

Expanding Repertoires of Practice: Improving Informal Science Learning Experience for Preschool Dual Language Learners

**Final COV Brief
June 2018**

Overview

Expanding Repertoires of Practice: Improving Informal Science Learning Experience for Preschool Dual Language Learners is a pathways research project funded by the National Science Foundation. COSI and the Ohio State University collaborated with eight other museums and community partners in an exploratory study of informal science education programs and practices for reaching and serving preschool dual language learners.

The project consisted of three activities: 1) a national needs assessment of children's museums and science centers; 2) virtual quarterly meet-ups and a two-day, in-person convening of museum partners who are actively engaging with dual language learners; 3) an exploratory study of informal science programs that serve pre-school dual language learners at COSI and outreach sites.

Collectively, the three strands of research were expected to:

- Produce findings on the current state of the field related to providing informal science experiences for preschool dual language learners;
- Identify gaps in existing research and practice;
- Identify promising foci for future empirical study and improvement and expansion of museum practice;
- Establish a national network of museums ready to develop a full-scale research in service to practice

Maureen Callanan, Cecilia Garibay (Chair) and Lisa Lopez served on the Committee of Visitors (COV) for this project. The role of the COV was to provide critical, reflective review of the progress of the project in order to maximize the rigor and quality of the research conducted. The committee work included conducting approximately two calls per year with team to discuss project progress and reviews of study summaries and products. COV members also attended the two-day in-person convening. Additionally, COV members communicated with the team on specific issues as needed during project. The Committee also met as a team to reflect together on the project and critically considered the project findings in terms of its rigor, depth, and potential contributions to the field, arriving at consensus on the insights and recommendations described in this brief.

This brief was written prior to the completion of dissemination activities such as journal manuscripts, and the timing did not allow for COV members to review these materials. Therefore, this brief does not address dissemination deliverables.

Key Accomplishments and COV Reflections

Collectively, the various threads of this project explored important questions about the current programming and practices in informal learning settings and the extent to which they are reaching and serving DLL families.

Needs Assessment

The purpose of the National Needs Assessment (NNA) conducted by COSI was to identify the specific needs and practices of science centers and children's museums across the country regarding serving the needs of multilingual preschool children and their families. The NNA report provides findings on the current state of the field, identifying an important disconnect between what museums understand to be best practices for working with their local multilingual populations and what they are currently doing. This is a theme that cuts across the different sources of data collected for the pathways grant, including the NNA, the partner profiles, and the exploratory study. It is important to note that this issue is not unique to informal learning spaces such as museums, but is also experienced in formal preschool programs, which has widely documented the disconnect between research and practice. The findings documented in the NNA should be considered of great importance and interest to the funding agency, the museum community, and the academic community, although the NNA stops short of providing recommendations or next steps based on findings.

It is the opinion of the COV that COSI, in developing and distributing the NNA, engaged in a substantial amount of pre-work to ensure the proper questions were included in the questionnaire, seeking advice from the COV as well as the advisory panel. They also partnered with both ASTC and ACM to distribute the questionnaire. The research questions for the NNA were properly aligned with the Expanding Repertoires project. The focus of the NNA addressed the degree to which science centers and children's museums perceived meeting the needs of DLL populations as being important and provided an opportunity for museums to select what resources were being drawn upon both to identify and serve the needs of this population. COSI was able to obtain results from 61 museums after several iterative processes for data collection, with the majority of respondents identifying themselves as children's/youth museums.

Within the final report on the NNA, COSI provides a range of data with figures and graphs that indicate a thorough analysis of the quantitative data collected through the NNA. These findings indicate that museums who responded rated prioritizing services to multilingual families as a median of 7 out of 10, mainly for the opportunity to enrich the museum experience for all visitors and in order to reach underserved populations. It is striking that while responding museums rated the need to prioritize services to multilingual families as high, at least a quarter of the museums reported having no goals or objectives for meeting these priorities.

The COV thinks it is important to highlight the disconnect found between the activities ranked as most important for meeting the needs of DLLs and the extent to which those activities are actively sought after by the museum community. While this information is reflective of the entire set of museums responding to the NAA, and not specifically about COSI, it is important for COSI to consider: a) the implications of these findings for their own community, and b) how both COSI and the museum community as a whole can better engage in practices that are more reflective of their stated beliefs about the importance of serving multilingual families.

This disconnect can be addressed through a number of activities, including: engaging in cultural and linguistic sensitivity training for museum staff, developing stronger ties with local multilingual communities, developing experiences that meet the needs of the local multilingual communities, and supporting bilingual language development.

Convenings

The virtual and in-person convenings brought together a group of museum partners with significant commitment to and experience in multilingual practices, and other professionals with DLL expertise. The series of conversations were rich and raised important issues related to dual language learners and multilingual issues in museums more broadly. Documents summarizing findings clearly point to a number of cross-cutting themes that can guide future research and practice in the field.

Given the richness of the convenings as a whole, the COV would have hoped to see a more detailed report that reflected the depth and nuance of the conversations rather than short bulleted summaries. Although the summary certainly has value, the depth and detail that can help illuminate the complexities of the issues at hand is lost. We encourage the COSI team to consider developing a document that captures the depth and nuance of key issues raised.

Similarly, although the museum partner profiles developed are a useful snapshot of what museums who have been working in this area are doing, they lack the type of rich description that might be especially instructive case studies for the field. More in-depth profiles could be especially useful for the field. Given the depth of expertise of museum partners involved, the COV strongly encourages the COSI team to invite the eight museums to write more in-depth profiles of their work/projects. At minimum, if the existing profiles are being shared publicly, we assume museum partners will be asked to review and sign off on these.

Exploratory Study

In terms of the exploratory study, its strengths include its deep interdisciplinary theoretical framework and the rich and robust data set collected in a range of settings from a variety of stakeholder groups (children, parents, ECE professionals, ISE professionals). As data are still being analyzed, the COV is limited in our comments about study findings. Nonetheless, the preliminary findings report some very interesting and important patterns in the data.

Given that one of the main goals of this study was to understand the needs of dual language learners, particularly those in COSI's local community, interviews with parents and ECE staff are particularly useful in considering how COSI could build on needs and issues identified. In their

preliminary findings, the researchers have identified intriguing patterns that suggest the study will eventually yield important findings both for the COSI team and for the field.

Families reported strong motivation for their children to be bilingual (or multilingual) but at the same time reported that both COSI and their children's ECE programs were essentially English-speaking spaces. The researchers' observations confirmed the parents' impression that English was dominant on the museum floor and in the outreach venues. Parents offered many recommendations for how COSI could better support and welcome bilingual and multilingual children and families; these ideas should prove fruitful for the COSI administration and staff to consider for the future.

COSI staff who were interviewed reported little training in working with culturally and linguistically diverse families, but some expressed considerable interest in increasing their skills in this domain. ECE staff paradoxically discussed the value of bilingualism as well as the challenges that bilingualism poses in their settings. Another paradoxical finding was the ECE professionals' report that dual language learners are just like other kids, while at the same time that they are children who have unique challenges and needs that are difficult to meet. These interviews highlight some of the issues that must be considered when informal learning organizations make the institutional decision to move forward in better supporting linguistically diverse families. We find it particularly encouraging that ECE staff recognized the promise of informal science learning as a effective arena for children to learn both language and concepts.

The researchers' comments about their observational findings signal to us that, while the analysis is in its initial stages, there is potential here to learn a great deal about some key issues. These include: how parents use their home language versus English in informal science settings, how different exhibits can engage multilingual families more or less effectively, and how museums can best support multilingual visitors, even when (as in Central Ohio) many languages are represented in the community.

In some ways, the exploratory study was extremely ambitious, which is commendable, but perhaps was not scaled realistically for Pathways grant. It resulted in large amounts of qualitative data (and video data in particular) that required more time to analyze than was doable during the grant timeline. We recognize that full analysis will continue beyond the grant period, but strongly encourage the research team to develop a timeline and a plan to share final results with project partners so that the team can benefit from the insights that emerge. In retrospect, given the amount and richness of the data, it might have been useful to have considered conducting data collection, analysis, and write up in phases. For example, participant observation data collected and coded between fall 2015 through winter 2016 at COSI could have been summarized in a brief that would have been useful to share with COSI PIs and leadership earlier in the process. We fully anticipate that once the final analysis is complete, that the study will make important contributions which will advance the knowledge base and that could inspire future projects at COSI and elsewhere.

Concluding Remarks

In conclusion, the COV considered how well the team met their initial goals:

- Produce findings on the current state of the field related to providing informal science experiences for preschool dual language learners;
- Identify gaps in existing research and practice;
- Identify promising foci for future empirical study and improvement and expansion of museum practice;
- Establish a national network of museums ready to develop a full-scale research in service to practice

We find that through its three main activities, the project team has clearly produced findings about the state of the field and identified gaps in existing research and practice, although much further work needs to be done to complete the final analysis and write up of the exploratory study in order to fully assess implications of findings. Collectively, the three strands of the project activities can help spur much needed dialogue and reflection about promising practices to address this gap.

On the other hand, while it appears that the project work collectively point to potential promising foci for a future empirical study and improvement and expansion of museum practice, it is not clear to the COV whether the team has fully articulated the potential focus for future studies.

This project brought together a group of eight museum partners who engaged in a rich exploration of a range of issues regarding the needs of DLL/multilingual families and museum practices. It is less clear to the COV, however, whether this initial collaboration established a robust network of museums ready to develop a full-scale research in service to practice.

Overall, this project highlights: 1) the need for COSI and museums nationally to further engage in research-based practices that effectively serve the DLL/ multilingual families within their communities, and 2) the disconnect that currently exists between beliefs and actual practices within these informal learning spaces. The work of the eight museum partners do highlight some promising practices that could be further explored. We hope that the team will continue to work together to identify future empirical studies to help in the improvement of such experiences.