



In Principle, In Practice

Museums as Learning Institutions

Edited by

John H. Falk

Lynn D. Dierking

Susan Foutz

FOR EDUCATIONAL PURPOSES ONLY



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LEARNING INNOVATIONS SERIES

SERIES EDITORS

John H. Falk
Lynn D. Dierking

BOOKS IN THE SERIES

In Principle, In Practice: Museums as Learning Institutions, edited by John H. Falk, Lynn D. Dierking, and Susan Foutz

ABOUT THE SERIES

Museums, libraries, broadcast and print journalism, the Internet, and community-based organizations all represent distinct and important sources of public education that learners can choose from at will. The Learning Innovations Series publishes books pertaining to this broadly defined area of free-choice learning for use by free-choice learning educators and researchers, in college and university courses or by scholars and professionals in the social sciences and humanities. Each volume in the series focuses on a different institution or subject area, highlighting the many ways in which the free-choice sector facilitates learning in our society.

ABOUT THE ORGANIZATION

Established in 1986 as a not-for-profit learning research and development organization, the Institute for Learning Innovation is dedicated to changing the world of education and learning by understanding, facilitating, advocating and communicating about free-choice learning across the life span. The Institute provides leadership in this area by collaborating with a variety of free-choice learning institutions such as museums, other cultural institutions, public television stations, libraries, community-based organizations such as scouts and the YWCA, scientific societies and humanities councils, as well as schools and universities, striving to better understand, facilitate and improve their learning potential by incorporating free-choice learning principles.

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Contents

Foreword	ix
<i>David A. Ucko</i>	
Preface	xiii
<i>John H. Falk, Lynn D. Dierking, and Susan Foutz</i>	
Acknowledgments	xxi
Part I How People Learn in Museums	
1 Toward an Improved Understanding of Learning From Museums: Filmmaking as Metaphor	3
<i>John H. Falk</i>	
2 Family Learning in Museums: Perspectives on a Decade of Research	17
<i>Kirsten M. Ellenbogen, Jessica J. Luke, and Lynn D. Dierking</i>	
3 Students, Teachers, and Museums: Toward an Intertwined Learning Circle	31
<i>Janette Griffin</i>	
4 Exhibit Design in Science Museums: Dealing With a Constructivist Dilemma	43
<i>Sue Allen</i>	

- 5** Research on Learning From Museums 57
Léonie J. Rennie and David J. Johnston

Part II Engaging Audiences in Meaningful Learning

- 6** Envisioning the Customized Museum: An Agenda to Guide Reflective Practice and Research 77
Mary Ellen Munley, Randy C. Roberts, Barbara Soren, and Jeff Hayward
- 7** Museums and Cultural Understanding 91
Gretchen M. Jennings
- 8** Raising the Relevancy Bar at Aquariums and Science Centers 107
Emlyn H. Koster and Jerry R. Schubel
- 9** Challenging Convention and Communicating Controversy: Learning Through Issues-Based Museum Exhibitions 121
Erminia Pedretti

Part III Fostering a Learning-Centered Culture in Our Institutions

- 10** New Ways of Doing Business 139
Robert "Mac" West and David E. Chesebrough
- 11** Optimizing Learning Opportunities in Museums: The Role of Organizational Culture 153
Janette Griffin, Lynn Baum, Jane Blankman-Hetrick, Des Griffin, Julie I. Johnson, Christine A. Reich, and Shawn Rowe
- 12** Fostering Effective Free-Choice Learning Institutions: Integrating Theory, Research, Practice, and Policymaking 167
Jeffrey H. Patchen and Anne Grimes Rand

13	Meaningful Collaboration	181
	<i>Beverly Sheppard</i>	
 Part IV Investigating Museum Learning in the Next Ten Years		
14	Understanding the Long-Term Impacts of Museum Experiences	197
	<i>David Anderson, Martin Storksdieck, and Michael Spock</i>	
15	Investigating Socially Mediated Learning	217
	<i>Tamsin Astor-Jack, Kimberlee L. Kiehl Whaley, Lynn D. Dierking, Deborah L. Perry, and Cecilia Garibay</i>	
16	Research in Museums: Coping With Complexity	229
	<i>Sue Allen, Joshua Gutwill, Deborah L. Perry, Cecilia Garibay, Kirsten M. Ellenbogen, Joe E. Heimlich, Christine A. Reich, and Christine Klein</i>	
17	An Emerging Research Framework for Studying Free-Choice Learning and Schools	247
	<i>Laura M. W. Martin</i>	
	References	261
	Index	295
	About the Contributors	303

Foreword

David A. Ucko

Most people, most of the time, learn most of what they know outside the classroom.

—George Tressel, former division director,
Materials Development, Research,
and Informal Science Education, NSF

Although people have always learned outside the four walls of a classroom, the purposeful design of experiences for self-directed learning by organizations established with that mission expanded greatly in the late 20th century. That increase is best illustrated by the growth of the Association of Science-Technology Centers (ASTC) from 20 museums at its inception in 1973 to some 340 U.S. members today. These institutions enable 83 million citizens each year to experience science and technology firsthand, mostly as families and school groups.

Not surprisingly for a young field, informal education has largely been guided by practice informed by personal experience and intuition. Evaluation and research are only now beginning to play greater roles. One reason is the growing demand for accountability by public and private funders who are seeking evidence for their investments in informal education. Other factors stem from maturation of the field. The value of formative evaluation in developing exhibits and programs is gaining acceptance, as is the potential to learn from what does and doesn't work based on summative evaluation. In addition, increasing numbers of researchers in academic institutions as well

as some museums have been studying how people learn in informal settings and are publishing their results in peer-reviewed journals. All of these factors are helping to professionalize the field.

The Informal Science Education (ISE) program and its predecessors at the National Science Foundation (NSF) have supported the field for more than two decades. They were instrumental in providing early funding for capacity building within ASTC. ISE has invested heavily in exhibitions, as well as in a wide range of educational programs. Its funds have made possible more than half of the approximately 200 exhibitions that have been toured by the ASTC Traveling Exhibition Service. NSF was instrumental in establishing the field of children's science programming on television through support of *3-2-1 Contact*, *Bill Nye*, and *The Magic School Bus*, and adult science programming through funding for *NOVA* and the National Public Radio science unit. ISE investments established the large-format film as an immersive educational medium and made possible such out-of-school programming as "citizen science," in which the public contributes to ongoing scientific research.

While funding development of products designed to increase public interest, engagement, and understanding of science and technology, ISE has elevated standards through program emphasis on accuracy of scientific content, linkages to formal education, reaching underserved audiences, and evaluation. Recently, ISE revised its solicitation to require that projects seek to "raise the bar" by furthering knowledge or practice ("strategic impact"), as well as demonstrating innovation and collaboration. To meet these requirements, proposers—principal investigators, or PIs in NSF lingo—must be aware of and build upon the lessons learned from both prior practice and educational research. ISE has invested in several projects to help PIs advance the field in this way.

The website www.informalscience.org at the University of Pittsburgh Center for Learning in Out of School Environments (UPCLOSE) provides access to a searchable database of educational research articles along with both formative and summative evaluation studies from ISE-funded projects. Conferences such as *Best Practices in Science Exhibition Development* and *Web Designs for Interactive Learning* have helped enlarge and share information. A synthesis study now underway at the National Research Council will assess and report on what is known about the characteristics of effective informal science education environments across a

range of outcome measures. In addition, the program this year intends to fund an Informal Science Education Resource Center designed to stimulate further professionalization and a community of practice that bridges the field.

The *In Principle, In Practice* initiative, which includes a national conference that was organized by the Institute for Learning Innovation along with a series of publications, forms an important part of this larger ISE effort. Following a synthesis of research findings published in a supplement to the journal *Science Education*, the conference explored and articulated explicit connections among research, evaluation, and practice. The resulting brief reports and this book now share these conversations with a wider audience. Their intent is to identify critical issues in museum learning, better establish a base of research evidence, improve practice in the field, and guide future research efforts. By achieving these outcomes, this initiative will augment the value of informal or free-choice learning on its own terms, rather than those derived from formal education, which do not closely match our community's unique strengths, especially outside the cognitive domain. In so doing, it should also enhance the credibility of the informal education field among policymakers.

The primary focus for *In Principle, In Practice* has been learning in science museums. However, many outcomes may be more broadly applicable to other types of museums, to modes of informal science education other than museums, and to learning in general. This conference fostered active exchange between researchers and practitioners about the ideas that are discussed in the pages that follow. It is essential to the further development of the entire informal education community that this dialogue continues and expands.

Preface

John H. Falk, Lynn D. Dierking, and Susan Foutz

In May 2005, more than 150 people gathered in a small room off an obscure conference center hallway in Indianapolis. Everyone there was a museum professional, but from diverse parts of the community. There were professionals from art, history, and science museums, and also zoos, botanical gardens, and aquariums. They included educators, curators, and administrators, as well as researchers, evaluators, exhibition designers, and funders, professionals from large institutions and ones from smaller institutions. And since this was a session at an annual meeting of the American Association of Museums, most did not know each other or did not expect to get to know each other over the next hour and 15 minutes. Within ten minutes, though, all of these individuals had self-organized into roughly a dozen discussion groups and were deeply engaged in conversation and debate. Although the topics had been predefined, everyone seemed able to find something of interest among questions that ranged from how to make collections more relevant to determining the long-term impact of museum experiences to improving the role of staff in facilitating visitor learning. As new people joined, they were quickly given an overview of the topics and sent to find a group; they too became enmeshed in conversation and debate. There were small groups everywhere, including a couple of groups that moved their tables and chairs out into the hallway. Although these professionals had not known each other at the beginning of the session and came from varied backgrounds and institutions, they all had something in common. They shared a thirst to know more about the museum community in which they worked and to learn what

others were thinking were important topics in the community, and they possessed a sincere desire to use this information to support and enhance the public learning that happens in museums of all types. These are the very reasons that motivated us to create this edited volume, and we suspect they are the same reasons that have motivated you to read this book.

To understand and make the best use of this book, though, you should know that there's a story behind the volume. More than a decade ago, in 1994, with the support of the National Science Foundation, the Institute for Learning Innovation (then Science Learning, Inc.) hosted a national conference in Annapolis, Maryland—*Public Institutions for Personal Learning: Establishing a Long-Term Research Agenda*. The goal of the conference was to discuss the nature of museum learning and to formulate a research agenda to investigate the long-term impact of visits to museums. This effort, in particular the edited volume that resulted from the conference (Falk & Dierking, 1995), served as a catalyst for numerous museum research endeavors, stimulated dozens of masters' theses and doctoral dissertations, and continues to guide research and theory in the field.

The past decade has been a time of significant research and great advances in our understanding of learning in and from museums. Despite this progress, though, the museum community continues to struggle to meaningfully document the impact of its exhibitions, media, community-based programs, websites, and other educational efforts, and to apply those findings to the creation of useful and valid frameworks for exemplary practice. To move this process forward, to consolidate our understandings from a decade's museum-learning research efforts, and to lay out the issues that need to be addressed in the decade ahead, the institute, again with National Science Foundation support, launched a new initiative called *In Principle, In Practice: A Learning Innovation Initiative on Museum Learning*. This initiative had several parts, including a preconference special issue of the journal *Science Education* (July 2004, Volume 88, Supplement 1); a national conference of over 100 museum professionals representing a diverse cross-section of roles and responsibilities, institutions, geography, and, of course, perspective; the national town hall meeting at the American Association of Museums annual meeting described above; production of a set of short discussion papers related to current practical issues and concerns published online as *Insights* (Stein, Dierking, Falk, & Ellenbogen, 2006); and now this book.

Our goal throughout this initiative was to gather together in a single place an accessible compendium of what we currently know about learning in museums, to inquire where that knowledge leads us in terms of practice and community, and finally to ponder what still needs to be learned as the museum community moves ever further into the uncertainties and challenges of a new millennium. This book, then, is actually the product of a very long process. These ideas are the distillation of more than two years of effort to bring a useful volume to the museum community, useful being defined here as one that provokes thought and discussion within the field. Most importantly, the ideas presented here are not merely the products of the authors listed but actually represent the collected ideas of a large sampling of the museum community. As the following quotes from professionals who were interviewed in connection with the *In Principle, In Practice* national conference illustrate, there is a very real need to connect museum research to practice and to articulate the place of museums in society at large:

The next decade of museum learning research needs to focus on creating a conduit between researchers and practitioners with the primary goal of affecting practice (of course this conference is designed to achieve this). To do so, research must be collaborative and cross disciplinary, and include learning theorists, sociologists, anthropologists, museum evaluators, and exhibition designers, interpreters, developers, and educators from the museums in which the research is being conducted. Learning research in museums must connect findings to the stimuli if museums are to learn how to create more meaningful experiences. (Randi Korn, Randi Korn Associates)

We certainly have a greater [theoretical] understanding than we used to have 10 to 20 years ago. But that has still not been translated into the different ways in which people design informal science education experiences. Not all practitioners have knowledge of this research. And for those who do, it's not obvious how to translate it into specific applications. . . . [Professionals are] not necessarily learning from evaluations that are done elsewhere or even from their own institution's evaluations done in previous years. So the field needs to do much better in terms of building on resources based on prior experience. It's the only way for a field to move forward. (David Ucko, National Science Foundation)

We're talking about building learning communities . . . [it is] essential for a healthy democracy and civic well being to have educated citizens. Museums have to see how they fit into the constellation that includes schools, libraries, and homes and how they work with these venues to increase choices for free-choice learning. (Marsha Semmel, Institute for Museum and Library Services)

The *In Principle, In Practice* Initiative was designed to begin building a bridge between theory and practice, between what we currently know and what that implies for institutional practice and policy, and finally between what we are doing now and what we still need to do and learn in the years ahead to maximize the success of the museum community as part of a national and international learning infrastructure. The past decade has seen not only a growing desire for this information but a growing sense of urgency and need. The number of institutions has continued to grow exponentially and visitation at museums is at all-time highs; but against this background, many—if not most—institutions are feeling challenged by changes in the economic, social, and political landscape (Bradburne, 2004; Falk & Sheppard, 2006; Munley & Roberts, 2006; Silverman & O'Neill, 2004). The emphasis on learning experiences and growth in museum visitorship and visitation comes at a time when the mission of museums is shifting from a focus on collecting and preserving to one of educating the public. The late Stephen Weil (2002) described this as a movement from being *about something* to being *for somebody*. We believe this book, with its focus on visitor learning, will provide museum professionals of all types with an important tool to support their own learning and that of their institutions.

We have divided the book into four sections: How People Learn in Museums, Engaging Audiences in Meaningful Learning, Fostering a Learning-Centered Culture in Our Institutions, and Investigating Museum Learning in the Next Ten Years. Although the book was designed to be read cover to cover, like any edited volume we understand that not all readers will find all chapters equally useful or compelling. Thus, we encourage you to freely sample, selecting the section, or even the individual chapters, that best meet your immediate needs. Please use the book as a reference and if so inspired, perhaps even as a focus of discussion within your institution.

The first section of the book, *How People Learn in Museums*, provides a foundation for understanding the nature of learning in and from museums. Although not an exhaustive synthesis of what we currently understand about this extremely challenging subject, the five chapters in this section provide a fairly comprehensive overview of some of the most important findings from the past decade. The first and last chapters in this section provide a holistic view, emphasizing the complex, contextual nature of museum learning, and the need to address the longer-term impacts of museum experiences. Two other chapters tackle learning through the lens of arguably the two most important social groupings of museum visitors—families and school groups. Rounding out the section is a chapter that tackles the fundamental challenges of understanding the role that exhibitions play in supporting museum learning. As the five chapters in this section attest, considerable progress has been made over the past ten years in our understanding of museum learning, and readers will certainly come away with a better sense of what we currently do and do not yet understand about learning in and from museums.

Building upon the foundations of the first section, the second section, *Engaging Audiences in Meaningful Learning*, addresses some of the challenges facing museums in this time of economic, social, and political change. Each of the four chapters in this section challenges the current museum status quo. Chapters discuss developing more customized and personal experiences for visitors, addressing the issue of institutional authority and worldview in an increasingly multicultural society, the need to focus institutional mission upon socially relevant goals rather than narrow academic ones as has often been the case in the past, and the opportunities and risks of communicating controversial topics. Each of the chapters advocates for a readjustment and accommodation to changing realities—accommodations that involve significant challenges to the field but also represent major opportunities.

Appropriately, the third section of the book, *Fostering a Learning-Centered Culture in Our Institutions*, describes the structural changes 21st-century museums will need to undergo in order to engage their audiences in the meaningful learning discussed in the previous section. Each of the four chapters lays out initial guidelines for directly addressing institutional change—through reformulated business models; by focusing on the creation of a culture of learning within the

organization; by systematically and consciously integrating learning theory, practice, research, and policy; and finally by fostering a culture of collaboration, both within and without the organization. Each of these approaches is challenging in its own right; however, each is fundamental to success in the knowledge age.

The last section of the book bookends the first and is appropriately titled *Investigating Museum Learning in the Next Ten Years*. The first section provided an overview of what we have learned about the nature of museum learning over the past decade; the final section lays out an agenda for the research we need to do in the next decade in order to lay a foundation for tomorrow's museum practice. As foreshadowed by earlier chapters, these four chapters advocate for new paradigms of research: paradigms that emphasize longer-term investigations, a better understanding of the social nature of museum experiences, and investigations that better accommodate the complexity of the museum experience.

As suggested earlier, we believe this book is an important marker in the development of the museum field, a time capsule of current best thinking from a representative cross-section of the museum community. We certainly do not assume that everyone will agree with all of the ideas postulated here. However, we purposely encouraged authors to be bold, so what we do believe is that we have assembled a provocative and thoughtful view of the future of museums. We will feel successful if the writings assembled here stimulate both reflection and debate and ultimately raise more questions than answers.

DEFINITIONS

The goal of the *In Principle, In Practice* Learning Innovation Initiative was to apply new understandings of free-choice learning to the development of visionary frameworks for improving the practice, evaluation, and future research efforts of the museum community. A major first step in this process was the bringing together of the varied parts of the community—diverse in role within the community (e.g., researcher, evaluator, practitioner, policymaker), diverse in venue and discipline (e.g., science center, art museum, aquarium, natural history museum, zoo, children's museum, history museum), and diverse in stage of career (e.g., participants included established leaders and emerging ones). In so doing, we hoped to provide

a shared platform for understanding and communication while at the same time encouraging divergent thinking. Because of the diversity, though, it was essential that we share a common vocabulary and set of definitions. What follows are several key terms that we identified as important. We stipulated that all authors were to build from and use these definitions.

Museum—We use *museum* as a generic term to refer to all the various kinds of museum-like institutions, such as art, history, and natural history museums, science centers, zoos, aquariums, botanical gardens, and nature centers.

Exhibition/Exhibit—There is frequently confusion and a lack of specificity about the use of the terms *exhibition* and *exhibit*. For clarity, we utilize Serrell's (1996) definitions: an exhibit is an individual unit or element within a larger exhibition. In other words, collections of exhibits are combined to form exhibitions.

Learning—This is the most difficult definition of all. For purposes of this book, learning is defined as a personally and socially constructed mechanism for making meaning in the physical world. The definition is a broad one and includes changes in cognition, affect, attitudes, and behavior.

Informal—*Informal* is a term used to describe institutional settings other than (formal) classroom settings; for example, museums are informal settings. However, informal is *not* used to describe the nature of the learning occurring in the setting, since the fundamental processes of learning do not differ solely as a function of institutional setting.

Free Choice—This term describes the learning that occurs in settings in which the learner is largely choosing what, how, where, and with whom to learn. It is a generic term that captures the intrinsically motivated nature of most museum-based learning. However, it is important to note that although free-choice learning describes the learning of most casual visitors in museums, not all museum-based learning is free choice. For example, when children in school groups take field trips where there is a pre-defined lesson with limited or no choice or control over goals and activities, the learning is best described as compulsory.

Finally, it is with great pride that we launch this volume as the first in a new publication series—the *Learning Innovation Series*. The series is a joint effort of the Institute for Learning Innovation and AltaMira Press, devoted to the how, where, and whys of free-choice learning. Volume 1 in this new series—*In Principle, In Practice*—coincides with the twentieth

anniversary of the Institute for Learning Innovation, a not-for-profit organization committed to understanding, supporting, and advocating for free-choice learning—learning that fulfills the lifelong human quest for knowledge, understanding, and personal fulfillment. Given our history, it is altogether fitting that this volume be devoted to museums, since for twenty years we have disseminated the results of our museum-based research, evaluation, and planning efforts through publications, presentations, and professional training. By providing museum-learning policy-makers, researchers, and practitioners with up-to-date understandings of free-choice learning, we have been able to encourage a more encompassing and accurate understanding of how these institutions support an ever evolving learning society.

However, the *Learning Innovation Series* will not only be focused on museums. The series will provide the broader education community with comprehensive edited volumes on a wide variety of free-choice learning topics. For example, the second book in the series, to be published in 2008, will focus on free-choice learning and the environment, while future books are planned to focus on the areas of free-choice learning and media, libraries, public health, young children, and older adults. Individuals interested in developing new books in this series should contact the series editors, John Falk and Lynn Dierking, at falk@ilinet.org or dierking@ilinet.org.

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