garibaygroup

REVEAL
Process Evaluation Report on Culturally Responsive Research

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Introduction

Researching the Value of Educator Actions for Learning (REVEAL) is an NSF-funded research project, led by the Oregon Museum of Science and Industry (OMSI) in collaboration with TERC and Oregon State University (OSU), which studied the impact of science center staff facilitation strategies at math exhibits. Building on and using exhibits from *Design Zone*—an interactive math exhibition which engaged visitors in exploring algebraic relationships and functions—the study was designed to add to the scant existing literature about the impact of staff facilitation on visitors. The study also aimed to identify effective staff facilitation strategies for supporting family engagement and learning at math exhibits.

The research consisted of two phases. In the first phase, the OMSI team led a qualitative design-based research (DBR) study using two educators to collaboratively develop and refine effective staff facilitation strategies and to identify the factors that influence interactions and outcomes. Using the facilitation model developed in the first phase, the team then trained four additional educations on the REVEAL facilitation approach and conducted a quasi-experimental study—with 263 groups—to compare the outcomes of family learning and engagement at *Design Zone* exhibits with, and without, facilitation by educators. Interactions were videotaped and visitors completed a survey immediately following the interaction. Data were analyzed for evidence of family learning and engagement, including visitor satisfaction, level of intergenerational communication, awareness of the mathematics in the exhibit, and depth of mathematical reasoning.

The interdisciplinary REVEAL project was organized into a core research team and a PI leadership team with some overlap between the groups. The PI leadership team included the project PI and co-PI from OMSI, the lead representative from TERC, and the lead representative from OSU. This team met approximately once per month to discuss major project activities and decisions, including issues related to culturally responsive research. The core research team consisted of two OMSI educators, the OMSI co-PI, the lead representative from TERC, and at least one other member of OMSI's research and evaluation department. This group met weekly about all aspects of the project and was primarily responsible for planning and implementing the project's culturally responsive approach to research. The core team included people of different backgrounds and levels of experience relative to culturally responsive research and other areas of expertise. For example, the two educators had extensive experience working with families and visitors at OMSI but were less familiar with

research strategies and techniques. The TERC representative was the math education expert of the group and helped guide the team in understanding and measuring visitor mathematical reasoning during staff-facilitated interactions. Members of the core research team were always involved during culturally responsive research (CRR) coaching and evaluation sessions with Cecilia Garibay and Laura Huerta-Migus (described below). During several sessions, the additional members from the PI leadership team also joined the conversation.

Culturally Responsive Research

A goal of the project was to enact and implement all activities through a culturally responsive approach. In CRR, one considers the culture and context as critical factors to which one must heed and which ultimately influence all aspects of the research process, including design, data collection, analysis, and dissemination (Frierson, Hood, and Hughes, 2002). The team recognized a need for support to build the knowledge, skills, and behaviors of the project team to realize this goal. To this end, the team engaged in a coaching and reflective discussion process led by two external experts, Laura Huerta-Migus and Cecilia Garibay.

Huerta-Migus led three learning sessions about cultural competency which focused on different topics. Session topics were collaboratively determined between the OMSI team, Huerta-Migus, and Garibay. The format for the learning sessions included an introduction to concepts and practices related to cultural competence and CRR followed by facilitated discussion and reflection among the OMSI team. This process allowed sessions to respond to emerging issues identified by the team given the specific issues and needs of the research activity to that point (see Table 1).

Table 1. Professional Development Session Topics

Date	Research Stage/Activity	Topic
Year 1 July 2014	Phase I DBR Study (Early data collection phase)	Cultural Competence and Culturally Responsive Research: Explorations of Assumptions and Power
Year 2 August 2015	Phase II Experimental Study (Data collection phase)	Introduction to Cultural Competence
Year 2 March 2016	Phase II Experimental Study (Code development phase)	Reliability ≠ Objectivity: Cultural Competence in Coding

Each learning session was followed by a reflective discussion, between three to twelve weeks later, developed and led by Garibay. Reflective sessions were intended to further explore ideas from the workshops, particularly after the OMSI team had time to consider and/or apply concepts in their research work. (See Appendix A for a full project timeline.) Discussions were structured around a reflective process framework (Schon, 1987). Reflections asked team members to be attentive to their activities while they were doing them ("reflection-in-action") and then, after the event, participate in "reflection-on-action," in which team members consciously review, describe, and analyze their practices (including assumptions and beliefs) with the goal of gaining insights to improve their future practices.

Ultimately, in the coaching model Garibay and Huerta-Migus developed, the learning and reflection components were integrally linked. They were intended to work together to support the team in accounting for cultural and linguistic diversity and to document the extent to which (and how) the research team developed its understandings of inclusive, culturally responsive, contextually relevant approaches to research. Issues raised and explored during the trainings, for example, inevitably provided insight into the team's evolving perspectives and experiences. Issues raised and explored during a reflective discussion helped inform the agenda and topics of the next learning session. (In practical terms, this meant that Huerta-Migus and Garibay worked together to plan and determine topics for the learning sessions and to set foci for reflective meeting sessions.)

Evaluation Design and Methods

Cecilia Garibay of Garibay Group conducted a process evaluation to document and assess the extent to and ways in which the research team experienced themselves as growing in their diversity awareness and competence.

The specific evaluation questions identified were:
- To what extent do team members' definitions and conceptions of cultural responsiveness and cultural competence change or deepen over time?
- If shifts in thinking about cultural responsiveness occur, how does this thinking translate into practice? To what aspects are they more or less attentive in the research design and implementation as a result of their experiences in the process?

- What aspects of the project facilitated or hindered development of culturally responsive approaches to their work?

Given the importance of capturing the evolution of researchers' learning, the evaluation drew primarily on qualitative methods. As described above, the reflecting discussions described in the previous section—as well as conversations that occurred during training sessions—allowed Garibay to document and examine the team's deepening understanding of cultural responsiveness and how it influenced their work on the REVEAL project. Although the nature and focus of the dialogues evolved as the team's understanding did, each discussion ultimately explored their beliefs and actions, assumptions underlying their practice, and implications of their learning for future practice. Garibay worked with the team to examine the project activity, issues that arose, and decisions made with the intention of teasing out issues related to culturally competent practices.

The evaluation also included an online journaling component in which the REVEAL team members were asked to consider and answer questions about their practice. These data helped document individual perspectives beyond group discussions. The team was asked to complete four journaling exercises, each containing approximately 4–5 questions. Garibay developed the questions for each journaling activity based on specific issues that arose in the REVEAL work.

At the end of the project, Huerta-Migus and Garibay led a discussion with the team to capture final insights from the team about the process and their learning. Garibay also conducted an interview with the two OMSI Principal Investigators.

Analysis
Data were comprised of written notes and audio recordings from learning sessions, reflective discussions, the team's conversation about final insights, and the PI interview. Data also included a written record of responses from the online journaling activity.

Data were analyzed using simple thematic coding to tease out patterns and themes. Using an inductive coding technique (Patton, 1990; Denzin & Lincoln, 1998), the evaluator compared each unit of data in order to identify especially salient patterns as well as where differences emerged in participants' responses and perspectives.

Results

It is important to recognize that one's own cultural competency (i.e., personal knowledge, skills, and awareness for navigating various worldviews) and ability to implement culturally responsive research practices are always evolving. Thus, the goal of this process evaluation was to document the extent to and ways in which the project team members deepened and evolved their practices relative to CRR.

This evaluation found that participating in the REVEAL project successfully deepened all research team members' understandings about culture and increased their awareness about important practices in developing their own cultural competence.

The learning sessions and reflections helped all team members broaden their definition of "culture." For some members, participation in REVEAL helped them recognize that culture goes beyond ethnicity and can include such factors as education, geography, and museum-going experiences.

> *I had a pretty narrow idea of culture, thinking that it had to do mostly with ethnicity, but I have come to think of it more as the collective experiences of an individual or family. Where they grew up, level of education, museum experiences, and many other factors that play a role in shaping one's cultural identity.*
>
> *Many times we focus on the things that are obvious, such as ethnicity…but there are many more ways [to think about cultural aspects].*

Reflective conversations about culture—particularly in considering and attempting to interpret family interactions at the math exhibits—also helped illuminate the complexity and dynamic aspects of culture that go beyond "ethnicity" or even language. For example, early in the study, team members were surprised to note that some of the families who spoke Spanish sometimes switched to English during their conversations with each other and, in some cases, code-switched quite often between the two languages while engaging with the exhibits. Some team members were uncertain about what to make of this.

> *Why do they switch from Spanish to English at this specific time [in an interaction]? What's the significance of code-switching?*

Code-switching has been previously documented in the museum literature and described as being indicative of families' cultural and linguistic norms and world views (see, for example,

Goss, Kollman, Reich, & Iacovelli, 2015; Yalowitz, Garibay, Renner, & Plaza, 2015; Garibay, 2009). Although this was new content for some individuals of the REVEAL team, observing this behavior helped these team members learn that linguistic practices are more nuanced than they had previously understood.

The collective meaning-making and discussion among the team members also helped increase their awareness that recognizing and reflecting on one's own values, assumptions, and biases is a critical aspect of cultural competence. For example, team members all shared that realizing that their expectations of "successful" family interactions were colored by their own values and assumptions was an important insight for them.

> *I have become more aware that what I consider a 'successful' visitor interaction is very much influenced by my own goals for visitors—and that these might be different from the goals that visitors themselves have.*
>
> *One of the greatest insights for me was definition of successful interactions with families based on my own values around social and education goals in an informal setting.*
>
> *[One thing I gained was] being aware of how our own values color our interpretations of visitor actions.*

As the team continued its work with families, team members shared how they were more keenly aware that they had to carefully consider their interpretation of what they observed. The team, at times, was challenged—and sometimes frustrated—by this insight. Ultimately, however, this understanding helped team members move from considering cultural competence to be a "checklist" toward understanding that it is an evolving process, more of a life-long journey.

> *As always, considering cultural competency left me with more questions than answers. On the bright side, I am getting a lot more comfortable with the discomfort!*
>
> *We are beginning to feel more comfortable in the process [of cultural competency] rather than [thinking about it as] finding the "right answer."*
>
> *One of the biggest hurdles was…understanding that cultural competence is a process…that will never be complete. I kinda came into it thinking I would "learn how to do it." Boy, was I off the mark!*

The team also deepened its understanding of the complexities of conducting culturally

responsive research. In particular, most team members noted that they had initially thought of CRR as being mostly about conducting research with different types of visitors (or in multiple languages) and getting the tools to "do it right," but that the REVEAL experience had helped them understand that CRR is actually about much more.

> *I used to think about it [CRR] more as having particular strategies for serving different audience types, but now I view it more as responding to individual families or visitors based on what information can be picked up during the interaction, paired with acknowledging my own assumptions and understanding how they come into play during the interaction. I think the latter is where I've grown the most with CRR, becoming more reflective about my own practice and having the awareness now to consider interactions through a more culturally responsive lens.*

One team member noted a broadening appreciation of the need for a CRR perspective across all phases of a research study:

> *Most of my experience previously was thinking about [CRR] practices related to collecting and analyzing data in multiple languages. However, now I feel like I appreciate the broader implications of CRR across a research study.*

One major contributor to the team's deepening understanding of culturally responsive research was the actual process of <u>applying</u> CRR principles and ideas about cultural competence in their REVEAL work. As one team member noted,

> *Many of the ideas we have talked about during these works and reflective discussions were very familiar to me either from past professional development (including with Cecilia and Laura!) or grad school… but REVEAL helped me to [increase my] understanding of how concepts of cultural competence might be applied to research.*

Critical Points in the Journey

Ultimately, researchers did their most important learning in encountering the challenges and tensions in having to apply concepts learned previously or in the learning sessions. In particular, this evaluation identified a number of critical points along the process that contributed to the team's learning.

Early in the process for Study 1, the team needed to define and document what successful facilitation with visitors was—and looked like—at math exhibits. As they began to work with families and consider these interactions through a culturally responsive lens, the team found it

had to reconcile what it had considered to be "successful" engagement at a math exhibit with the desires and goals of participating families.

> *I think we were basing most of our measures of success on facilitator goals.*
>
> *Although there were several instances where we talked about success from the view of the visitor when the facilitator and visitor goals did not align, it [the measure] was not framed [in such a way that would] accept that misalignment of goals.*
>
> *An interaction that I may judge to be less than completely successful in terms of intergenerational communication and interaction and incomplete educational goals could still be viewed as a wonderful experience by the family and, thus, successful. In a visitor-centric institution, who gets to determine the success and value of an interaction?*

This was especially instructive because it fostered conversations about the goals of facilitation and the extent to which museum professionals may make assumptions about what counts as a successful visitor interaction. The REVEAL team, in an effort to address this issue of goal alignment, experimented with measuring the "facilitator-family match"—how well facilitators' goals and actions and visitors' goals were aligned. While the team made progress in conceptualizing this measure during the first study phase, they were not able to reliably quantify the construct for the experimental study.

> *Trying to code for behaviors that represent success from the perspective of the visitor and not the researcher was a big challenge. What we may see as essential to a successful interaction may not be important to the visitor at all.*

A major insight, nonetheless, was the need to consider definitions of successful facilitation from multiple perspectives and to understand how one's values and goals may play into what researchers may define as positive interactions. The process was instructive and provides an example of the ways that the REVEAL team considered some of the issues that emerged regarding previously held perspectives about successful engagement.

Another critical point in the REVEAL process was the realization that both researchers and practitioners had to consider and be attentive to the power dynamics at play in their interactions with visitors. This topic was the focus of a learning session, after which team members were asked in discussions to consider power and privilege in terms of their work on the project.

One of the team's "aha" moments was realizing how these power dynamics play out and the importance of attending to them, especially when interacting with participants from communities that do not typically visit OMSI. The team began to understand how issues such as power dynamics and unearned privilege influence research practices and interpretations.

> [I realize that we should be] carefully considering the process of informed consent and how it positions participants.

> [We need to] take a look at our recruitment and informed consent process in light of the discussion [in the learning session] about power and power distance.

> [We need to] continue to talk about our own power and privilege, since I still think there is some uneasiness on the team around this issue.

These conversations between Huerta-Migus, Garibay, and the research team ultimately led to the team inviting Adelante Mujeres (a community-based partner on the project) to help team members learn more about the Latino families with which they worked:

> The platinum rule[1] is great. It's easily stated but also quite deep. How do we know how people want to be treated? This [learning] is what led to [us talking with] community organizations because we don't know.

> We [need to] continue to elicit feedback [from our CBO partner] to help us check and question our assumptions.

Conversations about power positioning also helped the team reflect on their own work as well.

> This session's focus on power dynamics was enlightening in terms of thinking about the concept of unearned privilege, particularly in the context of people who don't know they have it.

> I've been thinking about treating people as they want to be treated and how to incorporate that. How I can broadly incorporate that in my facilitation and always keeping it in mind.

> It made me think about people who work at museums, and wonder if there is an implied power dynamic by the nature of the institution, kind of in the same way universities operate.

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[1] The "platinum rule," in contrast to the "golden rule," states that we need to treat others as they would like to be treated rather than how we would like to be treated.

The development of the video coding rubrics was perhaps the major pivotal moment in the research team's cultural competency development and in its understanding of the core aspects of culturally responsive research approaches. The initial rubrics consisted of a matrix of observable behaviors (language use, social interactions, etc.) that were mapped as indicators of different levels (low to high) of math engagement. During the third learning session and subsequent discussions, Huerta-Migus and Garibay raised concerns with the "levels approach." They noted that the rubric tended to ascribe a value judgment (i.e., certain behaviors indicate "more successful" engagement than others) which could lead to unintentionally devaluing or, conversely, norming certain types of interactions/behaviors in family groups.

Evaluative data indicate that team members felt quite challenged in these conversations and even initially pushed back. The team was challenged to reconcile existing and accepted measures of math engagement with considerations and new knowledge gained from the learning sessions and reflective discussions on culturally responsive practice.

One of the most productive aspects of team conversations, however, was reflecting on embedded assumptions in the rubric and the need to identify and clearly articulate limitations. These discussions also led to larger conversations about the fact that that while any measure may have specific value judgments, the goal in CRR is to address such issues by mitigating them to the extent possible and considering alternatives (particularly in ways that align with respondents' goals and norms) as well as documenting assumptions so that appropriate claims and limitations are explicitly described. In essence, the team was pressed to become more attentive to the social dynamics and consider that practices and cultural norms within a family play big roles in what a group does at an exhibit. Although the team decided to keep level-based rubrics, it did take specific steps after the workshop and subsequent conversations to address the issues raised.

Specifically, the team engaged in reflective group practice and documented the assumptions and potential biases underlying each rubric. This resulted in rich discussions and lengthy documentation accompanying the directions for each coding scheme. The team also disaggregated data and analyzed some outcome variables by demographic categories to check for differences in the data and consider whether measures were biased in some way.

The team revised the rubrics to focus more concretely on verbal behavior rather than nonverbal.

The team, thus, placed more emphasis on observable behaviors that could be objectively coded by researchers, especially for the mathematical reasoning and facilitator-family match rubrics. For example, the team moved away from measures that asked raters to determine family members' goals or intentions and how well the facilitator responded. Instead, raters captured behaviors that families did or did not do at an exhibit and how the facilitator's actions complemented them (or did not). The team also worked to ensure that levels within the rubric clearly tied to these behaviors.

> *I was definitely more mindful of the differences between the things that are interpretations versus the things that are more counting actions….I do remember being conscious of thinking about different interpretations that I may not have been before.*

> *I am more aware that any measurement scheme is going to have unspoken values embedded in it no matter how hard we try to describe what we're looking for in terms of actions/words.*

> *I certainly recognized that it is difficult to code conversations held in languages other than English without multilingual coders, but I [am now] more aware of how a reliance on language as an indication of thought may not be culturally neutral.*

Although the activity and discussions proved critical in the team's learning, this portion of the REVEAL work had much less impact on educators, in part because this was not an area in which they were as involved in or had as much experience in.

> *This was the most difficult of our sessions to wrap my head around and understand, perhaps because [it involves] the rubric and coding which [are] not my usual domain. As I look through the slides [again and think about our conversations], I can't think of any specific or general ways in which this particular work has influenced my thinking.*

For those team members who worked in research or evaluation, attempting to work within a culturally responsive research approach also meant they often came up against their previously held "norms" of conducting research and had to reconsider them.

> *For me, it [the CRR process] has particularly highlighted tensions between the principles of cultural responsive research and common expectations of rigorous research within social sciences. So, for example, one challenge has been developing measures with certain mathematical qualities while recognizing the cultural biases that can come along with that approach.*

Understanding what we are actually measuring is extremely difficult and for me this discussion was a reminder of how we have limited tools to get at this aspect of measurement within the scope of this type of project.

I have reconsidered the role of the researcher in the whole equation. I think when I started on [the project], I felt the role [and influence] of the researcher was much less overt [compared] to now.

Documenting assumptions and limitations of the research design, sample, and measures [is more important than I think we often consider]. This doesn't remove the important or obligation of the research team to try to… [address] these issues. But my sense is that [researchers] do their best and then tend to sweep limitations/assumptions under the rug. Documenting them is an important step.

Lessons Learned

Spanish-Speaking Families

An important focus for the REVEAL team was attempting to develop a facilitation approach that worked with different families. Spanish-speaking families were one specific target audience identified in the NSF proposal. One of the important aspects of working toward this goal from a CRR approach was the partnership OMSI staff forged with their community-based partner, Adelante Mujeres—an organization that works with Latino families. The team engaged their community partner throughout the process and obtained feedback from them throughout the study. Conversations with staff at Adelante Mujeres, as well as with families from this community site, allowed the team to ask questions, reflect on their process and direction, check their assumptions, and generally ensure that a community perspective was included at the table. The research team incorporated extensive feedback from Adelante families and staff into the REVEAL facilitation approach and philosophy as they engaged in the DBR phase of the study.

Although an intended outcome of the study was that, "Ultimately, the facilitation approach tested in the experimental study will be designed so that English-speaking educators can effectively support math discourse for Spanish speakers" (NSF REVEAL Proposal), the sample size for study 2 proved challenging.

A tension for me has been the disconnect between our research and the Latino community that we were hoping to engage. In spite of our efforts, our sample was primarily White and English-speaking.

Although the OMSI-based research team diligently worked with Adelante partners and families,

due to visitation patterns at OMSI, the sample size of Spanish-speaking families was low (7.3% of participants self-identified as Hispanic) and the sample size meant the team was unable to robustly test the facilitation model with this audience. Thus, very few (if any) claims can be made about the study results as they apply to this audience. Although the team could have oversampled to obtain a higher sample size of Spanish-speaking families, this would have required additional funding resources. One of the lessons learned is that studies which seek to include community members that visit museums/science centers with lower frequency (or not at all) need to deliberately reach out to and oversample groups that would otherwise be underrepresented. This also requires building in time and budgeting resources for recruitment, however.

Differences in REVEAL Team's Learning

The interdisciplinary REVEAL team was one of the unique and important aspects of the project that also illustrates another way in which the project teams sought to adopt CRR perspectives. Specifically, it's an example of jointly negotiated research in which researchers and practitioners share power, influence the research, and may potentially produce research results that can be of value to practice. In this case, the team met weekly during the core research team meeting and contributed to ongoing discussions about planning, design, data collection, analysis, etc.

At the same time, team members had different backgrounds, which shaped how they experienced the meetings and the tasks they took on outside those discussions. Practitioners, for example, sometimes found it challenging to follow some of the more technical aspects of the research and they also, understandably, did not directly conduct certain study activities.

As described previously, those individuals on the research team charged with developing the study design—and especially the coding rubric—were most engaged with the issues and challenges around cultural competence and validity. This was mainly because they were the ones who had to resolve these issues. Those on the team not directly involved in all phases of the research (for example, in data analysis) still had to reflect on some of these issues, though not as deeply as the more involved researchers. For example, team members not tasked with developing the study design and developing rubrics (e.g., educators) remained engaged mostly conceptually but did not have the opportunity to directly wrestle with emerging research-specific issues. We also found some variation in learning, even for those with previous research experience, which seemed tied to depth of involvement in the various REVEAL research

activities. There were some indications, for example, that those individuals who participated in conversations with Adelante Mujeres to reflect on the process, check their assumptions, and consider the community perspective further deepened their understanding of CRR more so than those research team members not involved in these discussions with CBO staff. Therefore, the depth of learning and deepening of cultural competence regarding CRR varied. One of the lessons learned is that those different starting points, and the specific activities within the research one is tasked with, influence outcomes. As one team member commented, "It is somewhat of a surprise to me to see how we all started in very different places at the beginning of the project. I think I had assumed we…all had more of a shared baseline related to these issues."

This is not necessarily a negative, but it does point out the importance of having to actually apply culturally responsive research constructs to one's practice in order to deepen one's understanding of CRR. Thus, another lesson learned in this project is the importance of continuing to find ways to connect researchers and practitioners at every phase of the research.

Sharing Work with Staff
The core REVEAL team struggled with finding the language to discuss and explain culturally responsive research to OMSI staff and colleagues. They made significant efforts to discuss the REVEAL work with education staff, which included an educator training workshop led by Huerta-Migus regarding the REVEAL project and cultural competency and facilitation. Although the workshop was positively received, some disconnects prompted the team to reflect on some of the issues at play:

> *It was hard for them [education staff not on the project] to see what we were trying to elicit.*
>
> *There's a history that some of us have coming into this [REVEAL project] that others didn't have. There's some preparation that perhaps we didn't do. Some of us have been spending time thinking about this a lot but others hadn't and we didn't account for that in our presentations or conversations with others like the Education department.*

Although there were also broader efforts to share the REVEAL work with OMSI staff more generally, activities were necessarily limited given the lack of time and resources. Sharing about

a specific project within a large organization is also challenging. Ultimately, the team's main insight was that different departments and staff members can be considered multiple communities and that consideration needs to be given to the best way to engage and share work in ways that are seen as relevant and useful to their practices.

Aspects that Facilitated the Team's Learning

The team identified a number of specific aspects that supported their individual and collective learning and facilitated the process of attempting to conduct a study using a culturally responsive approach. These included:

- Supportive leaders in the research and evaluation department who championed as well as encouraged the team's CRR work.
- An interdisciplinary team of researchers, educators, and math specialists that brought its expertise and varied perspectives to the project.
- Developing relationships and trust among the team where individuals felt safe to discuss many of the questions and issues that emerged, particularly around cultural competency. (On a related note, the duration of the project was important so that the team had time to develop these relationships and trust.)
- Ongoing communication within the team, particularly holding regular weekly meetings, proved important in wrestling with these issues as they arose.
- Having a community partner from whom the team could ask questions of, check its assumptions, and learn from when considering Latino families in the context of the study.
- The coaching model, which introduced specific content related to cultural competency and culturally responsive research and provided guided discussions. Additionally, Huerta-Migus and Garibay at times challenged the team and pointed out areas of tension or disconnect between a particular research activity and CRR. The accountability to the coaching team was also good motivation and provided opportunities for them to have checkpoints and external individuals with whom they could dialogue about emerging issues.

Looking Ahead

Beyond the progress of the project team on the design and testing of a rubric for testing family math engagement at museum exhibits, the REVEAL project, as reflected in this evaluation, also

tested a new model for the implementation of culturally responsive research approaches for informal learning. The architecture of the project (PI Team, research team, evaluator, and coach) differs greatly from the traditional staffing model of a research project. Project leaders recognized the gap between *intention and skill* for implementing CRR approaches and opened the team up to challenging voices and community input to inform every part of the research design. This is a critical piece for learning for the field—moving beyond the traditional "advisor" model to supporting in-the-moment learning for the researchers during the design and implementation process. Ultimately, this investment in time and resources for team support resulted in stronger measure development, more nuanced analysis of resulting data, and clear opportunities for this team and other researchers to further culturally responsive research in this topic area.

Conclusions

Overall, this evaluation found that the team increased its understanding about culture and cultural competence. Through the project, team members also increased their skills in using a culturally responsive research approach. They broadened their definitions of "culture"; increased their self-awareness of the need to recognize one's own values, assumptions, and biases as part of one's work; and increased their understanding of the complexities involved in conducting culturally responsive research.

The extent and depth of engagement, and thus individuals' own learning, varied depending on their role in the project, however. Those not involved in the actual measure development and data analysis did not necessarily have opportunities to apply ideas discussed about CRR. The most instructive aspect for the researchers on the team in developing CRR skills was the opportunity to move from more theoretical discussions on culturally responsive research to actually having to apply the techniques. Naturally, points of tension and challenges arose, particularly in reconciling more traditional research models with culturally responsive perspectives. Wrestling with these tensions, sharing initial discomfort, and expressing appreciation for such learning experiences are signals that team members engaged in deepening their cultural competence.

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APPENDIX A: Project Timeline

REVEAL Project Timeline																																				
	Year 1												Year 2												Year 3												
	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	
Planning	�!	▒	▒	▒																																
Phase 1: Design-based Research Study					▒	▒	▒	▒	▒	▒	▒	▒																								
Phase 2: Experimental Study													▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒						
Dissemination													▒	▒	▒	▒	▒		▒	▒	▒	▒	▒	▒			▒	▒	▒	▒	▒	▒	▒	▒	▒	
Cultural Competency Learning Session						▒																▒		▒												
Reflective Discussion/ Evaluation							▒																▒		▒											
Project Review				▒	▒																															