

Cognitive Development in Museum Settings

RELATING RESEARCH AND PRACTICE



EDITED BY DAVID M. SOBEL AND JENNIFER L. JIPSON

A **Psychology Press** Book



COGNITIVE DEVELOPMENT IN MUSEUM SETTINGS

Researchers in cognitive development are gaining new insights into the ways in which children learn about the world. At the same time, there has been increased recognition of the important role that visits to informal learning institutions plays in supporting learning. Research and practice pursuits typically unfold independently and often with different goals and methods, making it difficult to make meaningful connections between laboratory research in cognitive development and practices in informal education. Recently, groundbreaking partnerships between researchers and practitioners have resulted in innovative strategies for linking findings in cognitive development together with goals critical to museum practitioners, such as exhibit evaluation and design.

Cognitive Development in Museum Settings offers accounts of how researchers in cognitive development partner with museum practitioners. The chapters describe partnerships between academic researchers and museum practitioners and details their collaboration, the important research that has resulted from their partnership, and the benefits and challenges of maintaining their relationship. This approach illustrates cutting-edge developmental science, but also considers how researcher-practitioner interactions affect research outcomes and influence educational practice. Each partnership discusses how their interaction affects the goals both researchers and practitioners have, and to what extent researchers and practitioners benefit from their collaborations.

David M. Sobel is a professor in the Department of Cognitive, Linguistic, and Psychological Sciences at Brown University. His research examines how children represent and learn causal knowledge and make inferences about their own and others' mental states.

Jennifer L. Jipson is an associate professor in the Department of Psychology and Child Development at California Polytechnic State University in San Luis Obispo. Her research investigates preschool children's developing understandings within the domains of science, health, and technology, with a focus on how everyday interactions in informal settings contribute to children's learning.

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Relating Research and Practice

*Edited by David M. Sobel
and Jennifer L. Jipson*

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PREFACE

Researchers in cognitive development and practitioners in children's museums have been engaged in productive working relationships for several decades. Recently, however, interest in the potential value of such partnerships has become increasingly visible in both academic and applied circles. In 2005, Museum of Science, Boston, launched the first Living Lab (described in Corriveau et al., this volume), in which researchers and museum practitioners work together to pursue and share child development research. This model influenced many researchers and efforts to establish research–museum partnerships proliferated. In 2012, a timely “Tools of the Trade” article describing different partnerships and styles of researcher–practitioner interaction came out in the *Journal of Cognition and Development* (Callanan, 2012). Shortly thereafter, the Presidential Symposium at the 2013 Biennial meeting of the Cognitive Development Society was entitled *Science at an Exhibition: What We Learn from Studying Children in Museums*, and highlighted the relation between researchers and museum practice. In 2014, the Association of Children's Museums developed the *Learning Value of Children's Museums Research Agenda*, a document that described ways in which museum practitioners can broaden their participation in research and create “a field-wide research agenda for children's museums” (ACM, 2014). This agenda is beginning to be implemented in research networks around the country. As evidenced by these activities and others, many professionals perceive clear value in establishing partnerships between researchers in cognitive development and museum practitioners.

This led us to think about the value of providing additional resources to guide, inform, and inspire others curious about this increasingly popular approach to bridging research and practice. We also identified merit in documenting the recent past and emerging future of researcher–practitioner partnerships. Our desire to

pursue these issues form the basis of this book in which we ask: *How do participants currently engaged in researcher–practitioner partnerships describe how their partnerships were formed and are maintained? How would they characterize the value of the research being done in museum settings to the field of developmental science? How would they discuss the potential impact of this research on the everyday practice of museum educators? And how might they convey the ways that working with practitioners affects research activities?*

To launch our inquiry into these topics, in the summer of 2014, we organized a small workshop, with 16 of the 37 authors in this book participating. Critically, we asked several of our partnerships to have at least one researcher and one practitioner attend and *together* describe their partnership process, the research outcomes, and the implications for both research and practice. We then asked some of the discussants in this book to give their thoughts on the overall goals for collaboration between researchers and practitioners. One of the outcomes of that workshop was agreement by both the researchers and practitioners who were present that more and better communication between fields was needed and desired. This strengthened our resolve to produce a foundational book that highlights existing collaborations and addresses core considerations in establishing and maintaining productive partnerships.

Asking researchers and practitioners to present at a workshop together is one thing; asking them to write chapters collaboratively is another. We think the final product is remarkable; each chapter is well-crafted, honest, and informative. We hope that readers will get a better sense of the varied research on cognitive development being done in museums, and at the same time gain insight into how researchers and museum practitioners can partner in ways that benefit both research and practice endeavors. By sharing stories of existing partnerships, this book will be particularly valuable for researchers who want to start collaborations with a museum in their area, and practitioners who want to establish research connections. We also think the book presents cutting-edge scientific findings as well as valuable lessons for the ways research influence practice and practice influence research.

We are deeply indebted to all of our authors; both our partnerships who constructed chapters that potentially went outside of their comfort zones in writing, and our discussant chapters who took on the challenging task of being fair to others' work while bringing in their own perspectives and voices (not to mention working on a rather strict timetable). We are also grateful to Michelle Ross, who took on the role of organizing the logistics of the initial workshop. The National Science Foundation (1223777 to DMS) and the Department of Cognitive, Linguistic, and Psychological Sciences at Brown University supported the workshop. NSF also funded both of our research programs during the last few years, and we are grateful for the support. We thank Georgette Enriquez at Psychology Press for her enthusiasm for the project and guidance through the publishing process, and also for her patience when there were delays. We also thank Lisa Faille and

Michael Hardy whose encouragement and understanding were indispensable as we navigated the process of crafting this book. Finally, we thank our children, Paulina, Nate, Josie, and Bixby. We are inspired by their sense of wonder and enthusiasm for learning. They remind us every day of what is important in life.

—Dave Sobel and Jennifer Jipson

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THE INTERACTION BETWEEN RESEARCH AND PRACTICE IN MUSEUM SETTINGS

An Introduction and Synthesis

Jennifer Jipson

CALIFORNIA POLYTECHNIC STATE UNIVERSITY, SAN LUIS OBISPO

David M. Sobel

BROWN UNIVERSITY

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 at 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 comprises 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, 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 encouraged 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 5), 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 (Corriveau, Kipling, Ronfard, Biarnes, Jeye, & Harris, Chapter 4), 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 pursue cognitive development topics through experiments, the findings of which often end 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 partnership chapters 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 that 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 researcher–practitioner partnerships? What practical issues both promote and constrain the perceived success of these partnerships? And, what unique opportunities do researcher–practitioner 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 partnerships. Variability in the ways that the researcher and practitioner 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 researcher–practitioner 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 suggests 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 partnership’s 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.