Studies. These softer skills include “curiosity, initiative, understanding, communication, [a] sense of professional responsibility, and the ability to overcome and deal with mistakes”—skills that are often discounted in a profession that instead tends to concentrate on information alone.”

An administrator from the library system we are partnering with told me that three branches have permanent social workers, with a full time social worker at the main branch. The social workers have daily drop in hours and a contact person to make appointments for people, free of charge to support the need for mental health support in all of the communities that the library serves.

### **Unanticipated Expertise Development Based on Expanded Roles**

I had opportunities to see some of the emotional labor and stress that librarians experience firsthand. At the beginning of one of my interviews in the library, Olivia seemed upset and told

me that the day before the interview one of her coworkers had been assaulted on the third floor of the library by an indigent person. She talked about how the librarians were learning skills to deal with homeless and mentally ill people, telling me that they were instructed to never physically contact a sleeping person in the library and knowing when to call security. The Washington Post (2015) reported that the welcoming design of public libraries are having to learn to cope with a large number of people who are homeless and mentally ill, who come to the library to seek warmth and shelter, use the restroom, and access the internet. Library science classes do not teach these skills to students acquiring their MLS, so the American Library Association has formed a task force to help librarians learn these new skills (Hunger, Homelessness & Poverty Website). Britt, a library administrator, tweeted an article from the New Statesman American, where author Daniel Rey talks about our public library working with the large homeless population. Working with homeless patrons is a core part of Seattle Public Library's mission: to deliver universal access to information and provide opportunities to improve the lives of people in the community A crucial part of the library's appeal to the homeless is its computers. In today's technocentric world, a digital divide has formed between those with and those without an internet connection. And beyond its 27 branches, one of the library's key programs sets aside 50 mobile Wi-Fi hotspots for homeless encampments and tent cities across Seattle. Funded by the city and a grant from Google, the hotspots reduce the effects of the digital divide and boost social inclusion for homeless people in encampments. (Rey, 2018.) Olivia has told me that librarians take de-escalation classes, and although the main branch of the library has security guards on duty, many branches do not, and have to request security for special events. This means that the branch librarians must manage problematic situations with the public themselves.

I saw this training at work at a booster day event at the community center last summer. A man wandered in off the street, and sat down to watch the children. Susanna was facilitating the event and Olivia was acting as support for the event. After a few minutes the man came to the back of the room where we had a buffet set up for the families. Olivia, and Britt (a library administrator) approached him to find out what he needed. Olivia was very calm and thoughtful as she talked to him:

Man: I wanted to get your AA ... I know you have AA meetings.

Olivia: We don't, we're just using the room tonight.

Britt: Yeah.

Man: I understand that.

Olivia: So we don't-

Man: Maybe I could become involved in what they're doing.

Britt: Oh?

Olivia: This is for families with little kids. Do you have kids?

Man: No, I've got a 40 year-old boy.

Olivia: Yeah.

Britt: Yeah.

Man: I'm divorced for pretty much 40 years-

Olivia: Oh.

Man: -and single, and gotta 90 pound pit bull. He's my better half.

Olivia: Yeah.

Man: He's nine years old. I'd like to be involved. I've been involved in this community for over 30 years. I remember grenades going off at 15th and Covington.

Olivia: Yeah. Unfortunately, I don't think this project has opportunities for community volunteers at the moment.

Man: Even with dogs?

Olivia: Even with dogs.

Man: Oh my god!

Olivia: I wish. But if you'd like to take a plate of food, you can. And you can-

Man: Oh, I'll do that!

Olivia: Okay, that sounds great.

Man: That...

Britt: So we're-

Man: Is there anything else I can do?

Britt: Well we're through the library, the South Park Library.

Man: Over there (pointing)

Olivia: Yeah

Britt: Just around here. And I know that-

Man: Brand new library

Britt: Yeah, it's really nice. You can apply to be a volunteer through the library, and there may be other opportunities like this that come up.

Man: Well, you know, I got my company, I got my dog, and I got DirecTV.

Olivia: Yeah, that's all you need huh?

Man: No.

Britt: No?  
Man: No, I need to do something to make a difference.  
Britt: Yeah.  
Olivia: Well, do you know LaDonna?  
Man: I know nobody.  
Olivia: Oh, okay.  
Man: I've been through two rehabilitation programs, I'm a Christian, and I think I can spread something that might be cool. You know what I mean?  
Olivia: Well, if LaDonna were ... she had to leave to do something, but if you ever meet LaDonna, she knows everybody in this community.  
Man: Yeah, her name rings a bell.  
Olivia: She can hook you up.  
Man: OK.  
Olivia: So please, help yourself to a plate of food.  
Britt: Oh here, plates are right here. [crosstalk 00:02:48] There you go, help yourself.  
Man: Can I get this to go?  
Britt: Yes.  
Olivia: Yes. I've got foil we can cover your plate if you need to.  
Man: I've been through two rehabilitation programs, I'm a Christian, and I think I can spread something that might be cool. You know what I mean?  
Olivia: Well, if LaDonna were ... she had to leave to do something, but if you ever meet LaDonna, she knows everybody in this community.  
Man: Yeah, her name rings a bell.  
Olivia: She can hook you up.  
Man: OK.  
Olivia: So please, help yourself to a plate of food.  
Britt: Oh here, plates are right here. [crosstalk 00:02:48] There you go, help yourself.  
Man: Can I get this to go?  
Britt: Yes.  
Olivia: Yes. I've got foil we can cover your plate if you need to.

Olivia was very kind and patient in this interaction, and she told me later that she has dealt with similar issues in other workshops. During a professional development session at one of the branches, she had to talk to an angry man who entered the teaching room and was being verbally abusive until she convinced him to leave the room. She sees it as her role to manage and sometimes diffuse these situations. Because of all the demands that are placed on librarians in their daily work, our project is working to give the librarians the time, space and support to learn new skills and think about the change in identity required to facilitate effectively. “The formation of identity, or even fundamental change in attitudes or habits of reasoning, cannot take place on short timescales. Even if short-term events contribute toward such changes, it is only

the fact that they are not soon erased, do not quickly fade—that subsequent events do not reverse the change—that makes it count. It is the longer-term process, including the effects of subsequent events, that determines for us the reality of basic human social development” (Lemke, 2000, p. 11). Supporting the librarians by apprenticing them into the work of facilitation to become more adept and comfortable in their practice allows them, by extension, to make the learning experience more fulfilling and fun for the workshop participants.

### **The Affective Work of Identity Development Along Learning Pathways**

The changing dynamic of the work of the librarians in these facilitation roles has required a deep shift of affect in relation to their identities. We are seeing a change in affect of the experienced librarians as they move further through the process of learning the curriculum and gain comfort with the technology and with being in a leadership role in the workshops. Affect is individual and transindividual. It is ontogenetically prior to the distinction between the individual understood as a separate unit and the collective understood as a molar aggregate of separate units. It is “collective” in the sense that it expresses itself in collective individuations (Massumi, 2015). I was able to see the librarians maintain a professional and caring affect even as they juggled a room full of families and small children with the broader needs of the community.

“Affect” refers to a person’s tendency to experience a particular mood or dispositional trait” (O’Toole, 2017, p. 1086). One of the tensions that typical facilitators face is the lack of time and support they typically have in an informal learning environment. The norm for a facilitation role in a museum, library, or other community learning setting is to give workshop leaders a very short time to familiarize themselves with the subject and then they are put in front of a group to begin teaching the subject. The apprenticeship approach to learning that our project takes in addition to the extensive curriculum and facilitator supports and including the

facilitators in debrief sessions after the workshops and then the curriculum is adapted to work in informal setting (Spanish translations, time spent on each lesson, etc...) seems to have allowed the facilitators to acquire confidence in the subject of robotics and circuits to the point where they are able to facilitate on their own and use those skills in other settings. Olivia and Susanna have continued with the technical knowledge they obtained in the workshops and used them in further coding and circuitry workshops inside the library, leading robotics sessions in local schools and one-day coding workshops within the library.

In our initial interview Olivia did not see herself as a person capable of leading learning sessions but after three full runs of the workshops she was able to take on a leadership role in her library and teach other staff about the subject of community partnerships. Another practice of our project is having experienced faculty support facilitators until they feel comfortable leading sessions, and then senior librarians eventually take up the practice of facilitation support with the new facilitators. Olivia has taken this to the next level by stepping up to lead Professional Development sessions with new librarians and fill the support role to assist the new librarians at each of their workshops so that the faculty facilitators are no longer needed.

In addition, when we began this project the librarians were made uncomfortable by the mess of design and the prospect of failure in the design process. At one meeting, early in the project, we had an all-team design session in which the robotics diorama the team was attempting to build did not work after multiple attempts. An administrator from the library met with me after that session to discuss her concerns about how the process would be problematic for librarians: "Librarians have a fear of failure, they have always excelled in school and get praise for knowing how to find anything." She went on to tell us that Olivia and Susanna were the "cream of the crop" of librarians, but that the new people that would eventually come on

board were not as facile with the work they would be asked to do. The administrators and librarians had a fear that the design process that they saw in that meeting meant that the robotics curriculum would not work in the workshops. In the months that followed I was able to see Olivia and Susanna work through that frustration and worry and take active part in the design sessions, and learn to express their knowledge of productive failure in their facilitation. Olivia talked about the way she felt about the mess in the beginning and how she sees it years into the project:

Nancy: I remember that was one of your things after PD, you said the mess. There's just so much stuff. And I was like, "Yeah, that's true."

Olivia: Yeah. It's that tension between, I think I've gotten better at this, but just letting it be chaotic and then also knowing that certain patterns and boundaries and whatever the word is, just the families learning better sometimes when there's expectations. So just having both of those things in mind when you're teaching and I think that goes into our philosophy of facilitation in general is you need to let them go, but you also need to direct them appropriately too. You know what I mean?

In fact, the mantra “trust the process” was taken up among the facilitators, researchers, and library administrators to express their willingness to be flexible in the workshops, and to not get anxious when the technology did not work the first time, or even the third time. It has been a collective strategy to manage the stress and uncertainty of successful pulling off programs that serve community members in the ways intended by the ambitious design approach.

We saw the communities of practice grow not only within the families present at the workshops, learning together and telling their stories, but also within the facilitators and the faculty who mentored them. Lave and Wenger (1991) discuss learning as a process of becoming a member of a sustained community of practice. They go on to say that developing an identity as a member of a community and becoming knowledgably skillful are part of the same process, with the former motivating, shaping and giving meaning to the latter, which it subsumes. The faculty in our group worked closely with the facilitators, supporting them in leading workshops

as needed and helping them get past the anxiety of working with technical subject matter by writing very detailed, descriptive curriculum and being on hand throughout the workshops to jump in to support families when the technical knowledge was beyond the level with which the librarians were comfortable. This apprenticeship model gave the librarians the opportunity to see the community practice in its complexity early on and get a broader view of what the workshops entailed, which allowed them to take up the practices on their own and scaffold newcomers into the space (Lave, 1991).

The faculty experts in the space focused on the cultural learning pathways of the facilitators. Bell, et al., (2012) describe this to be conceptualized as a series of linked actions where individuals are positioned—or position themselves—in ways that deepen their participation in a practice amidst a myriad, and often competing, set of different systems of competency. These systems of competency operate throughout cultural experiences taking place across the breadth of social groups and settings in a learner’s life in relation to scopes of possibility for action and learning.

Olivia grew into the role and eventually became so proficient and comfortable with the work that she began contributing to the curriculum design, an aspect of the project that the library had initially opted out of. She now serves as facilitation support for the librarians enacting the workshop for the first time.

Susanna talked about what a gift it was to have Olivia support her during workshops:

She (Olivia) is a treasure. Afterwards I emailed her ... I think when you are working a program and she's so deeply in it and she's done it so many times and she really has a very good idea of how it goes. I think it would be very hard to let go of that and let somebody else do it. And she's so good at letting the other person do it. I feel like I would have had to insert myself into the work, you know what I mean? And she's not like that at all. She was very supportive and she was there every time I had a question or a suggestion, but she wasn't at all like, "This is how you should do it." That's a really good quality in a person. Also, she helped a lot with the prep and the setup and everything so that really took a lot off. The last time I was doing most of that and that was a lot harder.

Olivia and Susanna both discussed their feelings about the value of the project in their own work and the future trajectory they saw coming from it. I asked Olivia about whether she believed the work she was doing in the TechTales workshops would help her in future roles.

Olivia: Absolutely! There are so many skills that I'm either learning for the first time or practicing, many of which don't have to do with robotics or science. Working in a larger team comprised of multiple organizations helps me to avoid insular-thinking and learn the differences in work culture. I love working on a project that is focused on learning and growth which encourages feedback and debriefing at all stages. The theoretical discussions that occur continually brings us back to the purpose of the project, which is a good model to follow in terms of keeping focused on what matters. Working with a federal funding source (though I have little to do with this) is enlightening in so many ways. Teaching and learning from families of all backgrounds and abilities is always useful in the library and it's one of the stronger skills that I have as a result of my experience and this project. Prototyping and seeing how curriculum is developed is allowing me to become less invested "my idea" and more invested in ideas as communal, to be developed and refined together. I could go on and on about how this work is impacting me and my work, both current and future. All of this helps with building community partnerships, managing large-scale projects, supporting colleagues, and challenging established modes of operation.

### **Community-Centered Professional Learning**

I have spoken to both of these librarians about their role in community work. They see the workshops as a way to help their communities by providing STEM opportunities that the families might otherwise not be able to have. Susanna sees her small library as an important part of the community. She hosts a kindergarten welcome group every summer to help immigrant parents find their way into a school system that can seem unwelcoming and frightening to someone who does not speak the language. The library staff talk to the parents and help them learn to negotiate the education system, to understand the role of the PTA and the support kids will need with homework.

Susanna volunteers at the local schools regularly. She lives in the community and her children attend school there, so she has a very strong connection to the school district. During a casual conversation with Olivia at a workshop, Susanna spoke about another of the ways in which she supports the school:

What I was talking about was a panel that the then-Assistant Principal set up for the teachers to learn more about the South Park Community. It was during their trainings before school started and I, and people from two other CBOs, were there to talk about what we do in the community as well as how we can work together more effectively. It was really wonderful because often it's very hard to get into the school and let teachers know what resources we have available as well as to find out more about what their actual needs are.

I do a lot of work with the school in varying capacities but this was the first time that I had been invited to talk with the teachers so it was really great. Mostly I rely on making a connection with one or two teachers and the librarian so it was great to be able to talk to all of them.

Susanna's goal is to grow the library into a "one-stop-shop" for people in that community. She sees herself and her staff as "connectors" connecting people to resources and helping them find social services and answers to their questions. She talked about the way she sees the library's responsibilities to the people in her community:

This work is really building more relationships, both with the people in the community but also organizations and people outside the community and bringing them in to River Park. It makes me really happy when people come here and they're like "This is such a great place to be and how can I be a part of this community too?" Sort of strengthening the community from the inside, and showing what an awesome community it is. I think sometimes people go, "Oh River Park. It's so scary in River Park. Where's that? Isn't that a TV show? So being able to see what really awesome community things are here and how the community is so important here. And then how the library is part of it."

Susanna is vigilant about making sure that everyone in the session is working or playing and keeps an eye on the many children in the community center during the workshops. On one booster day she noticed a young child sitting alone on the floor during a booster day where many of the science stations were in English and were too complicated for him to work with. She joined him on the floor to work on a set complicated building blocks, building again and again so he can knock them over, playing with him for over 20 minutes, speaking in Spanish while they work:

Susanna: A ver. A ver.

Let's See. Let's See

Susanna: Donde esta

Where is it?

Susanna: Aqui esta

Its right here

Susanna: OK. Quieres hacer otro?

OK, Do you want to do/make another one?

Susanna: Ponlo aqui Arriba  
Put it up here  
Susanna: OK Asi? Ok Aqui?  
OK, like this? Ok Right here?  
Susanna: Mira  
Look, right here?  
Susanna: Otra Vez?  
One more time?  
Susanna: OK Ahora  
OK Now  
Susanna: Aqui Otra  
Another one  
Susanna: Ok vamos a ponerlo aquí arriba  
Ok, so now we are gonna put it up here.

Eventually more young children came to play with them so that many of them were engaged in playing rather than wandering alone.



*Figure 8: Susanna working with family members*

### **Taking Up Facilitation Roles**

The librarians are being asked to take on facilitation roles that are unfamiliar to them. Goodwin (2000) talks about thinking about the physical positioning of the facilitators, how they use their bodies in the space as a method of meaning-making and action while they work with families. Olivia speaks English while many of the participants in her workshops speak Amharic. Susanna is bi-lingual, Spanish and English, in a mostly Spanish-speaking community. Olivia tends to sink in at each table, perhaps so she can work across that language barrier or use the interpreter

that is at the workshop, while Susanna's facilitation style tends to be browsing through the room, only sinking into the family groups if there is a particularly thorny issue to address. These formations of body and language are unique to each workshop and community. "How people are spaced and oriented to one another places important limitations on how they may interrelated their behavior in other ways. Hall suggests that there will be shifts in the style of language used and in how listener behavior is organized and in the role of vision" (Kendon, 1990).

Susanna's initial concerns about facilitating:

The biggest challenge for me is going to be learning how to do this stuff well enough tactually teach it. Teaching is an art. It's hard, and you have to know how to adjust what you're doing to each person's skill level and aptitude and learning style, and make sure everybody feels included. Make sure everybody feels like they're not getting left behind and they're lost, and they're motivated, and they're really enjoying it. I feel like that's been the hardest part for me.

She also discussed what she learned through teaching in a 5-week long family-based workshop when she was generally working with kids in the library for one afternoon:

I kind of knew this ... When I first started in libraries, I didn't ever really think about it. And then as I've worked in this community in particular, the whole idea that you take your kid to an activity that's for them and then you leave there and it's just for them, is not something that people do as much here.

Everything's more like a family. So, if you want to have people come to your programs. If it's a family program, it's much more successful. Because they all come together. They all go as a family. It's something that I've started to notice and somebody had mentioned to me. So these workshops really showed me more about how the families work together, and how important it is when they're doing something together.

How important it is when I'm thinking about something that I'm doing here, making sure that the whole family's included. It's not just, "This is something for you." It's going to benefit you, but it's also going to benefit the rest of your family. So really thinking more about that collaborative and how important those activities are for the whole family.

We included a reflection component into the workshop to allow the facilitators to express concerns and talk to us about changes they would like to see in the curriculum. I interviewed the facilitators prior to each series of workshops and then again after the series of each set of workshops. In addition, I interviewed them with the mood-meter protocol (Appendix A) prior to most workshops. The reflection seemed to be helpful to the librarians and allowed them to feel

supported in a safe place to express their thoughts and feelings. During one academic quarter I was not able to attend the workshops since I had a course that conflicted with the time the workshops were being held. I interviewed Olivia after a series:

Nancy: What were your biggest challenges in this particular set of workshops? What was the hardest thing to get over, not even the hardest, but were there things that you found more challenging than others?

Olivia: The curriculum was pretty challenging. The lesson plans. The pace was challenging. I think it was ... I don't know which one it was if it was the second or the third-

Nancy: Third.

Olivia: Yeah, it might have been the third. Where I was just like, "I don't know what to do." See, one of the things that's happened since you've become less of a touchpoint for me, is that I don't really know ... there's just been kind of a structure change.

Nancy: We need to talk about that, yeah, in general.

Olivia: Well, yeah. I mean I've understood a little better about who's doing what just because of, I don't know, watching. Yeah, whatever session that was it was like I was waiting for Don. He came in the door, and I'm like, "Don, I have to talk to you now. What am I supposed to do?" So there were times where I just felt at a loss, because it was too much. I think we're meeting next week to talk about how to change it.

I was glad that the reflection process made Olivia feel supported in the work and that it seemed helpful to her. While she has not taken on the research role of interviewing the new librarians she has stepped into the reflection space and acts as a safe place for the new facilitators to express their concerns and get help when they need it.

Olivia thought about the identity shift she experienced as part of her participation in the project:

The thing that I've been thinking about, and when I understood more about my identity ... through the program that I'm doing and through this project ... is that maybe it's not about becoming a tech person. It's about becoming, or like fully more embracing my learning like as a person who knows how to learn. So that fits in really well with what we're trying to cultivate in the kids and the families, is this lifelong learning, knowing how to learn and adapt. That's more of what I've noticed about myself.

There is a great need for staff developing STEM workshops to think about facilitators other commitments. Facilitating a workshop with unfamiliar or complex curriculum at the end of a work day can be exhausting for the instructor. Olivia's realization that running workshops

each quarter along with the seasonal demands of the library were too much to expect from the facilitators helped the project staff understand the need to slow the pace of the sessions.

I interviewed Olivia after the decision to take a break in the workshops was made and she said that she felt that relieved and happy that she made the decision, although she worried greatly about letting the families down. In her post interview after the Winter enactment she reported:

“As a facilitator, I felt more confident with the material, though I still felt overwhelmed on occasion. A lot of that has to do with starting a new session because I don’t know quite what to expect from the families, and as the series goes on, I develop more comfort with everything. There is also still an underlying stress that results from having so many experts in the room observing, as well as the cameras/audio recording happening. That’s easing a bit with experience, although I expect this long break between sessions will have the effect of building all of these stresses up again.

Susanna ran her first session in summer and her second session the following winter, which made balancing the dual demands of library work and facilitation much less onerous. Since we were a year into the workshops before Susanna began her facilitation, we were able to get many of the bugs out of the program and curriculum before she began facilitating. She mentioned the stress around trying to learn curriculum and manage the library in tandem, but she felt less of the stress and pressure than Olivia felt.

The mood meter also helped to highlight the differences between the librarians. Susanna’s small library is deeply embedded in that community and some of her stress revolved around the community and the work she was trying to do there. In our first interview prior to the first series of workshops she would facilitate, Susanna marked “enraged” on the mood meter. I was a little taken aback, but soon realized her anger wasn’t directed at the workshop at all.

Susanna: Interesting. It’s only because I work with young people and youth and care about education, would be why I feel a little “ragey” today.

Nancy: Are we talking about political climate or something else? (Susanna nodding) Okay, good to know.

Susanna: Yeah. And then today has just been one of those days where, since the moment I got up this morning, it feels like everything has been a roadblock all morning

long. I'm hoping that changes throughout the day. I'm hoping nobody else makes me upset

Susanna: When your livelihood is trying to help people, and promote creativity, and a thirst for education, and a thirst for learning, it's hard to see that devalued. Not that I should be political about work, which I'm not, but-

## **Conclusions & Implications**

The librarians in our study care deeply about their work and the communities that they serve. They engage in significant emotional labor to help cultivate powerful learning experiences for the families they serve. Maria Puig de la Bellacasa writes about the burden of care in an entangled world. In her account, feeling an obligation “to care” is more than an affective and moral state. It has material consequences for those who assume it—coercively or not” (de la Bellacasa, *Matters of Care*, p. 163). I believe that my findings show that scaffolding informal facilitators into STEM work with detailed and explicit curriculum, co-teaching of researchers with librarians as they take up aspects of the material practice, and helping them to reflect on their feelings around that work can support a better workshop environment for the facilitators and the participants and help make the burden of care that the librarians are experiencing more manageable as they refine their practice.

This study starts to scratch the surface of the emotional labor required of informal facilitators taking up equity-focused STEAM programming, but I believe that helping librarians and others to process their perceptions of the work is proving to be useful in environments where people are asked to go above and beyond their daily work environment. Examining different models of facilitation that are culturally responsive and productive in particular community settings can help future facilitators to be more adept and comfortable in facilitation roles.

Deep, sustained engagement in equity-focused learning is challenging for libraries to enact. Libraries provide an amazing variety of programming for their wide audiences: from storytime to after-school tutoring, to adult computer services. While these programs may occur

on a regular basis, they are rarely designed to build from session to session in a series. TechTales provided a different model of engagement with learning that involves engaging the same families over the course of multiple weeks. There is a need to understand how programs like this are taken up and locally adapted in different library community settings in order to understand the ways in which we support deep, sustained STEM learning in libraries.

Scaffolding the community members to who take up this work to allow them to be confident, calm instructors is an important step to creating rich learning experience for the families who take part in the workshops. There would be great value in extending the work out to rural libraries to support librarians in underfunded places. The Aspen Report (2015) discussed the challenge of sustainable funding is particularly acute in libraries serving small and rural communities. The needs are great and staffing support in most libraries is very limited and librarian skills and training can vary widely. Rural communities look to their local libraries as partners for creating self-sustaining, long term community and economic development, especially with the library's focus on growing human and social capital. The work that we are doing with libraries, librarians and families could have wide-reaching impact if we can find ways to get them into libraries in smaller cities.

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## Appendix A: Mood Meter

Mood Meter as created by the Yale Center for Emotional Intelligence. The protocol was developed as part of the RULER curriculum to support elementary student’s emotional development.

Enraged	Furious	Frustrated	Shocked	<b>M</b>	Surprised	Upbeat	Motivated	Ecstatic
Livid	Frightened	Nervous	Restless	<b>O</b>	Hyper	Cheerful	Inspired	Elated
Fuming	Apprehensive	Worried	Annoyed	<b>O</b>	Energized	Lively	Optimistic	Thrilled
Repulsed	Troubled	Uneasy	Peeved	<b>D</b>	Pleasant	Joyful	Proud	Blissful
<b>M</b>	<b>O</b>	<b>O</b>	<b>D</b>	<b>M</b>	<b>E</b>	<b>T</b>	<b>E</b>	<b>R</b>
Disgusted	Disappointed	Glum	Ashamed	<b>E</b>	Blessed	At Ease	Content	Fulfilled
Mortified	Alienated	Mopey	Apathetic	<b>T</b>	Humble	Secure	Chill	Grateful
Embarrassed	Excluded	Timid	Drained	<b>E</b>	Calm	Satisfied	Relaxed	Carefree
Alone	Down	Bored	Tired	<b>R</b>	Relieved	Restful	Tranquil	Serene

### Mood Meter Interview Protocol:

*Before the teaching / program session...*

- Hand the mood map to the teacher / facilitator. Ask them: “Using the moods listed on this map, how are you feeling before starting today’s session? Please identify specific moods and say a bit about why you are feeling that way.” Give them 2-3 minutes to choose the relevant emotions, then debrief.

*During the teaching / program session...*

- At several random intervals, wait for a moment where you can approach the teacher / facilitator without disrupting their work. Show the mood map. Ask them: “Using the specific moods listed on this map, how are eeling right now? Why are you feeling that way?”
- Follow up with them about what specific events or concerns are shaping their emotional reaction.

*During the teaching / program session...*

- How did you feel about today’s session
- How are you feeling about next week?

*Follow up on last session:*

- Ask questions about what I saw in the workshop. Why specific things I noticed were done/said.
- Anything you would have done differently?

*First interview after a workshop was run and a new one is beginning:*

- How did you feel about the last set of workshops?
  - What changed? Personally or with the families?
  - DO you have thoughts about things that you might do differently based on this knowledge?
- About Booster Day (if there was one)
- About the circuit card session?
- How are you thinking about storytelling now?

**Appendix B:**  
Definitions of the terminology in this paper

**Facilitation:** Facilitators in our workshops are multi-faceted resource connectors, learners and friends to the participants (Barron & Pinkard, 2015)

**Emotional Labor:** The labor involved with dealing with other people's feelings, a core component of which is the regulation of emotions (James, 1989). The awareness of the emotional expressions required of a job and the strategies used to express those emotions (Matteson & Miller, 2012).

**Affect:** The feelings and perspectives that are brought into a given space that have to do with modes of activities, that change as the facilitator moves through spaces. Affect is the co-presence of potentials (Massumi, 2015).

# TECH TALES

MAKE. LEARN. SHARE.

## DAY 1: INTRODUCTIONS Algorithms

Today's session is about getting to know each other and getting oriented to the program. We will talk about what we think about robotics and how they work.



### materials

- |                              |  |
|------------------------------|--|
| Light meal                   | Markers/Crayons  |
| Diorama examples             | Books  |
| Projector and slides         | "About Me" Cards   |
| Name tags, lanyards          | Badges   |
| Backpack checkout forms      | <i>Optional: Energy Stick, bowl of water, tape, fabric for blindfold</i> |
| Backpacks + Hummingbird kits |  |
| Large paper/dry erase board  |  |

**1. WELCOME & SHARING**

Welcome participating families and introduce everyone. Dinner and ice breakers. Introduce the program.

**2. STORYTELLING**

Share a book or traditional story. Facilitator tells a story from their life. Researchers meet with each family.

**3. EXPLORING**

Adult meeting  
Children: Toothbrush Robot  
Families: Grown-up Robot

**4. ACKNOWLEDGING**

Reflection on the day: How does what was done today relate to algorithms? Check out backpacks. Prepare for next week.

workshop day 1