Facilitation Annotated Bibliography
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This bibliography is the first product of the IMLS-funded grant “Facilitating Learning in Digital Museum Environments.” The bibliography is one product of our early attempts to understand the meaning of “facilitation” in literatures associated with learning in informal environments. The bibliography is designed to assemble the most relevant material that we can find that relates to facilitating learning in informal environments, especially Web 2.0 environments. In the construction of this document, we ventured into museum studies, workplace management and scholarship from the learning sciences in order to build a working literature on facilitation.

The construction of this document stems from an interesting opportunity and dilemma that arose at the completion of a study (Take Two: A Study of the Co-Creation of Knowledge on Museum Web 2.0 Sites) that focused on the co-creation of knowledge in a museum-based digital environment (Science Buzz, http://www.scienc buzz.org). One of the major findings of the study was that there were distinct writing styles within Science Buzz and that these writing styles were vital toward encouraging participation within threads. The presence of these writing styles and their importance in generating responses resulted in our identifying facilitation as important in that it determines what constitutes a successful online museum environment.

There are compelling reasons to look at facilitation in digital museum environments. Facilitation is a familiar practice for museum professionals and those who study learning in museums. There is a long history of research on families learning in museums that has found that adults take on roles while facilitating their children’s experiences (e.g., Diamond, 1987). This facilitation research is specific to museum experiences and relies extensively on characterizing physical interactions in exhibit galleries. The physical behavior of adults and children, for example, follows particular conversational rules (Hensel, 1987). As museums develop online environments to build and sustain new audiences, we have little understanding of whether the museum field’s expertise on facilitating learning in the galleries transfers to online environments.

Unfortunately, there is very little information available on facilitation styles within museum literature, especially literature addressing online facilitation. Therefore, we felt that it was particularly useful to assemble a document that compiles a literature on facilitation that we feel may be useful for understanding the facilitation of learning in digital environments.

While we believe that this bibliography will benefit anyone interested in the study of facilitation, we believe that those in the museum studies field may benefit the most. Museums are increasing their activities in Web 2.0 environments and are in need of tools that can help them measure learning in order to create richer experiences and increase the volume of visitors.
Pedagogy and Scaffolding Learning


The driving question for this chapter asks what exists beyond primary sources and driving questions that make history as a discipline meaningful. The researcher argues that in order for a discipline as well as learning to be meaningful for students, teachers need to understand and make use of the intellectual processes and organizational logics that drive their discipline of interest. Teachers can accomplish this by paying attention to: questions of evidence, significance, causation, consequence, periodization, explanation, and construction of the accounts in the content they teach. These seven concepts can help teachers understand how students relate/approach a subject so that they can better design effective learning environments.


Garoian characterizes the relationship between the museum and its visitors as a dialogic process that enables a play between the public narratives of the museum and the private narratives of the viewers. This piece is valuable in that it provides five pedagogical strategies that comprise a critical performative pedagogy in museums: performing perception, autobiography, museum culture, interdisciplinarity, and performing the institution. These strategies represent a comprehensive museum pedagogy that enables visitors to experience and understand the museum's collections and exhibitions from their respective cultural perspectives. The ends of such a project then are aimed at broadening institutional pedagogy to include viewers' personal and social knowledge for the purposes of creating better museum experiences that critically engage visitors by tapping into the social worlds they inhabit.


The authors conducted a study of programs aimed at deepening scientific inquiry practices within science museums. Most inquiry-based science learning materials are developed within and for formal learning environments. Central to the authors aim was to determine whether it would be possible to leverage an informal environment like a museum in order to produce coherent inquiry investigations and learning through a series of scaffolded activities. The study, which was a randomized experimental design, focused on two versions of a program called, Inquiry Games. One of the versions was self-directed and based on spontaneity, the other collaborative and more structured. The findings of the study showed that the version comprised of collaborative inquiry was superior in that it required all family members to participate and articulate their understandings together. This suggests that meaningful facilitation may constitute the use of scaffolded activities that rely upon collaboration.

Hein presents an account of how research in visitor studies and educational philosophy can be used to implement educational experiences in museums. This book is a guide for museum professionals who are interested in creating engaging, meaningful, educational experiences within a museum setting.


What constitutes meaningful dialogue is the question that lies at the heart of this article. The author highlights that a central component for creating and sustaining the conditions of meaningful engagement involve listening—in this case, “eloquent listening”—as a strategy. Listening is, in fact, an important component of facilitation; nevertheless, it is how we listening that is vital. Specifically, there is a difference between active listening and passive listening that forms the foundation of good listening; this is a distinction that the author raises as she reflects on the facilitation of a public meeting at a local museum that invited “civic dialogue” after a presentation on prejudice. This article is a useful listening in that it provides insight into how good listening strategies, as a component of pedagogical practice, create meaningful dialogue and possibly critical learning.


In this chapter, the authors focus on the Design Principles Database, which is a public collaborative knowledge-building tool that helps capture knowledge about what constitutes effective supports for learning in technology-enhanced environments. They present eight design principles from the Design Principles Database that support learning and demonstrate how features in technologies, which apply these principles, support learning. This article provides a critical discussion on the advantages and shortcomings of design principles as guides for designing learning practicums mediated by technology.


The authors discuss and define the concepts of informal and incidental learning as ways in which these learner-centered situations can be learned. The authors specifically mention museums as a place where informal and incidental learning are clearly happening. This type of learning happens, according to the authors wherever people have the need, motivation and opportunity for learning. The authors posit that informal and incidental learning most widely takes place in the absence of or without much external facilitation or structure. As a way to capture those moments of facilitation, there are three ways to enhance this structure--critical reflection, simulation of proactivity, and creativity. These informal and incidental ways can flourish and become part of what happens in the course of people identifying what they need to learn.

The earlier editions of this chapter focused on defining generative learning, this third edition seeks to reconceptualize generative learning by comparing the theoretical foundations of generative learning and its understanding of learning processes to varying learning outcomes. The authors define generative learning as “student-centric learning” guided by activities that actively construct meaning. It is their belief that only through learners’ construction of relationships and meaning can true knowledge emerge in sustainable form. An understanding of generative learning is useful for designing facilitation strategies that produce desired learning goals.


This chapter explores what is necessary for teachers to know when seeking meaningful learning through the use of technology within the classroom by linking student learning with teaching strategies. The researcher focuses on six science teachers and their mentor as they deployed Web-based Inquiry Science Environment (WISE) projects into their respective curriculum. WISE places heavy emphasis on engaging students in diagnosing problems, critiquing experiments, locating alternatives, planning investigations, debating with peers, and forming arguments as part of a scientific inquiry model that facilitates meaningful learning rather than the passive adoption of information. This study provides a compelling model for scaffolded-inquiry teaching.


This is an annotated bibliography that covers curricula resources about museology training needs, content development and instructional strategies. The citations span 1975-2000 with most of the articles having been written after 1990. Although most of the resources are outdated, this document does provide a guide as to what has been written regarding the training of docents in relation to desired museum education outcomes.


This article follows the recent National Research Council report Learning Science in Informal Environments: People, Places, and Pursuits and specifically discusses the report’s implications for learning within museums. The authors focus on three aspects of the report: (1) a framework for developing and studying science learning experiences;
cultural diversity as a resource for learning; and assessment of learning. While this article provides insight into assessing learning and using assessment to guide design, it is also useful toward thinking about whether different facilitation approaches correspond to different learning outcomes.


This study centers upon the vital function that museum educators serve in supporting museums’ educational initiatives, such as facilitating learning during field trips. The problem is that studies on field trips within museum primarily focus upon the perspectives of educators and their students who visit the museum rather than the educators within the museum who are poised to design learning practicums. Moreover, some studies also describe teaching at museums as didactic and lecture-oriented; however this study presents museum learning instruction as a more fluid and creative interaction. What emerges from this article as useful is insight into the pedagogical practices of museum educators by showing the ways educators adapt their preplanned lessons based upon student audiences’ interest, need, and ability to understand.


This article provides some thoughts about the creation of a “targeted professional development approach” as a way to teach teachers how to implement technology-enhanced science inquiry modules into their classroom. The study involved 16 schools in 8 different school districts in 5 states. The participants were asked to create a 5-day module supported by technology, reflect on their experiences and then think about the resources needed to implement the module with their students. The study found the most concerning obstacle to implementation was the comfort level and knowledge of the teacher’s about how to incorporate the technology in the classroom. When teachers are the facilitators in the classroom using technology to teach students, there is a need for the technology to be functional and comfortable. This paper offers insight toward thinking about how their should be a level of comfortibility on the part of facilitators who’s practice is supported-by technology as well as other barriers that might inhibit the adoption of technology for learning in informal environments.

Interactive Exhibits/Learning


The article presents the Situating Hybrid Assemblies in Public Environments (SHAPE) experience at one museum. SHAPE creates hybrid artifacts to enhance the museum visitor’s experience. SHAPE is focused on design interventions that avoid simple didactic forms of display where visitors passively receive information by creating stimulating exhibition environments where people explore, question, debate, and reflect on the nature of museum collections. The SHAPE project is an example of how various
technologies and media can create a new, interactive learning experience for visitors in a collaborative way with museum partners. The article provides a nice example of non-didactic forms of display which could be replicated.


The authors discuss the possibility of facilitating students’ learning through the use of computer models or simulations in science-learning environments. Their findings emerge from the careful examination of three approaches to using models in education: learning from models, learning by modeling and a combination of the two preceding approaches. This article provides a closer look into how models can be used as a strategy for facilitating learning in a science-learning environment.


This case study is centers on interactive and non-interactive exhibits museums and the design issues that emerge with such installations. The authors explore and report their findings on visitors’ activity with a digitally-augmented exhibition on the history of modern media. Visitors’ interaction with exhibits were tracked and analyzed using smartcard technology, analysis of logfiles, interviews, and observation. The authors reported several findings that both raised the value of interactive exhibits while presenting caveats in addition. These findings show that while interactivity increased with exhibits that had computational components rather than exhibits with historical objects, it also revealed visitors’ frustration with some applications that structured interactivity. This article is generative toward thinking about not only what are the components that make for good engagement but also how one can design installations that are engaging and produce desired learning outcomes.


Facilitating learning often requires effectively providing feedback. This article investigates what types of feedback is required when a learner engages in online interactive tasks. The forms of feedback presented for discussion include: immediate, delayed, and informative tutoring feedback (guided to get students to recognize their errors, correct them, and provide strategies to better problem-solve). Readers will find this article useful as it offers theoretically and empirically-based guidelines for the design and evaluation of feedback strategies. Specifically, it presents an interactive, two-feedback-loop model that explains core factors and effects of feedback in interactive instruction.

**Rayward, W.B. & Twidale, M.B. (2003).** From Docent to Cyberdocent: Education
What is the nature of a docent’s work within a museum emerges as the focus of this white paper. From this question, the authors develop the concept the “docent function,” which describes the work performed not only by museum professionals but also objects (e.g. maps, guidebooks, PDAs, etc.) created to guide visitor experiences. The increasing importance of these objects or “cyberdocents” lead the authors toward speculating what new possibilities for facilitating learning arise with these information technologies. From what they gather, several facilitation strategies/design necessities emerge that correspond to docents and cyberdocents: the importance of (1) bringing aspects of their own social worlds to the forefront during conversation, (2) understanding their audiences in order to shape the information/experience so that it is most useful for them, (3) scaffolding the arrangement of knowledge artifacts around the audiences’ discussion needs, and (4) using jokes, stories, or suggested activities.


The authors offer a critical look at collaborative learning. The researchers used two general categories – prescriptions and descriptions in order to categorize their research. The researchers mentioned that the majority of the research is light on the descriptions or the “how to” of examining and defining what collaborative learning is. The authors continued with the belief that the research that exists is heavy on prescriptions--or the examination of what needs to happen within collaborative activities to facilitate learning. The authors focused on those ideas, principles and representations of what facilitation is and should be. The authors felt the empirical accounts or descriptions offered little. The authors thought the best approach in their work was to take an ethnographic approach to uncover collaborative learning and its values. This article provides some thoughts on what needs to happen in order to facilitate learning by way of collaboration.


This white paper highlights the impact of social interaction on museum experience through the use of novel technologies (e.g. PDAs, information kiosks, computer exhibits, etc.), which museum directors believe can facilitate new forms of interactivity around exhibits. The chief deliverable of this document is its attempt to foster the development of a number of design sensitivities that should be considered when designing and deploying new technologies within museums for the purposes of enriching visitors’ experiences. Specifically, the authors highlight social interaction and collaboration as critical for enhancing the level of knowledge-work that surround exhibits and that these technologies, which take on docent functions, are capable of facilitating such activity.

This article suggests that learners need a balance of structured and self-guided strategies to learning, especially when using technology. There is a traditional approach to using learning objects that creates personalized educational experiences. When learners are directed to learning objects such as multimedia content or even learning software or tools, their learning is self-guided oftentimes and these learning objects are aides or support to the meaning making process. The authors encourage hybrid approaches that find creative ways to allow both traditional and permissive approaches to learning objects.

Gaming and Facilitation


This study explores the dynamic of creating video games that use narrative scenarios and interactions to achieve educational goals. Grounding their work in their research on transformational play, the authors posit that if properly designed, education-based videogames can help learners develop rich content understanding. Transformational play is relevant to designing technological applications that facilitate learning.


Using narrative as pedagogical approach, the article explores the richness of using videogames that create, “narrative transactivity” for the purposes of scaffolding students’ agency, consequentiality, and accountability. The authors design the narrative focused component of their video application, Quest Atlantis. The authors find that there is a pedagogical potential to the design of educational interactions that allow learners to exercise narrative transactivity –that is, learners who are the audience, performer and author of the narrative in the video game.


The purpose of this article is to explore the use of transformational play as a pedagogical tool. The authors conducted a pilot study of the virtual world, Taiga Virtual Park. What they seek to highlight in this piece are the stated goals of transformational play, which articulate as helping learners understand and apply the meaning of concepts to specific
situations. The benefits of such activity helps to make the argument that game-based learning environs serve as a valuable tool for promoting science learning. With this article, readers encounter another look at transformational play and the impact that participation in this type of play can have with respect to learning outcomes.


The article presents an understanding of an emerging type of curricula that allows students to position themselves as knowledge-builders in an online environment. The findings provide theoretical frameworks that posit that “knowing” is a contextual and participatory act. Students who engaged in inquiry-based activities became “practitioners” of scientific knowledge. This article is a useful exploration of games as immersive participatory simulations.


The authors present research on their Quest Atlantis educational video-gaming experience as a means of researching the relationship between play and learning. The authors posit that there is value in academic activities that are designed for learning, playing and helping. The study found that students who took part in Quest Atlantis, were able to learn and make associations between their interactions and consequences in the educational game. This article provides good insight into how students see themselves as part of the learning practice—controlling how they receive and use the knowledge. It also provides further context for the authors’ development of learning engagement theory.

Workplaces and Facilitation


This article examines the pedagogic practices in the workplace that facilitate learning. Through a review of workplace learning literature, the author concludes that workplace experiences are not informal. The author posits that learning is related to the historical-cultural practices and situational factors of a given workplace and its practices. This relationship makes it possible for participation of cohorts and individuals to engage in workplace learning. This article offers some critical points about workplace learning pedagogies. For example, when workers are given the opportunities to engage in learning at the workplace, they are mostly likely to take advantage of that opportunity. However, most of the learning takes place in informal ways as well; workers value co-participatory environments; spaces that are created for them to learn from one another.

The purpose of this study was to explore how employees facilitate others' learning and the contextual factors that influence employees' facilitation of others' learning in a workplace setting. The authors list several behaviors used by employees to facilitate learning; this included: providing feedback, role-playing, observing, listening, and asking questions. When employees engage in these types of behaviours they are vested in the learning that is happening. When employees engage in this way, there is accountability and develop credibility amongst one another.


This paper examines how a supervisor functions as a facilitator in the workplace. The authors provide a rationale and focus of the wide range of skills that are required by supervisors in organizational development. Supervisors function as instructors, coaches and conflict resolvers. This article provides further insight into informal learning with the workplace as a setting and supervisors assuming the roles of facilitators.