

IMPACT

of ART MUSEUM PROGRAMS on STUDENTS

LITERATURE REVIEW



NATIONAL
ART EDUCATION
ASSOCIATION

This research has been supported by a grant from the Samuel H. Kress Foundation.

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ACKNOWLEDGEMENTS

In addition to the aforementioned contributors, the authors would like to recognize the many people who contributed to this literature review. The Samuel H. Kress Foundation provided generous support, including hosting a planning meeting at the Foundation and supporting the research through a Kress Fellowship in Museum Education at the Clark Institute of Art. We are deeply grateful to Max Marmor, President of the Kress Foundation, for his encouragement and enthusiasm throughout the process. NAEA Executive Director Deborah Reeve and NAEA Past Presidents Dennis Inhulsen and Robert Sabol offered unwavering confidence, encouragement, and steady guidance. Many thanks to the Association of Art Museum Directors' Christine Anagnos and Andy Finch for their partner support, leadership, and commitment to museum education throughout this endeavor. Randi Korn and her team at Randi Korn & Associates provided valuable guidance throughout the literature review project. Jennifer Czajkowski, Ben Garcia, Anne Henderson, Emily K. D. Jennings, Anne Kraybill, Lynn Pearson Russell, Marissa Reyes, and Stacey Shelnut-Hendrick shared their professional knowledge and experience as they helped to develop a framework that shaped the structure of the review. The Advisory Group to the NAEA/AAMD Impact of Art Museum Programs on Students Research Initiative—George Hein, Danielle Rice, Jennifer Novak-Leonard, Sree Sreenivasan, and Angela Fischer—offered critical feedback, insight, and expertise that helped us to refine and clarify key points of our review. Krista Brooke and Lynn Ezell at NAEA oversaw a production and design team who collectively lent their keen eyes and detailed editing throughout the publication process. To all of you, we extend sincerest and heartiest thanks.

CITE AS:

Terrassa, J., Hubard, O., Holtrop, E., & Higgins-Linder, M., (2016). *Impact of art museum programs on students: Literature review*. Alexandria, VA: National Art Education Association.

IMPACT

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LITERATURE REVIEW



Cincinnati Art Museum



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Museum of Fine Arts, Houston, 2012. © Patrick Bertolino

SECTION 1: INTRODUCTION

Art museums offer unique aesthetic, contextual, and social settings for exploration and human understanding (Levent & Pasqual-Leone, 2014; Ritchhart, 2007). Seeking to build field-wide knowledge about the potential of art museums as places where learning and discovery happen, the National Art Education Association (NAEA), in partnership with the Association of Art Museum Directors (AAMD), undertook this review of the literature as a step toward conducting the first major national study in the United States on the impact of single-visit art museum programs on K-12 students.¹

Focusing on children in grades 4-6 and on experiences that take place during single-visit programs, our investigation seeks to explore a central question: *What are the benefits to students of engaging with original works of art within the distinctive physical setting of art museums when students are guided in their experiences by means of inquiry-based pedagogies?*

The literature review is one of several activities conducted during the planning year for the larger study, all of which were possible through the generous support of the Samuel H. Kress Foundation, with the intention:

- to surface research directly related to our investigation;
- to help us assess the relevance of a national study;
- to guide and inform the design of a major empirical study;
- to situate a future national study within the larger context of research related to constructivist and inquiry-based pedagogies, engagement with original works of art, and aspects of learning in museum environments; and finally,
- to provide the field with a resource that, in turn, stimulates further research.

¹ During the Planning Year, the project was directed by Jacqueline Terrassa, formerly the Managing Museum Educator for Gallery and Studio Programs at The Metropolitan Museum of Art and Director of the Museum Education Division of NAEA 2013-2015, and now Woman's Board Endowed Chair of Museum Education at the Art Institute of Chicago, in collaboration with the research firm contracted for this study, Randi Korn and Associates, Inc. The Planning Year team included researchers Stephanie Downey and Randi Korn with advisor Olga Hubbard, Associate Professor of Art Education, Columbia University, as well as Barbara Bassett, The Constance Williams Curator of Education, School and Teacher Programs, Philadelphia Museum of Art; Andrew M. Finch, Director of Policy at the Association of Art Museum Directors; Emily Holtrop, Director of Learning and Interpretation at Cincinnati Art Museum and 2015-2017 Director of the Museum Education Division of NAEA; and Wendy Wolf, Learning Programs Manager, Vizcaya Museum and Gardens. During Project Year 1, the team expanded to include contributors Amanda Krantz, Senior Associate at RK&A, and study project manager Melissa Higgins-Linder.

Three sections structure this literature review:

01 INTRODUCTION

Section 1 serves as an introduction, clarifying the contexts surrounding all aspects of the study's hypothesis, including what is known concerning single-visit programs or "field trips."

02 STUDENT CAPACITIES

Section 2 provides narrative discussions of five featured capacities that serve as a suggested framework for examining the impact of museum programs on students.

03 REFERENCES

Section 3 includes a comprehensive list of references consulted.

More than a decade ago, the landmark report *Gifts of the Muse* (McCarthy, Ondaatje, Zakaras, & Brooks, 2004) and, more recently, a report by the President's Committee on the Arts and the Humanities (2011) both identified a gap in the evidence available about the value of arts and arts education. Though the last 15 years have seen a number of quantitative studies that measure how group-led dialogues with K-12 students promote critical thinking, our review of the literature confirms that there remains a relative dearth of empirical and qualitative investigations concerning learning in art museums. In our review, we found that the research that exists does not adequately address art museum settings or single-visit programs within them. Available literature also fails to provide a sufficient, broadly generalizable picture of the intrinsic benefits of these programs. Unlike *instrumental* benefits, which achieve social, educational, or economic

goals that are not specific to the arts, *intrinsic* benefits concern how the arts enhance the lives of individuals, and at times a larger community, in ways that are fundamental to the arts. Intrinsic benefits may encompass artworks' private or social meanings, the pleasure and emotional stimulation they offer, and the human capacities they help develop (McCarthy et al., 2004). This attention to intrinsic benefits of the arts echoes developing education research about the importance of "non-cognitive" factors, such as social skills, in holistic conceptions of student success (Farrington et al., 2013). The national NAEA/AAMD study has the potential to reframe the cultural and political discourse about the value of art museums within the context of education by adopting a comprehensive and integrated approach that places intrinsic benefits from museum experiences at the center of the discussion.

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This research has been supported by a grant from the Samuel H. Kress Foundation.



Cincinnati Art Museum, 2013

01

INTRODUCTION

*Pedagogy: Inquiry
in the Art Museum*

PEDAGOGY: INQUIRY IN THE ART MUSEUM

In the first half of the twentieth century, three individuals—Dewey, Piaget, and Vygotsky—developed theories of cognition, learning, and education that have shaped contemporary teaching in the art museum. Their work was foundational to the development of constructivist learning theory and influenced pedagogical approaches that support it. Not coincidentally, their work overlapped with the emergence of modern art history and the growth of epistemology.

John Dewey, American philosopher, psychologist, and educator, theorized that learning is a process of experience and interaction with the world (1980/1934), an idea that underlies much of progressive museum education today. For Dewey, the basic aim of education was to foster curiosity, or the desire, to “go on learning” (Dewey, 1953). He maintained that education is meaningful when it is construed as experience with the world: experiences being *continuous, inherently social, active, situated, and interactive*. Nearly concurrent with the publication of Dewey’s *Art as Experience* in 1934, Swiss psychologist Jean Piaget and his Soviet counterpart L. S. Vygotsky were proffering their own respective theories regarding the experiential nature of cognition.

Jean Piaget’s keen interest in uncovering intersections between epistemology and biology led him to spend decades observing and interviewing children, and eventually

to his theory of progressive intellectual development marked by changes in children’s thinking about specific concepts and domains (e.g., mathematics, physics, natural phenomena). Ginsburg and Oppen (1988), summarizing a selection of Piaget’s prodigious writings, explain that as a child physically and cognitively develops and expands his experience of the world, he “incorporates or assimilates features of external reality into his own psychological structures” and “modifies or accommodates his psychological structures to meet the pressures of the environment” (p. 18). Piaget (1952) describes how, just days after birth, even infants begin to organize and adapt the outcomes of their reflexive behaviors into “psychological structures,” and “organized patterns of behavior” (Ginsberg & Oppen, p. 20) otherwise known as “schemes” or “schema.” Through these active processes of organization, accommodation, and assimilation, a child is able to construct knowledge of and assign meaning to the objects and phenomena that make up their world. In constructivist theory, the individual constructs knowledge as he or she learns, building on prior understanding and experience, and often within a social context of interaction. In other words, knowledge is not passively received and absorbed, but created by the learner through an integrative process.

Piaget also addresses concepts of learning and knowledge construction. He differentiates between learning in “the narrow sense” (e.g.,



Philadelphia Museum of Art, 2012

memorizing state capitols) and learning “in the broad sense” which “involves the acquisition of general thought structures which apply to many situations” (Ginsburg & Oppen, p. 209). Piaget refers to the latter type of learning as “development,” and posits that learning/development takes place when a person has an experience that challenges his or her existing schemes *and* is developmentally ready to assimilate new schemes into his or her understanding. A person who successfully integrates the conflicting schemes into a new, more complicated knowledge structure achieves *equilibrium*; someone who encounters such conflict before he/she is developmentally ready experiences *disequilibrium* (Ginsburg & Oppen, 1998; Hein, 1998; Piaget, 1952).

L.S. Vygotsky shared many of Piaget’s constructivist theories of knowledge, but differed in his emphasis on the fundamental role social interaction plays in cognitive development. According to Vygotsky,

From the very first days of the child’s development his activities acquire a meaning of their own in a system of social behavior and, being directed towards a definite purpose, are refracted through the child’s environment. The path from object to child and from child to object passes through another person. (1978, p. 30)

A key aspect of Vygotsky’s theories, the Zone of Proximal Development (ZPD), reinforces the importance of socialization to cognitive growth. Similar to Piaget’s concepts of equilibrium and disequilibrium, Vygotsky proposes that learning happens in the space between a person’s ability and the challenge at hand: too big a gap, and the student gives up; too small, and the result is boredom. The ZPD describes the space within this dichotomy as characterized by the activation of “internal development processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers” (p. 90). Since its inception, the ZPD has directed the creation of pedagogical approaches and curricula in a multitude of educational institutions, including the art museum.

The contributions of Dewey, Piaget, and Vygotsky continue to serve as touchstones for many working in the fields of education, psychology, museums, and the arts. The relationship between skill and challenge is central to Mihaly Csikszentmihalyi’s work in what he termed “flow,” a state of heightened focus and immersion (Csikszentmihalyi, 1996; Csikszentmihalyi & Csikszentmihalyi, 1988; Csikszentmihalyi & Robinson, 1990). Art education scholar Eliot Eisner’s (2002) influential book *Arts and the Creation of Mind* built upon their theories, as did museum educator Philip Yenawine and cognitive psychologist Abigail

Housen as they developed the inquiry-based Visual Thinking Strategies (VTS) method for exploring artworks (Rice & Yenawine, 2002). Museum authority George Hein's (1998) *Learning in the Museum* cites their work as he makes the case for the constructivist museum: "Constructivism provides the most comprehensive and elegant theory to consider how visitors can both use their previous beliefs and knowledge to construct new meanings and how they can actively carry out this process" (Hein, 1998, p.154). By the 1990s, constructivist educational and inquiry-based approaches began to take hold in museum education (Burnham & Kai-Kee, 2011; Hein, 1991, 1998) and remain prevalent pedagogies guiding practice today.

Burnham and Kai-Kee (2011) explore the centrality of inquiry-based approaches within contemporary art museum pedagogies, and connect inquiry-based approaches to constructivism. Echoing Piaget's emphasis on "broad sense learning," the authors remark that rather than imparting historical context or sharing a work's "correct" meaning, many constructivist-minded museum educators "came to see their task as one of teaching skills" and empowering viewers (Burnham & Kai Kee, p. 46). In most facilitated art museum programs, the goal of the inquiry process is not for the group of people to learn facts, or to learn vocabulary, or to hear one interpretation of a work of art (though at times all of those may happen). For Burnham and Kai-Kee, "conversation and dialogue are the foundation of understanding and interpretation," and "the unique charge of museum teaching is to bring people and works of art together face-to-face so that conversation can take place" (pp. 60-61). These open-ended, dialogical

conversations involving facilitator, audience, and artwork "allow us to build upon each other's thoughts and observations" while "the object reveals itself" (p. 61). They offer both support and critical review of pervasive questioning strategies used in art museum education, such as Yenawine and Housen's VTS (Rice & Yenawine, 2002) and the Project Muse "Generic Game" series developed by the Harvard Graduate School of Education's Project Zero (Davis, 1996).

Art educator Olga Hubard (2011) has sought to better understand the nature of inquiry during facilitated experiences with art, asking,

If the skills at hand can be developed in inquiries across fields and in daily life, what, then is the distinctive value of inquiries into works of art? What might students gain from these experiences, beyond the development of the skills germane to all inquiries? (p. 176)

She argues that what distinguishes learning from works of art from investigating other kinds of objects is interpretive inquiry. Hubard compares *interpretive inquiry* with *factual inquiry*, or the act of questioning to arrive at concrete answers. Questioning, observing, speculating, associating, evidential reasoning, and conclusion-forming are part of both. Whereas, factual inquiry often involves linear questioning strategies used to arrive at some definitive conclusion, interpretive inquiry might expand in a web-like path, branching off into contradictory meanings and



“Knowledge is not passively received and absorbed, but created by the learner through an integrative process.”

possibilities without ever arriving at a singular or agreed upon outcome. Open-ended art interpretation is both the process and purpose of the experience.

As Dewey and Vygotsky noted, learning is both situated and social. Both Hein (1998) and museum scholar Eileen Hooper-Greenhill (2000) indicate inquiries and experiences in museums are significantly conditioned by visitors' motivations and self-identities. Hooper-Greenhill (2000) states,

Processes of interpretation are not singular, but multiple, and they proceed from a range of starting points... Meaning is produced by museum visitors from their own points of view, using whatever skills and knowledge they have, according to the contingent demands of the moment, and in response to the experience offered by the museum. (p. 5)

Free-choice learning researcher John Falk (2009) found that motivations can vary from visit to visit for the same individual, and identity is neither fixed nor solely demographic, but rather psychographic and affective.

The social and cultural enterprise also anchors the idea of an *interpretive community*, which literary theorist and legal scholar Stanley Fish introduced in the late 1970s. He argued that the interpretive apparatus that each reader uses, and what the reader considers to be the text, is developed and agreed upon by a larger community of readers: "The conclusion, is that all objects [of interpretation] are made and not found, and that they are made by the interpretive strategies as we set forth" (p. 133). In other words, individuals within an interpretive community use established norms while also contributing to the making of the objects of study (Fish, 1982). If we extend this notion to the context of facilitated group experiences in art museum galleries (and harken back to Burnham and Kai Kee's dialogical model of inquiry), the implication is that the group co-develops ways of encountering and interpreting works of art while also adopting conventional methods of perception and analysis that a larger, implicit social body has agreed upon. This hypothesis is supported by Csikszentmihalyi's (1998) research, which argues that creativity is not simply a mental process but also a cultural and social event shaped and constrained by systems that

make judgments on an individual's or group's products. As a result, part of what students learn is how to take part in a larger community of discourse (Eisner, 2002). Eisner (2002) explains that one of the outcomes of group experiences is to find both practical application for what they were learning and to grasp principles of democratic participation involving discussion, deliberation, and consensus. Digital humanities scholars Davidson and Goldberg (2009), as well as media scholars Jenkins, Purushotma, Weigel, Clinton, and Robison (2009), argue that the need for leveraging communal and peer-to-peer learning and nurturing social skills is acute in an increasingly connected, participatory culture. These educational theories are supported by recent neuroscience and psychology research, which demonstrates that cognition develops through processes of interaction with our environment and our social world (Mesquita, 2010).



01

INTRODUCTION

Single Visit Programs, or "Field Trips"





Museum of Fine Arts, Houston, 2012, © Patrick Bertolino

SINGLE-VISIT PROGRAMS, OR "FIELD TRIPS"

What kind of learning experience is possible during single-visit programs to museums, and what might those visits yield for students? How do we assess them? For the purpose of this study, we define this type of program, commonly referred to as a “field trip,” as a one-time museum visit for K–12 school groups that:

- Includes a substantial amount of time in the museum galleries;
- Focuses on student experiences with original works of art; and
- Is facilitated by a museum representative who is a full-time or part-time staff member, contract gallery educator, or unpaid docent/volunteer.

Substantive research on field trip programs to art museums is very limited. We found only one large-scale impact study, conducted by University of Arkansas researchers on the Crystal Bridges Museum of American Art’s school program. This much-discussed study is especially relevant to the present investigation due to both the type of program it focused on and the nature of the inquiry. During the randomized controlled trial involving a total of 3,811 grade 3-12 students, researchers examined the impact of the museum visit on critical thinking, as well as historical empathy, likelihood to visit museums in the future, and tolerance (Bowen, Greene, & Kisida, 2014). They found that students who participated in the program demonstrated significantly stronger critical thinking skills when analyzing an art reproduction. The benefits were greater for students who may not have had such an experience prior to their

participation in the study, including students from rural communities, those attending schools with a higher proportion of students eligible for free or reduced lunches, minority students, and students making first visits to the museums. The benefits were also greater for younger students than for older ones (Bowen et al., 2014).

While studies of this scale and depth about single-visit programs to art museums are absent in the literature, the practice of offering single-visit programs is prevalent among art museums. According to a national survey of U.S. art museums, including Puerto Rico, which was carried out as part of the present NAEA/AAMD study, 96% of museum respondents offer these programs. A total of 270 art museums responded to the survey, for a response rate of 49% (RK&A, Inc., 2015). As in art museums, single-visit programs are commonly offered by museums across the country, including science centers, zoos, and historic homes. Along with family programs, they often offer young people their first entry-points to these learning environments and to the objects they hold. The fact that field trips often constitute new experiences for students can play an important role in visit outcomes. In the early 1980s, five studies by Falk with Aronson, Balling, and Martin, primarily conducted in science centers, demonstrated that knowledge gain may be greater when students have had some prior experience with the specific learning environment. This was especially true for the youngest students, who tended to benefit most from repeated visits to a site rather than single-visit experiences, suggesting that the effect of setting on learning may depend on the developmental level of students (Falk, 1983).

Like the present NAEA/AAMD study, a comprehensive literature review of field trips conducted as part of a major study in Cleveland, Ohio by the Institute of Learning Innovation (Storksdieck, Werner, & Kaul, 2006), sought to illuminate the question of how to define and measure the benefits to students of these experiences. DeWitt and Storksdieck (2008) found a substantial body of research investigating field trip practices and exploring how these experiences contribute to learning by school-age children. They note, "most of this research focused on cognitive or conceptual outcomes and was based on the general premise that school field trips had to be able to compete with classroom instruction to show their educational

“Field trips,
when most successful,
are part of
a continuum
of learning.”



Vizcaya Museum and Gardens, 2010, © Bill Summer

worth” (p. 181). Though many of these studies looked specifically at science-related field trips and their impact on student learning, the results can illuminate culturally significant settings, such as art museums. Museums are promising environments for learning,

because they seem to be venues that naturally encourage people to do the kinds of things that are hallmarks of constructivist learning theory—to explore and discover their own interests, to actively engage with rich stimuli, and to use their own backgrounds and prior knowledge as explicit frames of reference for constructing knowledge. (Tishman, McKinney, & Straughn, 2007, p. 3)

In another review of the literature concerning experiential learning activities and field trips, Behrendt and Franklin (2014) cite a National Research Council report which states that students who

acquire hands-on, authentic experience may develop curiosity and interest, leading to a desire to learn more. Observation skills improve. Social skills develop as the students share perceptions and knowledge with others. Students may begin to look forward to classes and connect previous knowledge and experiences with the new concepts. Students are interested and motivated, permitting the instruction to rise to new and higher levels. Students who are interested and alert in class will learn the concepts, thus standardized test scores may improve. (p. 237)

In fact, we found in our review that a prevalent theme of the research about field trips is that such visits can, in fact, impact students’ cognitive and affective skills. Field trips offer a unique opportunity for students to create connections, which will help them gain understanding and develop an enjoyment of learning.

DeWitt and Storksdieck (2008) further note that a range of factors impact the outcomes of field trip programs—including novelty, students’ prior knowledge, field trip structure, social factors, and educator agendas and actions. They discuss the challenges of researching what is typically a very brief educational intervention and point out that, in spite their short time span, it is notable that cognitive, social, and affective outcomes can result from

these experiences. Emotional impacts such as increased curiosity and interest in a subject (as well as their opposite in negative emotional circumstances) can be important outcomes. Citing several studies, including the work of Falk, they found some evidence suggesting long-lasting positive affective benefits, with students holding on to visit memories months after the experience (DeWitt & Storksdieck, 2008). This finding parallels the Arkansas study, which found that students retained a great deal of factual information from their museum tours and recalled details about paintings at a high rate, even as evidence of concept acquisition in other areas was harder to ascertain (Bowen et al., 2014).

DeWitt and Storksdieck (2008) propose that the primary value of field trips is not that they help students learn complex concepts and facts that link directly to the curriculum, but that they foster exploration, affective growth, and process-skill development. In the best cases, the out-of-school setting functions as a place in which students engage in primary experiences that cannot be replicated in the classroom and where information gathered is subsequently analyzed in the classroom. The researchers conclude that field trips must be contextualized within the broader curriculum and learning activities in order for them to be meaningful. Specifically, field trips are most effective when they are:

- aligned with school curriculum;
- preceded by some type of preparation by the students’ teacher, in school;
- followed by some sort of activity back in the school classroom; and
- able to provide students with opportunities for further extension at home or back at the museum or field trip site, with their families.

They offer a series of recommendations to sites and schools to support this interweaving within the curriculum (DeWitt & Storksdieck, 2008). The conditions they outline indicate that field trips, when most successful, are part of a continuum of learning echoing Dewey’s (1953) theories of educational experiences. These conditions also suggest that the responsibility for designing and implementing effective visits is shared by schools and museums and begins prior to the visit itself.

01

INTRODUCTION

*Learning in
the Museum
Environment*





Wacziarg Museum and Gardens, 2010, © Bill Summers

LEARNING IN THE MUSEUM ENVIRONMENT

If learning results from interaction with the world, including our engagements with others (Dewey, 1953, 1980/1934; Ginsberg & Opper, 1998; Hein, 1998; Immordino-Yang & Damasio, 2007; Piaget, 1952; Tishman et al., 2007; Vygotsky, 1978), then environment plays a fundamental role. The social, pedagogical, and physical space of art museums provides the central learning environment for the research at hand. As Falk (1983) argues,

the key to ensuring that students will benefit from field trips is to realize that setting does have an effect on learning. Armed with this realization, we can at least begin to think of making the *place* where learning occurs as a functional part of our instructional repertoire. (p. 141)

Originally published in 1976 in the art journal *Artforum*, a series of essays by Brian O’Doherty (2000) examined the art gallery

space as a complex economic, social, and aesthetic system. O’Doherty’s essays represented a watershed moment in the visual art field. Coinciding with the rise of postmodernism, cultural studies, and critical theory, O’Doherty’s writings helped propel the field of exhibition studies. Twenty years after the *Artforum* essays, the groundbreaking volume *Thinking About Exhibitions* (Ferguson, Greenberg, & Nairne, 1996) presented a series of multi-disciplinary and analytical case studies that, together, demonstrated how exhibitions function as a communicative medium where objects and texts are arranged to both construct and convey meaning. As such, they reflect specific curatorial ideas and broader aesthetic, philosophical, cultural, and political concepts (Ferguson, Greenberg, & Nairne, 1996).

Museum environments encompass more than exhibitions. As art historian Carol Duncan (1995) argues, “Like traditional

temples and palaces they so often emulate, art museums are complex entities in which both art and architecture are parts of a larger whole” (p. 1). This total environment conditions behavior, serving as a kind of stage or setting where visitors perform specific behaviors, beliefs, and attitudes. Hein (1998) remarks on the impact of “orientation and other environmental psychological factors” such as “light levels, wall colors, placement of exits and entrances, noise, crowds, [and] visitor traffic flow” on visitor comfort levels, which in turn influence visitor learning. Thus people, along with objects and architecture, impact the context for learning in art museums. Tishman et al. (2007) find that this is also true in the specific setting of art museum study centers, where physical and contextual characteristics of the space strongly condition visitor experiences both perceptually and affectively. At times spatial factors pose challenges (to orientation and emotional comfort, for instance); at other times, these factors foster positive responses (i.e., aiding concentration, conversation, etc.). Within the broader physical context of art museums, curators and exhibition designers shape environments through the choice, arrangement, and organization of works of art in spaces as well as the intellectual frameworks that they operationalize through for display. As museum education scholar Melinda M. Mayer (2007, 2014) and others argue, the result of such arrangements and other environmental factors can compromise learning by producing psychological and physical distancing from works of art and by further inscribing culturally irresponsible viewpoints. These factors include the systems of surveillance that aim to protect both visitors and works of art, which can trigger negative emotional responses among visitors (Mayer, 2012, 2014). As Mayer argues, visitors themselves bring and enact their own attitudinal and behavioral assumptions, such as the myth that one must be quiet in museums. Those teaching in the galleries play a significant role as well, actualizing their own assumptions and specific pedagogies that at times are prevalent in the field (Mayer, 2012). Safe and physically comfortable environments are essential for creating positive relationships between museums and visitors and are necessary conditions for learning (Mayer, 2007). Through forms of listening and dialogue, for instance, museum educators can counter other negative factors and create a safe emotional environment for what can be difficult, transformative experiences (Mayer, 2014).

The last 20 years have seen a surge in writing about exhibitions and museums as spaces for meaning-making. Hein’s (1998) *Learning in the Museum* is devoted to and

thoroughly addresses historical and contemporary theories on the subject. Though not specifically addressing art museums, Leslie Bedford (2014) provides a recent overview of museum exhibitions as forms of education and the various pedagogies that currently inform them. In his contribution to the volume *The Multisensory Museum*, Juhani Pallasmaa (2014) questions the hegemony of vision as the dominant modality in exhibition design (and in art display, most acutely), arguing instead for museum spaces that will “enhance and focus perception, activate and sensitize the senses of the visitor, and facilitate an intense dialogue between exhibits and the viewer.” Multiple other factors, such as access to information, also influence environments in art museums, which impacts cognitive outcomes (Tishman et al., 2007).

Recent research in neuroscience tells us that contextual cues also influence learning. Zisch, Gage and Spiers (2014) explain how our brains represent and remember space, elucidating how we construct a kind of mental image of architecture in order to help us navigate and create memories. In fact, Brieber, Nadal, Leder, and Rosenberg (2014) find that viewing art in a museum is more stimulating, positive, engaging, and enjoyable when compared to viewing images of art in a computer in the laboratory; recall is also higher, with spatial layout cues assisting retrieval. They conclude that encountering works of art in the museum enhances cognitive and affective processes and assists in encoding long-term memory (Brieber et al., 2014). Focusing on the experiences of 14-year-old students, Hubard (2015a) also reports on the differences between viewing works of art first hand and perceiving them in reproduction. In a small-scale study, she found that students used the same processes to interpret images, regardless of format. In all instances, viewers used core interpretive skills—observation, description, speculation, evidential reasoning, connecting visual information to past knowledge and experience. However, experiencing original works of art in the museum setting seemed to afford students a level of visual detail that led to more consistent and more complex interpretations about the image. This direct engagement with objects also seemed to trigger students’ sense of touch; in turn, this seemed to prompt speculation among students about the artists’ choices and creative process—reflections which were not at all evident among those who viewed reproductions.

01

INTRODUCTION

*Ways of Knowing:
Engaging with
Works of Art*



WAYS OF KNOWING: ENGAGING WITH WORKS OF ART

As previously articulated, pedagogical, structural, and environmental factors inextricably merge into a complex context that influences students' art museum experiences. These experiences include firsthand encounters with works of art. Hooper-Greenhill (2000) explains:

The exchange between object and viewer is more than a cognitive one. The encounter between an active agent and an object has two sides to it; the interpretive framework brought to bear by the individual subject, which is both personal and social, and the physical character of the artifact. The material properties and the physical presence of the artifact demand embodied responses, which may be intuitive and immediate. Responses to objects are culturally shaped, according to previous knowledge and experience, but the initial reaction may be tacit and sensory rather than an articulated verbal level. (p. 112)

Like many thinkers and researchers (Csikszentmihalyi & Robinson, 1990; Damasio, 2005; Dewey, 1980/1934; Eisner, 2002; Immordino-Yang, 2008; Kiefer & Barsalou, 2013; Lakoff & Johnson, 1999; Levent & Pascual-Leone, 2014; Merelau-Pony, 1993; Mesquita, 2010; Sontag, 1982; Yob, 1998), Hooper-Greenhill (2000) emphasizes the role of the body in the act of knowing,

The behavior of the body cannot be separated from the mind and the emotions, and equally, mental activity (cognition) works in partnership with bodily responses. Learning is understood to involve tacit, felt knowledge in addition to knowledge that can be verbalised, and styles of learning and knowing include the skills of the body... as well as linguistic and mathematical skills. (p. 113)

For Eisner (2002), the ability to imagine and form a range of mental concepts is part of multiliteracy; exposure to

multiple forms of art is necessary in order for the mind to think in multiple formal languages. Findings from various fields of science offer support, demonstrating the significance emotion, sensory perception, and both physical and social context have in learning. Immordino-Yang and Damasio (2007), for instance, propose that developing and acknowledging students' emotional capacities may in fact help students form the ability to apply accompanying cognitive skills and intellectual knowledge in future situations. It is only in the last thirty years that neuroscientists have come to understand the mind as constantly changing and reorganizing over a person's lifespan (Aglioti, Bufalari, & Candidi, 2014). Today, experts in multiple disciplines increasingly believe in an integrated notion of ways of knowing.

Yob (1998), like Immordino-Yang and Damasio, articulates a profound interrelation between cognition and emotion and argues for the place of affect—and of the arts—in schools. Yob builds on Israel Scheffler's (1991) notion of "cognitive emotions" and applies these concepts to works of art. In the processes of creating and of perceiving works of art, cognition serves emotion in three ways:

- *expressive information*, where reasoning channels and disciplines emotional responses and enables decision-making;
- *passional knowledge*, which theorizes that works of art are in some way symbolic manifestations of an inner life and of a series of subjective insights; and
- *imaginative reconceptions*, or ideas that are made over in the process of understanding.

Recognizing emotional cognitions or thoughts can lead to several benefits. By enhancing our appreciation of an emotional domain we can enrich our awareness of

self, others, and world. Understanding of emotions and their impact on human actions can also exercise our capacity to reason as we recognize emotional alerts. In sum, “human understanding... is conceived as a flux of constructions and reconstructions, each one making a measure of meaning, explanation, or representation of the intellectual, emotional, intuitive, and descriptive worlds that we inhabit” (Yob, 1998, p. 34). Works of art can thus be seen as products of emotional cognitions—manifestations of both intellectual and feeling dimensions.

In their research of encounters between art professionals and works of art, Csikszentmihalyi and Robinson also (1990) highlight the interplay of perception, emotion, and intellect in the aesthetic encounter, arguing that the intrinsic satisfaction derived from the integration of these factors during such experiences constitutes their very goal. They find that aesthetic experiences follow a consistent structure even as their content is as diverse as the artworks and the individuals involved. Harvard’s Project Zero researchers found something quite similar taking place in art museum study centers—that those engaging with works of art experienced complex forms of learning where multiple aspects—perceptual information, intellectual content, etc.—manifested simultaneously during the experience and also varied widely in their specific content. When aesthetic engagement happens—a purposeful and at times intensive involvement with works of art—visitors “make nuanced discernments, ask generative questions, pose sophisticated problems, make rich comparisons and connections, and construct complex interpretations” (Tishman et al., 2007, p. 70). Experiencing works of art first hand thus involves an inherently multifaceted process.



Isabella Stewart Gardner Museum, 2013

“Experiencing original works of art in the museum setting seemed to afford students a level of visual detail that led to more consistent and more complex interpretations about the image.”



02

STUDENT CAPACITIES

SECTION 2:

STUDENT CAPACITIES

In line with recent research, and based on input from several art museum educators about the purpose of their work, we have chosen to focus this research on five capacities: critical thinking, creative thinking, sensorimotor and affective response, human connections and empathy, and academic connections. Though presented as distinct here for the purpose of analysis, research in cognitive psychology and neuroscience confirms that these capacities are not separate but indivisible, and all essential to what has been understood as “cognition,” or the process of acquiring and constructing knowledge.

The capacities we have identified include some that are generically referred to as “non-cognitive.” So called non-cognitive factors are gaining traction in formal education policy (Garcia, 2015). For instance, in June 2014, U.S. Secretary of Education Arne Duncan proposed new priorities in education, including supporting efforts that help students master “non-cognitive” behaviors so that they develop and attain skills necessary for success in school, career, and life. Mounting and compelling evidence shows that so called non-cognitive factors support learners’ maturation (Farrington et al., 2012). A discussion of each of the five student capacities follows.

5 Student Capacities:

- CRITICAL THINKING
- CREATIVE THINKING
- SENSORIMOTOR AND AFFECTIVE RESPONSE
- HUMAN CONNECTIONS
- ACADEMIC CONNECTIONS



Cincinnati Art Museum

“Creativity is often invoked in relation to artmaking, an activity that is present in many museum visits—even though artmaking activities may or may not involve creative thinking, depending on how they are structured.”

(FOLEY, 2014; LOWENFELD & BRITAIN, 1987)



Isabella Stewart Gardner Museum, 2013, © John Dean Photography

CAPACITY 1: CRITICAL THINKING

A prevalent practice in art museum education in the US consists of educator-led group dialogues that support viewers as they shape verbal interpretations of works of art (RK&A, Inc., 2015). The last 15 years have seen a number of quantitative research studies that measure how such dialogues can help promote critical thinking in learners. By and large, this focus on critical thinking represents the most robust line of empirical research in the field of art museum education (its prevalence may be due in part to the value ascribed to critical thinking in formal education).

Though critical thinking can be conceptualized in different ways (Wright, 2002), studies in museum education align with Willingham’s (2008) definition, whereby critical thinking involves “deducing and inferring conclusions from available facts” (p. 21). According to Willingham, critical thinking calls for “reasoning dispassionately, demanding that claims be backed by evidence,” as well as “seeing both sides of an issue [and] being open to new evidence that disconfirms your ideas” (p. 21). In sync with this definition, studies in museum education—which

have a great degree of conceptual consistency among them—collectively show that group dialogues about art facilitated through certain constructivist pedagogies can help promote the following skills in students:

- observing
- describing
- associating with prior knowledge or experience
- Interpreting
- hypothesizing
- comparing
- grounding assertions and opinions on evidence
- identifying missing information needed to form conclusions and opinions
- extended focus
- openness to different perspectives and possibilities
- revising thinking

(Adams, Foutz, Luke, & Stein, 2007; Bowen et al., 2014; Curva and Associates, 2005; Housen, 2002; RK&A, Inc., 2007; Tishman, 2003).

While not all studies focus on exactly the same skills (or use the same terminology for skills), there is significant overlap.

This research shows that students can develop the aforementioned skills whether they dialogue about original works of art or about reproductions. Additionally, most studies clarify that the development of critical thinking skills through art viewing is contingent on the use of particular constructivist pedagogies. While most studies on art museum programs and critical thinking have focused on multiple-part programs, a recent large-scale study demonstrates that students can develop critical thinking skills even within a single museum visit (Bowen et al., 2014).

Generally, the research on critical thinking in connection to art museum education focuses on the critical thinking skills in themselves, and not on what might be gained from applying these skills in the realm of art. Moreover, most studies consider the potential transfer of these skills to other contexts and subject areas—an issue that will be addressed under “Capacity 5. Academic Connections.”



02

STUDENT CAPACITIES

Capacity 1: Critical Thinking

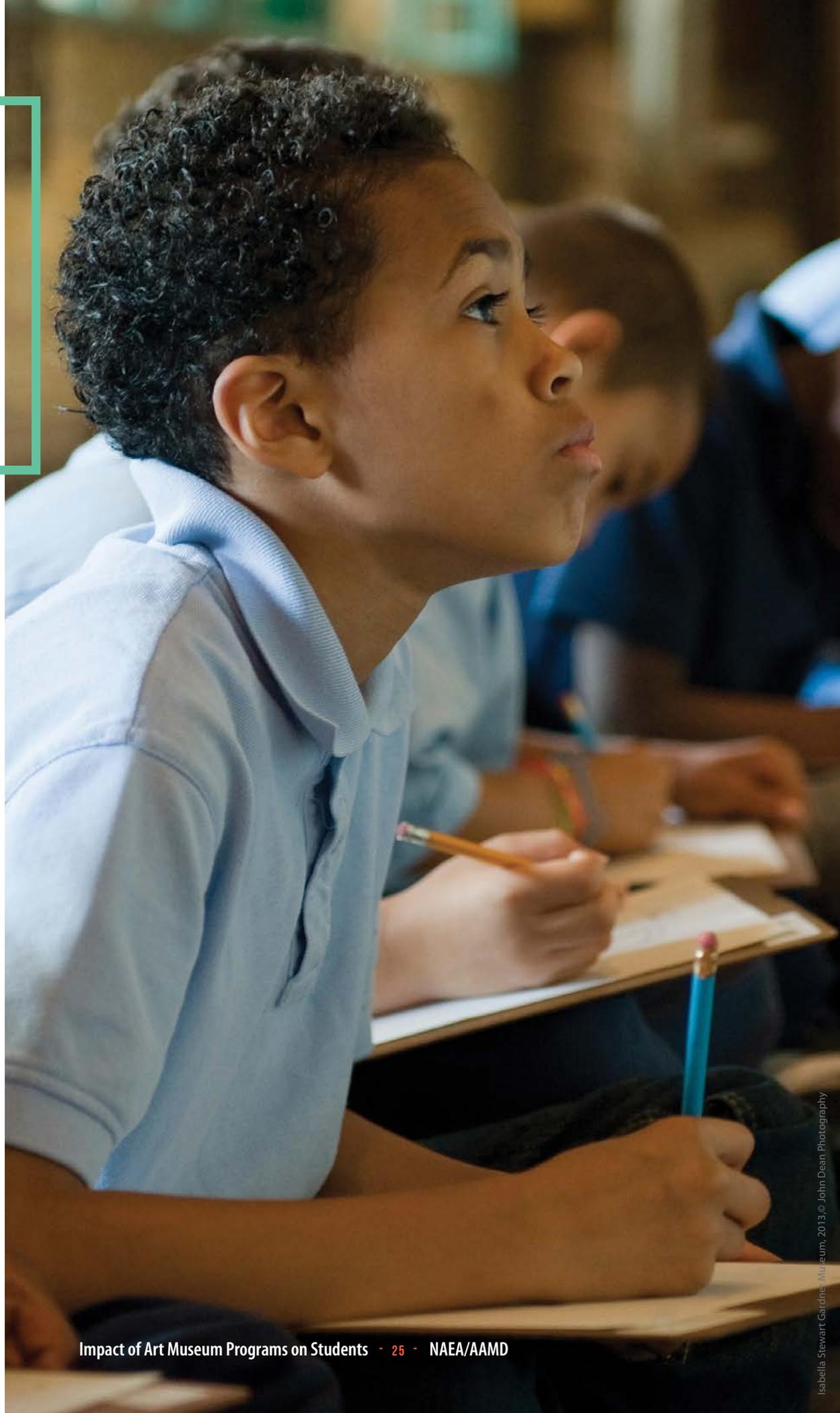
“Generally, the research on critical thinking in connection to art museum education focuses on the critical thinking skills in themselves, and not on what might be gained from applying these skills in the realm of art.”

The onset of the 21st century has brought about increased attention to the importance of creativity in education and contemporary life. The push for creative thinking is conspicuous in the Framework for 21st Century Learning, among other sources (P21 Partnership for 21st Century Learning, 2016; Pink, 2006; Robinson, 2015). Art museums, too, are attentive to the influence of creativity. Over the last decade and a half, many have reframed their mission, vision, and values to emphasize their role as platforms for creative works, while also stressing their potential to fuel creativity in visitors (Alvarez, n. d.; Foley, 2014; Norris, 2013; Ramussen, 2012; Vergeront, 2014).

02

STUDENT CAPACITIES

*Capacity 2:
Creative Thinking*



CAPACITY 2: CREATIVE THINKING

There is loose agreement that “little c” creativity—the sort of creativity that all people, and therefore museum visitors, are capable of—is characterized by the ability to consider situations from a fresh perspective; to connect seemingly unrelated phenomena in new and productive ways; and to generate unorthodox, novel solutions or works (Amabile, 1996; Beghetto & Kaufman, 2007; Csikszentmihalyi, 1998; Gardner, 2007). Activities and processes that are commonly associated with creative thinking include questioning and probing, divergent thinking, metaphorical thinking, flexibility, play, exploration, risk-taking, imagination, and challenging conventions, among several others (Csikszentmihalyi, 1996; Foley, 2014; Gardner, 2007; Greene, 1995, 2001). Yet, in spite of loose agreement about aspects of creativity, definitions vary from one context to the next, as stakeholders stress certain activities and processes over others (Batey, 2012).

Some museum education scholars propose that creative thinking is inherent to viewers’ experiences of artworks, especially when these embrace a spirit of active exploration and discovery (Dewey, 1980/1934). For example, grounded on Dewey’s thinking, Burnham and Kai-Kee (2011) likened the process of art interpretation to the artist’s process, highlighting aspects that are present in both: irregularity, unpredictability, complexity, ambiguity, experimentation, a back-and-forth interaction, and a gradual revealing, among others. Other texts link encounters with art to processes associated with creativity, without necessarily mentioning creative thinking as such. For example, Burnham and Kai-Kee (2011) elaborated on the process of play as a critical element of interpretive experiences with artworks. Similarly, Hubard (2011) examined the significance of divergent, “web-like” exploration; of metaphorical and analogical thought; and of a disposition to accept uncertainty and contradiction in

open art interpretation. A special mention is reserved for Maxine Greene and her work on the imagination. Across her copious scholarship, the philosopher of education argued compellingly that participatory encounters with works of art are the most secure way to release the imagination and to help people envision the world “as if [it] could be otherwise” (Greene, 2001, p. 124).

In popular thinking, creativity is often invoked in relation to artmaking, an activity that is present in many museum visits—even though artmaking activities may or may not involve creative thinking, depending on how they are structured (Foley, 2014; Lowenfeld & Brittain, 1987). In the museum, students may engage in artistic production (visual, written, performative) in connection to experiences with exhibited works, or participate in independent artmaking workshops (Ecker & Mostow, 2015; Hubard, 2007, 2011).

Scholarship that frames artmaking from the standpoint of creativity abounds (Eisner, 2002; Lowenfeld & Brittain, 1987) and indeed, there is evidence that hands-on art education can be associated with the development of creative thinking (Burton et al., 2000). However, as mentioned earlier, this interrelationship is not to be taken for granted. To illustrate, a study of a museum-school collaboration including multiple school-based artmaking sessions (and a few museum visits) found that the program enhanced three of six pre-identified skills associated with creative problem-solving in students—flexibility, connections of ends to aims, and resource recognition. Yet, this program did not impact students’ growth in the remaining three pre-identified skills—imagining, experimentation, and self-reflection (RK&A, Inc., 2010).

Moreover, despite art museums’ expressed interest in creativity, there are scant texts that specifically examine

museum-based artistic production through the lens of creative thinking, and even fewer that assess student learning formally from this standpoint. One recent account describes a pedagogical approach for promoting questioning, the exploration of possibilities, and personal meaning-making across both components of a “gallery tour and studio workshop” museum program (Ecker & Mostow, 2015); however, the learning outcomes of this approach have not been studied. A different report presents a formal evaluation of a multi-part museum program designed to promote secondary school students’ writing skills, including the use of “creative problem solving to express themselves” (p. iv). In this context, creative problem solving was defined as the ability “to make choices... that result in prose that is descriptive, intentional, has personal style, and creates meaning” (p. iv) and as students’ “persistence and self-reflection” (p. iv). The program, which included a series of written responses to contemporary artworks, was indeed found to have a positive impact on students’ creative problem solving (to various degrees) (RK&A, Inc., 2014).

When considering the literature related to creative thinking and museum visits as a whole, it becomes evident that authors frame creative thinking in subtly different ways. For some, the key goal of art museum experiences—encounters with works of art and/or artmaking—is to promote creative thinking (Foley, 2014; RK&A, Inc., 2010). However, others see art experiences as valuable in themselves, while also recognizing that these experiences are inherently creative (e.g. Burnham & Kai-Kee, 2011; Ecker & Mostow, 2015). Moreover, while some have asserted the importance of measuring creative thinking in relation to predetermined outcomes (Foley, 2014; RK&A, Inc., 2010), others favor an approach where the focus is on facilitating art experiences, while remaining open to possibility and the unexpected (Burnham & Kai-Kee, 2011; Greene, 1995, 2001). Regardless, most thinkers on the topic concur that intentional program design and pedagogy are key factors for fostering creative thinking and related processes in learners (Burnham & Kai-Kee, 2011; Ecker & Mostow, 2015; Foley, 2014; Greene, 1995, 2001). In short, the field of art museum education is ripe to continue studying creative thinking and the activities and processes associated with it—their meaning, their significance, their incidence, the ways they might be nurtured—as well as their relationship



to visitors’ encounters with original artworks in the museum space.

As a parenthetical note, critical and creative thinking are frequently mentioned in the same breath, positioned as two fundamental cognitive capacities (Foley, 2014). In fact, there are certain dispositions that are deemed central to both modes of thought: questioning, connection-making, and tolerance for ambiguity, for example. In some interpretations, critical thinking is actually seen as a necessary component of creative thought (Foley, 2014). That said, differences between the two modes of thought are also conspicuous: while the logical, rational, and analytical are emphasized in critical thinking, the imaginative, unorthodox, and unforeseen are stressed in creative thought (Forrester, 2008).

02

STUDENT CAPACITIES

*Capacity 3:
Sensorimotor and
Affective Response*



Cincinnati Art Museum, 2013

CAPACITY 3: SENSORIMOTOR & AFFECTIVE RESPONSE

Over the last century, thinkers across disciplines have challenged the dominant Cartesian notion that knowledge is gained through the intellect and rationality alone, highlighting the role of the human body—sensorial perceptions, corporeal sensations, motor responses and emotions—in the construction of knowledge (Csikszentmihalyi & Robinson, 1990; Eisner, 2002; Dewey, 1980/1934; Levent & Pascual-Leone, 2014; Merleau-Ponty, 1993; Mesquita, 2010; Sontag, 1982; Yob, 1998). In recent decades, advances in cognitive science and neuroscience have bolstered the proposition that the sensorimotor and affective systems play an essential part in cognition, including abstract conceptual thought. Moreover, studies show that affect, sensorimotor responses, and conceptual thought are inextricably intertwined and operate together in human cognition (Damasio, 2005; Immordino-Yang, 2008; Kiefer & Barsalou 2013; Lakoff & Johnson, 1990; Yob, 1998).

From the days of Plato and Aristotle, thinkers have addressed the connection between emotions and art, stressing the place of affect in meaningful art experiences (Armstrong, 2000; Csikszentmihalyi & Robinson, 1990; Dewey, 1980/1934). Moreover, scholars have explored—and debated—the impact that art can have on viewers' emotions. Among many other perspectives, art has been said to “purge” spectators' emotions (Aristotle, c. 367–322 BC/1986), to help viewers experience the emotions of the artist (Tolstoy, 1996), to help elucidate the patterns of “human sentience” (Langer, 1953), to promote empathy¹ (Costantino, 2010; Lawrence, 2005), and to generate

experiences of awe or the sublime (Bell, 1992; de Bolla, 2003; Hegel, 1975; McCarthy et al., 2004).

Thinkers from various disciplines have also highlighted the significance—and complexity—of sensorimotor responses in encounters with works of art. For example, psychologist Rudolf Arnheim (1969) argued that visual perception involves an active structuring of information and is in itself a form of thinking. Philosopher Maurice Merleau-Ponty (1993) described the artist's/viewer's body as the site of both perception and consciousness, inseparable from the physical world. Also from a philosophical perspective, John Dewey (1980) posited that engagements with art can intensify viewers' senses and stimulate their motor channels of response, making them more awake to the world and themselves.

Foretelling discoveries in cognitive science, art education scholar Elliot Eisner (2002) framed perception, emotions, and somatic (embodied) knowing as essential, interconnected components of a “wide conception of cognition” that also includes rational, conceptual thought. He argued that arts experiences are particularly well positioned to nurture embodied ways of knowing; for example, they can refine the senses and enhance people's ability to judge qualitative relationships (Eisner, 2002; see also Bresler, 2004). The RAND Corporation embraced this view as it positioned emotions and embodied response as inherent to the intrinsic benefits of the arts (McCarthy et al., 2004).

A few studies have specifically examined sensorimotor and affective response in people's encounters with works

¹ In art and aesthetic education, the relationship between art and empathy—emotional and somatic in nature—has received considerable attention. It is addressed specifically under “Capacity 4: Human Connections & Empathy” in this literature review.)

of visual art based on empirical data. One relevant example is Csikszentmihalyi and Robinson's (1990) research on the nature of aesthetic experience, which was based on interviews and surveys with art experts. The researchers identified four interrelated dimensions of aesthetic experience and noted that the two most salient were the perceptual and emotional dimensions (the other two dimensions were the cognitive and the communicative).

Neuroscientists, too, have investigated this topic. Drawing on current neuroscientific insights, Ward (2014) asserted that experiences that involve multiple senses, as museum experiences do, activate different neural systems and can therefore result in richer memories. Also from the standpoint of neuroscience, Freedberg and Gallese (2007) considered the physiological underpinnings of the "bodily resonance" and related emotional responses that viewers can have in front of an artwork. Their work suggests that such sensorimotor responses are rooted in the work of mirror neurons, a special class of brain cells that allow us to "simulate" other people's actions in the brain. That said, Aglioti et al. (2014) clarified that the way someone's body responds to art objects is also inevitably mediated by the personal and socio-cultural experiences that are constantly shaping and reshaping a person's brain (see also Immordino-Yang, 2008).

In the field of museum education, writers have asserted the importance of emotions and corporeal response in viewer's encounters with art objects (Barrett, 1994; Burnham & Kai-Kee, 2011; Falk & Dierking, 1992; Hooper-Greenhill, 2000). In addition, some have considered how affective and sensorimotor responses may be honored and nurtured through particular pedagogical approaches (Hubard, 2007, 2015a-b).

Mindfulness of the museum environment in this context is also key: research in cognitive science, media studies, and other fields has shown that the affective and sensorimotor systems, and thus cognition in general, are inevitably influenced by the physical and social contexts in which they function (Mesquita, 2010). Accordingly, the museum context can change the way viewers respond to and remember particular works (Brieber et al., 2015; Casile & Ticini, 2014; Ellsworth, 2005; Falk & Dierking, 1992; Mayer, 2012).

To sum up, literature addressing the significance of the affective and sensorimotor dimensions of cognition in general, and specifically in relation to arts processes, is vast and growing. Texts on this topic (1) stress how affective and sensorimotor responses are inherent to arts experiences (and cognition), (2) point to the centrality of affective and sensorimotor response to the sense of meaningfulness that encounters with art can bring about, and (3) suggest that arts experiences may help enhance people's engagements with the world beyond art.

Rich possibilities remain for empirical examination of the sensorimotor and affective dimensions of non-experts' encounters with works of art in the museum: the various kinds, their qualities, the conditions of their occurrence, their interrelationship with other dimensions of critical/aesthetic response, the experiences and learning they provoke, their significance, and so forth. While one obvious direction when designing such investigations might be to look to the cognitive sciences, the RAND Corporation stresses the need to also look "beyond the quantifiable" and recognize the promise of qualitative research when addressing complex, experiential human phenomena (McCarthy et al., 2004).

“Experiences that involve multiple senses, as museum experiences do, activate different neural systems and can therefore result in richer memories.”



02

STUDENT CAPACITIES

*Capacity 4:
Human
Connections
& Empathy*

Philadelphia Museum of Art, 2014

CAPACITY 4.

HUMAN CONNECTIONS & EMPATHY

In the literature on art museum education, authors often note the obvious fact that works of art are expressive objects made by people (Barrett, 1994) and, as such, speak to the human experience. “Art tells us who we are” (Housen, 2001-2002, p. 122); “[Art] can help us understand the experience of being human” (Leason Duke & Schlagenhauff, 2010, n. p.); “Art is a language through which [humans] speak about our experience” (Ecker & Mostow, 2015, p. 208)—these are just a few statements peppered across the literature that highlight the humanity that art embodies. Next to these generally brief acknowledgements of art’s humanity, museum educators have on occasion foregrounded art’s human—and humanizing—nature as central to their work. For example, in a blog post from 2012, Briley Rasmussen asserted that works of art “tell myriad stories of human activity” (n. p.) and are “endowed with profound [human] significance” (n. p.). Rasmussen stressed that education programs can teach visitors how to “unlock” and engage with the humanity in these works, and called for institutions and gallery teachers to “value this as a goal and plan [for] this outcome as they would any other” (n. p.).

Though scarce, there is also solid empirical research that illuminates the human themes and processes that artworks embody, and how these might matter to observers. In their research on the aesthetic experience, Csikszentmihalyi and Robinson (1990) found that most art experts’ accounts of significant encounters with artworks involved a sort of dialogue or process of communication indicative of a sense of human connection. This connection might be between the viewer and another era or culture depicted in a work of art, which brings to mind “historical empathy,” described later in this section. Alternatively, the

connection might be between the viewer and the artist—a sense of communication rooted, for some, in the physical traces of the creative process evident in original works. Finally, the communication triggered by artworks might occur within viewers themselves, entailing an enhanced sense of connection with the self.

In relation to connections with oneself, Csikszentmihalyi and Robinson (1990) reported on experiences of the transcendental relayed by a few respondents in their study. These experiences were described, for example, as a state of heightened awareness, as a loss of self, as transportation outside the self, or as a sense of absorption, among others. Experiences of this kind received much attention during the Romantic era, and have been explored in the work of various thinkers since then (Armstrong, 2000; Bell, 1992; de Bolla, 2003; Hegel, 1975; McCarthy et al., 2004). In one recent example, Esrock (2001) drew upon neuroscience,

“Encounters
with works of art
can help lift the veil
of routine and convention,
awakening people
to themselves and
the world around them.”



psychoanalysis, linguistics, and other fields to examine the sense of immersion whereby a viewer seems to merge with a work for a moment. She linked this experience to shifts in the “felt-sense of bodily boundary” (p. 2) grounded in the viewers’ somatosensory system. On a related note, Costantino (2010) explored the sense of wonder within the aesthetic experience, focusing on its educational value. Referring to Eisner and Dewey, among others, Costantino described wonder as “a vehicle for emotional, intellectual and social growth” (p. 4).

A different aspect of “connections with oneself” in Csikszentmihalyi and Robinson’s (1990) study described art encounters as means for participants to question or consider themselves, their development, and/or their relationship with the world. This theme, too, has reverberations across the literature, as several thinkers have written of encounters with art as a means of self-understanding (Costantino, 2010; de Botton, 2013; Hegel, 1975; Iser, 1980).

Philosophers Maxine Greene (1995, 2001) and John Dewey (1980/1934) addressed the self-awareness that art experiences can nurture, while also highlighting the relationship between the self and the environment. They argued that encounters with works of art can help lift the veil of routine and convention, awakening people to themselves and the world around them. Greene further argued that, as art experiences enable us to see the existing world in poignant ways, they can also compel us to imagine and work towards a better social situation (see

also Costantino, 2010). Examples of this sort of awareness can be found across the literature on art and museum education. Consider, for example, how African American students might assert and share their sense of personal history and cultural identity, challenging dominant narratives as they respond to an artwork depicting slaves (Levenson, 2014). With examples such as this in mind, some have pointed to the limitations of programs that emphasize the teaching of looking skills, and, in doing so, neglect the meaningful human and cultural content that engagements with artworks can generate (Mayer, 2014).

Within the broader topic of human connections, there are also thinkers who have focused specifically on empathy, which can be defined as the ability to understand and share the feelings of others. Based on a review of relevant literature, the RAND Corporation identified empathy as one of the intrinsic benefits of the arts, arguing that art draws individuals into the experiences of “people vastly different from themselves” (McCarthy et al., 2004, p. xvi), thereby making them more receptive to unfamiliar people, attitudes, and cultures. The literature on museum education features initiatives that aim to do just this. One example is an art museum education program designed to foster empathy in medical students. Participants reported that this program increased their “appreciation for the psychosocial context of patient experience” (Gaufberg & Williams, 2011, p. 546). Beyond the emphasis on patients, participants also reported having practiced “empathic listening” (p. 547) within the group, and commented on

the sense of community that the sharing of responses around artworks can promote.

The responses just described evoke another intrinsic benefit of art identified by the RAND Corporation, namely the creation of social bonds that can come about when people experience works of art communally (McCarthy et al., 2014). The interrelationship of social interaction and cognition is worth stressing. In the words of Smith and Collins (2010):

Human cognition is fundamentally shaped by people's social and communicative goals, personal relationships, and group memberships. Our social worlds not only frequently make up the *content* of our thoughts and feelings, but they also shape the *processes* underlying our cognition and behavior. (p. 126)

What empirical evidence is there to demonstrate that encounters with art can in fact enhance people's ability to empathize with others? A recent, large experimental study focused on school-age children found that students who participated in a single museum visit demonstrated significant increases in *historical empathy* as a result of the museum experience (Bowen et al., 2014). The program in question involved discussions of historical artworks, as well as the delivery of information on these works' historical and social contexts. While this finding is significant, it focuses on a very specific kind of empathy—a self-reported inclination and ability to appreciate what life might have been like for people who lived in a different time and place.

From a different angle, and grounded in neuroscience, Freedberg and Gallese (2007) focused on the bodily and emotional empathy that viewers can experience in front of works of visual art. As mentioned under "Capacity 3: Sensorimotor & Affective Response," their studies suggest that the physiological roots of this kind of empathy are the work of mirror neurons, a special class of brain cells that allow us to "simulate" other people's actions in the brain. The sort of empathy to which Freedberg and Gallese referred is reminiscent of the connections art experts felt to artists based on visual traces of the creative process in certain works (Csikszentmihalyi & Robinson, 1990).

In short, numerous texts speak to the human connections that art can promote. The literature on this topic is

primarily theoretical and philosophical; however, there are some solid empirical studies that point to the relevance of human connections and empathy in people's encounters with art (Bowen et al., 2014; Csikszentmihalyi & Robinson, 1990). Overall, the literature identifies different kinds of human connections. References are made to connections with humanly relevant themes, issues, or processes presented in artworks; to connections with other cultures or eras; and to connections with the artist. Also mentioned are allusions to enhanced connections with—or awareness of—the self, connections with other people who share in the art experience, and the humanizing power of art. Empathy is highlighted in some accounts, whether the focus is on a felt empathy triggered by the physicality of an object, on empathy based on knowledge about another's situation—or perhaps both. Finally, there is a suggestion that the human connections that art can nurture may, at times, generate yet new kinds of human connections, as some people are compelled to work towards a better world for all.

“Engagements with original works of art that take place within the distinctive physical and social setting of art museums can constitute complex, multidimensional, context-sensitive experiences.”

02

STUDENT CAPACITIES

*Capacity 5:
Academic
Connections*



CAPACITY 5: ACADEMIC CONNECTIONS

Often, art museum education departments offer programs meant to support students' academic studies. In the literature (and in practice), the connection of museum and school learning is framed mainly in two ways. The first focuses on skills that can be nurtured in museum education and that are also relevant to academic learning—notably critical thinking skills. In fact, the majority of studies on the impact of inquiry-based art viewing on critical thinking (featured under “Capacity 1. Critical Thinking”) have also examined the transfer of critical thinking skills beyond group dialogues about art. For example, some researchers have found that critical thinking skills developed through dialogues about art transferred to other modes of responding to art, namely, stream-of-consciousness monologues or writing about artworks (Bowen et al., 2014; Desantis, 2009; Housen, 2001-2002). While these findings highlight transfer that occurs within the realm of art, other research has shown that critical thinking skills developed through dialogues about art can also transfer to the interpretation of non-art objects (from material culture or the natural world) (Housen, 2001-2002; RK&A, Inc., 2007).

Continuing with the idea of transfer, a number of studies on critical thinking have examined the impact of inquiry-based museum education on performance in statewide standardized tests. A multi-year study by Housen (2001-2002) suggested links between facilitated, inquiry-based art viewing programs and student performance on state-level standardized tests; a multiyear study by Curva et al. (2005) resulted in more concrete associations between the two domains.

The second way of framing how museum education can support academic connections focuses on the relationship between works of art and content from the school curriculum. In this vein, the literature features numerous

descriptions of museum initiatives that engage students in learning about topics, questions, or issues that are relevant in art as well as in academic subjects—geography (Gainer, Lewis & Keel, 2014), history (Levenson, 2014), and literature (RK&A, Inc., 2014)—for example. Such programs are often fueled by the (explicit or implicit) ideas that (1) “questions can be illuminated more richly if drawing from different disciplinary ways of knowing” (Parsons, 1998), and (2) that interdisciplinary (including artistic) learning can enhance the experience and meaningfulness of learning for students (Jacobs, 1997). Most scholarly accounts of

“Students who dialogued about art from different periods in American history recalled details about these works, as well as related historical and sociological contextual information, at an impressive rate weeks after their visit.”

initiatives of this kind are primarily descriptive and/or theoretical, without data to illuminate the actual impact of programs on curricular learning.

One exception is a recent large-scale study from the University of Arkansas (Bowen et al., 2014) (also featured under other capacities). Aside from confirming the impact of a museum visit on critical thinking (about artworks), this study found that students who dialogued about art from different periods in American history recalled details about these works, as well as related historical and sociological contextual information, at an impressive rate weeks after their visit. These results suggest that art might be an important tool for conveying traditional academic content effectively—though the researchers clarify that they cannot prove this contention, since there was no control group that learned the same content without art. On a related note, as mentioned under “Capacity 4: Human Connections & Empathy,” the University of Arkansas study also found an increase in historical empathy in students who visited the museum. Defined as “the ability to understand and appreciate what life was like for people who lived in a different time and place” (Greene et al., 2014, n. p.), historical empathy is regarded as an important component of learning in history.

In general, writing about museum-based learning in relation to curricular content assumes that the particular characteristics of artworks, the meanings that emerge as students respond to them, and the contextual information that educators share in the museum are essential to what is learned (Burnham & Kai-Kee, 2011; Mayer, 2014). It is also noteworthy that thinking about how art can support learning in non-art subjects is often surrounded by debates on whether art education should be valued for instrumental reasons (i.e. for its contributions to learning in other realms) or for intrinsic reasons (i.e. for the value of art experiences and learning in themselves) (Eisner, 1990; Hetland, 2008; McCarthy et al., 2004). Though there are advocates on both sides of the argument, there are also those who stress that instrumental and intrinsic rewards of art learning are not necessarily mutually exclusive (Brewer, 2002).

There are opportunities to continue to investigate the transfer of critical thinking skills from engagements with art to other realms. Further research could also continue to assess the potential of museum experiences to promote understandings and content learning relevant to the school curriculum. Moreover, future studies might explore the relationship of the range of capacities that can be nurtured in the museum and academic growth.

02

STUDENT CAPACITIES

Conclusion



Museum of Fine Arts, Houston, 2010

SECTION 2: CONCLUSION

The purpose of this review of research is to contextualize and inform the design of a major national study in the US on the impact of single-visit programs to art museums on K-12 students. The research will explore this central question: *What are the benefits to students of engaging with original works of art within the distinctive physical setting of art museums when students are guided in their experiences by means of inquiry-based pedagogies?* When considered comprehensively, the constellation of theoretical and empirical research that emerged from this review of literature offers a compelling picture: that engagements with original works of art that take place within the distinctive physical and social setting of art museums can constitute complex, multidimensional, context-sensitive experiences. Even limited duration interactions such as those afforded by single-visit programs have the potential to surface cognitive, experiential, affective, social, and academic capacities that are critical to K-12 education.

“*This review shows that there are few empirical and qualitative studies investigating learning in art museums, and in particular, there is a dearth of evidence about the benefits of single-visit programs.*”

A significant outcome of this review, based on literature in the fields of social science, cognitive psychology, and neuroscience, is that these skill domains are integrally linked and often activated *together* during engagements with original works of art. Experiences with objects simultaneously trigger a range of effects in a person’s mind and body in good part *because* these interactions with objects cannot, in turn, be separated from their physical and social contexts. Learning is not a process of knowledge intake. Rather, mind and body are inseparable and co-dependent with the world: thoughts, emotions, perceptions, self-identities, attitudes and other forms of understanding emerge in relation to people’s interactions with each other and their environment. These findings reinforce constructivism and inquiry as the dominant pedagogy in museum education and, increasingly, in formal education. Constructivist pedagogies facilitate multifaceted experiences by adopting situated approaches to learning that acknowledge students’ thoughts, emotions, self-identities, and prior knowledge. They promote discovery and place interaction at the center of learning.

Taken as a whole, this review of research has important implications for the design of the national research study. First and foremost, it demonstrates the need for such a study. While the literature reviewed includes relevant studies about the benefits of field trips on school children, most of those studies are found in informal science settings. This review shows that there are few empirical and qualitative studies investigating learning in art museums, and in particular, there is a dearth of evidence about the benefits of single-visit programs. Secondly, the review provides a theoretical and evidence-based language for talking concretely about the benefits of students’ engaging with original works of art in a single-visit program. While most museum educators would argue that the programs can affect students’ creative thinking and empathy, for example, often there is no consensus on what those benefits actually mean or how they relate to one another in the context of an art museum program. This review provides comprehensive, clear explanations of each of the five areas the impending study will explore—critical thinking, creative thinking, sensorimotor and affective response, human connections and empathy, and academic connections—and grounds them in a museum setting. The review also illuminates how these five areas overlap and relate to another, showing that they are not inseparable. This understanding of the five areas of study will serve as a driver as we further develop and implement the research; in particular, it will inform the development of assessment and analytical tools as well as how we interpret and make sense of the findings, and perhaps most important—the way the research team communicates the results. Ultimately, the national NAEA/AAMD study, beginning with this comprehensive literature review, has the potential to clarify and legitimize discourse about the value of art museums within the context of museum education.



03

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Vizcaya Museum and Gardens, 2010. © Bill Sumner

SECTION 3: REFERENCES

This section lists all references consulted in our research. In shaping this review, the planning team leading the NAEA/AAMD national research study adopted a broad, interdisciplinary, and exploratory approach in order to illuminate our hypothesis: *that engaging directly with original works of art within the distinctive physical setting of art museums, during guided programs that use constructive and inquiry-based pedagogies, can nurture a series of competencies among a series of interrelated domains—cognitive, experiential, affective, social, and academic.* We also sought to address specific goals and questions:

- What does research tell us about how students benefit from experiences in art museums that take place during the school day and that also involve significant engagement with original works of art?
- In what ways do constructivist and inquiry-based pedagogies underpin current theories and practices in American art museums related to K-12 field trip programs?
- What is known about the way in which a series of interrelated competencies—critical thinking, creative thinking, sensorimotor and affective response, human connections and empathy, and academic connections—might be nurtured through encounters with works of art in the museum setting?
- What is the value of single-visit “field trips” and what constitutes effective practices? Where does a field trip begin and end?

A brief tag appears beneath each reference highlighting the aspect of the hypothesis that the text illuminates. The eleven tags are:

PEDAGOGY
RESEARCH DESIGN
SINGLE-VISIT PROGRAMS
LEARNING IN THE MUSEUM ENVIRONMENT
ENGAGEMENT WITH ORIGINAL WORKS OF ART
CRITICAL THINKING
CREATIVE THINKING
SENSORIMOTOR & AFFECTIVE RESPONSE
HUMAN CONNECTION & EMPATHY
ACADEMIC CONNECTIONS
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ACADEMIC CONNECTIONS

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LEARNING IN THE MUSEUM ENVIRONMENT SENSORIMOTOR & AFFECTIVE RESPONSE

03

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*Selected
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SECTION 3:

SELECTED TEXT SUMMARIES

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RESEARCH DESIGN CRITICAL THINKING ACADEMIC CONNECTIONS

This study's authors sought to understand how a multiple-visit, inquiry-based museum program facilitated critical thinking amongst a representative sample of third, fourth, and fifth graders from under-resourced urban communities. Each class in the study participated in three to four museum visits per school year, and each museum visit was preceded by a classroom lesson taught by museum staff. Museum visits and classroom lessons involved dialogues using approaches such as Visual Thinking Strategies (VTS) about original artworks and poster reproductions, respectively.

This quasi-experimental investigation relied on a posttest-only control-group design. A total of 64 students from two schools who participated in the museum's School Partnership Program (SPP) comprised the treatment group. Seventy-one students from three different schools that had no prior experience with the SPP comprised the control group. Data collection included: one-on-one, school-based student interviews about a poster reproduction; museum-based, group "untours" that allowed students outfitted with recording devices to roam throughout the galleries and discuss any artworks that caught their attention; and students' standardized test scores in Reading Comprehension. The standardized test

research component was meant to assess potential impact of the SPP on critical thinking in areas outside of visual art.

During the first two years of the study, Adams et al. developed a rubric for assessing critical thinking skills demonstrated by students during the poster interviews and untours. The rubric identified seven critical thinking skills: observing, interpreting, evaluating, associating, problem finding, comparing, and flexible thinking. A separate category, "evidence," was applied to any of the seven individual critical thinking skills when used to support an assertion or opinion.

Findings showed that during the interview and untour experiences the treatment group talked significantly longer and utilized a higher frequency and wider range of critical thinking skills than control group students. The treatment group also provided higher quality evidence when supporting assertions and opinions. In both treatment and control groups, students most frequently applied critical thinking skills of observation and interpretation. Analysis of the treatment and control groups' standardized test scores revealed no significant results. In their final report, the researchers suggest that pedagogies such as VTS may play a role in the development of specific critical thinking skills in connection with guided, participatory art viewing.

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- 2 Aglioti, S. M., Bufalari, I., & Candidi, M. (2014). Multisensory mental simulation and aesthetic perception. In N. Levent & A. Pascual-Leone (Eds.), *The multisensory museum: Cross-disciplinary perspectives on touch, sound, smell, memory, and space* (pp. 301-317). Lanham, MD: Rowman & Littlefield.

ENGAGEMENT WITH ORIGINAL WORKS OF ART SENSORIMOTOR & AFFECTIVE RESPONSE

In this comprehensive discussion of recent research in cognitive neuroscience, Aglioti et al. explain that human perceptual ability depends on both direct experience with the world through our sensory systems and simulated imagery produced in the absence of or in response to external conditions (i.e., a memory, an image that we envision). Prior knowledge, understanding, and our sense of prediction and expectation influence both sensory perception and the formulation of mental concepts, including memory recall, the ability to imagine, and our capacity to understand the physical and mental states of other individuals. Rooted in brain science, the authors extend their argument to include aesthetic perception. They propose that these embodied variables also play a crucial role in our ability to react to objects in the world and assign them a positive or negative value: “aesthetic appraisal and appreciation likely depend on our bodily sensations and the way we use our body to interact with objects and individuals” (p. 301).

The authors note that the brain is highly *plastic*, meaning that it changes and reorganizes constantly over a lifetime, is relatively recent; three decades ago neuroscientists thought that the brain only changed at critical moments. In their review of research, the authors find that such changes are produced within relatively simple neural systems as well as more complex cognitive and affective systems, including those related to the process of empathy. While different sections of the brain analyze specific sensory stimulus, the evaluation and integration of this stimulus takes place in neural areas linked with the determination of value and reward. This makes it cognitively possible for someone to *prefer* a particular kind of stimulus (i.e.,

a work of art) but be able to ascribe it aesthetic value *regardless* of how much they like or dislike it. Personal and socio-cultural contexts influence individual preferences, and these factors carry a strong emotional charge. “The combination of all of these influences may shape not only the psychological (individual taste), but also the physiological (changes in the body) and neural (changes in the brain) response to a piece of art” (p. 306). Such complexity makes it untenable to locate neural activity related to aesthetic experience in a single region of the brain.

Cognition is embodied through experience, and human beings “not only perceive the external world but can also represent it via mental imagery” (p. 304). A work of art may trigger emotional responses because it offers simulated multi-sensory and motor stimuli that in turn can induce an empathetic response in the perceiver. In other words, a person can respond through their sensory-motor system to both the subject (e.g., what a figure is doing) and the visible traces created by the artist in the process of producing the work. Information generated by simulated stimuli can trigger powerful neural activity. Like that offered by actual stimuli, such information must be integrated by the brain for it to be meaningful.

Works of art offer a wealth of simulated sensory information as a result of their imagery, material and physical properties. Aglioti et al. offer a neurocognitive framework for understanding the process of experiencing and evaluating works of art—one that argues for an expansive understanding of perception as being both multi-sensory and dependent on real and simulated stimuli.

3 Bowen, D. H., Greene, J. P., & Kisida, B. (2014). Learning to think critically: A visual experiment. *Educational Researcher*, 43(1), 37-44.

Greene, J. P., Kisida, B., & Bowen, D. H. (2014). The educational value of field trips. *Education Next*, 14(1), 78-86.

RESEARCH DESIGN SINGLE-VISIT PROGRAMS CRITICAL THINKING HUMAN CONNECTION & EMPATHY
ACADEMIC CONNECTIONS

These articles present the results of the first large-scale study conducted to gauge potential benefits of single-visit art museum field trips to students' critical thinking skills and other capacities, such as historical empathy and tolerance. During the year of its opening, the Crystal Bridges Museum of American Art in Bentonville, Arkansas held a lottery to award slots in the School Visit Program—and to the treatment group. A stratified randomization procedure was used to select the control group. A total of 3,811 students in grades 3-12 from 70 schools participated in the study.

Classroom teachers prepared treatment groups for the visits using pre-experience materials provided by the museum; teachers also led similar classroom-based, post-experiences. During the museum visits, educators engaged groups of 10-15 students in student-driven discussions around four to five works of art. With each work and discussion, educators encouraged students

to think together, engage with each work of art on a deep level, and seek out their own unique interpretations of the work at hand. When appropriate, museum educators supplied historical and sociological contexts of the works in order to facilitate greater student understanding. (Bowen, Greene, & Kisida, p. 39)

Several weeks after the field trips, researchers asked students to write a brief essay about a painting reproduction that they had not previously seen. Researchers used the critical thinking rubric designed by Luke, Stein, Foutz and Adams (2007; see also Adams et al., 2007) for the Isabella Stewart Gardner Museum's School Partnership Program study to analyze the essay data. The rubric defined critical thinking through a list of seven key behaviors: observation, interpretation, evaluation, association, problem finding, comparison, and flexible thinking. Students who participated in the school visit program demonstrated significantly stronger critical thinking skills in their essays. The program's benefits on

students' critical thinking skills were greater for students from "disadvantaged" backgrounds (e.g., rural students, students eligible for free or reduced lunches, non-White students) who "may have been less likely to have had such an experience absent of the treatment" (Bowen et al., p. 42). The benefits were also greater for younger students than for older ones. In terms of critical thinking, researchers found no statistically significant differences between treatment and control groups if students were: White, from larger towns, in high school, or attended schools with lower student participation in free or reduced lunch programs.

The researchers also used surveys to assess the impact of museum visits on students' capacity for tolerance (the ability to consider perspectives and opinions that differ from one's own) and historical empathy, which they defined as "the ability to understand and appreciate what life was like for people who lived in a different time and place" (Greene, Kisida, & Bowen, p. 83). The surveys asked students to express their level of agreement or disagreement regarding statements such as, "People who disagree with my point of view bother me" (tolerance) and "I have a good understanding of how early Americans thought and felt" (historical empathy) (Greene et al., p. 83). In their survey responses, treatment students showed higher degrees of tolerance and historical empathy than control students. The tolerance benefit was slightly higher among students from high poverty schools. For rural students, benefits in both tolerance and historical empathy were greater. This study did not assess whether these benefits may endure for longer periods beyond the "several weeks" that elapsed between the visits, surveys, and essay writing.

This study also found that students retained a great deal of factual information from their tours and recalled details about the paintings at a high rate. These details and information were relevant to historical and sociological topics valued in school; for example, students talked

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about art in connection to “abolitionists making maple syrup to undermine the sugar industry, which relied on slave labor,” or about “the importance of women entering the workforce during World War II” (Greene

et al., p. 81). These results suggest that art might be an important tool for conveying traditional academic content effectively but, as the researchers admit, their analysis cannot prove this speculation.

4 Behrendt, M., & Franklin, T. (2014). A review of research on school field trips and their value in education. *International Journal of Environmental and Science Education, 9*(3), 235-245.

PEDAGOGY SINGLE-VISIT PROGRAMS LEARNING IN THE MUSEUM ENVIRONMENT

Behrendt and Franklin examined literature about experiential learning activities, (specifically, science-related) field trips, and the role of the classroom teacher prior to, during, and after the field experience. The authors found research to support that “experiential learning at formal and informal field trip venues increases student interest, knowledge, and motivation” and that students who actively participate during field trips have more positive attitudes about related academic subject (p. 235). They also point out that high quality experiential activities require organization, planning, and student reflection to ensure authentic learning takes place.

The reviewers discuss definitions and criteria for field trips, including Tal and Morag’s (2009) description of “field trips as student experiences outside the classroom at interactive locations designed for educational purposes” (p. 236). They cite Michie’s (1998) five proposed purposes for science field trips, identified as: (1) providing firsthand experiences; (2) stimulating interest in content; (3) adding relevance to learning; (4) strengthening students’ perceptual skills, and (5) promoting social development (p. 236). Behrendt and Franklin also use literature analysis to differentiate between formal and informal school field trips. Formal experiences are highly planned; students follow a predetermined agenda and their experiences are similar. Informal field trips are less structured and allow for more individualized experiences; students choose the objects and activities with which they would like to interact. Across the literature, the authors found that key criteria for all field trips is that they provide unique, experiential learning that would not be accessible in traditional classroom settings.

Experiential learning is an educational strategy in which teachers guide students through specific, first-hand experiences and reflections about those experiences in order to “increase knowledge, develop skills, clarify values, and develop people’s capacity to contribute to their communities.” (Association for Experiential Education, 2012, as cited in Behrendt & Franklin, p. 237). Drawing on the work of Kolb (1983), the reviewers explain that such learning is sensory-based and requires experiential activities such as watching, listening, and touching. These activities, in turn, lead to students “grasping an experience and then transforming it into an application or result” (p. 256). They describe Kolb’s “spiraling four step cycle” of experiential learning, during which students; (1) have an experience, (2) reflect on the experience, (3) analyze the experience, and (4) test knowledge inspired by the original experience while creating a new experience that sparks a repeating of the cycle. This model of learning posits that knowledge construction takes place over time and is cumulative; each learning cycle requires students to “synthesize a concept... into an already established knowledge pool” (p. 237). The authors list increased student curiosity and engagement, improved student observational and social skills, and maximized instructional time among the many potential benefits of experiential learning activities such as field trips.

In addition to potential benefits of experiential learning and field trips, Behrendt and Franklin note common obstacles to implementing such learning activities. These include Michie’s (1998) list of field trip barriers (transportation issues, teacher training and experience, scheduling and time constraints; lack of administrator

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support, rigid curricular mandates, student behavior, and limited venues) among several others.

The reviewers reference studies about the critical role teachers play in ensuring successful field trip experiences for their students while also noting research that suggests teachers “have little training or pedagogical knowledge relating to the process of field trip planning and preparation” (p. 239). They present Tal and Steiner’s (2006) three levels of teachers’ participatory engagement with field trips—ranging from (1) active and enthusiastic involvement in all the preparation and field trip activities, to (2) status quo participation in field trips that have been embedded in the school culture and routines, to (3) passive involvement and/

or disassociation from field trip activities. Preservice training and professional development programs that include more explicit training related to the pedagogy of experiential education and field trips are proffered as solutions for helping teachers to better understand their roles and responsibilities before, during, and after field trips. Research into such training indicates that once teachers gain confidence and clarity around field trips and experiential learning, they are increasingly likely to schedule student field trips. Further, more fully engaged and knowledgeable teachers better ensure that such trips are more likely to result in high quality experiences that magnify student engagement and learning outcomes.

5 Csikszentmihalyi, M., & Robinson, R. E. (1990). *The art of seeing: An interpretation of the aesthetic encounter*. Malibu, CA: The J. Paul Getty Trust.

RESEARCH DESIGN ENGAGEMENT WITH ORIGINAL WORKS OF ART CRITICAL THINKING
SENSORIMOTOR & AFFECTIVE RESPONSE HUMAN CONNECTION & EMPATHY ACADEMIC CONNECTIONS

Commissioned by the Department of Education and Public Affairs at the J. Paul Getty Museum more than twenty-five years ago, Csikszentmihalyi and Robinson’s study sought to determine whether there was such a thing as an aesthetic experience. The authors also sought to identify what characterized it and to assess whether specific actions or conditions could help people experience it more often. They defined aesthetic encounters as experiences where “information coming from an artwork interacts with information already stored in the viewer’s mind...” thus proposing that they are individually, socially, and culturally specific (pp. 18-19). The authors confirmed the viability of aesthetic encounters.

Csikszentmihalyi and Robinson used interpretive social science to investigate what experiences with works of art meant to subjects who were most familiar and skilled with aesthetic encounters—professionals in the visual arts. Interviews and a questionnaire served as the primary methods of data collection for the researchers, who sought to surface what was happening in each

respondent’s consciousness as they engaged with objects.

The researchers found that while aesthetic experiences differed in content, they followed a consistent structure: focusing attention, problem solving, and discovery. This structure closely paralleled criteria for aesthetic experiences outlined by American philosopher Monroe Beardsley as well as Csikszentmihalyi’s research on “flow”—experiences that produce a heightened state of consciousness where the activity itself becomes the goal. The latter alignment suggests that aesthetic encounters and the parts that make up their structure are also autotelic; the process (attention, problem solving, and discovery) is itself, the goal of the encounter. The authors elaborate on each aspect of the structure—noting that discovery is especially critical to experiences with works of art:

1. *Focusing attention*, or perceptual hook, refers to concentrating one’s range of stimuli to a multisensory-based absorption with an object. This process is enhanced by having

5, cont. clear goals and feedback that confirms or rejects perceived notions of the work of art.

2. *The tackling of challenges, or problem solving*, results from the interplay between the object's characteristics and the perceiver's skills and knowledge. Aesthetic encounters were more likely to be significant when the challenge posed by the object matched the skills of the person and when individuals had a clear interpretive problem to solve. The concrete, observable evidence offered by works of art served as a form of feedback that enabled the "art expert" study participants to check their interpretations.
3. *Discovery* emerged as a central component of the aesthetic encounter. Although "flow" theory research on respondents working in other fields of practice also revealed discovery as a factor in their experience, it played a more significant role for professionals describing aesthetic encounters. Echoing John Dewey's theories in *Art as Experience* (1934), the researchers proposed that the reason for discovery's salience lies in the human quality of works of art: "aesthetic interaction is not simply between the viewer and the work but includes a third aspect that represents all of the perceptual, emotional, intellectual, and communicative factors that went into the creation of the work" (p. 133). The process of interpretive inquiry is crucial: "Aesthetic enjoyment differs from other kinds [of flow experiences] in that the skills required are interpretive and lead to a sense of unfolding discovery—a discovery, to be precise, of human experiences. The visual arts provide this sense of discovery in the form of concrete objects that embody human action" (p. 183).

The consistency of aesthetic encounters across the study's respondents was notable. Differences of age, gender, position, experience, skill, or type of training and specialization had minimal impact on structural differences, but these factors did influence the

motivations and content of aesthetic encounters—what specifically stimulated each viewer.

The researchers also identified four dimensions of the aesthetic experience: the perceptual dimension, the emotional dimension, the intellectual dimension, and the communicative dimension. They clarify that each dimension comprehends "a variety of discrete but related ways of experiencing" (p. 29), and that, to some degree, all dimensions tend to be present in meaningful experiences with art.

The perceptual dimension was present for all respondents, as all interviewees reported being visually drawn to the features of art objects. Most expressed an appreciation of formal elements and their organization. Some referred to the power of sensing the overall physicality of the work, as well as its scale—something that is only possible with original artworks, and again harkens back to sensorimotor responses. Engagement with the perceptual qualities of a work led some respondents to admire the craft involved, or "how well the object was made" (p. 31). On a related note, the researchers explained that sometimes perceptual responses were intermediaries to other concerns; in some cases, respondents commented on the choices and traces of the artist indicating that observational clues provided access to the art-making process. In short, the perceptual dimension was found to be as varied as it was central.

The researchers found that, like the perceptual, the emotional dimension, "lurks behind every encounter with a work of art, and if one is open to it, it can transform the experience in important ways" (p. 4). Ninety percent of respondents conveyed an appreciable level of emotional involvement; the contents of such responses were broad and varied, and included reports of positive and negative emotions. Often, respondents alluded to the salience of personal feelings—past associations and experiences—in their experiences with art objects. Some referred to art's ability to provoke a visceral, physical reaction, or to elicit a contemplative state. The researchers also noted the emotional quality of the "initial spark" when respondents encountered a work of art. While some respondents emphasized the power of artworks to

produce emotion, others spoke of the artist's ability to portray and share feelings. Others reported awe or inspiration at the ability or genius of the artist.

Responses related to the emotional dimension suggested a sort of development over the course of a particular engagement with a work of art where different kinds of emotions, as well as thinking, enter the experience. Such interplay underscores the intertwined role that emotion and cognition play in making sense of the art object.

A significant level of intellectual engagement was present in the majority of cases. Respondents ascribed varying levels of importance to this dimension, from considering it central to their experience with artworks, to deeming it irrelevant, or even an obstacle. The intellectual dimension is aligned with a quest to understand a work; it involves a sort of sleuthing to make sense of, or interpret, a particular object. For some, intellectual satisfaction lay in the closure that understanding can bring—in finding a solution to the puzzle of the work, so to speak. For others the rewards were in the openness to new ways of thinking about a work.

Csikszentmihalyi and Robinson identified three kinds of intellectual engagement, which relate respectively to historical understanding, art historical understanding, and understanding in connection to the artist's life. As the researchers remark, the intellectual dimension is closely linked—as are the other dimensions—to the communicative dimension of the aesthetic experience. They go on to clarify that the communicative aspects of encounters with artworks are multidimensional, as they integrate the visual, the emotional, and the intellectual. Many of the respondents described their encounter with an artwork as a dialogue or process of communication. Most often, the dialogues fell into three categories, all indicative of a sense of human connection: communication with an era or culture, communication with an artist, and communication within the viewer.

In their experiences of communication with an area or culture, respondents pondered either differences between the past and the present or continuities between them, depending on the case. Experiences of

communication with the artist involved, for example, a sense of sharing feeling states with the artist; a sense of understanding the artist's work; a sense of relating to, or entering, the world portrayed by the artist; or simply a feeling of profound human communication, independent of what might be being said. At times, imagination entered into communicative experiences with artists or artworks, as respondents vividly considered depicted worlds or characters. For some, connections with the artist depended on the presence of original artworks, with their physical traces of the creative process. In terms of experiences of communication with oneself, respondents described interactions with art as means of questioning or considering themselves, their development, and/or their relationship with the world. Such experiences also involved memories of and associations with significant personal experience during interactions with art objects.

A few respondents reported transcendental experiences, outside of the realm of the everyday, as they engaged with works of art. They described these as a state of heightened awareness; as a loss of self; as a full awareness of the integrated, sensorial self; or as transportation outside the self. Some also referred to a sense of absorption; to being on a plane above things; to works that completely engross the viewer in the way nature does; and to the spiritual. The researchers did not create a special category for such experiences, perhaps because of their low incidence, but rather included them under "communication with oneself."

Though the subjects of the study differ from those of the NAEA/AAMD study in that these were highly trained adults, the authors' findings still offer a useful framework for understanding aesthetic experiences. Most significantly, they show that such encounters are inherently multidimensional and widely varied. As Csikszentmihalyi and Robinson note, the distinction between structure and content allows experiences with works of art to have a great deal of diversity, based on both viewers and objects, while still holding together as a consistent process. They indicate that there seems to be a developmental trend in viewers' interpretive encounters; attraction to an object often begins with visual and sensory impact, moves to

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biographical reference and emotional content, and then engages intellectual dimensions. Museums can optimize experiences with art by displaying works to focus our attention on them; creating installations that pose interpretive goals that challenge expectations and ask viewers to consider specific aspects of the work; and providing opportunities where viewers can develop their skills.

Drawing from philosophy and various branches of psychology, Csikszentmihalyi and Robinson conclude that the value of aesthetic experiences is humanistic: "Total involvement in an aesthetic experience forces viewers to confront their emotions and values and provides a taste of sharing the essence of other beings, other ways of life" (p. 184).

6 Damasio, A. (2005). *Descartes' error*. New York, NY: Penguin Putnam.

SENSORIMOTOR & AFFECTIVE RESPONSE

In this watershed book, neurologist Antonio Damasio challenges René Descartes' separation of rationality and emotion. By examining a series of scientific case studies, including his own work with brain-injured patients, Damasio casts the separation between mind and body as fictional, arguing that "the mind is embodied, in the full sense of the term, not just embrained" (p. 118).

One of his key contributions is the proposition that emotions, far from being something to be suppressed or neglected, are inextricably connected to rational thinking and to normal social behavior; in fact, they are "just as cognitive as other precepts" (p. xv). Feelings serve as internal guides for individuals and for those around them; the effective deployment of reasoning strategies depends on the ability to experience feelings. While it is true that, at times, feelings can interfere with the process of reasoning, the absence of feeling can also compromise rationality.

Damasio shows that feelings and reason are

interconnected through the same neural networks in the brain. He further shows that the brain and the rest of the body "constitute an indissociable organism, integrated by... mutually interactive biochemical and neural regulatory circuits" (p. xiii). From this standpoint, Damasio makes the case that the essence of a feeling is rooted in the structure and state of the body at any given moment; the mind depends on the interplay of body and brain, and feelings are a key piece of the equation.

Taking a humanistic stance, the scientist cautions against equating the physiology of feeling with the human phenomenon of experiencing feeling and instead suggests that feelings "form the base for what humans have described... as the human soul or spirit" (pp. xvii-xviii). Finally, Damasio expresses skepticism of science's presumption of objectivity and definitiveness, clarifying that scientific results are, in his view, provisional approximations "to be enjoyed for a while and discarded as soon as better accounts become available" (p. xviii).

7 Dewey, J. (1980). *Art as experience*. New York, NY: Perigee Books. (original work published in 1934)

PEDAGOGY ENGAGEMENT WITH ORIGINAL WORKS OF ART CREATIVE THINKING SENSORIMOTOR & AFFECTIVE RESPONSE HUMAN CONNECTION & EMPATHY

This influential book is based on American psychologist, philosopher, educator, and activist John Dewey's lectures on aesthetics delivered at Harvard University in 1932. Dewey proposes that a work of art has aesthetic

standing only when it becomes an experience for a human being. He defines "an experience" (p. 5, emphasis Dewey's) as an interaction that results in a sense of integration and fulfillment, and suggests that

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it must also exhibit pattern, structure, and relationships between its parts to have meaning. This quality of unity or wholeness is what distinguishes such “experiences” from other kinds of interactions with the world.

Dewey rejects the separation between the kind of art one finds in a museum and everyday experiences that stimulate human attention and interest. He argues that works of art are “part of the significant life of an organized community” (p. 7) reflecting the emotions and ideas of the social body, and that art “develops and accentuates what is characteristically valuable in things in the everyday environment” (p. 11). As such, artworks must be understood as continuous with life.

Anticipating much of the most current research in human development, Dewey proposes that “life goes on in an environment; not merely *in* it but because of it, through interaction with it” (p. 13). However, in order for an object to be art it must be created with the intention that it be perceived. It requires an audience in order to be complete: “There is the speaker, the thing said, and the one spoken to. The external object, the product of art, is the connecting link between artist and audience” (p. 106). Dewey’s assertion that meaning is produced in the act of perception has particular relevance when one considers the impact of engagement with original works of art. The very process of sensing the work becomes creative; the beholder orders the elements of the whole—including the object’s material and form—in the act of comprehending the work. It is this process of dynamic interaction that constitutes the meaning of the work, and thus, Dewey declares, “The real work of an artist is to build up an experience that is coherent in perception while moving with constant change in its development” (p. 51). When the audience engages in the creation of the work, the artist also becomes a beholder who takes part in the aesthetic process.

Dewey’s characterization of perception as an embodied process that interweaves intellect, emotion, and volition resonates with the views of many cognitive psychologists today who take particular interest in sensorimotor and affective responses of aesthetic experiences. He differentiates “mere recognition”

from true perception, framing the latter as an act of reconstruction that involves the whole person:

*“This act of seeing involves the cooperation of motor elements even though they remain implicit and do not become overt, as well as cooperation of all funded ideas that may serve to complete the new picture that is forming... an act of perception proceeds by waves that extend serially throughout the entire organism. There is, therefore, no such thing in perception as seeing or hearing *plus* emotion.”* (p. 53)

Anticipating Csikszentmihalyi’s concept of “flow,” Dewey describes the aesthetic experience as a process of “yielding” or losing oneself in order to take in what is perceived. In other words, “In an experience, things and events belonging to the world, physical and social, are transformed through the human context they enter, while the live creature is changed and developed through its intercourse with things previously external to it” (p. 246). He further argues against typical approaches in psychology and philosophy, stating that “there are no intrinsic psychological divisions between the intellectual and sensory aspects; the emotional and ideational; the imaginative and the practical phases of human nature” (p. 247).

Finally, with regard to issues of human connection and empathy, Dewey locates the value of artworks in the fact that they embody experiences that are ultimately human and social. As such, they allow audiences to enter civilizations and cultures other than their own, however remote. When artworks enable us to communicate and participate “in values of life by means of the imagination” (p. 336), they also broaden and deepen “our own experience, rendering it less local and provincial” (p. 332). Works of art, are for Dewey, “the most intimate and energetic means of aiding individuals to share in the arts of living” (p. 336).

8 DeWitt, J., & Storksdieck, M. (2008). A short review of school field trips: Key findings from the past and implications for the future, *Visitor Studies*, 11(2), 181-197. doi: 10.1080/10645570802355562

**PEDAGOGY SINGLE-VISIT PROGRAMS LEARNING IN THE MUSEUM ENVIRONMENT
SENSORIMOTOR AND AFFECTIVE RESPONSE ACADEMIC CONNECTIONS**

DeWitt and Storksdieck review three decades' worth of literature on field trips. The authors discuss measureable impact on student learning as a result of field trip experiences and variables that contribute to the success (or ineffectiveness) of learning during field trips. They report key findings, discuss implications for classroom-based teachers and educators at informal learning sites who are planning future field trip experiences for students, and suggest topics for future field trip research.

Much of the field trip research from the 1970s through the 1990s focused on whether and how "out-of-school" learning experiences support school-based instruction and students' overall academic performance as a means for justifying field trips' inclusion in the school curriculum. Some research highlighted the educational potential of informal learning environments while making comparisons between such student learning experiences and those that typically take place in the regular classroom. While some studies produced conflicting results about the effectiveness of field trip versus regular classroom learning on "cognitive or conceptual outcomes," the majority of research indicated that field trips "may lead to somewhat better learning outcomes than school-based instruction" (p. 181), particularly with regard to "learning facts and concepts" (p. 182). Documented improvements in students' learning as a result of their field trip experiences are often modest, however, DeWitt and Storksdieck point out that the typical brief, single-visit nature of the experiences render any measureable gains significant.

Later research into the learning that takes place during field trips reflects their propensity to support expanded ideas about cognitive learning outcomes that go "beyond facts and concepts to include process skills, awareness of lifelong learning community infrastructure" (p. 182) and include equally valued positive affective and social outcomes, such as

students "sharing discoveries and experiences with others" (p. 185). The authors go on to propose that "affective outcomes—such as increased motivation and interest, sparking curiosity, or improved attitudes towards a topic—may be more reasonable for school trips than specific factual or concept learning outcomes" (p. 183).

The brevity of typical field trip experiences was less consequential when considering their lasting impact on students' emotional responses; "There is some evidence that suggests long-lasting positive affective impact, with students expressing increased interest in the subject matter of a school trip 18 months after a visit" (p. 184). The authors concede that studies designed to measure the long-term impact of field trips on student learning were less common due to "the logistical challenges of collecting data" and tracking students "over extended periods of time" (p. 183). However, researchers conducting short and longer term studies found that both students who participated in single visits and those who engaged in multiple visits to a singular informal learning site over several years recounted complex, descriptive feelings and memories about their experiences. The reviewers argue that such research indicates a substantial benefit to making field trip visits "more memorable and personal" and "building on the trip experience in the classroom," particularly for students who otherwise would have limited access to such informal learning sites and experiences (p. 183).

In terms of field trip pedagogy and structure, DeWitt and Storksdieck distill a variety of factors that can impact the effectiveness of field trips as learning experiences. Key variables are identified as: the relative novelty of the learning site paired with students' existing familiarity with concepts and content; classroom teachers' planning, practice, and engagement; and the responsiveness of educators at informal learning sites to the needs of school

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teachers and research on how students best learn. The authors explain,

discussions with students suggest that they learn the most from an exhibit when they already have some understanding of the concept being presented... At the same time, it can be difficult for museum practitioners to provide experiences specifically appropriate to each student's prior knowledge. Thus, the role of the teacher... in mediating such experiences becomes even more apparent (p. 185).

While substantial research has revealed explicit actions that teachers can take to maximize their students' field trip experiences and learning outcomes, other studies show that many classroom teachers are unaware of such actions or instead choose to "use field trips simply as a 'day out'" filled with "busy-work types of tasks and behavior management at the expense of encouraging engagement with exhibits and objects" (p. 187). Museums and other informal learning sites may help to improve field trip outcomes by encouraging teachers to: familiarize themselves with field trip sites in advance of class visits; thoroughly prepare students with what to expect and clear learning goals aligned with the broader classroom curriculum; and allow "students time to explore and discover during the visit" (p. 187). This particular recommendation supports research suggesting that optimal field trip experiences balance more structured learning goals and activities (e.g., worksheets) with opportunities for students to exercise free-choice explorations of field trip sites. According to the authors, "[S]uch visits also seemed to enhance deeper involvement, scaffold learning, and encourage social interactions" (p. 186).

Finally, museum educators have long understood that the structure of an effective field trip experience extends to what happens before and after the visit. As such, student learning "can be enhanced by the use of pre- and post-visit activities in the classroom" (p. 186) that increase "opportunities for sharing and

feedback" (p. 187). Classroom teachers may be less familiar with the pedagogy of learning in museum environments and could benefit from increased support and education in this area.

DeWitt and Storksdieck offer a summarizing list of recommendations for classroom teachers and educators in informal learning environments as they plan and develop future field trip experiences, stating that field trip programs should:

- be responsive to teachers' needs, goals and contexts... and be developed in cooperation and consultation with teachers;
- support embedding the field trip into the classroom curriculum;
- offer multiple learning opportunities during the trip;
- take advantage of the unique qualities of the setting and provide experiences that cannot be replicated in the classroom;
- provide a degree of structure, but also allow time for exploration;
- give students a measure of choice and control over their experience;
- provide opportunities and encouragement for students to engage in discussion with adults and with other students;
- be based on exploration, discovery, and process skills rather than transmission of facts, whereby the out-of-school setting functions less as a place at which specific learning occurs, and more as a place in which students collect primary experiences and data that are subsequently analyzed in the classroom; and
- be continuously improved through feedback from teachers and students. (pp. 190-191)

Despite the growing body of evidence for the value of field trips on student learning, the authors note that such experiences "are increasingly threatened by limited school funding, lack of time and crammed

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curricula, the pressures of standardized tests and student assessments, and a need for teachers and principals to document whether and in what way individual field trips satisfy curricular demands” (p. 182). Such challenges and obstacles reinforce the

continued need for research on how to better support and engage teachers in participating in field trips and prove the multifaceted value of field trips and sites of informal learning.

9 Eisner, E.W. (2002). *The arts and the creation of mind*. New Haven, CT: Yale University Press.

PEDAGOGY CRITICAL THINKING CREATIVE THINKING SENSORIMOTOR & AFFECTIVE RESPONSE
HUMAN CONNECTION & EMPATHY

Art educator and scholar Eliot Eisner makes a compelling case for the value of the arts in developing consciousness and for their central place in school. Building on Dewey’s ideas, Eisner adopts a biological and humanistic basis for his argument, drawing a direct line between sense-perception, experience, concept-development, the capacity for representation, cultural conditioning, discernment, emotive expression, and the overall development of mind. He argues that the arts should not be subjected to the emphasis on and expectations of efficiency that characterizes so much of teaching and education in the United States; arts curricula should, instead, emphasize the pleasure that can result from engaging with the arts. For Eisner, the value of the arts does not lie in extrinsic factors; instead, the fact that the arts develop thinking skills *in the arts* is sufficient justification for their value in education. Perception is cognition: “What we see is not simply a function of what we take from the world, but what we make of it” (p. xii).

Eisner posits that, within education, the ability to imagine and form a range of mental concepts is part of multiliteracy. Access to the imaginative, communicative, and expressive forms and media of the arts not only conditions what students are able to generate; it influences what they are able to perceive and therefore shapes their sense of the possible. Eisner advocates that “if students are to learn to see and talk about visual qualities, they need occasions for such seeing and talking” (p. 12).

Eisner notes that there are a series of factors that impact what students learn in the arts: the constraints

and opportunities offered by the materials and activities; the prompts, tasks, and support that the teacher provides to students; classroom conventions or norms, which influence the kind of thinking and behaviors that are encouraged; and finally, the classroom ambiance or environment. These factors interact and “create a cognitive culture that has as much to do with developing dispositions as with developing aesthetic and analytic abilities” (p. 74). He articulates a series of outcomes (primarily focused on art-making experiences but also relevant to looking at and interpreting works) that may result from involvement with the arts:

- “Attention to relationships” (p. 75) or “learning to see the interactions among the qualities constituting the whole” (p. 76);
- Improvisation and “flexible purposing” or the capacity “to shift direction... to redefine one’s aims when better options emerge” (p. 77);
- Understanding and using materials as a medium, imagining possibilities and making conscious choices in shaping a work of art;
- Experiencing emotion and having the capacity to give form to expressive content;
- Exercising imaginative skills;
- Framing the world and acquiring tools for making sense of it from a variety of aesthetic perspectives, including capacities to notice and be moved by an object’s sensual qualities;

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- The ability to transform experiences with the arts into speech and texts, including using language to describe what they perceive and participation in critical discourse; and
- Understanding art as a cultural artifact and “general principles regarding cultural influences on the arts” (p. 90).

Eisner sums up these outcomes by saying that “arts education should foster the ability to carry on those fine-grained discriminations that constitute qualitative forms of inquiry” (p. 91). Eisner, like

Dewey, emphasizes the value of communal learning experiences. The author explains that desirable outcomes of such group experiences include finding practical application for topics of inquiry, and practice with principles of democratic participation involving discussion, deliberation and consensus. In other words, part of what students learn is how to take part in a larger community of discourse. Eisner concludes by proposing a research agenda to advance understanding about teaching and learning in the arts.

10 Farrington, C. A., Roderick, M., Allensworth, E. Nagaoka, J., Keyes, T. S., Johnson, D. W., & Beechum, N. O. (2012). *Teaching adolescents to become learners. The role of noncognitive factors in shaping school performance: A critical literature review*. Chicago, IL: The University of Chicago Consortium on Chicago School Research. Retrieved from <https://consortium.uchicago.edu/sites/default/files/publications/Noncognitive%20Report.pdf>

PEDAGOGY ACADEMIC CONNECTIONS

With this literature review, Farrington et al. advance the notion that a student’s ability to learn stems from a combination of his or her capacity to use traditional academic skills (e.g., reading, writing, content comprehension) and a broader range of behaviors, attitudes, and strategies which the authors refer to collectively as *noncognitive factors*. These difficult to test but essential qualities reflect “the ways students interact with the educational context within which they are situated and the effects of these interactions on student’s attitudes, motivation, and performance” (p. 2). Underpinning their research is the understanding that learning and intelligence are not isolated in the human brain; they are also “embedded in both the environment and in socio-cultural processes” (p. 2). The authors acknowledge the problematic nature of framing some skills and factors as *cognitive* (i.e., “weightier, more academic”) and others as *noncognitive* (i.e., “fluffier... ‘soft’ skills”), but apply the terms given their wide use in educational policy circles and existing field literature in education, economics, and psychology (p. 2).

Farrington et al. refer to a host of recent research that challenges the effectiveness of K-12 education

trends toward increasing curricular rigor and academic expectations for students as a means for improving academic performance, as well as reliance on standardized test scores as the primary indicator for student success throughout high school, college, and life beyond. Instead they advocate for attention to students’ course grades and grade point average (GPA), which research indicates better represents both students’ cognitive knowledge and skills and noncognitive factors such as “study skills, attendance, work habits, time management, help-seeking behaviors, metacognitive strategies, and social and academic problem-solving skills” among others (p. 3). The authors propose five general categories of noncognitive factors: (1) academic behaviors, (2) academic perseverance, (3) academic mindsets, (4) learning strategies, and (5) social skills (p. 8). As research increasingly indicates that such noncognitive factors are crucial for college and life readiness, “a key task for educators becomes the intentional development of these skills, traits, and attitudes in conjunction with them development of content knowledge and academic skills” (p. 5).

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The researchers break down the category of “academic mindsets” into four attitudes reciprocally linked to student performance (measured by grades): (1) *I belong in this academic community*; (2) *My ability and confidence grow with my effort*; (3) *I can succeed at this*; and (4) *This work has value for me* (pp. 10, 28). Recent research indicating that short-term interventions can have a lasting effect on these attitudes has particular significance for the NAEA/AAMD study. Examples of conditions that nurture students’ positive academic mindsets—from a 2004 report by the National Research Council and Institute of Medicine—listed many variables with relevance to art museum field trip experiences, including:

providing students with opportunities to exercise autonomy and choice in their academic work; requiring students to use higher-order thinking to complete academic tasks; structuring tasks to emphasize active participation in learning activities rather than passively “receiving” information; emphasizing variety in how material is presented and in the tasks students are asked to do; requiring students to collaborate and interact with one another when learning new material; emphasizing the connection of schoolwork to students’ lives and interests and to life outside of school. (p. 36)

The authors note that “research on mindsets further suggests that a psycho-social approach could have major implications for reform efforts aimed at closing racial/ethnic gaps in student performance and

educational attainment” (p. 28). However, experimental studies in this area have been small scale and focused on a single group of students and more are needed. They encourage additional studies that include pre- and post-treatment measures to demonstrate clearer evidence connecting changes in student attitudes and beliefs to the tested interventions.

Farrington et al. also explore the category of Social Skills which are variously defined across the literature as capacities for “cooperation, assertion, responsibility, and empathy” and “self-management, self-awareness, social awareness, relationship skills, and responsible decision-making” (p.48). They note that social skills are difficult to study as an isolated category because the majority of research studies on the subject bind them to variables related to other noncognitive factors. A majority of the literature also centers on how social skill interventions impact students’ behaviors rather than academic performance. While meta-analysis into existing studies reveals some connection between such interventions and students’ academic performance, the links tend to be correlational instead of causal, again revealing the need for more research.

The authors conclude by recognizing that while studies across disciplines offer evidence for the importance of noncognitive factors in student achievement (measured in both short and long-term outcomes), there is a considerable lack of research on the practical application of such knowledge. Drawing from their research review, they identify areas for continued study focus as well as “critical gaps” to be filled (p. 73).

11 Foley, C. M. (2014). Why creativity? Articulating and championing a museum’s social mission. *Journal of Museum Education*, 39(2), 139-151.

CREATIVE THINKING

The Columbus Museum of Art’s (CMA’s) adoption of creativity as an institutional value is emblematic of art museums’ renewed emphasis on creativity and was the focus of a 2014 issue of *The Journal of Museum Education*. CMA takes the position that creativity involves the process of developing new

ideas (imagination), synthesizing and evaluating those ideas (critical thinking), and doing something of value with the results (creativity). An ideal outcome for creative ideas, actions or products is to progress, change, or impact the world (innovation) (pp. 143-144).

11, cont.

In its quest to promote creativity in its community, CMA aims to teach visitors how to think and engage with the world like artists. For the CMA educators, this means helping people to cultivate “deep questioning, a comfort with ambiguity, a sophisticated understanding of play as process” (p. 144). With notions of creativity and artists’ thinking in mind, CMA has re-envisioned its exhibitions and programs, including those for school audiences—whether these are focused on the interpretation of artworks or on artmaking.

Foley presents the foundation for the CMA’s shift in vision, citing notable articles published in *Newsweek*, work by economists like Daniel Pink, science and brain researchers like Jonah Lehrer, and education reformers such as Sir Ken Robinson. According to these many and varied resources, creativity is crucial to everything from 21st-century job preparedness, to problem solving for critical, global issues, to the quality of everyday life. The CMA staff concur with Sir Ken Robinson that the formal education system is “challenged to make any significant progress in fostering creativity,” and that institutions of informal education—such as museums—are ideally situated to make gains in this realm (p. 145).

The focus of the CMA journal articles is on the institution’s journey of re-envisioning itself rather than

particularities of its school programs’ goals, pedagogies, activities, or outcomes. This said, readers do learn that all programs are assessed with respect to “measurable outcomes that promote creativity” (p. 142) and are frequently reexamined and adjusted as needed to ensure alignment with the museum’s vision and values. CMA’s re-imagined school program outcomes are “focused on questioning and idea development,” based on learners’ interests rather than previous outcomes focused on “appreciating art... historical content, technique development, and aesthetics” (p. 150). Some activities take place beyond CMA. Critical thinking is identified as a major goal alongside creative thinking. In some cases, students have reconsidered their identity as artists as a result of participation.

CMA staff began to implement intentional, creative practices in their own work, applying strategies of “questioning, idea generation, risk taking, and play” (p. 146) in order to realize authentic creativity in their programs. By offering a clear definition of creativity and establishing visible markers of creative thinking, the museum also helped to challenge and debunk common clichés around creativity in the art world and in education circles. As a corollary, their resultant programming helps to raise questions about what K-12 school programs in an art museum should and could be.

12 Freedberg, D., & Gallese, V. (2007). Motion, emotion and empathy in aesthetic experience. *Trends in Cognitive Science*, 11(5), 197-203.

SENSORIMOTOR & AFFECTIVE RESPONSE

Freedberg and Gallese examine the feeling of empathetic engagement that spectators can experience in front of works of visual art, tracing its roots to particular neural mechanisms. Their argument presents bodily sensations and emotions as essential to this empathetic response.

The article begins with examples of viewers’ reports of bodily empathy (or “bodily resonance”) in front of artworks—for example, a felt activation of one’s muscles in response to a figurative sculpture, or

imagined sensations in the skin when viewing pictures of lacerated flesh. The researchers add that empathetic physical feelings can also occur in response to the visible traces of the artist’s creative gestures: brushwork, the movement of the hand on clay, etcetera. Freedberg and Gallese link this physical empathy to the work of mirror neurons, a special class of neurons that allow individuals to mentally “simulate” other people’s actions, intentions, and emotions. To clarify, when an individual performs

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a particular action, certain neurons are discharged in his brain. When another person observes the first person's action, the same neurons discharge in her brain, even if she is not moving. This mirroring of neurons allows people to connect to others' experiences, and has been framed by scientists as the physiological basis of human empathy.

Research has shown that the observation of static images can also lead to action simulation in the brain of the observer, possibly explaining the neurological underpinnings of felt physical empathy in front of artworks. Moreover, Freedberg and Gallese argue

that physical empathy in art experiences can easily transmute into emotional empathy, as viewers intuit the emotional consequences of felt actions or sensations. In this respect, they refer to Damasio's (2005) discovery that feelings are inseparable from the body's neural pathways.

The researchers contend that the automatic, preconceptual, embodied empathetic responses they describe are a crucial element of response to works of art, and that their understanding helps explain the power of images on human beings.

13 Gaufberg, E., & Williams, R. (2011). Reflection in a museum setting: The personal responses tour. *Journal of Graduate Medical Education*, 3(4), 546-549.

HUMAN CONNECTION & EMPATHY

This article presents *The Personal Responses Tour*, a museum-university partnership for medical students. This program was "designed to promote individual reflection, foster empathy, increase appreciation for the psychosocial context of patient experience, and create a safe haven for learners to deepen relationships with one another" (p. 546).

At the start of the tour, participants randomly selected a card with a prompt that asked them to make connections between a work of art and some aspect of life, inviting emotional response. Examples included: "Focus on a memorable patient of the past year, and find a work of art that person would find meaningful or powerful" (p. 546) and "Find a work of art from a culture or religious tradition other than your own, and identify something you find beautiful about the work" (p. 547). Participants explored the galleries individually for 20 to 30 minutes to address their prompt. Subsequently, the group came together and each student shared his/her object and response.

At the time the report was written, the program had been assessed only through participants' responses to a survey. Responses were overwhelmingly positive. Participants felt the program had offered opportunities to listen empathetically to others

in the group and to consider things from various perspectives. They also reported that the tour had stimulated reflection on meaningful issues and that it had allowed them to get in touch with their patients' humanity, as well as their own. One person summarized the value of the experience;

while viewing artwork in the museum setting could be beneficial for observation skills, in this visit it was more useful as an exercise in listening to one another and also identifying our motivations and passions... Appreciating those things within ourselves will help focus why it is we would like to become practitioners of medicine and perhaps give us a sense of purpose in times that may be very difficult. (p. 547)

Additionally, participant comments suggested that the program offered overwhelmed medical students a much-welcomed change of pace that allowed for reflection in a peaceful space which in turn generated feelings of being "whole and exceptionally calm" (p. 549). As in other cases, this article points to the inextricable relationship between program goals, pedagogical approaches, and outcomes in art museum education programs.

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- 14 Greene, M. (1995). *Releasing the imagination: Essays on education, the arts, and social change*. San Francisco, CA: Jossey Bass.

PEDAGOGY CREATIVE THINKING

Maxine Greene presents a view that encounters with art, and the imagination they can ignite, are inseparable from a quest towards a better reality. Greene believed that engagements with art are “the most likely mode of releasing our students’... imaginative capacity and giving it play” (p. 125). According to Greene, when we actively engage with a work of art, we imaginatively constitute an entire world and enter it with the various dimensions of our self: perceptually, affectively, and cognitively. When this occurs, we can begin to see, hear, and sense more in our experience; we become more awake to the world and ourselves. In Greene’s words, “we lurch, if only for a moment, out of the familiar and the taken-for granted” (p. 123). In this way, art prompts us to entertain “the as-if, the merely possible” (p. 125), and to see beyond the frames of presupposition and convention. New avenues for choosing and for action may open and, in the light of possibility, we may take initiative to work towards a better reality.

In short, Greene believed that active engagements with works of art could support an education where people “become different... find their voices, and... play participatory and articulate parts in a community in the making” (p. 132). Signaling the importance of pedagogy, Greene stated that the kind of encounters with art for which she advocated called for “tutoring in dialogue about the arts” (p. 125), for educators who relinquish control of what is discovered as meaning, and for conscious participation on the part of learners. As a means for realizing such a vision, Greene calls for an emancipatory pedagogy that blends art education and aesthetic education to engender in students “imagination and perception, a sensitivity to various modes of seeing and sense making, and a grounding in the situations of lived life” (p. 138). She clarifies

each aspect of this unified pedagogy, explaining that “art education” refers to the study of genre (e.g., dance, music, painting, graphic arts) while “aesthetic education” refers to “deliberate efforts to foster increasingly informed and involved encounters with art” (p. 138).

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In Greene’s vision, imagination and critical thinking are inseparable. However, her notion of critical thinking goes beyond exercising evidential reasoning—it relates to awareness about power structures and their impact. For example, Greene emphasized the importance of making “critical sense of what authoritative others are offering as objectively, authoritatively ‘real’” (p. 126). In her view, this included certain views on education. To be specific, Greene stressed the importance of combating standardization. She argued that the administrative focus on the manageable, the predictable, and the measurable in education is at odds with the restlessness and unpredictability associated with art experiences. She also felt that a preoccupation with world-class achievement could squelch the picturing, questioning, inquiring, and cognitive adventuring that she deemed so essential to human flourishing.

15 Hein, G.E. (1998). *Learning in the museum*. New York, NY: Routledge.

RESEARCH DESIGN PEDAGOGY LEARNING IN THE MUSEUM ENVIRONMENT

Hein contextualizes museum learning and visitor studies within a synthesized framework of the histories, cultures, and theories that shape the broader story of contemporary Western education. He distills a variety of epistemologies, theories of learning, and pedagogical approaches into four educational theories—expository-didactic, stimulus-response, discovery learning, and constructivism—and provides examples of how each might manifest in museum practice. Further, Hein delves into possibilities for conducting research on visitor experience and learning, covering a range of theoretical and practical variables and the methodologies that support them. The author is thorough (yet concise) in his explorations of educational and research paradigms, but is explicit in his favoring of “a constructivist view of education for museums and a naturalistic approach for studying visitors” (p. x).

Hein argues “the inevitability of constructivism.” He writes, “If we accept modern theories of learning, then we inevitably need to accept the constructivist position on theory of knowledge at least to some degree” (p. 34). Drawing on the work of theorists such as Dewey, Piaget, and Vygotsky, the author describes two key components of constructivist learning; (1) active participation of learners as they engage both “their hands and minds” in explorations and experiments without singular or predetermined outcomes, and (2) validation of learner knowledge by whether or not it fits within the “constructed reality of the learner” rather than “some external standard of truth” (p. 34). In other words, “the process of learning is not a simple addition of items into some sort of mental data bank but a transformation of schemas in which the learner plays an active role and which involves making sense out of a range of phenomena presented to the mind” (p. 22). Constructivists contend that learning—an active, experiential process of meaning-making—is dependent on (and will vary with) the backgrounds, experiences, and developmental levels of each learner.

Hein makes a case for a constructivist museum based on general conclusions drawn from his review of research on learning in museums:

1. People ‘learn’ in museums... They learn about themselves, the world, and specific concepts; they have aesthetic, spiritual, and ‘flow’ responses.
2. In order to maximize their potential to be educative, museums need first to attend to visitors’ practical needs; degree of comfort influences the value of the museum experience.
3. People... incorporate the content of museums into the agendas they bring with them, and their social interactions, attention, fantasies, and feelings include, and often focus on, the content of museums.
4. People make unique, startling connections in museums.
5. Museums are not efficient places for traditional “school” education, learning specific facts and concepts, because people don’t spend enough time and are not there primarily for that purpose.
6. Staff should never underestimate the value of wonder, exploration, expanding the mind, providing new, cognitively dissonant... and aesthetic experiences... these are an integral part of learning.
7. For visitors to have a positive experience, their interactions with the contents of the museum must allow them to connect what they see, do, and feel with what they already know, understand, and acknowledge. (p. 153)

In his concluding chapter, Hein presents the constructivist challenge to museums: “How can we fulfill our responsibility as teachers to lead our visitors so that ‘they recognize that they too can begin to know?’” (p. 155). He responds to this challenge with components that constitute a systemically constructivist museum. The author also advises that these should be considered as “matters of degree, not absolute standards” (p. 155).

15, cont.

Components with particular relevance to this study include:

- Connections to the familiar – As they work to help visitors “make connections between the known and the new” (p. 157), staff consider all aspects of the visitor experience—from visitors’ associations with the museum’s location and architecture, to orientation within the museum’s spaces, to “intellectual comfort” with the exhibition and program content.
- Social interaction – Staff “deliberately capitalize on learning as a social activity” (p. 174), building opportunities for social interactions and cooperative learning into programs and exhibitions.
- Intellectual challenge – Keeping in mind the developmental learning theories of Piaget (disequilibrium) and Vygotsky (Zone of Proximal Development) staff strive to design museum experiences that “challenge our visitors but provide them with enough familiar context so they can rise to the challenge” (p. 176).

Finally, Hein emphasizes that staff must make every effort to study the visitor experience, collect and apply visitor feedback, and involve visitors in the development of exhibitions and programs if they are committed to constructivist theories.

16 Hubard, O. (2011). Illustrating interpretive inquiry: A reflection for art museum education. *Curator*, 54(2), 165-179. PEDAGOGY ENGAGEMENT WITH ORIGINAL WORKS OF ART

Hubard proposes a way to distinguish the specific process that she calls “interpretive inquiry” (a process particularly pertinent to art, and especially encounters with original works) from more generalized inquiry-based teaching methods and strategies applied across disciplines. After offering a broad definition of inquiry as “the process of seeking understanding by questioning,” Hubard describes “factual inquiry” or inquiry “whose purpose is to discover facts” (p. 165). She compares such inquiry with the purpose of inquiry in art museums, which she posits as “constructing interpretations. While the process of interpretive inquiry often takes the form of facilitated group dialogue in museum settings, she clarifies that it “can also be conducted through other means” and that “group dialogue does not necessarily constitute an inquiry” (p. 177).

The author explains how “questioning, observation, association, speculating, evidential reasoning, and conclusion forming” (p. 175) are part of both factual and interpretive inquiry-based processes, but continues on to outline five characteristics distinct to the interpretive:

- Interpretive inquiry is neither linear nor efficient, but rather follows a flexible, web-like path.
- In interpretive inquiry, “each insight or discovery warrants deep consideration” (p. 175).
- Analogies and metaphors are frequently used as sense-making strategies within interpretive inquiry.
- Uncertainty and contradiction are necessary components of interpretive inquiry.
- In interpretive inquiry, the goal—to find significance in the work—is met at every step and never fully met.

In her conclusion, Hubard suggests that the field at large would benefit from the kind of research planned for the NAEA/AAMD study. She writes, “If the skills at hand can be developed in inquiries across fields and in daily life, what, then is the distinctive value of inquiries into works of art? What might students gain from these experiences, beyond the development of the skills germane to all inquiries? Why do we deem it important that students engage in meaning making about artworks?” (p. 176).

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- 17 Levenson, C. (2014). Re-presenting slavery: Underserved questions in museum collections. *Studies in Art Education*, 55(2), 157-171.

LEARNING IN THE MUSEUM ENVIRONMENT HUMAN CONNECTION & EMPATHY ACADEMIC CONNECTIONS

Levenson, associate curator of education at the Yale Center for British Art (YCBA) at the time of the article's publication, puts forth a vision on how museum exhibition and education programs can support students' academic development while addressing what the author calls "underserved questions." The author points out that questions related to "Issues of race, power, and the legacy of slavery and empire" often remain unaddressed in collection displays and programs despite their presence as depicted in the collection works. Throughout the article, Levenson speaks to how museum experiences can connect with school-based learning and imbue this learning with depth and meaningfulness.

To contextualize her argument, Levenson describes a conversation with a New Haven public school principal who questioned what value and relevance a visit to an elite university's European art collection might have for her students, especially those students of color. The principal worried about her students' comfort with experiencing the YCBA and its collection—a collection with only a few works depicting people of color. Furthering the principal's challenge, "the sparse images of people of color" that were on display "often reflect[ed] problematic 18th-century notions of difference and servitude" (p. 159). The author in turn advocates for thoughtful curatorial and educational practices that can frame these works as opportunities to "confront the difficult imagery of 18th-century imperial power and racialized subjugation with 21st-century eyes" (p. 159). She contends that facilitated dialogues about such works can help render them personally and culturally significant to diverse students

while also promoting historical insight—in particular about issues of race that are "essential to [students'] understanding of American culture" (Bunch, 2010 as cited in Levenson, p. 158). Interpretive exercises in the galleries open up opportunities for students and teachers to "talk to [the past] and through it" (p.163).

In another point of illustration, she writes about a group of high school students involved in a school project around Shakespeare's poem, *The Rape of Lucrece*. These students visited the YCBA several times and participated in a series of in-depth discussions about a painting depicting part of Lucrece's story. From this platform, students worked to put together a theatre production that took a critical look at the character of Lucrece as victim/hero. The project's "combination of research and in-depth creative engagement with text and image brought the work and the issues to life for the students" (p. 164).

Pointing to the affordances of artworks to promote historical insight, the author stresses how visual representations can allow students to connect with historical figures, "consider multiple points of view and to attend to experiences beyond their own" (p.159). Levenson concludes by advocating for museum experiences that expose visitors to "the flexible history of objects" and "present the museum as 'a place of relativism and relationships rather than as a pantheon of facts'" (Winchester, 2012 as cited in Levenson, p. 160). By helping students to see how the meaning of an object changes throughout time and with the lived experience of each viewer—including themselves—the object, museum, and history become alive and relevant.

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- 18 Mayer, M. M. (2012). Looking outside the frame: Demythifying museum education. *Art Education*, 65(4), 15-18.

LEARNING IN THE MUSEUM ENVIRONMENT HUMAN CONNECTION & EMPATHY
SENSORIMOTOR & AFFECTIVE RESPONSE

Drawing from the writings of French philosopher Roland Barthes and museum scholar Carol Duncan, art museum scholar and educator Melinda Mayer discusses the ways in which museum educators,

and visitors themselves, contribute to creating the social norms that govern museum experiences. She argues that, "our teaching is shaped by the preconceptions—the myths—that our learners

18, cont.

hold, as well as our own values about what is good for visitors” (p. 15).

She identifies and explains ten different myths impacting teaching and learning in museums:

1. The myth of silence, or the notion that museums are not places for talking. This adversely impacts pedagogical approaches that emphasize dialogue and interaction.
2. The myth that museums are “safe places.” She describes how systems of surveillance that are typical in museums as part of their security apparatus can communicate distrust to visitors and produce emotional unease and discomfort.
3. The myth of “no wrong answers,” a phrase often used in gallery teaching. In combination, questions of authority, factual information, subjectivity, and pedagogical methods may contradict and contest such assertions, causing learners to further distrust the message.
4. The myth that the theoretical frameworks guiding museum educators in the process of facilitating interpretation align with what visitors want and expect.
5. The myth that docents should be “trained” (which can produce mechanistic behaviors) versus “educated” or “prepared” to exercise more complex, responsive teaching capacities.

6. The myth of universal “best practices” for gallery teaching that optimize the learning experiences of all visitors rather than an understanding that “learning arises at the intersection of multiple cultural contexts, including those of the visitor, the artist and artworks, the museum, and societies” (p. 17).

7. The myth that visitors don’t know how to look when it comes to art, which ignores the fact that visitors are constantly decoding visual information and already bring experience and information to the act of looking at art.

8. The myth that art museum experiences are inherently good for everyone. This reinforces the missionary impulse many educators feel to reach new audiences and bring them to the museum, assuming that we know what audiences want or need, rather than engaging in dialogue.

9. The myth that learning in the museum is “free choice” when, in fact, museums are highly codified, socially constructed spaces where learning happens in relation to physical, sociocultural, and personal contexts.

10. The myth of “the average visitor,” which homogenizes museumgoers.

Mayer calls art educators to reflect on the myths that govern their own practices and to actively interrogate them through their work as educators.

19 McCarthy, K. F., Ondaatje, E. H., Zakaras, L., & Brooks, A. (2004). *Gifts of the muse: Reframing the debate about the benefits of the arts*. Santa Monica, CA: RAND Research in the Arts.

ENGAGEMENT WITH ORIGINAL WORKS OF ART SENSORIMOTOR & AFFECTIVE RESPONSE
HUMAN CONNECTION & EMPATHY

Through their comprehensive literature-based study, McCarthy et al. reframe the discussion on the benefits of the arts for the arts policy field by positing and exploring differences between “instrumental” benefits (e.g., improved health, economic growth, and student learning) and “intrinsic” benefits (e.g., pleasure, social bonds, and increased feelings of empathy). The study highlights how numerous arguments for the public and educational value of the arts, especially

those based on empirical studies, have touted the value of the instrumental benefits for individuals and communities while minimizing the intrinsic. The authors contend that while some intrinsic benefits of the arts may be of private/personal worth, others are valuable to the broader community, or even society at large. Some benefits, such as cognitive growth, have both instrumental and intrinsic dimensions that have value for both individuals and broader communities.

19, cont.

The report calls for “an effort to raise awareness about the need to look beyond quantifiable results and examine qualitative issues” (p. xviii) in order to heighten recognition of intrinsic benefits among the policy community and the American public.

Referencing the work of John Dewey, Elliot Eisner, Howard Gardner and Mihaly Csikszentmihalyi among others, the researchers reviewed sources across four major categories that illuminate arts-driven outcomes:

1. research that supports instrumental benefits,
2. conceptual theories as to how and why instrumental benefits develop from arts experiences,
3. publications focused on the intrinsic benefits of the arts, and
4. literature on how people access and participate in the arts and the impact of their engagement. (p. xii)

In addition to synthesizing findings from a broad field of literature across a variety of disciplines, the authors provide a critique of past studies and key areas needing further research. Several criticisms bear particular relevance for the proposed NAEA/AAMD study. With regard to literature on the benefits of art education for students, the researchers find an absence of studies on programs that foster art appreciation (theory, history, experience) as opposed to the creation of art. They also note that short-term interventions (such as single visit field trips) are unlikely to produce long-term impact for “more important benefits, such as learning how to learn and developing personal skills needed for behavioral change” (p. 34). However, theoretical literature about the impact of and participation in the arts suggests that individuals who experience a high-quality, engaging “gateway experience” (again, such as a field trip visit) before they are teenagers may be more likely “to continue to be involved in the arts” and “seek arts experiences because they find them stimulating” (p. xvii).

The authors remark upon the significance of encountering a work of art, firsthand. The potential aesthetic experience that results is personal and immediate: “it moves us by communicating something akin to what the artist envisioned by drawing upon our own powers of discovery and eliciting our emotions... the heart of our response is a kind of sensing” (pp. 41-42). The sensory and emotional dimensions of an art experience often attract audiences and give rise to intrinsic benefits. These benefits may not be exclusively sensorimotor or affective, but clearly feature corporeal and affective dimensions as illustrated by the authors’ descriptions of the following intrinsic examples:

- **Captivation.** “An initial response... of rapt absorption... deep involvement, admiration, and even wonder” (p. 45) that can “briefly but powerfully move the individual away from habitual, everyday reality into a state of focused attention” (p. xv).
- **Pleasure.** A sense of delight or “deep satisfaction” upon encountering an artwork that provokes “an imaginative experience that is often a more intense, revealing, and meaningful version of actual experience” (p. xvi).

The effect of the initial, firsthand art encounter often continues as the individual who experienced the work “reflects on it and shares his or her impressions with others” (p. 41). Most often, the process of interpreting the work of art—of finding significance—is a social process that takes place through interaction with others. Additional intrinsic benefits described by the authors are pertinent to issues of human connection and empathy. Specifically, these include:

- **Expanded capacity for empathy.** Artworks can draw people into the experiences of different individuals and cultures, making them more receptive to the unfamiliar.
- **Creation of social bonds.** Social bonds are created as, together, people experience and work to discover the meaning of works of art.

19, cont.

- **Expression of communal meanings.** Works of art can empower whole communities to express shared ideas.

McCarthy et al. conclude that shifting “attention and resources... away from supply of the arts and toward cultivation of demand” would be an effective strategy for maximizing the potential benefits of the arts for both individuals and communities (p. xvii).

They offer several concrete steps that could be taken to promote such a shift:

- “Develop language for discussing intrinsic benefits.”
- “Address the limitations of the research on instrumental benefits.”
- “Promote early exposure to the arts.”
- “Create circumstances for rewarding arts experiences” (p. xviii).

20 RK&A, Inc. (2007). *Teaching literacy through art. Final report: Synthesis of 2004-05 and 2005-06 studies* (Unpublished report). New York, NY: Solomon R. Guggenheim Museum.

RESEARCH DESIGN CRITICAL THINKING ACADEMIC CONNECTIONS

This report provides a description of the research design and findings for an evaluation of the Guggenheim Museum’s Learning Through Art (LTA) Program and further elucidates how museums can support students’ academic development across school curriculum. Researchers from Randi Korn & Associates (RK&A) sought to measure the program’s impact on teacher efficacy; student literacy and critical thinking outcomes; student attitudes about school, art, and art museums; and student performance on Language Arts standardized tests. The LTA Program involved 20 weekly sessions during which students created art and participated in inquiry-based dialogues about artworks at their school and in the museum.

This study adopted a quantitative, modified post-test only control group design. The treatment group was comprised of third graders from two LTA partnership schools; the control group was comprised of third graders from two schools that did not participate in LTA. The total number of subjects was 605.

For data collection, control and treatment group students completed questionnaires and participated in single session interviews during which they were asked to respond to a reproduction of an Arshile Gorky painting and a passage from a story by Cynthia Kadohata. Treatment group students partook in the

interviews after participating in the LTA program. Interview responses were analyzed for word count, grade level performance, and literacy/critical thinking characteristics. Literacy and critical thinking were measured using a rubric that scored student capacities for: extended focus (adding detail and asking questions after initial observation); thorough description; hypothesizing; evidential reasoning; building schema (making connections between artworks and student’s prior knowledge of experience); and inferring multiple interpretations of an artwork. Researchers found that, during the interviews, treatment group students used more words and gave responses that correlated with a higher grade level than did control students. In their responses to the image, treatment group students scored higher on five of the six rubric-rated, literacy/critical thinking characteristics. Even more notably, treatment group students scored higher on five of the six characteristics in their responses to the text passage, suggesting that the literacy and critical thinking skills supported through the LTA program had transferability to other disciplines.

Findings such as those brought forth through the Guggenheim’s LTA program study form a foundation for further research into the impact of museum programs on student academic performance in the arts and in other subject areas.

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- 21 Smith, E. R., & Collins, E. (2010). *Situated cognition*. In B. Mesquita, L. F. Barrett & E. R. Smith (Eds.), *The mind in context* (pp. 126-145). New York, NY: The Guilford Press.

PEDAGOGY LEARNING IN THE MUSEUM ENVIRONMENT HUMAN CONNECTION & EMPATHY

Smith and Collins provide a comprehensive overview of the recent concept of *situated cognition*. As they explain, “The situated perspective sees the mind not as primarily in the business of constructing, storing, and retrieving inner representations, but rather as a controller for behavior, continually transforming incoming information into specifications of what to do *right now*” (p. 127). In other words, people use perception to access the world when and as they need to. The environment functions as an extension of the mind, encompassing the physical world along with other individuals and socio-cultural systems. The authors focus on the social, rather than the physical context, drawing upon psychology research to explain that the social world impacts a person’s thoughts and feelings even when he or she is not in the presence of other people. Social norms modulate a person’s judgments and assessments of objects in the world. People extend

their thinking processes through technology and various forms of socio-cultural resources, because ultimately the purpose of cognition is action.

Smith and Collins note that communication is a significant kind of action, a factor relevant to our study of learning in art museums within the context of group settings. The authors find that communicative roles and relationships within group interaction (for example, speaker vs. listener) shape cognition by influencing language choice and meaning. Each person’s identity is multifaceted; which identity he or she puts forth depends on the context at hand. Such alignment between with the environment impacts how people think about themselves and how they evaluate their thoughts about others. The authors conclude that, as such, social engagements “not only influence but constitute cognition and behavior” (p. 139).

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- 22 Storksdieck, M., Werner, M., & Kaul, V. (2006). *Results from the quality field trip study: Assessing the LEAD program in Cleveland, Ohio*. Annapolis, MD: Institute for Learning Innovation.

RESEARCH DESIGN SINGLE-VISIT PROGRAMS LEARNING IN THE MUSEUM ENVIRONMENT

Researchers from the Institute for Learning Innovation (ILI) present an overview of a three-year study of the University Circle Incorporated’s (UCI) Linking Education and Discovery (LEAD) field trip program along with resultant evaluative findings. UCI is a non-profit organization focused on advancing the quality of Cleveland, Ohio’s University Circle cultural district—a concentrated area of the city featuring 13 major museums and cultural institutions such as the Cleveland Museum of Art and the Museum of Contemporary Art (MOCA) Cleveland. At the time of the report’s publication, the LEAD program served around 20,000 K-8 students from 25 schools within a three-mile radius of University Circle, providing them with a visit to one of 16 participating museums or cultural institutions each year. The primary goal of ILI’s *Quality Field Trip Assessment Study* (QFTAS) was to evaluate the LEAD program’s effectiveness and identify areas and actionable steps for improvements. The study also

served a broader purpose, “to determine the conditions necessary to ensure a quality field trip experience and to develop a planning and assessment tool that can be broadly applied by institutions to assess their own field trip programs” (p. iii).

The study’s research questions sought to uncover ideas about the program’s purpose and what constitutes a high quality field trip from a variety of stakeholder perspectives. Researchers were interested in learning about: teachers’ motivations and goals for participation as well as their satisfaction with the overall experience; teachers’ pre-visit preparation methods and post-visit follow-up activities; the range, quality, and distinctiveness of activities included in the LEAD field trip offerings; and the roles museum staff play in creating high quality field trip experiences.

Data collection took place over the full three years of the study and used a variety of methods. After undertaking

22, cont.

a comprehensive literature review, researchers conducted a series of focus group interviews with stakeholders from schools (e.g., teachers and principals) and participating cultural institutions (e.g., museum educators and program directors) in order to generate a list of criteria for high quality field trips. The results from the focus group discussions and literature review were then combined to create a model for quality field trips that was, in turn, used to create a pre/post experience teacher questionnaire and a questionnaire that educators from cultural institutions could use to assess their field trip offerings. Researchers collected and analyzed 150 pre/post teacher surveys and surveys from museum educators. These initial survey responses were used, along with data gathered from 28 observations, to create a second post-experience teacher questionnaire to assess 98 subsequent field trips during the study period.

In terms of program efficacy, researchers found that the LEAD program was a success with regard to teacher satisfaction: “Teachers overwhelmingly indicate that their expectations are being met for affective, general, and content-oriented learning goals” (p. iv). Teachers reported that the field trips engaged their students by providing materials and experiences that appealed to a range of skills and abilities and exceeded typical classroom learning experiences.

Regarding the more broadly relevant stakeholder perspectives on quality field trips, the research team found different groups had various areas of priority and emphasis for specific aspects of the field trip experience. Museum educators “sought first and foremost to provide experiences that were hands-on and authentic” (p. iv). Principals most highly valued curricular connections while teachers valued logistical ease. Somewhat unexpectedly, LEAD program teachers “rated the affective goal of having a positive, memorable experience higher than learning-related goals, indicating that the affective experience is just as important, if not more important, as having their students learn content related to their classroom curriculum” (p. iv). Different groups also had different

perspectives about the variety of tour activities offered, with museum educators seeing “their field trips as more varied than teachers did,” suggesting, perhaps that tour ideals might not always come to fruition. In general, however, there was considerable overlap as to the key characteristics and objectives that constitute a high quality field trip.

Additional notable findings relate to varieties of field trip activities and teacher preparation for trips. Programs for older students “provide[d] less opportunity to participate in hands-on and unstructured activities” (p. 3) and perhaps as a corollary, middle school teachers were “less satisfied with what the museums are offering their students than elementary school teachers” (p. 3). Overall, teachers reported limited efforts in preparing their students for LEAD experiences or conducting follow up activities. Pre- and post-visit activities in the classroom tended to be informal, easy to implement, and adequate rather than ideal by museum educators’ standards.

The report concludes with a list of recommendations for museums and cultural institutions to consider as they seek to evaluate and improve the quality of their field trip experiences. A selection of these points include:

- Finding ways to innovatively and authentically meet multiple field trip goals as identified by school stakeholders. Specifically, meeting schools’ curricular standards is important, but affective learning should also play a significant part of the experience.
- Encouraging teachers to better integrate the field trip into their classroom curriculum, extending the experience through more substantial pre- and post-visit lessons and activities.
- Collaborating with teachers/administrators to more effectively and reliably share information about field trip programs.
- Providing teachers with specific guidelines and suggestions on how to better prepare and engage chaperones during field trips.

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- 23 Tishman, S., McKinney, A., & Straughn, C. (2007). *Study center learning: An investigation of the educational power and potential of the Harvard University Art Museums Study Centers*. Harvard University Art Museums and Harvard Project Zero.

PEDAGOGY LEARNING IN THE MUSEUM ENVIRONMENT ENGAGEMENT WITH ORIGINAL WORKS OF ART
ACADEMIC CONNECTIONS RESEARCH DESIGN

This investigation of Harvard University Art Museums (HUAM)'s study centers sought to better understand, contextualize, and articulate the potential for learning in spaces designed to allow visitors access to objects and collection works not currently on view in the museum's affiliated galleries. Harvard's Project Zero researchers used constructivist learning theory to frame the study, positing learning as "a dynamic process of meaning-making. It involves interaction with physical, social, and epistemological aspects of the environment" (p. 2). Museums are seen as promising environments for learning "because they seem to be venues that naturally encourage people to do the kinds of things that are hallmarks of constructivist learning theory—to explore and discover their own interests, to actively engage with rich stimuli, and to use their own backgrounds and prior knowledge as explicit frames of reference for constructing knowledge" (p. 3).

Given this definition, exploring learning in the environment of a study center posed specific challenges for researchers. Rather than seeking to pinpoint a single instance in a study center experience that would capture the complexity of learning, the Project Zero team used a range of research methods—interviews with HUAM curators and staff, interviews with faculty from Harvard and other local universities from a range of disciplines, and observations and interviews with study center users—to identify what various groups valued about study center learning. After compiling the data, researchers could look for patterns among the findings.

The researchers call attention to three factors that impact learning in study centers: objects, environments, and people. *Objects* are paramount in study centers, serving as primary reason and focal point of for the visit, yet they are not the singular trigger for learning. Physical and contextual characteristics of the *environment* strongly condition visitor experiences both perceptually and affectively. At times the environment may pose challenges (to orientation and emotional comfort,

for instance). At other times, it may foster positive responses (i.e., aiding concentration, conversation, etc.). Availability of information also impacts cognitive outcomes; different visitors may prefer more or less information. Finally, *human interaction* plays a key role, with study center staff prompting conversations and guiding visitor choices within the study center's discretionary environment. "When visitors converse in study centers... people's interests are clarified, perspectives are shared and deepened, interpretations are developed, new questions emerge, curiosity is heightened, and excitement is generated—often for staff as well as visitors" (p. 44). Furthermore, staff model their profession as well as ongoing excitement about learning from objects.

Most significant for our study, researchers found evidence of sophisticated disciplinary and interdisciplinary forms of inquiry taking place in study centers, which they classify as "high-end cognition." Visitors "make nuanced discernments, ask generative questions, pose sophisticated problems, make rich comparisons and connections, and construct complex interpretations" (p. 70). People learn about specific objects while also potentially learning how to critically observe or gaining insight into the artistic process. They may learn something about the process of learning, a field of practice, or themselves. Various observable behaviors indicate learning outcomes in study centers: the nature of the conversations among visitors and staff; how visitors juxtapose objects; the ways in which they sketch or take notes; the time they take to look; the personal connections they make; and their kinesthetic responses. Within a constructivist framework, such forms of interaction "*constitute* learning, and the knowledge that [the visitor] develops in the process consists in the meanings she makes through her interactions, not in a set of facts that exist independently" (p. 63).

Tishman et al. point out that what is learned is not always intentional. One line of inquiry may lead to

23, cont.

something surprising or otherwise unanticipated by the learner. This experience of surprise, or “cognitive emotion,” shapes memory. Beauty also plays a role in cognition, making objects more captivating to a visitor’s attention. Time is another cognitive factor: study centers encourage people to take time to look, which enables visitors to explore, revisit ideas, and consider different perspectives. Visitors reported that the intimate, individualized nature of study center viewing experiences contrasts with the social dimension of seeing art in museum galleries with different people looking at the same works of art, together, as part of something larger. “Put simply, the character of the objects in study centers, combined with people’s

prolonged and intimate encounters with them, seems to inspire learning among multiple dimensions” (p. 69).

The Project Zero researchers present a case for the value of study centers as powerful catalysts of such multidimensional learning experiences while also suggesting implications for art museums, in general. They note that supporting the development of complex knowledge about works of art is a primary task of art museums. Environments that support experiential engagement—opportunities to be surprised, to take time, to make personal connections, to move and respond with one’s body in the act of perceiving works of art—create powerful conditions for learning.

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- 24** Ward, J. (2014). *Multisensory memories: How richer experiences facilitate remembering*. In N. Levent & A. Pascual-Leone (Eds.), *The multisensory museum: Cross-disciplinary perspectives on touch, sound, smell, memory, and space* (pp. 273-284). Lanham, MD: Rowman & Littlefield.

LEARNING IN THE MUSEUM ENVIRONMENT SENSORIMOTOR & AFFECTIVE RESPONSE

In his contribution to this compendium, Jamie Ward focuses on how the brain constructs and retrieves memories through the active interplay of multiple senses. Ward provides an accessible and timely overview of recent research in cognitive neuroscience, explaining key concepts and suggesting implications for museums. Ward finds that research in cognitive psychology demonstrates that complex memories result from the integration of two types. The first are *semantic memories*, which pertain to the specific facts a person knows about an object, person, or situation. The second are *episodic memories*, which result from a process of retrieval that involves reconstructing the sensory, conceptual, emotional, and contextual details of an experience. Neuroscientific studies show that multisensory stimuli can result in complex memories because the multiple features that make up such experiences activate different neural systems across the brain. However, structures such as the hippocampus provide a built-in capacity for integrating information from all of these systems, serving as a kind of “central hub receiving information from all different senses” (p. 276). Thus, it is possible to elicit a sensory memory of one kind by providing the brain with

a different kind of stimuli related to the original event. Also, when asked to recall an experience as a whole, a person might recall the specific parts that total up to the whole. Furthermore, the same brain regions are activated when experiencing actual stimuli as when experiencing imagined or elicited stimuli.

The implications for museums and for learning are significant, as museum environments and objects are inherently multisensory. How might museums best apply such findings to combine, organize, and otherwise optimize stimuli (actual as well as imagined) so that museum experiences are memorable? Ward’s research suggests that once a person’s neural cortex experiences a certain pattern of multisensory stimuli, it can better respond to that same pattern in the future. Encoding an experience through the activation of multiple senses can produce a richer memory because the event results in a more distributed pattern of neural activity. Rich memories result when sensory stimuli is meaningfully, rather than arbitrarily, considered and when more of the original experiential conditions are repeated at the moment of remembering.

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- 25 Zisch, F., Gage, S., & Spiers, H. (2014). Navigating the museum. Multisensory mental simulation and aesthetic perception. In N. Levent & A. Pascual-Leone (Eds.), *The multisensory museum: Cross-disciplinary perspectives on touch, sound, smell, memory, and space* (pp. 215-237). Lanham, MD: Rowman & Littlefield.

LEARNING IN THE MUSEUM ENVIRONMENT SENSORIMOTOR & AFFECTIVE RESPONSE

In their account of how, neurologically, we come to understand space, Zisch et al. draw from emerging research to explain ways in which our brains create mental representations that help us pre-plan, navigate, and remember architectural environments. The authors infer implications for how visitors might make sense of museum spaces, which tend to be architecturally notable. Human bodies have capacities—beyond vision—that allow people to understand a physical environment. *Proprioception* refers to how our internal systems can be used to perceive and monitor where our limbs are in space. Humans also possess highly sensitive mechanisms located within the ear that control a sense of balance and inform movement in relation to the gravitational pull of the earth. These biological systems work together with the mental images we craft of our environment, allowing us to physically make our way in the world. The authors point out that the *hippocampal formation* region of the brain that controls our spatial sense is also understood to be the area that facilitates memory.

After introducing how different kinds of cells operate within the hippocampus, the authors relay research findings that help to explain how visitors might experience museum spaces from a neural stimulation perspective. Zisch et al.'s proposal that, "from an architectural, neuroscientific, and philosophical standpoint" the museum visitor's experience takes place "before, during, and after" (p. 221) the physical time spent in the museum has particular relevance for the NAEA/AAMD study of single-visit school programs.

Individual museum experiences and the goals for these experiences may vary with each visitor; however, these experiences and goals are connected by the singular, physical spaces of the museum—spaces designed to suggest multiple linear paths and/or narratives. Each visitor's sensory perceptions of the museum spaces reintroduce variability of experience. The authors propose that complex processes of "neural and mental

construction, preconstruction, and reconstruction of sophisticated architectural environments" help visitors to effectively navigate through the museum while also inspiring "sensual delight" (p. 221).

Zisch et al. revisit ideas similar to those of Falk and Dierking (1992), implying that a person's museum experience begins "as soon as the thought of going enters her stream of consciousness" (p. 221). A variety of factors will influence her expectations and projections about what the experience will be like, including past visits to the museum or other museums, reports from other people about their experiences of the museum, and looking at images of the museum's objects and spaces online or in print. The authors connect these pre-visit imaginings to recent neurological experiments with rats that mapped out a sequence of brain cell activation as the rats encountered a series of spaces on a short journey (e.g., through an entryway, to the center of a space, and through an exit). In addition to demonstrating distinct sequential brain cell activity that progressed as the rats moved through the space, scientists found that just before the rats started their physical movements through the space their brains "pre-played" the neurological sequence in anticipation of their impending movements. Similarly, human brains may prepare a set of behaviors in anticipation of a future event or activity. These neural preparations take place within the hippocampus, often during sleep and rest periods. This suggests that once a visitor is aware of an upcoming museum visit, her brain may begin preparing her for the experience by calling up dreams, memories, and imagination.

The authors continue to describe how the brain maps and navigates through the space of the museum during the actual visit, again with insights offered by neural tests on rats. As the visitor moves through the museum, its divisions of space and their markers (e.g., doorways, walls, and other boundary markers) trigger sequential cell firings that encode and map

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coherent mental representations of the environment and set up predictions about what might come next. Rodent research also suggests that the mammalian brain might store multiple and varied map sequences which they can call upon as needed to inform patterns of action. Mental map images are dynamic, updating as new information is presented. The authors cite research by K.J. Jeffrey (2008)—showing that changes in geometry, context, or a combination of these factors changes neural responses to an environment—as further evidence of this theory. Our brains significantly alter the location, shape, and other characteristics of our place fields within our brain cells when we encounter a major change in the environment. Brains have the neural capacity to recognize a space as both familiar *and* different. In other words, neurologically, a museum visitor can both recognize a gallery she has visited and also note that features within it (such as wall color) have been altered from that of a prior experience. Novelty, surprise, and delight may influence this (re) mapping. When a space has been altered so significant so as to be unrecognizable in most ways, the visitor will experience it as a new environment and will create a new mental map.

The brains of rats engaged in foraging behaviors demonstrate that changes to a journey's goals or intentions may trigger significant neural activity. Scientists tracking neural firing rates of rats as the rodents worked to find food rewards at different

locations in a maze found that “the firing rate patterns depended on the flavor of the reward aimed for” (p. 229). Further, the rate firing differences persisted through the entire quest, from start to finish, not just upon reaching each goal reward. For humans, who are unique in their ability to assign meaning to spaces (such as museums) while also perceiving and appreciating their physical characteristics, the often pleasurable act of contemplating and deriving meaning from architectural spaces and features can become the intention (or reward) of the experience. In other words, discovery becomes its own goal and may produce its own set of neural patterns.

Regarding the end of a physical museum visit, Zisch et al. find that, as upon a journey's start, its ending also produces a high level of neural activity. This concentration of activity indicates that the brain is making space for the experience within its memory archive. In other words, as a visitor reflects on a museum visit once it has ended, our brains consolidate the impressions in neural networks (a process also greatly facilitated by sleep and rest). The more the memory is embedded in our synaptic patterns, the easier it will be to recall, even over long periods of time.

The authors conclude by calling for future neural research on humans in efforts to better understand neural excitement and the kind of stimulation—including sensations of delight and wonder—that architectural spaces can provide.

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LITERATURE REVIEW

