Informal learning, also called free choice learning or out-of-school time, is a relatively new field that has grown exponentially in the past 15 years. Research on the learning and teaching that takes place in these non-traditional, non-classroom environments, such as museums, gardens, after-school and community programs, has enjoyed tremendous growth; yet we still need to understand much more, and more deeply, how people actually interact, participate and learn in such settings. *Putting Theory into Practice: Tools for Research in Informal Settings* is designed as a research and practice toolkit, offering a range of theoretically well-grounded methods for assessing learning for life in diverse settings and among diverse populations. We pay special attention to the full complexity, challenges and richness involved in such research into learning in places like museums, aquariums, after-school clubs, and gardens. *Putting Theory into Practice* serves both, researchers and practitioners, as well as a more general audience. This book offers several field-tested methods for building empirically-based, informal learning settings and research deeply grounded and guided by theory. Sociocultural theory, broadly defined, forms the unifying theoretical framework for the different qualitative studies presented. Each chapter clearly lays out the theoretical underpinnings and how these inform the suggested methods. The chapters are written by recognized experts in the field, and each addresses, in its own way, “the synergy among different learning contexts and the benefits of studying how contexts influence learning.” Together they give voice to the diversity, richness, and complexity of the study of learners and learning for life.
PUTTING THEORY INTO PRACTICE
NEW DIRECTIONS IN MATHEMATICS AND SCIENCE EDUCATION
Volume 25

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Scope

Mathematics and science education are in a state of change. Received models of teaching, curriculum, and researching in the two fields are adopting and developing new ways of thinking about how people of all ages know, learn, and develop. The recent literature in both fields includes contributions focusing on issues and using theoretical frames that were unthinkable a decade ago. For example, we see an increase in the use of conceptual and methodological tools from anthropology and semiotics to understand how different forms of knowledge are interconnected, how students learn, how textbooks are written, etcetera. Science and mathematics educators also have turned to issues such as identity and emotion as salient to the way in which people of all ages display and develop knowledge and skills. And they use dialectical or phenomenological approaches to answer ever arising questions about learning and development in science and mathematics.

The purpose of this series is to encourage the publication of books that are close to the cutting edge of both fields. The series aims at becoming a leader in providing refreshing and bold new work—rather than out-of-date reproductions of past states of the art—shaping both fields more than reproducing them, thereby closing the traditional gap that exists between journal articles and books in terms of their salience about what is new. The series is intended not only to foster books concerned with knowing, learning, and teaching in school but also with doing and learning mathematics and science across the whole lifespan (e.g., science in kindergarten; mathematics at work); and it is to be a vehicle for publishing books that fall between the two domains—such as when scientists learn about graphs and graphing as part of their work.
Putting Theory into Practice
Tools for Research in Informal Settings

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1. INTRODUCTION

Tools for Research in Informal Settings

*Putting Theory into Practice* offers a toolkit of theoretically-grounded methodologies, methods and imaginaries showcasing ways of pursuing research of learning for life in a vast array of settings. The book makes the case for theoretically well-grounded methods that can help us understand learning as it unfolds over time and across space, attesting fully to its messiness and complexity. The chapters that follow offer unique insights into how theory and method constitute one another and how a focus on their interplay strengthens our understanding of the role informal settings play in learning for life. The chapters also give voice to children, youth, visitors, educators and other professionals who make these settings what they are. We collectively emphasize the rich diversity among learners and educational settings, a product of our modern era of globalization and movement, which can present both challenges and rich opportunities for the current educational infrastructure and our society. As such, that toolkit is not bound to any one particular context of the informal learning infrastructure, nor is it bound to one particular content area of learning or one particular population. We want to promote attention to the full complexity and richness that such study involves. The chapters that follow offer a diverse set of theoretically well-grounded and methodologically rich approaches to conducting in-depth research in locales like museums, aquariums, afterschool programs, gardens, and university outreach programs, with some of the chapters also addressing research across such settings. We offer a variety of perspectives on what such research might look like, and we wish to be especially clear on the theory that surrounds such practices. Thus the title *Putting Theory into Practice*.

While this book offers tools for the study of learning in out-of-school settings, and is essentially about methods, the chapters also allude to the methodologies or broader frameworks tied to epistemological commitments that guide the ways of seeing and pursuing research. Hence, the chapters are grounded in somewhat different discourses on methodologies, yet globally, have their roots in naturalistic inquiry. The chapters share a theoretical commitment to sociocultural theory and the learning sciences. That theoretical grounding mediates in yet other ways a strong alignment in the chapters’ methodological and methodical framing.

The past 15 years have seen a tremendous increase in research on learning and teaching that takes place outside of traditional classroom environments, especially in museums, and more recently also in gardens, afterschool, and community programs. This field, known as informal learning, free choice learning, or out-of-school time, has grown exponentially. Despite such rapid growth, there is still a
need to further explore and more deeply understand how people interact, participate and learn in such settings (Banks et al., 2007). Such research requires theoretically informed research methodologies and methods that better illuminate what learning is and what it looks like in and across such settings. We contend that studies of learning in informal settings at large have avoided complex learning theory; rather, they have advanced a learning-by-doing view that only weakly relies on general constructivist notions of learners making sense of phenomena and objects, often in isolation (Paris & Ash, 2000).

The chapters in this book make the case for grounding the study of learning for life in sociocultural theory, asking what museum going, museum teaching, engagement in an afterschool, university outreach or gardening program entails; how engagement is socially organized; and how engagement can be understood in light of the activity system or systems in which it is embedded, and therefore explored at many levels simultaneously within and across practices, and in light of the social relations in which the individual is embedded (Martin, 2007).

Studies exist of both front end and other forms of evaluation in informal settings (American Association of Museums, 1999; Diamond, 1999). These have been primarily aimed at understanding program effectiveness or single exhibit use. Other studies have contributed more broadly to understanding general learning (Bekerman, Burbules, & Silberman-Keller, 2006), or science literacy development in particular (Crane, Nicholson, Bitgood, & Chen, 1994). Building on these earlier efforts, and grounding our pursuit in sociocultural theory, we are embracing a broader, more interdisciplinary approach towards the study of learning in everyday settings. The National Research Council (2009) has argued that “more widely shared language, values, assumptions, learning theories and standards of evidence are needed to build a more cohesive and instructive body of knowledge and practice” (p. 305). In light of this, “other kinds of research and data are needed … to build and empirically shape a shared knowledge base” (p. 305). The objective of this book is to begin that conversation.

To move towards shaping an empirically shared knowledge base, we align ourselves with others who have made the case that the next decade of research on learning in museums and other out-of-school settings needs to focus more “on creating a conduit between researchers and practitioners with the primary goal of affecting practice.” In addition, in order “to do so, research must be collaborative and cross disciplinary boundaries, and include learning theorists, sociologists, anthropologists, museum evaluators, exhibition designers, interpreters, developers and educators from the museums [and other settings] in which the research is being conducted” (Falk, Dierking, & Foutz, 2007, p. xv).

Putting Theory into Practice essentially expands upon the fundamental idea that “a good education requires education about diversity in a diverse environment” (Bowen & Bok, 1998, cited in Banks et al., 2007, p. 8). The chapters allude to the richness of that diversity in both the variety of educational settings studied, as well as the learners that make these settings what they are. The chapters also bring to the foreground the need for a diversity of methods to capture learning in diverse settings and among diverse people. The main goal of this book, then, is to help fill
the need for innovative and expanded research methodologies and methods that explore learning in informal environments in its full complexity by:

1. Building upon new and established theories of learning and teaching,
2. Providing information on robust methodologies and methods appropriate for research within informal learning institutions, and
3. Offering examples from a number of learning settings tailored to/constituted by diverse audiences/participants.

It should be noted that although the terms research and evaluation are often used in the same sentence, the chapters we include here fall into the research category. Though there are many ways the two can be defined and differentiated, for the purposes of this work the key distinguishing factor consists of looking past merely “judging the worth or merit” of an activity (Worthen, Sanders, & Fitzpatrick, 1997). Instead, we propose the pursuit of empirically and theoretically grounded research that explores in depth the unfolding of learning “in ways that put human agency, values and engagement with social practices at the center” (Penuel & O’Connor, 2010, p. 268). Thus, we take for granted that people are active agents and organizers of their lives. We are interested in the manner in which they organize their forms of participation in diverse practices, or how they participate, contribute to and constitute practices. Treating learning as a cultural practice makes possible the asking of questions that help us arrive at a more complex and nuanced picture of what happens in and across spaces driven by learning for life. In light of this human sciences perspective, we need to carefully consider what makes for “significant, investigable questions” and, especially, “from whose perspective” (p. 269).

This volume then offers new ways of thinking about the relationship between the researchers and the researched, emphasizing the ways in which they co-construct the actual research endeavour, driven by acknowledged values that are made explicit from the beginning. The chapters offer possibilities for research grounded in this human science approach by also making explicit “the scope and limits” of studies of learning for life within and across a vast array of settings. Finally, the chapters strive to make explicit the kinds of decisions made (sometimes in situ) about the end-goals of such learning and research. In light of this, they include and give voice to the learning activity actors—learners and practitioners—people often excluded from conversations in and about research. Such actions are designed to shed light on, challenge, question, and make explicit the power structure that constitutes research and practice in informal settings.
KEY COMPONENTS OF A THEORY INTO PRACTICE APPROACH

Grounding in Sociocultural Theory and Learning Sciences

The chapters draw upon a variety of theoretical and methodological frameworks that are loosely grounded in sociocultural theory, the learning sciences, and their extensions (O’Connor & Penuel, 2010; Vadeboncoeur, 2006). What unifies these approaches is the notion that learning emerges from social activity, including talk, and interactions with objects that the learners see, touch and talk about with one another. While learning is understood as a process and as emerging from activity, it is also tied to people’s history, and to the knowledge they bring to the activity, both of which they mobilize as tools to make sense of their current activity or form of engagement. Learning is understood as situated in local contexts, as constrained and enhanced by local affordances, constraints and the culture of the environment or institution in which it takes place, while it is also mutually constituted by the institution and its community. The goal is to understand human action and the manner in which such action is shaped by the context and social practices from which it emerges (O’Connor & Penuel, 2010). In practice, a focus on participation in learning activity means that collaborative sense-making must be monitored in detail as it happens, naturalistically, and over time. Methods, therefore, have had to shift, to become more fine-tuned, to track learning in detail over time, over sites, and across contexts. These cannot be captured in self-report, surveys or even in many interview formats. A focus on actual learning activity implies the daunting challenge of capturing and analysing learning in detail, as it occurs, interruptedly and discontinuously over time, within and beyond specific moments and settings. It also implies a multi-level analysis that moves beyond the micro-level analysis towards the macro, which allows the exploration of the manner in which global affordances and constraints, and political agendas and constraints, constitute and mediate activity and learning. Hence, the methodological tools or methods need to be varied and rich; they include, but are not limited to, ethnography; detailed digital capture of talk, gesture and embodied action; a variety of interview formats using multiple representations as impetus; reflective dialogue with participants; and action research. Most of these methods and their methodological grounding are described in the following chapters.

Next to activity and participation, the identity, or perception of oneself within a given context or place or in relation to the activity in which one is engaged, further constitutes learning activity, and is explored in certain chapters. Through engagement in informal settings, people do not only activate their knowledge, while making meaning of an activity; they also construct new meanings together and, as a result, are also potentially changed through such engagement. Learning, therefore, can lead to changes in perceptions of self and group. That interplay of activity and identity is at the heart of a sociocultural perspective; this has led to the daunting challenge of exploring the manner in which informal settings, and the objects, exhibits and people that participate within them, mediate engagement in
INTRODUCTION

the activities and the authoring of self and the positioning of others (i.e., identity work; Holland et al., 1998).

Research grounded in sociocultural theory and the learning sciences also discusses the role of agency for learners, visitors, museum educators, institutions, and for the researchers themselves. Many would argue that the sense of agency for each participant shifts and changes through participation in joint activity, and that this must be taken into account throughout the research (see Anderson, Ash & Lombana, Kisiel, Rahm). In this view, learners, educators and researchers act, construct and transform continuously, and it is the recognition of that agency among participants and researchers that enriches, yet also makes more complex, any study of learning. Thinking that such human interactions are non-agentive, simple, direct or interpretable in only one way has often served to provide narrow data that are not very informative. Many of our chapters, therefore, suggest that agency constitutes activity (what we do and say), yet also transforms that activity in important ways (see Anderson, Ash & Lombana, Kisiel, Mai & Ash; Rahm). What we mean by this is that educators, visitors, and others who are involved in the research change themselves, as well as are changing the context within which they are working. Such a view reflects the mutually constituted state of individual and community, each informing and changing the other reciprocally.

In light of this approach, we suggest that the researchers’ values and the dispositions driving the research need to be made explicit. We contend that “accounting for values in accounts of human action is a fundamental aspect of the contemporary ‘interpretive turn’ in the social sciences” (O’Connor & Penuel, 2010, p. 4). By this we mean a critical assessment of our stance as researchers and the manner in which we see things or design learning environments, attesting to our subjectivity as researchers. For this reason, the authors must foreground the values, judgements and decisions that accompany their working trajectories at different research sites. This also suggests that we need to critically examine, and make explicit in our accounts, the values and judgements that guided the research, and the ways we came to the study and to interpreting it in certain ways and not others. Certain visions of what an informal setting should be like may have guided the way we designed a learning environment, or our interpretation of it; these possibilities need to be made explicit and critically examined. Moreover, the values and subjectivities of the consumers of informal settings also constitute their forms of engagement and actions, and need to be discussed. Each chapter in this volume accounts for these dimensions.

In light of all these dimensions, which are loosely tied to a theoretical grounding in sociocultural theory and the learning sciences, the eight chapters may also be read like stories about the study of learning in informal settings. As will become evident, the trajectories of these stories are far from linear, underlining the subjective struggles of the researchers and researched. The latter are given voice and not excluded from the analysis; rather, they are integrated and they ground the analysis in important ways. Simultaneously, the theoretical foundation of each story is made explicit, acting both as a constructive means but also potential bias to the aspect of research that is being pursued. Research is no longer just about the
other, who serves as the object. Instead, research in this view is a collaboration among the actors involved, including visitors, researchers, educators and others. Hence, the book attempts to offer new stories about empirical research, methodologies, and methods, in informal settings in a language that can be assimilated and shared by the field.

Movement Beyond the Formal/Informal Dichotomy

Another aim of this text is to step outside the traditional boundaries of the typical formal/informal dichotomy. The international scholars contributing to this volume have all had extensive experience in and out of the classroom, conducting research on how people learn and how people teach. The authors assume that learning is a “life-long, life-wide and life-deep” phenomenon; it thus unfolds over time and across settings and is understood to be marked by beliefs, values, ideologies and orientations (Banks et al., 2007). The authors examine learning in designed spaces such as museums (Anderson; Ash & Lombana; Mai & Ash), aquariums (Anderson, Kisiel, Rowe, & Bachman), environmental centers (Tal), programs in community-based organizations (Rahm), partnerships among schools and informal institutions and programs (Anderson, Kisiel, Tal), and at home (Rowe & Bachman).

As suggested by the recent synthesis of current research on science learning in informal settings by the National Research Council (2009; see also Fenichel & Schweingruber, 2010), there is enough evidence to suggest that learning does happen in such a variety of spaces—an issue taken up and further supported by the chapters in this book. Yet, as proposed in the report, the goals that drive such learning and its evaluation are contestable; they should neither focus only on the academic (formal) or the subjective (informal), but instead should be grounded in the practices. As suggested earlier, the stories we tell about learning in these settings emerge from the practices studied. Yet, the stories also need to be stretched to go beyond case-based studies of the informal to explore in what ways belief systems and ideologies of other places that the participants bring with them constitute their participation and activity. The physical navigation of participants, and the kind of expertise in multiple cultural meaning systems this entails, also must become an objective of study. Moving beyond the dichotomy of formal and informal entails a research focus on what such navigation implies in terms of physical movement among and between learning settings, how it can be facilitated and supported, and, how it can most effectively be studied. The chapter by Kisiel, for example, is an effective example of what navigating between school and museum implies for teachers and students. Similarly, Tal offers insights into ways navigating from formal into informal settings by student teachers might be supported. Finally, Rahm explores the implications of navigations for research, by proposing multi-sited ethnography as a tool and method for its capture. Yet, as already suggested, even a study of a single site or practice entails an understanding of that navigation, since participants and researchers already come to that site with ideas and knowledge drawn from the many practices they have navigated in the past.
Putting Theory into Practice diminishes the dichotomy between the formal and informal, using both lenses and their underlying epistemologies, methodologies and methods to address learning and change in programs and settings to support learning for all.

Emphasis on Diversity and Equity in Informal Settings
We also highlight methods and theory that can help researchers, practitioners, and institutions to more effectively incorporate the knowledge, resources and voices of people who less typically visit such settings or whose voices have been marginalized in research and institutions that make up the informal infrastructure. Such work implies attending to diversity in terms of race, ethnicity, linguistic diversity and socio-economic status, but also in terms of perceived insider status and membership in communities of practices that constitute the informal science infrastructure. Inclusion may happen through the joint development of tools and materials. Such joint production of research is central to many chapters in this book. Through such engagement, insights may be gained into the persisting inequities in out-of-school settings, an area of research in need of further studies (NRC, 2009).

It is often argued that informal settings may be particularly important for learning for diverse groups (NRC, 2009); yet more needs to be known about how to empower learning for diverse groups through informal settings. Some chapters address that question through a focus on a methodology and method that no longer treats diverse learners as objects of the study but, instead, as active contributors (Anderson; Mai & Ash; Rahm). Other chapters speak to the value of ”[p]artnerships between science-rich institutions and local communities… for fostering inclusive science learning” (p. 301; Tal, Ash & Lombana). Still other chapters focus on the “learning, growth, and change at the level of a group, organization, or community” (p. 312; Rahm; Anderson), offering further insights into many dimensions of diversity and equity in informal settings.

OVERVIEW OF BOOK
Having introduced the framing of the book overall, we now highlight certain threads and leitmotifs that hold the chapters together. These include a focus on communities of practice (Ash & Lombana, Kisiel), teacher research or action research (Ash & Lombana, Tal), the value of design experiments and reflective hermeneutics (Anderson, Ash, & Lombana), paying close attention to learners’ voices (Mai and Ash, Rahm, Rowe and Bachman), the needs of diverse learners (Mai & Ash, Rahm), and research across contexts (Kisiel, Rahm, Tal). The chapters focus primarily on science education, but the methodologies and methods are applicable in any number of informal learning sites focused on cultural, artistic, and/or historical interpretation and conservation.

The first half of the book is concerned with changes at the institutional as well as at the smaller social group level, such as museum educators, teachers on field
trips, and museum/university partnerships. These four macro-level chapters look at
the kinds of activities typical of different aspects of a museum or school culture,
and they work towards integrating these aspects into a common cultural whole. The
second half of the book shifts to a more micro-level focus on the learner/
participants in out-of-school settings.

Each chapter introduces its line of inquiry and methods deeply rooted in an
explicit theoretical perspective, uniting practice with theory, and typically starts
with a vignette to set the stage for the arguments being presented throughout that
chapter. At the end of each chapter Leah Melber, co-author, initiates discussion
through a brief summary that ties the chapter’s message to experiences grounded in
practices and personal experiences of her own, given her position as a well-
seasoned informal education expert and practitioner. Discussion points follow for
both individual and group dialogue. These Theory into Practice sections seek to
provide a personally relevant touch point for practitioners at all experience levels,
facilitating engagement with the core methodological concepts of each chapter.

BRIEF CHAPTER DESCRIPTIONS

The chapter by David Anderson, *A reflective hermeneutic approach to research
methods investigating visitor learning*, offers a theoretical framework that relies on
a dialogue between the ‘researched’ and the researcher, in order to arrive at a
contextualized understanding of informal learning and its underlying processes. It
is presented as a contrast to the dominant positivist paradigm, which holds the
methods of a study fixed throughout the course of data collection. Anderson argues
that this new dialectic, reflective, and hermeneutic approach emphasizes the ways
in which data that is being collected and interpreted by the researchers can
dynamically inform modification and choice of methods used in subsequent rounds
of data collection. Anderson further posits that such a hermeneutic approach allows
for deeper insights, given the methods and tools employed. Also, since the
researchers’ interpretive lenses are critically and iteratively honed, the final results
may offer deeper insights, when compared to fixed methodological approaches. He
goes on to explore how such approaches have the capacity to provide researchers
with increased opportunities to reflect critically on methods used to explore
learning and to refine the individual and collective capacity, responsiveness and
fruitfulness of the methods. The chapter then offers examples of qualitative-
interpretive studies. The message of Anderson’s chapter, that research methods
evolve along with the research itself, is central to all chapters in the book. This
kind of dialectic between research and methods is often forgotten, but Anderson
claims, it is particularly crucial and insightful for understanding the natural ecology
of a learning environment. Interviews of visitors influencing learning in museums,
or having visitors self-select video samples of their visits for discussion, are just
two examples of the tight link between researched and researcher and the evolving
nature of research in this chapter.

The chapter by Doris Ash and Judith Lombana, *Methodologies for reflective
practice and museum educator research: The role of ‘noticing’ and responding,
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provides a powerful comparison with Anderson. Both chapters describe design experiments, but they have very different ways of theoretically grounding their work. Ash and Lombana collaborate with museum educators in a community of practice (Lave & Wenger, 1991) designed to foster reflective practice based on noticing and responding to what learners and other teachers are doing. The REFLECTs model that they describe is one example of an iterative redesign collected over time, using grounded enhancements with each iteration, much as Ann Brown and Alan Collins first suggested in the early 90s. It is also reminiscent of Anderson’s reflective hermeneutics. Ash and Lombana describe four phases that constituted the change in practice in which museum educators became researchers of learning on the floor but also critics of their own practices. Such constant redesign led to the development of specific teaching tools museum education researchers could then share with others in their museum and beyond. The described professional development collaborative was embedded in a design experiment that empowered and gave voice to museum educators and museum visitors. Thus, Ash and Lombana argue that research with a focus on learners and learning, as well as on teaching, has sharpened their insights about how museum educators, in the process of becoming increasingly reflective practitioners and teacher researchers, can learn to both ‘notice’ learners in new ways, and respond to these learners with flexible scaffolding, rather than relying only on predetermined disciplinary content, scripts or standardized questions. The chapter offers a model for professional development in the museum in which museum educators are change agents and co-constructors of interventions and generative action on the museum floor and in the institution.

The chapter by Jim Kisiel, Reframing collaborations with informal science institutions: The importance of communities of practice, also paints a large vision of how research should be conducted in informal learning settings, this time emphasizing partnerships with other institutions such as schools. Kisiel makes an important distinction between collaboration, defined as the interaction of institutions, and partnerships, which entail the mutual exchange of benefits. It is the latter he explores in the chapter by pointing to the kind of work needed to nurture their success and overcome the inherent challenges and tensions that are always present, regardless of how bright such prospects look at the onset of the collaborative process. Kisiel’s theoretical grounding in the communities of practice approach makes possible an exploration of what happens when the cultures of two (or more) institutions come together at many levels. By relying on Lave and Wenger’s (1991) view of a community of practice as a ‘set of relations among persons, activity, and world, over time and in relations with other tangential and overlapping communities of practice’ (p 98), Kisiel takes us on a journey of laying out the many steps it may take us as researchers and collaborators to work our way into practices that make up the collaboration. By drawing on stories from an Aquarium School Partnership research project he describes learning about the community, a first step to make it accessible, as an “immersive boundary encounter” (p. 59). Kisiel then explores crucial dimensions and tensions in terms of the form mutual engagement took, what marked the joined enterprise, and in light
of the shared repertoires that could be identified, essential components of communities of practice (Wenger, 1998). By looking at the whole infrastructure at work in collaborations, and by juxtaposing the design for effective partnerships with actual data at all levels, Kisiel offers a rich context for the discussion of boundary objects and brokers that facilitate partnerships among institutions.

Tali Tal’s chapter *Action research as a means to learn to teach in out of school settings* addresses another important issue and offers yet another methodological tool that helps put theory into practice. Professional development of museum staff, as addressed by Ash and Lombana in chapter 3, is one way to explore the changing role of adults in informal settings. Professional development opportunities for teaching in informal settings is another, which is at the heart of Tal’s chapter. Professional development programs seldom prepare teachers to develop or use suitable pedagogies in out-of-school settings. In this chapter, Tal illustrates how the methodology of action research can enable the improvement of teachers' best practices in out-of-school settings, and at the same time allow for deeper understanding of the teachers’ challenges and practices in general. Like Anderson (chapter 2), Tal stresses the importance of feedback and reflection central to action research. In fact, action research is a methodological tool particularly well suited for the development of out-of-school teaching expertise since it blends theory and practice. As suggested, through a feedback loop of preparation, action, reflection and evaluation, action research makes possible change grounded in critical reflection, initiated and owned by participants. Explorations and reflections upon one’s teaching in informal settings also helps teachers move towards a learning-centered orientation in their teaching, as other studies have explored (see Anderson, chapter 2; Kisiel, chapter 4).

There is an interesting parallel between the student teachers in Tal’s study and the museum educators in the Ash and Lombana chapter. Both have agendas that were not originally aligned with those of the students (and teachers) on fieldtrips or those driving family visits to museums. This hints at a disconnect that Kisiel (chapter 4) also explored in his study of a partnership among institutions and practices. But instead of focusing on communities of practice, Tal explores ways whereby classroom teachers’ navigation into the informal setting can be supported and enhanced. Tal’s study also points at the usefulness of informal educational settings on University campuses that can then be leveraged as laboratories for effective professional development programs for teachers on site. It makes possible embodied experiences of field trips by student teachers which, as suggested, can play a crucial role in making them part of a teacher’s toolkit for the teaching of science later on in the classroom.

In *Tracing our methodological steps: Making meaning of diverse families’ hybrid “figuring out” practices at science museum exhibits*, Thao Mai and Doris Ash detail research that actively explores scientific sense-making from the point of view of the learners, ethnically diverse families from underserved communities who were invited to an urban museum of science and industry in south central Florida. Their chapter traces the steps that drove the development of a complex analysis scheme that made possible an understanding and appreciation of the full
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range of family participants’ museum practices. They suggest that in order to understand families’ sense-making activities, what families actually do at exhibits needs to be explored in its full complexity. This has led to the observation of families’ complex weaving together of personal narratives with the exhibit, a “hybridization” that created a unique space for learning and participation. This hybrid space did not look like what the museum designers expected from families, thus Mai and Ash designed new ways of segmenting, coding, and analyzing discourse-based data, as well as new ways of thinking about family interactivity, relying, in part, on activity theory. The chapter helps expand our views about what counts as science when coding scientific talk and action. They show the seamless manner whereby humour, social and science talk are intertwined and constitute a family’s visiting practices, figuring out of exhibits, and sense-making of science. The kind of micro-analysis of dialogue engaged in by the authors is also apparent in other chapters and is essential for moving towards an appreciation of the full complexity of learning, which is embedded in practice and is constituted in complex and not always transparent ways by repertoires of practices. Essentially, the chapter is a vivid example of the point Anderson makes in chapter 2: “research methods evolve during the course of interpretive research studies” and entail an ongoing cycle moving from research, to interpretation, and methodological revisiting. This is at the heart of a hermeneutic approach, and it enables deeper insights into what is happening in situ.

In *A multi-sited ethnography: A tool for studying time/space dimensions of learning and identity work in science*, Jrène Rahm advocates the use of multi-sited ethnography. Youth today, she argues, encounter science learning across a variety of environments and contexts, and through multiple dimensions of time, necessitating a methodology and method that is equally as dynamic. To illustrate this point, Rahm follows an individual, in this case Lya, as she moves across a variety of settings, including museums, after-school programs, and summer camps. Offering examples from three different informal science practices, Rahm then explores the time/space scale in yet another manner by tracing youths’ engagement in science in informal settings across space. Multi-sited ethnography as showcased, she argues, is a method well-suited to research grounded in sociocultural theory, as it accounts for the horizontal and vertical, yet also dynamic nature of learning. Rahm suggests that the dialectic between the researchers and researched is essential; other chapters have emphasized this also (Anderson, chapter 2, Ash & Lombana, chapter 3, etc.). The term research imaginary, as invoked by Marcus (1998), resonates with the idea that research evolves (Anderson, chapter 2), and takes form over time (Ash & Lombana, chapter 3). To look at that research also implies different angles in terms of time and its spatial layout, as is also hinted at in chapter 7 by Rowe and Bachman. In fact, all chapters in this book entail research that took time, and that evolved over time. While the spatial scale remained local in most chapters, Rahm suggests that pushing that spatial scale holds much promise in understanding science literacy development and in designing for it. Rahm’s proposition, as well as others in this book, all clearly move us beyond dichotomies in every sense of the term, in terms of the people involved in research and doing
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the research and the sites studied and relationships among sites. Rahm contends
that such a systemic approach to research holds much promise to answer
fundamental questions and to fully grasp the complexity of lives today in an era
marked by globalization, diversity and movement.

In Mediated action as a framework for exploring learning in informal settings,
Shawn Rowe and Jennifer Bachman make the case for mediated action, an
epistemology that makes it possible to study the emergence of learning. They
perceive of mediated action as neither a method of data collection nor of analysis,
but as a research approach that addresses simultaneously the individual and the
learning contexts and tools of learning, in an attempt to capture the richness of
learning in informal settings. They briefly outline three key components of
sociocultural theory: grounded perception of learning, alluding to the social origin
of knowledge in interaction; its mediation by signs; and its emphasis on the
interdisciplinary nature of research. They offer insights into the use of a mediated
action approach in the context of a family dialogue that accompanies action in and
around a touch-tank in an aquarium, and a family dialogue around science in the
context of a home schooling event and play with a chemistry visualization kit.

They offer novel ideas on how to plot learning as emerging over time and as
taken up by different speakers simultaneously, while also exploring key
dimensions of a mediated action approach. For instance, they discuss the difficulty
yet importance of capturing talk and action simultaneously in interactions, offering
illustrations of how the two form a dialectic and constitute the meaning making
that is evident in the two examples. With a focus on talk and action, one may be
able to derive the participants’ goals that drive participation, yet also explore the
kinds of cultural tools that mediate thinking and action. One may then explore
agency in light of the cultural tools that are being used and by exploring the form
engagement takes with those tools in context. Most important to the authors are the
kinds of affordances and constraints that come with cultural tools and contexts. In
conclusion, the authors acknowledge the use-value of large-scale studies that focus
on the individual without much concern about context (the medical model).
However, they argue that case studies, such as the two they presented, need to be
pursued simultaneously, in order to arrive at an understanding of genuine learning
in out-of-school and everyday settings. According to the authors, only these latter
types of studies, digging deeply and simultaneously into complex dimensions of
learning, will help us move forward in the field of informal learning, making such
studies worthwhile despite their complexity and time-consuming nature.

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INTRODUCTION


2. A REFLECTIVE HERMENEUTIC APPROACH TO RESEARCH METHODS INVESTIGATING VISITOR LEARNING

INTRODUCTION

This chapter advocates for the study of new research methods that allow researchers a more unbounded-responsive approach to qualitative – interpretivist studies of visitor learning in informal settings. The focus is on the utility and merits of research methods that evolve during the course of interpretive research studies; such methods have considerable potential for researchers to more deeply understand emergent experiential visitor learning in informal contexts. Many research studies, typically situated within a positivist paradigm, often establish methods and hold them fixed throughout data collection. This static approach to data collection has historically been seen a virtue, and is celebrated for the scientific rigor it brings to research design. This chapter looks critically at traditional positivist research, arguing that a repetitive, dialectic, hermeneutic approach may be more effective when research questions seek understanding of the nature of learning in informal settings. The extended quote below illustrates how my own research has benefited from this approach:

We learned a great deal about our own approaches to research and the nature of visitor learning we were investigating in the museum by just thinking and repeatedly reflecting on the ways which we were conducting the research. Our repeated reflections allowed us to become all too aware of the many factors which were shaping the assumptions inherent in our research methods, which were at times preventing us from seeing the learning phenomenon more clearly. These repeated reflections not only made us more knowledgeable about the visitor learning we were investigating, it changed our underlying beliefs and freed us to see better ways of conducting the research we could not previously see, and in turn led us to deeper and richer understandings of learning itself. (Anderson, 2008, p. 4)

A repetitive, dialectic, hermeneutic approach, such as the one described above, is characterized by permitting the interpretation of data to dynamically inform modification of the methods used in subsequent rounds of data collection. Researchers can derive deeper insight as their methods (tools), understandings and views (epistemological stances) are critically honed through successive rounds of data collection and analytical interpretation. Repetitive feedback loops of collection and analysis can result in a deeper appreciation of learning than fixed methodological approaches or dogmatic epistemological stances. The repetitive,

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dialectic, hermeneutic approach provides an opportunity for researchers to reflect critically on their research methods and to refine their capacity for responsiveness. Such an approach has the capacity to yield much better and more detailed understandings of visitor learning.

In the sections below, I use a dynamic, hermeneutical lens to look at research on learning in museums. I begin by defining what is meant by learning in this type of research and go on to introduce several methodological approaches. I then focus on the complex interplay of data interpretation, methods and epistemology inherent in reflective feedback approaches. Finally, I introduce three research examples to illustrate the reflective hermeneutic approach.

NATURE AND DEFINITIONS OF INFORMAL LEARNING

There is no one comprehensive definition of “learning,” but a variety of definitions to suit different contexts, world-views, and research questions. Beliefs about what counts as learning are strongly aligned with the researchers’ paradigm, embedded in their ontology (belief about the nature of truth and reality) and epistemology (belief about how knowledge comes into being). Thus, what one believes about the nature of “truth” and the nature of “knowledge” are key factors in how one defines learning in the museum or in any other context (Anderson & Ellenbogen, 2012).

Contemporary definitions of learning in the field of visitor studies frequently span multiple domains—cognitive, affective, appreciative, aesthetic, social, moral, and identity, to name a few. These encompass a far broader range than the most dominant domain of investigation in research on learning: the cognitive domain. However, it is important to appreciate that all the domains named above are inextricably and holistically inter-linked with each other. It is necessary to understand “the parts” in order to understand “the whole,” but no single part is a valid representation of the whole. Beyond a domain specific framework, which has its origins in a largely product-based conceptualization of the phenomenon of learning, there are views of learning that conceptualize it in terms of process (Anderson, 1999). Most learning researchers, particularly those who subscribe to a constructivist-based view of learning, regard the nature of learning as being dynamic and in a state of continuous development or construction.

No single learning experience is mutually exclusive of others, rather every life experience is interpreted in the light of who we are and our dynamically developing socio-cultural identity(ies). As much as this relational perspective holds true for interpreting learning within a framework of visitor learning, it also holds for how a researcher of learning might change his/her understandings of learning with successive experiences of investigating learning. The researcher, as an investigator, is not immune to change and transformation within his/her own epistemology of learning. In fact, such transformations hold the potential to shape a better and deeper understanding of learning.

One tension then, within the study of visitor learning in informal settings, springs from viewing learning as epistemologically linear and instantaneous in nature without consistent regard for the notion that learning is an ongoing dynamic
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phenomenon. Such linear views narrow the focus of visitor studies on the effects and impact on visitor learning of unitary events like using an exhibit, exploring a gallery, or visiting a whole museum. This isolated view of learning is reflected in the methodological approaches used, for example, exit interviews seeking to understand visitor experiences of the museum in the past few hours, or naturalistic observations that seek to understand the immediacy of visitors’ behaviors in the gallery. These approaches, in isolation, do not reflect the view that learning is a dynamic and on-going phenomenon. The impacts of museum experiences (or any life experience) are noted in the continuous construction and re-construction of events, words and ideas, so we would expect that outcomes arising from a museum experience change over time, or longitudinally. The changes that manifest longitudinally occur as the visitors engage in subsequent conversations about the experience, read newspapers, watch television, surf the internet, and connect the experiences of the museum or informal context with other subsequent life experiences (Anderson, Storksdieck, & Spock, 2007). Thus, studies seeking to understand visitor learning connected with exhibitions or in-gallery experiences need to appreciate that instantaneous measures only tell part of the story. Hence, multiple measures or interpretive snapshots over time have considerable merit in understanding the emergent holistic nature of learning present in visitors’ experiences.

Most scholars would agree that learning in informal contexts involves visitors’ construction of their own meanings and understandings; such constructivist views have become prevalent over the last several decades. The meaning and understanding constructed vary greatly depending upon the background, experience, interests and knowledge that visitors bring to the experience and is also influenced by the visitors’ social groups and their socio-cultural identities and physical context of the institution itself (e.g., Falk & Dierking, 2000; Hein, 1998). Hence, a museum exhibition or a museum program alone does not predict visitor learning. Rather, it is a dynamic interaction between the diversity of factors intrinsic to the visitors themselves and their personal interactions in the museum that results in myriad of learning processes and outcomes.

A second methodological and theoretical tension arises from the fact that current visitor studies research typically uses the individual (visitor) as the unit of analysis even though most visitor learning occurs in a social context. Therefore learning research is focusing more and more on social experiences, noting the impact of the exhibitions on whole groups as a more valid way of interpreting and understanding learning. For example, several studies have investigated the impact of museum experiences on family groups (Borun, Chambers, & Cleghorn, 1996), or even an entire community (Jones & Stein, 2005; see also chapters by Ash & Lombana; Kissel, Mai, & Ash; Rahm, and Rowe for examples of research using social groups as unit of analysis)

Given this short overview, it is clear that the learning phenomenon as contextualized within the domain of visitor learning is highly complex learning is not a singularity, but rather a rich, dynamic, multidimensional mosaic in a state of continuous development. On the surface, the inherent complexities may be
damning to comprehend, let alone investigate. However, the rewards for deeper understanding of visitor learning are immense since deeper understanding of learning has the capacity to better inform the design and development of exhibitions and programs from a grounded theoretical perspective and hence improve the quality of visitors learning in formal and informal contexts.

**METHODOLOGICAL APPROACHES TO PROBING AND UNDERSTANDING LEARNING**

Although there are many ways in which to conceptualize the documented research on learning in informal contexts, from an archetype and methods perspective, the literature on visitor studies can be thought of in terms of two broad categories: *positivist-decontextualist* and *revelativist-contextualist* paradigms (Brewer & Collins, 1981). Positivist-decontextualist studies are characterized by research that has been conducted by means of elaborate experimental designs and statistical analyses (Nelson & Narens, 1990), with an approach to research that seeks simple answers to the complex world of the visitor as learner within the museum environment. Such approaches often set out to eliminate contextual factors and any resultant ambiguities (Popkewitz, 1984) and often use one method within the research design to reveal and/or understand visitor learning (Anderson, Thomas, & Nashon, 2009b). However, studies embedded in the *relativist-contextualist* paradigm regard such factors as being highly influential and important in relation to the development of visitor learning. Some of these factors include visitors’ agendas, motivations, and socio-cultural identities. *Relativist-contextualist* studies consider the natural ecology of the learning environment in which the learner is embedded as holding a vitally important set of parameters with which to understand the learner and his or her learning. Studies aligned with this paradigm are typically qualitative and interpretivist in nature. These studies acknowledge the complexity of learning and the learning environment, and incorporate it into their research methodology. In addition, they frequently utilize multiple data forms that emanate from the use of diverse research methods to better interpret and describe the nature of learning in informal contexts. This paradigm engenders the kinds of research questions that can most fruitfully assist educators and museum staff in improving learning and learning outcomes. A renewed and on-going scrutiny of the methods used for collecting and analysing empirical data gathered in a naturalistic manner is needed for a richer and deeper understanding of visitor learning.

*The Interplay between Interpretation of Data, Methods and Epistemological Stances*

There is a diverse suite of traditionally categorized research methodologies in the social sciences (i.e., ethnography, phenomenology, experimental designs) that can provide frameworks for understanding learning experiences in informal settings. Embedded within these frameworks are a wide variety of research methods (i.e.,
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interviews, focus groups, questionnaires, web-surveys, behavioral observations and tracking). As a general principal of social science research, the research question determines the methodology and the appropriate methods to be employed in the study, bounded by the researchers’ own paradigms, which are shaped by their ontological and epistemological views. In visitor learning studies, where the focus of research is to better understand the phenomenon of learning itself, a qualitative-interpretivist framework may be best suited to elucidate the complex richness and depth of the phenomenon. A repeated dialectic hermeneutic approach to the methods of such a research investigation could better reveal the complexity of the phenomenon in ways that a static, non-responsive design cannot. The term dialectic in this case refers to the practice or art of arriving at the “truth” by the exchange of logical argument; in this sense, it is a method of argument or exposition that systematically weighs contradictory facts and ideas in an attempt to resolve their real or apparent contradictions.

At the heart of hermeneutics is the process of interpretation, or making meaning from the stance of the interpreter. Hence, repeated logical argumentation (dialectic) amongst one’s own interpretation of meaning (hermeneutic) has the capacity for arriving at deeper truths. A core assumption of this approach is a research design that has provision for multiple stages of data collection and hermeneutic interpretation over the course of the study. These approaches require built-in opportunities for the researchers to reflect dialectically between successive stages and critically examine their epistemological stances. These reflections in turn permit the researchers to hone and refine their research methods in the successive stages of data collection and hermeneutic interpretation.

Within such interpretivist approaches, the methods should not be fixed, but dynamically responsive to a) the study’s research objectives, b) the developing relationship of the researchers to the phenomenon being studied, and c) the evolving epistemologies of the researcher(s). This last condition requires several pre-conditions: First, the researchers need to be critically aware of their own epistemological stances and the views they hold about the learning phenomenon under investigation. Second, the researchers need to see their own epistemology not as fixed, rigid or inflexible, but rather as something that changes with increasing understanding of the environment(s) in which they are contextualized (i.e., a museum) and the learning phenomenon under investigation. Third, the researchers need to be willing to allow their own epistemological stances and the values to be challenged by their developing understanding of the phenomenon studied (Guba & Lincoln, 1989). Such epistemological evolution is valued within the relativist-contextualist paradigm I have proposed.

Through hermeneutic interpretation of data and dialectic exchange of perspectives among the research team, the researchers’ epistemological stances around the phenomenon can be critically evaluated and challenged, allowing them to evolve. From these evolving epistemological stances a more enlightened critique and evaluation of the methods (tools) being used emerges. Although the researchers might initially construct a well justified set of complementary methods within their initial epistemological stances with which to understand visitor
learning, the opportunity to repeatedly reflect critically on their methods, with the
benefit of increased understanding of the phenomenon and context, permits
ongoing refinement and evolution of both epistemology and methods, and a
reciprocal increase in the capacity to understand the phenomenon and context. This
collective evolution can increase the synergy between the different methods and
further increase the researchers’ depth of understanding. This results in the
emergence of more fruitful methods with increased capacity and responsiveness.
Underlying the approach described above is the notion of the hermeneutic
method. At the heart of this method lies the ability of the researchers to understand
the meaning of a phenomenon from the frame of the visitor, and to appreciate the
cultural and social forces that may have influenced the nature of that phenomenon
(Guba & Lincoln, 1989).

EXEMPLARS OF REFLECTIVE HERMENEUTIC APPROACHES TO METHODS

In order to exemplify in a concrete manner some of the repeated dialectic
hermeneutic development of research methods, a recent major research study
entitled “Metacognition and Reflective Inquiry (MRI) Collaborative” (conducted
between 2003-2008) that investigated metacognition and learning in and resulting
from experiences in informal settings will be explored (Anderson & Nashon,
2007iii). The MRI research study sought to understand the nature of visitor
(student) learning and metacognition (awareness and executive regulation of
learning strategies) across numerous cases of experience in informal settings. The
study was conducted in multiple phases, with each phase informing the next
phase’s methodological approaches, and with the researchers’ evolving views of
the phenomenon and changing epistemological stances informing a better
resolution and understanding of the phenomenon itself.

Example 1. Researcher Driven Interview Discourse to Participant Driven
Interview Discourse

Many interpretive studies of visitor learning employ some form of interview
method in order to understand the learning derived or emergent from visitors’
experiences. This method is often driven by researchers, who are most likely the
primary interviewers, with the aid of an interview protocol comprising a set of
predetermined questions. Semi-structured interviews are a common approach
within qualitative-interpretivist investigations utilizing interview methods since
they afford the opportunity for the interviewer to dynamically respond to the
participants’ answers, and to capitalize on unpredictable issues that emerge in the
course of the conversation. Hence, the semi-structured interview reveals deeper
understandings of visitors’ experiences than more structured interview protocols.
However the extent to which the visitors’ experience of participating in the
interview itself can influence their own learning should be acknowledged
(Anderson, Nashon & Thomas, 2009a; Anderson et al., 2009b). This realization
holds lessons for those conceptualizing research methods aimed at understanding
learning. Specifically, the methods used to gather information about learning inherently hold for the interviewee the capacity to initiate high order learning itself. In the case of the MRI study, the researchers’ collective hermeneutic self-reflection on the interview methods caused a re-evaluation of the utility of researcher-driven discourse embodied in the semi-structured interview protocol. Here, initial rounds of the semi-structured interviews conducted with visitors permitted the interviewer to dynamically respond to the participants’ answers and to capitalize on issues that emerged. With the opportunity to reflect on the data, and the research teams’ realization that the interview itself was influencing the interviewees own learning, the researchers’ epistemological stances about the learning phenomenon shifted and evolved. It was this shift that permitted the semi-structured interview research methods in the subsequent rounds of data collection to change.

Special attention was directed in particular to opportunities during the semi-structured interviews for the participants’ own discourse to become the subject of self reflection and repeated self analysis. Practically speaking, the researchers’ (who were the interviewers) used participants’ own reflections made during the interviews to assist the participants in revealing the nature of their own learning. In this way, researcher driven interview discourse (the original method) was modified to incorporate participant driven interview discourse (the evolved method), resulting in better resolution of the phenomenon of the visitors’ learning.

**Example 2. Individual Units of Analysis to Group Units of Analysis**

Previous research on visitor learning has tended to focus on the individual as the unit of analysis. The reasons for this is are in part rooted in the historic traditions of educational research and educational assessment systems that have focused almost exclusively on the measurement of individual achievement. Most educators, however, recognize the value of group work for meaningful learning, and social constructivists commonly consider groups as the units of analysis. Yet group units are rarely considered in studies of visitor learning outside of “family learning” research. Ultimately, both individual and group units have the capacity to yield valuable insights about learning.

In the initial phases of the MRI study, the researchers’ epistemological stance was one that sought to understand the nature of learning and metacognition predominantly through the unit of the individual embedded within a group setting. But the researchers’ later interpretations revealed that they were not only individuals engaging in metacognitive strategies, but that the groups in which individuals were situated behaved and learned in ways that demonstrated collective metacognition. The outcomes of the MRI study reported in Anderson et al. (2009b) demonstrated that students are aware of, monitor, evaluate and control their engagement within the cognitive (learning) task (completing teacher-assigned activities) and social domains (their own working group environment). These three meta-domains are, for many participants, engaged actively and simultaneously in group activity. Additionally, individual and group engagements were dominated by
meta-social influences, which involve, for example, the maintenance of overall group harmony and the social status of individuals within the group.

Following the initial rounds of data collection and subsequent analysis, the research team’s reflections on the evidence for collective group metacognition led them to realize that this phenomenon is under-researched, and its effects on learning and behavior underappreciated. Moreover, the researchers’ realizations about group metacognition and simultaneous group monitoring of learning, task and social condition challenged their epistemological stances about the nature of metacognition and learning as predominantly a feature of the individual embedded within a group setting. These changing epistemological stances resulted in the team modifying their analytical and methodological approaches to understanding metacognition and learning in order to consider both the individual and the group as valid and important units of analysis. This in turn led to changes in the way participants self-selected critical incidents by group consensus as part of a stimulated recall approach, and also in the kinds of questions posed in the semi structured interviews. Specifically, in addition to the probing questions intended to examine their individual learning, questions were posed to the whole group derived from the critical incidents that had been selected by the collective group.

Example 3. Researcher Selected to Participant Selected Incidents of Whole Group Interactions

Researchers in the MRI study replayed video excerpts of participants’ engagement in the informal setting as means to stimulate recall of their learning during follow-up interviews with the participants. This required the research team first identify and select several incidents from the video data of participants’ activities. The rationale and justification for selection of critical incidents for stimulated recall was based on researcher-centric criteria. For example, incidents were selected that appeared indicative of the deployment of learning strategies, cognitive struggle or impasses, and individuals’ engagement of higher order learning. Researchers discussed and ranked the capacity of these incidents to engage participants and generate self-awareness and elaborative discussion regarding various aspects of their own learning.

When participants were interviewed after this process, they were shown researcher-selected video data of themselves containing critical incidents, and they were interested to see their personal and group interaction in the informal setting. However, there are several challenges involved in relying on researcher-selected critical incidents—challenges that the researchers did not foresee in the initial rounds of interviews. With the benefit of a better understanding of the phenomenon, and the opportunity to dialectically reflect, the limitations of these methods were revealed. The method was therefore modified to better understand the phenomenon in later rounds of data collection.

The hermeneutic reflections following the first round of data collection and analysis focused on a number of realizations. First, the researchers came to the realization that the visitors were, for the first time, being asked to see and hear
critical incidents that they had likely not reflected upon until that moment during the semi-structured interview. Consequently, they were not always able to recall or appreciate the meaning or significance of an incident for their own learning in the ways the researcher had anticipated. As a result, the participants’ responses in relation to what the researchers considered to be critical incidents were not as informative as the researchers had hoped. Second, the researchers were sometimes baffled by the lack of response to incidents they had judged to be appropriate for stimulating reflection about the participants’ own learning. Subsequent critical self-reflection about the lack of resolution around the phenomenon drove the researchers to question whether this might be a consequence of the participants’ lack of familiarity and sense of association with the critical incidents selected.

This led to several conclusions, which challenged and later changed the researchers’ epistemological stances and methods in subsequent rounds of data collection. First, because it was clear that the participants were being asked to see and hear a critical incident for the whole group that they had not necessarily ever reflected upon before, the researchers decided that opportunities to preview the critical incidents prior to the interview might afford opportunities for more meaningful participant reflection and insights. Second, the researchers questioned whether the incidents to which they had ascribed importance, significance and relevance were congruous with what was important, significant or relevant to the participants’ perspectives of their own learning experiences. This speculation was, in part, based on previous research (Anderson & Lee 1997), which demonstrated that student perspectives of what is important in a learning environment may vary from those of teachers and researchers, and that students should be given a voice in the research process. Therefore, the researchers decided that opportunities for participants to self-select their own critical incidents would better reflect their learning and interactions during their field visits, resulting in more fruitful conversations and results.

As a consequence of their hermeneutic reflections between data collection stages, the MRI researchers modified their approach to provide an opportunity for the participants to self-select the incidents used during stimulated recall and discussion. The researchers also used a smaller set of researcher-selected critical incidents that were not identified by the participants, but that the researchers ultimately felt were important to investigate. We concluded that both approaches have the potential to provide deeper understandings of the learning phenomenon.

CONCLUSION

These three examples, drawn from the MRI Collaborative Study, help describe and explain in practical terms how a staged approach that embeds opportunities to dialectically reflect about emergent interpretations of the data between stages, can allow researchers to hone their methods while at the same time reciprocally honing their capacity to understand the phenomenon being investigated. Although these examples were specific to the methods used in the MRI study, the principles of
repeated reflection through dialectic hermeneutic approaches can be applied to all
kinds of methods being used to understand and interpret visitor learning.

In this chapter, I advocate the benefits of an unbounded-responsive approach to
qualitative-interpretivist studies of visitor learning. The value of this approach to
research design is its capacity to further refine research methods as understanding
of the phenomenon under investigation increases. Inherent in this premise is the
notion that a more enlightened critique and evaluation of the methods (tools) being
used to understand learning phenomena can only be employed after the emergence
of new understandings of the phenomenon and with the new **versions** of the
epistemological stances held by the interpreters. Scholars in the field of informal
learning often identify the need for new and more effective research methods with
which to understand visitor learning, and they often call for the pioneering of new
methods. The approach advocated in this chapter has the potential to provide the
field with new and continuously evolving effective methods for investigating
visitor learning.

**NOTES**

i Hermeneutics (English pronunciation: /hɜrməˈnuːtɪks/) is the study of interpretation theory, and can
be either the art of interpretation, or the theory and practice of interpretation.

ii A set of assumptions, concepts, values and practices that constitute a way of viewing reality for the
community that shares them.

iii See also Anderson, Nashon and Thomas (2009a), Anderson Thomas and Nashon (2009b), Thomas,
Anderson and Nashon (2008), and Nielson, Nashon and Anderson (2009); for an elaborated
exploration of the examples of “within-study” methodology changes that are discussed, see in
particular Anderson, Thomas and Nashon (2009b).


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A REFLECTIVE HERMENEUTIC APPROACH TO VISITOR LEARNING


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PUTTING THEORY INTO PRACTICE

ANDERSON’S A REFLECTIVE HERMENEUTIC APPROACH TO RESEARCH
INVESTIGATING VISITOR LEARNING

The museum community has embraced the importance of critical self-reflection—methodical and sound approaches to measuring the impact of our programs and exhibits. Established study protocols and analyzed data reaching peer-reviewed publications have helped us document, to those inside and outside of our field, the nature of the visitor experience and the impact a museum visit can have. As our field continues its theoretical march forward, however, we have shifted our focus beyond simply the length of time spent in an exhibit space, or ability to recall an example of a vertebrate. Instead we are seeking to truly understand the learning going on within these spaces. In this piece, Anderson asks us to consider how a more flexible approach to methodology might allow us to better capture the true complexity of the learning process through a reflective, hermeneutic approach.

Many of us have scientists as workplace peers who view fixed, quantitative methods as the method of choice for exploring the visitor experience. Others of us have completed a thesis or dissertation, where a suggested deviation from protocol has the potential to throw a committee into a tailspin. In sum, it is likely that our own theoretical grounding is heavily steeped within a traditional, positivist approach to research. For example, as a brand new graduate student, I supported a colleague of mine and recent graduate on an exhibit evaluation study. She set a stack of open-ended questionnaires in front of me and began to lead me through the process of thematic category construction. She explained we would do a first level analysis, the categories would then be revisited, and we could discuss expanding or collapsing before moving on the next phase. I tried to conceal the horror on my face as I asked her, “You mean we might change things?!”

We spend much of our professional life preparing for change, supporting colleagues through change, and adjusting to change. Just as we might change protocol within the non-research aspect of our work in museums, Anderson makes a clear case that change and evolution is a necessary part of the research side as well. He reminds us that just as the process of learning is complex, and our understanding of the process constantly evolving, the methods by which we measure this learning must be equally as fluid and dynamic. We as museum professionals are serving as internal evaluators exploring these topics ourselves, or administrators overseeing the efforts of external researchers; Anderson’s work provides us with a different lens through which we can view methodology and methods, in order to adjust our own expectations about the importance of rigidity.
over self-reflective methodological adjustment. He also provides a reliable and substantial framework that can help us educate our own peers and stakeholders about the validity of a reflective, hermeneutic approach to the study of museum learning.

DISCUSSION QUESTIONS

1. Recall a prior research project steeped in a traditional, positivist approach. Did you experience any challenges that might have been remedied by a reflective, hermeneutic approach?
2. What do you think is the most effective way to help stakeholders understand the importance of a reflective, hermeneutic approach over traditional protocols that might be more familiar to them?
3. Is there anything about this approach that might cause you some discomfort? How could that discomfort be addressed and alleviated?