The interaction between research and practice in museum settings: An introduction and synthesis

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These are exciting times for those interested in better understanding and supporting children’s learning. University researchers in cognitive development are steadily gaining new insights into the intricacies of children’s reasoning about the world. At the same time, there has been increased recognition of the important role that visits to informal learning institutions (e.g., museums, science centers, zoos, botanical gardens) play in supporting learning. Traditionally, pursuits in research and practice typically unfold independently with different goals and methods. The disconnect between these endeavors can make it difficult to identify meaningful intersections between laboratory research in cognitive development and educational practice in informal settings. In this book, we document and discuss a diverse set of pioneering partnerships between university researchers and museum practitioners that have resulted in innovative strategies for linking investigations of children’s cognitive development with goals critical to museum educators, such as evaluation and design.

The primary focus of this book is on the partnerships themselves, with the contributors sharing multiple perspectives on the complexities, challenges, and rewards of establishing and maintaining productive working relationships. Of particular interest is consideration of how engaging with informal educators influences the research process, and how engaging with researchers influences the work of informal educators. A complementary focus is on the cutting-edge cognitive developmental science being done by researchers working in museum settings. The researchers who locate their work in museum settings report that by doing so they reap more robust research findings, and recognize more direct implications for practice.
This book includes chapters that reflect a variety of forms of research-museum partnerships. For example, some partnerships can be described as newly emerging, whereas others are long-standing collaborations. Some researchers work at large public research universities whereas others are situated in smaller private colleges and universities. Some partner museum sites are children’s museums whereas others are science centers. Some researchers are invested in studying children’s learning in situ whereas others are pursuing topics not directly related to the exploration and learning that occurs in museum settings. Through an overview of the topical and organizational structure of the book, this introductory chapter tracks key issues upon which contributors focus with regard to their experiences bridging historical divides between research and practice. We then concentrate on core issues that arise across the chapters, with the goal of providing readers with some context for the individual perspectives shared in the partnership chapters.

Organization of the Book

Our goal for this book is to provide current examples of groundbreaking approaches to research-practice partnerships that will serve as models and inspiration for others who also strive to engage in work that redefines the boundaries between research and practice. We also examine fundamentals of how children learn about and engage with the world around them, and explore age-old questions of how to better connect developmental research with educational practice and public awareness of the importance of the science. Throughout the book, authors consider how research in cognitive development can affect practice in informal learning settings, and how practitioners can influence novel and fruitful lines of research. These topics are examined across three major sections. The first section is comprised of principal partnership chapters. The second
and third sections are discussion chapters. In one set of discussion chapters, outside scholars and museum practitioners provide their insights into the value of the highlighted partnerships. In the next set of discussion chapters, two leaders in the fields of cognitive development and education provide a critical examination of how the increasingly popular approach of developing research-practice partnerships between university scholars and museum practitioners may have broad implications for understanding and supporting children’s learning and development.

*Partnership Chapters.* We used our professional networks to identify seven ongoing partnerships between university researchers in cognitive development and museum practitioners. We invited these research and practice partners to contribute to this book by reflecting on the nature of their collaboration, describing some of the research that has emerged from that collaboration, and providing insights into how research and practice intersect in their approach to partnership. We asked each partnership to describe the history of their collaboration and some of the research that had emerged from that collaboration. To offer further structure to our authors, we suggested topics they could consider in their chapters. One suggestion was to include what each partner’s expectations were in terms of both shared and individual goals. Another was to describe any benefits of the collaboration, with attention to both individual and mutual benefits. For example, we wanted to know what advantages motivate continued pursuit of the partnership by each participant. We also wanted to know whether and how research informs any of the activities taking place in the museum and whether and how engagement within the museum influences the researchers’ ideas and activities. Finally, we asked all of the contributors to comment on their perceptions of the value of the collaboration to their respective fields.

We also tailored questions specific to each member of the partnership. For example, we asked researchers whether and how their research activities have been affected by interaction
with skilled practitioners. This way, we could document the broader benefits to the research community that these partnerships provide. Similarly, we asked practitioners whether and how exposure to the scholarly expertise offered by researchers has been helpful and to consider ways in which it can bring additional advantage. This way, we could describe the ways in which having basic researchers partner with museums affects the visitor experience.

We wanted to provide models for both researchers and practitioners who might be interested in constructing such partnerships, but who are not currently connected with the appropriate partner. Some researchers might not pursue partnerships because they do not currently conduct research that focuses on the appropriate age group, or because they perceive that their research interests are not aligned with the activities that take place within museums, or because they simply have never explored the possibility of doing research in museum settings. Similarly, some practitioners might not pursue partnerships because they do not know who among researchers would be interested in this type of partnership, or because they are concerned about how visitors and staff might react to have researchers on premises, or because they simply have never explored the possibility of having researchers come to their setting to conduct research. We wanted to describe ways in which each of these concerns is addressable, and offer ways to navigate the process of establishing such relationships for both parties.

By focusing the content of each chapter on some common questions, we hoped to encourage contributors to explore certain foundational issues of broad relevance. At the same time, we were sensitive to the possibility that by suggesting topics, we were setting up a frame that might limit the range of possibilities for the contributors’ chapters. We were happy to find that our instructions were not taken as prescriptive; the content we desired for this book is evident in the partnership chapters, yet not every partnership responded to all of these questions,
and many of the partnerships introduced additional topics that surprised and intrigued us. Thus, throughout the partnership chapters there is both consistency and variability, resulting in a book that will help researchers imagine how their work could benefit from engaging with museum partners, and help museum practitioners recognize the value in establishing research partnerships.

Each partnership starts their chapter by providing brief descriptions of the researchers and practitioners who interact on a regular basis to form the partnership. Because all of the research reported in this book takes place in museums, we also asked each partnership to describe the museum setting in some detail. These descriptions provide context for the research questions and procedures, as well as support consideration of how research activities might influence the museum visitor experience. Review of partnership biographies and museum settings reveals that the partnerships differed in a variety of ways. Some partnerships, like the one at the San Jose Children’s Discovery Museum (Callanan, Martin, & Luce, Chapter 2), are long-standing, and have evolved in many ways over the course of the relationship. Other long-standing partnerships, such as the one at NY Hall of Science (Evans, Weiss, Lane, & Palmquist, Chapter 3) are more singularly focused on a particular set of goals, research questions, and exhibition design. Still others, such as the one at Chicago Children’s Museum (Haden, Cohen, Uttal & Marcus, Chapter 4), seem more of a hybrid between these two approaches.

The other partnerships described in this book are more recently established, each with different foci and goals. At Museum of Science, Boston (Corrin, Kipling, Ronfard, Biarnes, Jeye, & Harris, Chapter 5), the Living Laboratory model emphasizes dissemination of research and seeks to help museum visitors gain insight into the importance of developmental science. At the Children’s Museum of Manhattan (Rhodes & Bushara, Chapter 6), researchers pursued
cognitive development topics through experiments, the findings of which ended up inspiring the development of novel programs within the museum. Although the partnership at Providence Children’s Museum (Sobel, Letourneau, & Meisner, Chapter 7) started in a similar manner to the Living Lab model, the authors of this chapter describe ways in which the collaboration has affected questions the researchers ask – research that would not have been done in the absence of the collaboration. Finally, at The Thinkery (Legare, Gose, & Guess, Chapter 8), a new partnership with exciting potential is forming; although this partnership is still developing its identity, important contributions are already being made to the fields of cognitive development and museum education.

**Discussion Chapters.** The final two sections of the book focus on discussion of issues that emanate from critique of specific partnerships, consideration of the overall value in cultivating professional relationships between researchers and museum practitioners, and insights into the broader impacts that such partnerships can have on multiple stakeholders (children, families, researchers, educators). In the second section of the book, four discussants, each with different areas of expertise and professional backgrounds, consider different subsets of the partnership chapters. We asked them to examine and analyze the approaches that the partnerships take in their work together, but also to highlight the ways that their own specific expertise informs thinking about researcher-practitioner partnerships in general. Consequently, the discussion chapters in this section feature insightful critique of the various partnership endeavors, and describe additional models of collaboration between researchers and practitioners.

We assigned partnerships chapter to discussants based on intersections that we anticipated might result in provocative commentary. We asked Suzanne Gaskins (Chapter 9), an
expert in the ways that cultural experiences shape child development, to reflect on the
approaches taken by Callanan et al. and Evans et al. to better understand learning as it unfolds in
the context of everyday interactions on the museum floor. Helen Hadani and Caren Walker
(Chapter 10) are currently engaged in developing an innovative new distance model for
collecting research data in museum settings; we capitalized on their recent experiences by
soliciting their views on Corriveau et al.’s description of the Living Lab approach as a broadly
scalable mechanism to facilitate research-museum partnerships. The recency of Hadani and
Walker’s ongoing effort to develop new partnerships also positioned them to provide insights
into Legare et al.’s description of the burgeoning collaboration at The Thinkery. Bronwyn Bevan
(Chapter 11) provides a rich theoretical and experiential frame of reference to her critique of the
ways that Sobel et al. and Rhodes and Bushara engage research for the benefit of practice, and
vice versa. Finally, Sue Allen and Josh Gutwill (Chapter 12) use their vast experience working
at the crossroads of research and museum practice to examine the intersections among research,
practice and evaluation, as they consider Haden et al.’s partnership.

In the third section of this book, we invited two sets of recognized experts in children’s
learning to comment on the full set of discussion chapters. Our goal here was not to offer further
examination of the inner workings of any specific partnership, but rather to solicit reflections on
how the process of navigating the challenges and promises of research-museum partnerships
opens new possibilities in both research and practice. In addition to addressing the integration of
academic and applied benefits, these chapters serve to emphasize points of critical importance
that situate this work within broader conversations about approaches to integrating research and
practice in formal educational settings (Grotzer & Solis, Chapter 13) and about public outreach
about children’s learning (Hirsh-Pasek & Golinkoff, Chapter 14).
In sum, our approach to organizing the book seeks to emphasize a range of perspectives on research-practice partnerships. We hear first from those actively engaged in focal partnerships. We then consider specific analysis of those partnerships from the perspectives of discussants who have experience with research–practice endeavors themselves but who are not involved in these particular partnerships. Finally, we examine key takeaways offered by another set of discussants who situate the topics addressed in the partnership chapters within a larger set of theoretical, social, and practical issues. The content of this book presents key issues that promote a reconceptualization of research and practice relationships for the good of both cognitive developmental research and informal educational practice.

Core Issues

We take this opportunity to highlight and discuss certain focal concerns that are prevalent in both the partnership and discussion chapters. Specifically, we noted that many contributors provide insights that inform such questions as: What are the patterns of interaction that describe research-museum partnerships? What practical issues both promote and constrain the perceived success of these partnerships? And, what unique opportunities do research-practice partnerships provide for education and public outreach?

Patterns of partnership interaction. One dominant issue that we identified after reading the chapters relates to how researchers and museum practitioners structure their partnership. Variability in the ways that the research and museum partners engage one another requires careful consideration of the language used to describe their partnerships. Throughout the chapters, readers will notice that the authors use a variety of verbs to describe their interactions, such as “collaborate,” “communicate,” “cooperate,” “contribute,” “jointly negotiate,” and
“support.” Bevan (private communication) describes cooperative research as similar to a “handshake” between agreeable partners, collaborative research as one that engages the partners in productive transactional dialogue, and jointly negotiated research as one in which research and museum partners constitute a unified team. A similar taxonomy of research-practice relationships is offered by the Chicago Children’s Museum, an institution that provides clear guidelines for researchers seeking cooperative, supported, and collaborative partnerships with the museum (see Haden et al., this volume).

Each of the above descriptors of partnership processes suggest different modes of interaction that may reveal something about partner goals, may reflect the developmental stage of the partnership, and may predict the ways that research and practice are likely to shape one another. These elements are not unrelated. Our reading of the chapters leads us to conclude that a partnership goals often become more and more aligned the longer the partnership is in place. This convergence of goals seems to result from two mechanisms promoted by time and contact. First, the experience of working in a museum can shape an authentic research direction for the researcher. Second, research results can shape new programs, exhibits and facilitation strategies at museums. Throughout the volume, the authors emphasize the critical process of cultivating trust and respect for one another, regardless of the form of the partnership.

In several chapters, the authors provide evidence of clear and natural alignment between the researchers’ empirical questions and the goals that the practitioners have for collaborating with researchers (e.g., exhibit design or evaluation). This is clearly visible in the relationships described in the chapters authored by Callanan et al. and Evans et al. The convergence of goals experienced by these authors is not surprising given that the authors are engaged in long-standing partnerships, however the authors’ descriptions of the trajectories that led to their current
interaction modes tell a story of progressive appreciation of one another’s viewpoints and expertise. For example, Callanan et al. describe an initial relationship process that was more cooperative than collaborative. Catalyzed by a serendipitous research finding that surprised both the research team and museum practitioners, the relationship began to shift and the team started to craft jointly negotiated research-practice goals. A similar process seems to be unfolding in the relationships described by Haden et al. at Chicago Children’s Museum, as well as by Rhodes and Bushara at Children’s Museum of Manhattan. In both of these partnerships, initial interactions were based on each party offering cooperative assistance with independent goals until a provocative practice-relevant question and compelling research finding sparked a more collaboratively defined set of research and practice goals, including co-development of new programs and exhibits.

In other chapters, the researchers’ and practitioners’ goals at the beginning of the partnership reflected authentic shared interests, and the authors describe an ongoing exploratory process wherein they are navigating whether and how to pursue collaborative, or even jointly negotiated, goals. Specifically, Sobel et al. and Legare et al. describe partnerships in which partners’ roles and relationships are evolving and have yet to reach full potential. Sobel et al., for example, describe an early relationship characterized by independent goals that are becoming more aligned, aided in part by a model for partnership in which a hybrid researcher/practitioner position was created to help bridge the two sets of activities. The partnership described by Legare et al. is the newest partnership reflected in this volume; negotiation of goals, communication pathways, and strategies to address practical considerations are in the early stages. Much can be learned by using Legare et al.’s experiences as a guide for how to initiate
collaborations, and how to set the stage for a relationship that may eventually provide mutual benefit.

Another interesting case is the Living Lab model, described in the chapter by Corriveau et al. This approach to research-practice partnerships is unique in that, from the museum perspective, the research topics themselves are secondary to the goal of disseminating research findings and communicating the importance of developmental science to the general public. Upon establishing partnerships under the Living Lab model, researchers commit to engaging in outreach and public education. The academic authors of this chapter seem to embrace this opportunity. Thus, the Living Lab model promotes the development of a shared outreach goal between researchers and museum practitioners, yet much of the core work of researchers and practitioners remains independent.

It is our hope that examination of the variety of partnership models will inform those who are considering initiating research-practice relationships in the future. There are multiple lessons to be learned from reading the chapters in this book. Our own experiences lead us to suggest a few additional points consistent with the topic of partnership interactions. First is the issue of institutional endorsement. Although academic researchers enjoy a great deal of autonomy, they are nonetheless employees of universities and colleges wherein research is but one expected professional activity. Similarly, informal museum educators hold positions that are embedded in the formal and informal structures of their particular institutions. Thus, productive research-museum partnerships rely not only on individual vision and commitment, but also on institutional buy-in and support. Hints at the potential for tension in this regard are peppered throughout the chapters in this volume, although none of the authors raises this concern as one that seriously limited the development of their partnership. It is possible, however, that there is
something akin to a selection bias at play here, and that conversations with members of partnerships that failed to flourish would reveal the critical role of institutional support.

A second open question concerns the presumed advantage of collaborative (or jointly negotiated) relationships over other forms of interaction. Privileging the status of relationships characterized as collaborative may discourage some emerging researcher-practitioner partnerships that might otherwise find that partner cooperation and support are sufficient for their goals. Some researchers might find it ideal to participate in a model that emphasizes access to onsite data collection, opportunities for research dissemination, and engagement in communicating the importance of developmental science in general. Such researchers would be well matched to practitioners who seek benefits that come with opportunities to connect with researchers, such as access to a differing perspective and knowledge base. Other researchers and practitioners may strive to engage in a relationship in which they can collaboratively explore ideas for exhibits, jointly define approaches for evaluating the efficacy of programs, and co-construct research questions. What we see in the chapters in this volume is that cooperation tends to cultivate collaboration. Open questions that invite further exploration are: Is it the rare or common case for partnerships to grow mutually over time? Do those that do not evolve in this manner have diminished potential to help partners meet their goals and develop new goals? Finally, do all attempted partnerships have the potential to take on a collaborative form if core practical matters are addressed effectively?

**Practical matters.** A second issue, one that recurred throughout all of the chapters is the influence of seemingly mundane practical concerns on the perceived benefits and challenges of research-practice partnerships. When we asked our contributors to think about how they have benefitted from their ongoing partnerships, they mentioned many common advantages.
Similarly, when reflecting on the challenges of forming and maintaining research-practice partnerships, almost everyone brought up some of the same issues. The list of benefits is long, with museum educators often mentioning improvements in evaluation processes, opportunities for staff professional development, and inspiration for new exhibit topics and approaches. Researchers frequently highlighted issues of participant access and diversity, opportunities for student training, and inspiration for new research directions. One benefit that was not shared in a majority of the chapters, but that was of primary importance to a few researchers relates to access to environments in which learning *in situ* can be readily observed. Collectively, the authors also expressed jointly appreciated benefits, such as pathways toward improved communication of scientific understandings to the public, and access to differing funds of knowledge.

Practical concerns also dominated discussion of challenges to efficient and effective partnerships. Several issues relate to the relationship between museum activities and the research process itself. Multiple contributors had stories to tell about their experiences navigating the disparate paces of the work of researchers and the work of museum practitioners. Museums and universities, for example, tend to have conflicting calendars. The times of the year when researchers want to collect data are exactly the times when museums do not want extra bustle on the floor. Likewise, the times most convenient for museums to have researchers engage their visitors often correspond to times in the academic calendar when teaching and service commitments are at their highest, or when undergraduate or graduate student assistants are not able to work. The seemingly ordinary concern over timelines and schedules appeared to present serious challenges for some partnerships, as evidence by the number of partnerships that chose to mention this issue. More specific to researchers exploring learning *in situ* was the issue of
adapting to novelty in the museum environment, as exhibits may be modified and sometimes even removed from the museum floor before researchers have completed their investigations.

These examples, as well as many others introduced in the chapters that follow, highlight a critical distinction between the goals of researchers and museum practitioners that did not go unnoticed by the contributors to this volume. Namely, museum practitioners are primarily focused on the visitor experience, whether that be the learning of exhibit content, engaging in modes of thinking that emanate through play and family interaction, or simply offering parents a place to relax for an hour while children are engaged. Friction can occur when researchers’ efforts to ensure and maximize the integrity of their data intrude upon visitor experience. As Bevan points out in her chapter, bridging this gap can be difficult given that research and practice take place amid historically unequal power relations. To this end, the contributors to this volume emphasize the importance of regular face-to-face communication between partners for advancing mutual understanding and appreciating one another’s work. A powerful message that merged from their advice is that establishing intentional communication protocols early on in a developing partnership can have long lasting consequences for both successful research and practice, and that relying on spontaneous, unsystematic, or absent communication pathways might not allow the partnership to grow to its full potential.

*Education and public outreach.* Multiple authors examined the issue of education and public outreach. One clear benefit of locating research in museum settings is the potential for researchers to interact with the public by demonstrating scientific methodologies, describing findings, and discussing the implications of their work. Direct access to scientists, particularly those who provide good accounts of their research, can facilitate scientific literacy in museum visitors. As Corriveau et al. report in their chapter, many museum visitors are eager audiences
because the specific area of scientific study under consideration has to do with children’s development and learning. Consequently, it is incumbent upon researchers to generate explanations of their work that are accessible to general audiences while still accurately reflecting their research procedures and results. In some partnerships, this work is delegated to trained undergraduate and graduate students working on research projects within museums. In other partnerships, this is left to practitioners because they often have experience communicating complex academic content to their visitors. The daily check-ins required under the Living Lab model (described in Corriveau et al.), the design of the Mind Lab space (described in Sobel et al.), and the public education programs at Children’s Museum of Manhattan (described in Rhodes & Bushara) are all examples of explicit attempts at outreach.

Although communicating with visitors who stumble upon research being conducted in museums is important, Hirsh-Pasek and Golinkoff ask both researchers and practitioners whether they can do more. They push the researchers and their museum partners to consider other spaces as settings for informal learning, such as grocery stores and community events. Their Ultimate Block Party, for example, represents a way in which informal learning and the importance of developmental science can be communicated to the community in general, not just visitors to a museum. Grotzer and Solis take a different approach by considering how these researcher-practitioner relationships can inform both research and practice in formal educational settings. Thus, there are varied opportunities for researchers and practitioners to move beyond their comfort zones and integrate education and public outreach into broader community contexts.

Concluding Thoughts
One striking final point that emanated from the partnership and discussant chapters was that there is a genuine commitment to professional activities that will result in better understandings of how children learn, and how to support their learning. The missions of the museums engaged in the research-practitioner partnerships featured in this book share an emphasis on promoting learning and, specifically, learning through play and discovery. The research programs of the researchers working within these museum settings complement and inform this objective by examining a wide range of variables that influence what and how children learn.

This interest in learning aligns with the research agenda of the Association of Children’s Museums (ACM, 2014) in which efforts to engage research in service to practice are encouraged. Several questions posed by this agenda are relevant to the issues addressed by the contributors to this book. For instance, “What kinds of learning are effectively facilitated and supported in children’s museums (e.g., cognitive learning, emotional growth, social skills, mastery of the physical environment, attitude formation)?” and “What type of early learning experiences lead to foundational knowledge and skills needed for success?” (p. 4). Insights into each of these questions can be offered independently by researchers and practitioners, however, the contributors to this book show us that the potential to generate richer understandings of how children learn increases when academic and applied experts join together.

In sum, by highlighting a range of flourishing research-practice partnerships and discussions of the utility and challenges of initiating and maintaining these relationships, we wish to demonstrate that opportunities to establish partnerships between researchers and museum practitioners are readily available regardless of individual circumstances. An important caveat, however, is that for the partnerships described in this book, a variety of elements cohered to
support stable frameworks for productive and mutually beneficial research–practice relationships. Attention to these elements is critical for new investigators and informal educators who hope to develop similarly successful partnerships. It is our hope that the lessons learned from contributors’ critical examination of their own partnerships will inspire new collaborations that will streamline pathways to productive research programs, promote evidence-based educational practices, and allow for better understandings of how learning unfolds within everyday settings.