No One Flunks Museum: An Overview of Learning Theory and its Implementation in Formal and Informal History Education

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No One Flunks Museum:
An Overview of Learning Theory and Its Implementation in Formal and Informal History Education

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Abstract
The transition of museums from institutions for the knowledgeable to places for those seeking knowledge has brought about a need for those educating in museums to better understand the ways in which people learn. This paper introduces and explains theories, psychological and educational, that are applicable to learning such as Constructivism, Multiple Intelligences, and the Contextual Model of Learning. Observations of informal and formal history and social studies lessons or programs presented to students ages 3-16 provide the framework for understanding how well these theories of learning are being implemented in the museum. Comparison of history museum programs (informal education) with social studies school lessons (formal education) has demonstrated that both are succeeding as learning institutions, however the informal educational programs often have the ability to reach a more diverse audience of learners than formal educational programs do. If the goal of museums and schools is to educate each student/visitor equally then the future seems clear—museums and schools must work together to understand the strengths and restrictions each has to ultimately ensure that no child is left behind.
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Introduction

The image and focus of museums has been changing for years. Museums, once seen as impersonal homes to curators' precious objects are now trying to be recognized primarily as welcoming destinations for learning. More importantly, museums strive to be places where anyone can learn, places where it is not necessary to be already knowledgeable about the subject at hand. This shift in focus from being a place for the already knowledgeable to a place for those seeking knowledge has not been as rapid as one might think. In 1969, the American Association of Museums' (AAM) Belmont Report defined the mission of a museum as two-fold and to promote: "the advancement and diffusion of knowledge, and the enhancement of that awareness which affords pleasure and delight."

In contrast, in 1991, the AAM published another report, Excellence and Equity: Education and the Public Dimension of Museums; this was the first major report by AAM to focus on the educational role of museums. The report states "The commitment to education as central to museum's public service must be clearly expressed in every museum's mission and pivotal to every museum's activities—the missions of museums should state unequivocally that there is an educational purpose in every museum activity."

The messages museums attempt to convey to visitors, and the messages that the visitors actually receive, however, may be very different. Excellence and

1 Hein, Learning in the Museum, 8.
3 Ibid.
Equity challenges museums with a call to action: "Museums can no longer confine themselves simply to preservation, scholarship, and exhibition independent of the social context in which they exist. They must recognize that the public dimension of museums leads them to perform the public service of education—a term that in its broadest sense includes exploration, study, observation, critical thinking, contemplation, and dialogue." Mission statements from a variety of museums show very similar goals and standards that museums are striving to achieve, as well as a definite emphasis on education. Key action words found in many mission statements, “accessible,” “present and interpret,” “inspire learning,” and “educate,” indicate that museums now seek to put these words into action through interpretive exhibitions and programs.

G. Ellis Burcaw, author of *Introduction to Museum Work* states, “The term ‘exhibit’ carries the connotation that something has been added to the object or objects shown [interpretation] in order to accomplish something of importance [education, in the broad sense].” In other words, objects placed together and married by a theme become an exhibit. The action words from mission statements confirm the idea that museums seek to educate visitors through interpretation applied to exhibits, and by offering interpretive programs that relate to particular exhibits or the ideas central to the museum’s mission.

Since most museums now consider education to be central to the mission and mandates of their institutions, museum mission statements convey a lot

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about the institution. Mission statements are crucial not only for the museum to understand itself, but also for the public to understand the museum. In the 1994 *Museum News* article, "Self-Portrait: First Know Thyself, Then Serve Your Public," author Randi Kom states that successful organizations are the ones with a solid sense of self—they understand and know "what they are, what they want to be, and whom they want to serve." This notion of museum identity has been changing over the years and has steadily evolved since museums were founded in the United States.

Evidence of museums’ changing identities can be found in many documents published by the AAM since its founding in 1906, like the *Belmont Report* in 1969 and *Excellence and Equity* in 1991. The AAM guidelines and recommendations are followed by many museums in the United States and are often considered as standards for best practice.

For education to be the outcome of a person’s museum visit, learning has to occur while at the museum. One of the many struggles educators have encountered is that the nature of education demands that learning occur, yet it has been proven that no two people learn in exactly the same way. Without understanding of the learning process, museum staff may find it difficult to educate the museum visitor successfully. Since there is no universal definition of what it means to educate successfully, and no one correct way to go about trying it seems the only way museums can attempt to assess the level of learning is to

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Museum education programs should, and often do, take learning theories into account and strive to make the program goals and activities relate to every member of their audience on some level. More museums are currently offering exciting, creative programs that help people learn the concept, history, or topic being presented to them. Museums seek to educate all visitors, however, not just those that sign up for special programs. According to George Hein, author of *Learning in the Museum*, "the fundamental challenge of museum exhibitions and programs is how to transform the obvious (or not so obvious) enthusiasm of visitors into connected, engaging, integrated activities that lead to growth." 

There are currently organizations and institutions that focus on the research and study of museum education, such as the Institute for Learning Innovation which was established in 1986 as a not-for-profit learning research and development organization in Annapolis, Maryland. The Institute for Learning Innovation is dedicated to changing the world of education and learning by understanding, facilitating, advocating and communicating about free-choice learning across the life span. Prior to the founding of facilities like the Institute for Learning Innovation, museum educators relied heavily on theoretical work developed outside of the museum sector, primarily in psychology and education.

Many of these theories are still applicable to what museum educators do and serve as the foundation for current museum education research; what is

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8 Hein, 3.
9 [http://www.ilinet.org/abouttheinstitute.html](http://www.ilinet.org/abouttheinstitute.html)
uncertain is how well these theories of learning are actually understood by many seeking to educate in museums. It seems that although education is recognized as a core function of museums, understanding the learning process is still a low priority. It is through better understanding of the learning processes and theories related to learning that museums will be able to facilitate learning experiences for those visiting their sites. This study will examine the importance of learning theory on museum education programs specifically in history museums.

Chapter 1
Learning through the Lens of Psychology: Back to Basics

What is learning? There is no neat answer to this question. Fundamental to one’s understanding of anything is knowledge of what the word or action really means. A dictionary will give an answer or a definition of what learning is, but in museum terms, this definition may not be as accurate or as complete as it could be. The truth is that psychologists do not really know how people learn. Learning is an intense neurological process that has yet to be fully understood. Many theories have been created over the years in an attempt to understand the learning process. In Educational Psychology: Developing Learners, J.E. Ormrod provides a good framework for attempting to deal with the subject of defining learning.

Two popular definitions of learning have been created by psychologists:

Definition 1: Learning is a relatively permanent change in behavior due to experience.

Definition 2: Learning is a relatively permanent change in mental representations or associations due to experience. 11

The root of these two definitions is the same: they agree on the notion that for learning to occur there must be a “relatively permanent change.” The difference is in how that change is applied. In the first definition, learning occurs when a permanent change in behavior is achieved. The second definition indicates that learning involves a mental change rather than a behavioral change. But, what do these definitions mean, and why are the differences in definitions important?

11 Ormrod, Educational Psychology: Developing Learners, 184.
Examination of some influential learning theories provides an important key to answering these questions.

To understand how learning is applied to a museum setting it is important to first understand the theories that lay the foundation for the way educators understand learning today.

Learning as a change in behavior (definition 1) springs from the psychological school of thought known as Behaviorism which was the main focus of scholars in the early 20th century trying to figure out how the mind worked. This type of psychology is a reaction to the idea that an observer can never actually see thought processes occurring such as “remembering” or “paying attention.” The only thing that can actually be observed is the behavior; what people do and say.¹²

The Behaviorist method of observation is based on the principle of stimulus-response. The stimulus is a specific object or event that influences an individual’s learning or behavior. The response is a specific behavior an individual exhibits. A famous example of stimulus-response experimentation is the experiment Ivan Pavlov conducted with dogs.¹³ In this experiment, published by behavioral psychologist Ivan Pavlov in 1927, a dog was presented with a bowl of food to make it salivate. A bell would sound with the presentation of the food. This cycle of food, salivation and ringing the bell continued for a series of trials; each time the food and bell, which acted as a stimulus, were presented, the dog responded by salivating. These actions alone did not demonstrate learning,
however; after a series of trials with all the elements, the dog learned to salivate (response) with only the ding of the bell (stimulus). According to Pavlov, the dog had learned this response. Therefore, his experiment supported the idea of behaviorism because the change in behavior could be physically seen. Along with stimulus-response comes the concept of reinforcement. Behaviors that are reinforced (either positively or negatively) are likely to be repeated. This experiment demonstrated the behaviorists' views of observable learning.

The second definition of learning outlined above, unlike the first definition, requires not just a change in behavior, but a change in mental representations or associations. This psychological school of thought was a reaction to the behaviorists' perspective of learning, but did not reject their ideas altogether. Believers of the second definition said that learning was more than just a response to a stimulus. Rather, these theorists believed people, children in particular, could also learn by modeling what other people do. This idea of learning belongs to Social Cognitive Theory and was developed in large part by the research efforts of Albert Bandura at Stanford University in the 1940s.¹⁴

Social Cognitive Theory essentially states that learning occurs at the time the observation takes place. This learning does not have to be used immediately. Social Cognitive Theory is based largely on the concept of modeling. Modeling is the term applied to learning through observation when a child watches an action or task being carried out and then mimics this behavior in a similar situation at a later date. Children bring to situations assumptions and purposes that grow out of their history of social experiences; besides trying to understand the cognitive

¹⁴Ormrod, 185, 330.
task presented, they also try to make sense of the social relationship in which a task is presented. Social Cognitive Theory provides a more in-depth look at how children may learn, but it still does not address any cognitive processes that may be involved in learning. These cognitive processes are crucial to understanding the way in which people actually learn.

Using ideas from Behaviorism as a foundation, a new school of psychologists began looking at the thought processes as well as the behavior, conceptualizing learning as a mental change rather than a behavioral change. These ideas and the psychologists who believed them formed the cognitive school of psychology in the 1960s. Cognitive psychology began to address other mental phenomena such as memory, attention, concept learning, problem-solving and reasoning, believing these factors contributed to learning.

Underlying cognitive theory are a few basic assumptions about how people learn:

- Cognitive processes influence the nature of what is learned.
- People are selective about what they process and learn.
- Meaning is constructed by the learner, rather than being derived directly from the environment.
- Prior knowledge and beliefs play a major role in the meanings that people construct.
- People are actively involved in their own learning.

There are two key ideas to come out of early cognitive psychology: people learn new information more easily when they can relate it to something they already

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16 Ibid.
17 Ibid, 187-188.
know, and people learn several pieces of new information more easily when they can relate the pieces to an overall organizational structure or schemata.\textsuperscript{18}

At the same time cognitive psychologists were just forming early theories, developmental and social psychologists were also working at another approach to explaining learning. The theorist from early social cognitive development with perhaps the most impact on museum education is Lev Samanovich Vygotsky. Vygotsky conducted numerous studies of children's thinking from the 1920s until his death in 1934. Vygotsky and his students argued for a nonindividualistic view of learning and behavior where cognition develops as a result of the individual's social experiences. Collaboration is a source of cognitive development. The underlying principle of Vygotsky's approach to learning is the idea that human thinking must be understood in its concrete social and historical circumstances. Vygotsky's student, Alexander Luria, explained: "To understand thinking one must go beyond the human organism. One must search for the origins of 'conscious activity' not in the recesses of the human brain or in the depths of the spirit, but in the external conditions of life."\textsuperscript{19} An individual's learning is based on his own past learning or previous learning of the society in which the individual lives. For learning to occur, language must provide the link between the social and the psychological planes of human functioning.\textsuperscript{20}

In this view, all learning is built upon previous learning. This idea which Vygotsky called "scaffolding" has been one of the most embraced notions of his work. Scaffolding is the metaphor Vygotsky used to describe a support system

\textsuperscript{\textcopyright} Ormrod, 187.
\textsuperscript{19} Falk & Dierking, Learning from Museums, 43.
\textsuperscript{20} Berk & Winsler, 12.
for children's efforts that is "sensitively tuned to their needs." Scaffolding occurs when a child reaches an understanding, or learns something that if he had been left to his own devices probably would not have learned. By interacting with others and sharing knowledge and experiences, the child increases his level of learning.

Working at the same time as early cognitive psychologists, Jean Piaget (1896-1980) was foremost among psychologists who have studied the development of logical reasoning from childhood to adolescence. Piaget's theory is one of the most widely accepted theories of developmental psychology. Piaget developed a stage theory in which he outlined steps he felt young people must pass through to develop the capacity for logical reasoning and learning. According to Piaget, as a child grows, his physical and mental actions become better coordinated and new patterns of thought are created. Piaget said, "To know an object is to act upon it." Piagetian theory, in contrast with Vygotsky's theory, suggests that cognitive development occurs through inquiry rather than scaffolding. Piaget's idea of learning through inquiry is closely associated with discovery learning. Discovery learning is a child-centered approach to learning in which a child is allowed to explore an environment on his own and draw conclusions but, in order to be able to learn according to Vygotsky, there must be a social exchange rather than just an exploration.

Piaget believed that as children age they reason differently; he categorized these changes of reasoning in four stages of cognitive development:

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21 Ibid., 21.
sensorimotor, pre-logical, concrete operations, and formal operations. The sensorimotor stage begins in infancy and continues through age 2 with no specific defining characteristics. Between ages 2 and 7, a child is in the pre-logical stage and is beginning to develop language skills, explore symbols, accept his surroundings of “what seems to be,” and does not understand causal relationships. The third stage, concrete operations, involves children ages 7 through 11. During this time, children are involved with the present and the concrete, begin inductive reasoning and understanding of cause and effect relationships, and they begin to arrange objects in some sort of order. The final stage of Piaget’s cognitive theory is formal operations. From sometime in adolescence through adulthood, children are growing and enhancing these skills. During this time people are learning to use logic effectively; think in abstract terms using words and symbols; think in past, present, and future tenses; and are capable of inductive, deductive and hypothetical thinking.

Although Piaget’s theory is very highly regarded among educators, it is best used as a rough guide for determining what activities are appropriate for a group of children. The most common critique of any developmental or stage theory is that there is no definite point in a child’s life when he moves from one stage to the next. For example, all six year olds may not be capable of reading a particular book on their own but they may be able to read with the help of a teacher, parent, or classmate. Based in part on the work of Piaget, a new school of thinking emerged that adapted some of his ideas into a new learning philosophy, Constructivism, which was not dependent on development.

Ibid., 33.
Constructivist theory proposes that learners construct (rather than absorb) a body of knowledge from their experiences. This relates to the portion of Piaget's theory that says children construct their own beliefs and understandings from their personal experiences. Although Piaget contributed to the popularity of constructivism, a pioneer in the constructivist approach was education philosopher John Dewey (1859-1952). The constructivist position holds that learning is a transformation of mental structures in which the learner plays an active role. According to Dewey, "All principles by themselves are abstract. They become concrete only in the consequences which result from their application."

Constructivists feel that learning occurs through action. Learning in this way requires learners to use both their hands and their minds, ultimately allowing them to reach conclusions. Constructivism also suggests that conclusions reached by learners are not validated by any external standard of truth, but only within the experience of the learner. According to Hein & Alexander, "Discovery learning and constructivism arise not only from Dewey's insistence on experiential learning but primarily from the pioneering work of Jean Piaget and his followers in demonstrating the importance of the active mind in interpreting the sensations of the environment."

Author and supporter of constructivist learning, George Hein explains that developmental psychologists have stressed the notion that for significant learning...
to occur, new concepts must compete with mental structures already present in
the mind. Learning involves not just the addition of new material (assimilation),
but constant reorganization of material already learned (accommodation). This
process of assimilation and accommodation itself increases the capacity to
learn.\textsuperscript{29} As the focus shifted to studying what goes on in the mind, rather than just
the content to be learned and the behaviors acted out, theories began to develop
that propose specific cognitive preferences or learning styles.\textsuperscript{30}
Chapter 2
Entering the Present: Contemporary Theories of Learning

In comparison to early cognitive psychology, more recent research in this field has provided new insights and conclusions. Cognition deals with thinking, reasoning and ways of obtaining knowledge. Reasoning occurs when the brain searches for relationships and solutions from what is already known; familiar elements are combined to create a new or original answer. The result of rearrangement of ideas and experiences into concepts is knowledge. Concept formation involves taking known information and organizing it into categories. Shared features or similarities are a good generalization or rule of categorizing.

For example:

*Experience:* A child burns its hand when touching a pan on the stove.  
*Concept:* The pan is “hot” because it is on fire.  
*Generalization or rule:* Objects get “hot” when in a pan on the hot stove.  
“Hot” objects burn, burn causes pain.

*Experience:* A child learns that a ball is “round,” a circle is “round,” and joining hands in a circle is walking “a-round.”  
*Concept:* “Round” is the name of a class of objects.  
*Generalization or Rule:* Things having a circular shape are “round.”

These situations demonstrate organization of shared features. The second example demonstrates abstract reasoning. The capability to apply reason to abstract concepts comes with age. Concepts are learned by moving from concrete to abstract, for example, (1) quarter (2) coin, (3) currency. This demonstrates the hierarchy of specificity to concept. A quarter is a specific type of coin. At the second level, there are many kinds of coins. Finally, the most

31 Grinder & McCoy, 27.  
32 Ibid.
abstract is the concept of "currency" which includes not just coins, but other types of money as well which comes in many types such as paper, coins or plastic cards and varies geographically. Some museums use the idea of concept-based learning to organize exhibitions. H. Lynn Erickson feels that "when exhibitions are focused on an enduring understanding, the museum creates a meaningful, personal interaction between the learner and the exhibit . . . concept-based learning invites museum visitors to consider information in terms of deeper transferable understandings."¹³

The behaviorists, social cognitive theorists (e.g., Vygotsky), and early cognitive and developmental theorists (i.e., Piaget) provided a solid foundation for beginning to understand how learning develops, but educators still do not have a clear picture of the way in which people learn. It is true that learning does not usually occur in isolation. It is through interaction with others and the environment that learning is increased (scaffolding). It is also true that learning is repetition or imitation of actions or ideas observed or modeled. And it is true that for a person to thrive he must develop the ability to learn more difficult tasks, which come through the aging process and constant assimilation and accommodation of new information.

An issue addressed by learning theories in more recent years is the idea that even with concepts of modeling, scaffolding, and aging—not everyone seems to learn best in the same way, or has the same learning aptitudes. What if someone learns best by reading, or moving, or touching? Howard Gardner presented this idea in his theory of Multiple Intelligences. In 1983 Howard

¹³ Erickson, 42-43.
Gardner first published his theory of Multiple Intelligences. In *Multiple Intelligences: Theory and Practice*, Gardner states that "human cognitive competence is better described in terms of a set of abilities, talents or mental skills."^34^ Although Gardner's theory has been embraced and utilized by many educators, the biggest criticism of the theory of Multiple Intelligences is in the use of the word "intelligence" in its title. General intelligence^35^ is what many tests aim to measure; these are the tests such as the IQ (intelligence quotient=[mental age/chronological age] x 100) tests. This was the formula developed by Lewis Turman for revision of the Stanford-Binet test. Still widely used, it was published in 1916 as the Stanford-Binet Intelligence Scale.^36^ Intelligence tests are used to measure current cognitive functioning and predict academic achievement.

Just as theorists have had difficulty defining "learning," psychologists have not clearly defined what "intelligence" is, but they have created a list of components that many theorists believe intelligence to be:^37^

- Adaptive
- Related to learning ability
- Involving the use of prior knowledge
- Involving interaction and coordination of many different mental processes
- Seen in different arenas, e.g., academic tasks or social situations
- Culture-specific^38^

[^35^: Intelligence as defined by Ormrod, 2003: Ability to modify and adjust behaviors to accomplish new tasks successfully; involves many different mental processes and may vary in nature depending on one's culture, 140.
[^37^: Ormrod, 140.
[^38^: Ibid.}
Howard Gardner’s “intelligences,” a set of abilities, talents, or mental skills, are not quite the same ideas which typically make up intelligence as it is tested by IQ tests. It has been argued that Gardner “did not discover new intelligences, but rather reframed and renamed cognitive styles.” Gardner himself has realized this misnomer and stated in 1993, “It becomes important to consider individuals as a collection of aptitudes rather than as having a singular problem-solving faculty that can be measured directly through pencil-and-paper tests.”

Since its publication, this theory has been both embraced and challenged. In the original publication, Gardner outlined seven “intelligences” or ways people excel in learning. He has since added an eighth, and has proposed two others that have yet to be confirmed. The eight “intelligences,” and two proposed intelligences, are as follows:

Linguistic/verbal intelligence—someone who is highly verbal, likes to read and write, and has a good memory for names, places, dates and fact.
Logical-mathematical intelligence—someone who enjoys math and likes to play games of strategy.
Spatial intelligence—someone who has a good visual memory, can easily read charts, graphs, and maps and likes watching movies, slides or looking at photographs.
Musical intelligence—someone who plays an instrument well, remembers songs, and says he/she needs to hear music to concentrate.

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40 Gardner (1993), 27.
Bodily-kinesthetic intelligence—someone who performs well in competitive sports, likes physical activities and demonstrating skills, like crafts.

Interpersonal intelligence—someone who has many friends, likes to socialize and enjoys playing games in groups.

- Intrapersonal intelligence—someone who prefers to be alone when he/she pursues projects and is motivated to complete projects independently.

Naturalist intelligence—someone with the capacity of taxonomization; recognizes members of a group and can distinguish species and chart relations between them.

Spiritual Intelligence—someone with the ability to master a set of diffuse and abstract concepts about being; explores the nature of existence.

Existential Intelligence—someone with the capacity to locate oneself with respect to the furthest reaches of the cosmos and with respect to such existential features of the human condition.

In Gardner's theory of Multiple Intelligences, learning is a product of different intelligences working together. This explains why some people seem to have different skills or abilities that appear to come more naturally to them than to others. Gardner feels that everyone has all the intelligences, but certain intelligences are more dominant than others, and vary depending on the individual. For example, a dancer requires skills in bodily-kinesthetic, musical, interpersonal, and spatial intelligences in varying degrees. In contrast, a person with political power requires an interpersonal skill, a linguistic facility, and some

42 Furnham et al., 246.
43 Ibid., 247.
Gardner's theory is easily applied to any educational setting, such as schools or museums, but recently there have been theories developed specifically for museum learning.

Although early on museum professionals relied primarily on psychological theories, with the exception of educational philosopher John Dewey, there are currently new ideas being formulated specifically for learning in a museum. John Dewey stated in *Experience and Education*, "The history of educational theory is marked by opposition between the idea that [learning] is development from within and that it is formation from without." Taking Dewey's idea and attempting to reconcile this struggle between the internal processes and the external environment, researchers John Falk and Lynn Dierking have developed the Contextual Model of Learning.

Falk & Dierking through years of observation and study, starting in the 1990s, have constructed a model of learning that encompasses most of the previously described theories and reduces all of the accompanying complexity of these theories into a simple model. The Contextual Model of Learning encompasses three contexts: personal, sociocultural and physical. In this model learning is the process and the product of the interactions between these contexts. Recognizing that learning is never static and that all learning is constantly evolving and changing through the course of time, the contexts presented cannot be viewed as completely separate. It is through separation, however, that what each of the contexts encompasses can be understood.

44 Gardner (1993), 27.
45 Dewey in Falk & Dierking, 15.
46 Falk & Dierking, 10.
The first of the three contexts is the personal context which focuses on learning as a personal experience. There are four key points that form the foundation of this context.

1. Learning flows from appropriate motivational and emotional cues.
2. Learning is facilitated by personal interest.
3. "New" knowledge is constructed from a foundation of prior experience and knowledge.
4. Learning is expressed within appropriate contexts.\(^47\)

Motivation, an idea essentially ignored by behaviorism and cognitive psychology, is an important factor in the personal context. Telling someone to learn math, or to read, even if he tries, does not mean he will learn. But there are also occasions when someone who does not have to learn something does. Learning is often a choice.

According to Falk & Dierking, no one learns more effortlessly than children. Children approach learning as a whole-body, emotionally rich experience. It is only when these joyful learning experiences are reprogrammed by societal goals and expectations into the externally imposed, cognitive-focused tasks of schooling and work that "learning" often becomes unpleasant and difficult.\(^48\) If learning is presented in the appropriate context with the proper motivation and interest, then it continues to happen naturally.

Prior knowledge plays a key role in continuous learning. Although it is believed that some learning can occur through repetition and gradual accumulation of knowledge, more often learning requires conceptual shifts in how an individual deals with new information. This suggests that learning is

\(^{47}\) Ibid, 17.
always an ongoing transformation of mental structures in which the individual actively makes sense of the world on the basis of prior knowledge and understanding.\footnote{Hein & Alexander, 2; Falk & Dierking, 27.} It would be impossible, however, to understand any learning without placing it in context. Falk & Dierking state, “Not only does learning require prior knowledge, appropriate motivation, and a combination of emotional, physical, and mental action; it also requires an appropriate context within which to express itself.”\footnote{Falk & Dierking, 32.} Without cues from the outside world, individuals would not have the means of connecting seemingly disparate information in their heads. In the absence of context many bits of information seem meaningless. In this setting, context is always changing and always relative to the person.\footnote{Ibid, 32.}

The second context of the Contextual Model of Learning is the sociocultural context. Humans create understanding through things like conversation, narrative, and shared meanings. Much of the way humans make sense of the world is through social interaction with others, through distributed meaning-making.\footnote{Ibid, 38.} It is known that humans cannot survive in isolation. From birth to death humans are surrounded and influenced by others. The sociocultural context defines both who people perceive themselves to be and in turn perceive the world they inhabit.\footnote{Ibid, 39.}

Culture is made of shared experiences, beliefs, customs, and values of the groups that inhabit it; this is what gives the world meaning.\footnote{Ibid.} Falk & Dierking...
define learning within the sociocultural context as "the process by which a society shapes the mind of individuals to create the kind of persons who, as adults, will be able to meet the imperatives of this culture." Not all learning that occurs in the sociocultural context is necessarily meaningful. A person's culture and ideas can be affected daily from any number of sources such as exhibits, television, magazines, conversations, but "meaningful learning results when a person is able to actively construct and find personal meaning within a situation." Situated within the sociocultural context are ideas from Vygotsky, and his contemporaries Cooley, Mead and Lewin, who all argued for a nonindividualistic view of learning. Vygotsky's theory in particular focuses on the idea that to understand the individual, a person must be able to understand the entire society in which that individual lives. Paired with the idea of learning being a social product is the idea of modeling. Learning in the sociocultural context involves social interaction, and a constant reassessment of what has been learned about an individual's culture and experiences and a decision about whether or not to believe, accept and utilize the new information into understanding oneself and the world.

The third context of the Contextual Model of Learning is the physical context. People remember physical details about their experiences long after the experience occurs. The ability to later make sense of an experience—in fact, the ability to learn—is strongly dependent upon individuals' abilities to frame prior
experiences within the context of their physical setting. A person's behavior is dependent on the different settings he encounters. When a person enters a school, museum, hospital, etc., everything in the environment encourages him to maintain the status quo; in a sense the person assumes the behavior of people found in those places—a teacher or student, museum professional or visitor, doctor or patient. People create mental scripts for how to act in these types of settings. It is through experience that people can create mental scripts for how to act and what to do in certain situations. Once the "appropriate" behavior is learned for a particular setting, an individual can focus on other aspects of the setting which results in greater learning and a higher degree of personal security and emotional stability. Behavior settings are very powerful, so much so that people learn to associate certain settings with learning. Often places like schools, libraries, and museums are associated with learning; other places like playgrounds and restaurants, for example, are not. This notion that certain places are for learning and other places may be for activities like playing or eating reinforces the idea that learning is context specific.

The importance of physical context has been somewhat neglected by many cognitive, behavioral, and developmental psychologists even though it is apparent that a person's development depends as much on location as it does on genetics. For example, a child growing up in a suburban town in the United States will have learned very different behaviors from those of a child growing up on an African desert. Psychologist Ulrich Neisser argues that "perception and
action occur in continuous dependence on the environment and therefore cannot be understood without an understanding of the environment.\textsuperscript{62} This implies that learning is context-specific, and it is not always easy to transfer learning from one environment to another.

It is believed by many that the physical context is important, but the information learned in a context should be easily transferred to a different setting. For example, when children are placed within the context of a school classroom and taught a variety of subjects including history, art, science, etc., the assumption is that these topics once learned in a classroom will be permanently stored to memory and available for use in a later context.\textsuperscript{63} Research would suggest that this is not the case; according to Falk & Dierking, "The fact that children and adults are being taught concepts within the decontextualized physical environments greatly impedes their ability to learn the material in the first place, let alone transfer it to a new situation."\textsuperscript{64}

Although this transfer of information may be difficult, there is research to suggest that it is possible, but that the transfer process needs to be facilitated. Educational research conducted by Wolins, Jensen, and Ulzheimer in 1992 at Bank Street College in New York City suggests that students learned most during school field trips when the work they did at the museum was interdisciplinary and closely related to what they had been doing in school.\textsuperscript{65} When teachers involved students in creating interdisciplinary projects and activity-based experiences at

\textsuperscript{62} Neisser (1976), 183 in Falk & Dierking, 57.
\textsuperscript{63} Ibid., 58
\textsuperscript{64} Ibid.
\textsuperscript{65} Wolins, Jensen & Ulzheimer (1992) in Falk & Dierking, 59.
school, they helped the students create relevant physical contexts for themselves, which resulted in greater transfer and, ultimately, learning.
Chapter 3

Interpretation & Meaning-Making vs. Facts & Test-Scores

School, according to Frank Oppenheimer, founder of San Francisco's Exploratorium, connotes "a serious, regular, formal, deliberately decontextualized institution." Museums are seen by children as places that provide occasional, entertaining, and enjoyable outings. Oppenheimer continues, "No one flunks Museum." This statement may be accurate; students are not tested in the typical fashion after a visit to the museum. There is no quiz after a museum program. It is possible, however, that while at the museum, students are actually learning much more, in more meaningful ways, than they would have if they had stayed in the classroom that day.

The easiest way to distinguish between school learning and museum learning is to separate the ideas of formal education and informal education. Although both schools and museums are centers of learning, the teaching that occurs in each is different even though both environments use a curriculum to determine the content of their lessons or programs. According to author and curriculum theorist Julia Rose, "Curriculum is the embodiment of a program of learning and includes philosophy, content, approach, and assessment." Furthermore, "Both informal and formal educational planners engage in curriculum design activities when they plan how and what they want to interpret.

Julia Rose is an assistant professor of Museum Studies at Southern University at New Orleans and author of several books, most recently 105 South Louisiana Field Trips.
Schools often teach curriculum formally and museums teach curriculum informally.

Schools teach formal education based on curriculum that is mandated by whatever state the school is located in. The school is told what is to be taught, and to which specific grade levels. How well students are able to demonstrate mastery of these materials on a specific test is meant to determine not only the abilities of the student, but how well the teachers and that school as a whole are doing. Teachers often have little freedom and resources to aid in teaching these materials, and therefore are forced to rely on textbooks and other prepared materials. The recent addition of the federal government’s No Child Left Behind Act (NCLB) has made it even more difficult for teachers to utilize resources outside of the approved curriculum and test because of very little time to learn specific subjects, and little monetary resources available for outside programs.

The NCLB Act, signed by President George W. Bush on February 8, 2002, focuses on increasing the math and science skills of students, particularly in the early grades. The added pressure of standardized tests implemented to measure students performance specifically in reading, math and science has caused schools to spend more time than ever focusing on these subjects. Based on theories of learning, some students will excel in these subjects, and others will not. Students who will excel in math or science, for example, are those with aptitudes towards logical-mathematical and naturalist tasks. Although other students may be able to perform well on tests related to these subjects, it is clear

Ibid.

that not all students will be able to perform or learn to their maximum potential if a large portion of time is spent only on these subjects.

Presentation of subject matter can add or subtract to students' learning potential. If a teacher's curriculum allows for interdisciplinary lesson-planning, then more students may be able to learn better because more students' aptitudes can be reached. Most school testing measures the ability to respond to questions in the logical-mathematical or linguistic domains. Gardner believes that school testing measures would be more accurate if they were to survey in an appropriately contextual way the "full range of human problem-solving skills." Using Multiple Intelligences in a museum, according to Gardner, provides people with more learning potential than school curricula can provide.

It is important that for students to learn a concept well they must have different types of exposure to the subject. According to John Fairley, author of *History Teaching Through Museums*, textual material is invaluable for facts, but does not as easily lead to the comprehension students get from seeing an object or place themselves. Fairley also believes "The last thing which the museum visit should become is a kind of annual treat. Something which is seen as entertaining and recreational but only peripherally related to the mainstream of the child's education." The belief that museums and historic sites are essential supplements to school curricula has been discussed for decades. Schools do plan field trips to places that teach or demonstrate historical, scientific or environmental education, yet the number of field trips is decreasing. If the benefit

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72 Fairley (1977), *History Teaching Through Museums*, 3.
73 Ibid., 9.
of these partnerships has been known for so long, then what is the reason for waning interest in history, and decreased numbers of schools taking trips to museums? Museum attendance over all is decreasing, and some of this decrease can be attributed to the rise of standardized testing in schools.

The NCLB Act has made school field-trips to museums more difficult. If the teacher cannot prove that by taking a trip to the museum the students will be learning concepts that are useful for the standardized test, then school officials may not allow the money and time to be spent outside of the classroom. To comply with their mission statements, museums have to write programs that relate to their specific collections; however, museum professionals strive to ensure that any programs offered for school groups not only meet the museum's mission but also align with specific state core curriculum standards.

Museum learning is similar to school learning with a few key differences. Rather than being based on concepts or ideas that are demonstrated through pages in a textbook, museum learning is often, though not always, focused on real, tangible objects. Using objects as vehicles for storytelling and contextualization of ideas, the museum makes education more accessible to all types of learners. Learning theories (e.g., Piaget, Dewey, and Gardner) demonstrate that young children learn through exploration, using all of their senses. Sadly, verbal and logical thinking often dominate the ways in which children are taught once they enter school. Beverly Sheppard, editor of _Building Museum & School Partnerships_, observes "It seems that children live in a world..."
with lots of information, but little encounter... Museums remain one of the few environments where encounter is the basis for learning. For example, students can read in their textbook at school about life in early America, about different jobs people had and the types of tools tradesmen used, but seeing pictures in a book cannot compare to going to history museums like the Mercer Museum in Doylestown, PA or the Museum of Early Trades & Crafts in Madison. These museums provide programs that allow students to touch and role-play with these objects from the past. Sheppard explains:

There is nothing like the real thing. No textbook account, video image, computer simulation or recorded sound can ever match the wonder of the real. When students enter a historic site, gaze at a distant star, or stand before a work of art, they encounter the object, place or experience described in the pages of their texts. This is the "magic" of museums, the special ingredient museums bring to the educational experience.

The notion of learning through encounter with objects and places is not new. Museum educators have been aware for decades of the asset the museum can be to students as a welcome addition to any school curriculum. John Fairley, shared a very similar sentiment as did Sheppard; "[Experience with real, historical objects] provides the one thing which the historical textbook cannot—a real and tangible emotive link with the past." Bonnie Pitman-Gelles states in Museums, Magic & Children: Youth Education in Museums, "The museum's responsibility is to make learning meaningful, and to relate scientific, historical, and aesthetic concepts to the child's world of experience, thereby increasing his

76 Sheppard, Building Museum & School Partnerships. 3.
77 Shepherd, 2.
78 Fairley, 3.
ability to learn & to retain the information." As demonstrated by the Contextual Model of Learning, a major issue with formal education is the decontextualized manner in which students are taught facts and ideas. For example, reading about the battle of Gettysburg in the classroom is very different from actually being in Gettysburg and seeing the battlefield. As the constructivists believe, experiences are crucial in order to make meaning of the world. According to Eilean Hooper-Greenhill, author of *Museums and the Interpretation of Visual Culture*, the task for educators in museums is “to provide experiences that invite visitors to make meaning through deploying and extending their existing interpretive strategies and repertoires, using their prior knowledge and their preferred learning styles, and testing their hypotheses against those of others.” Informal educational experiences, like those offered at museums provide learning experiences through exploration, socialization, and encounter that cannot be duplicated in the school classroom.

Although there are obvious differences between formal and informal education, it is necessary for a student to have both. Schools and museums both provide essential knowledge and skills to children of all ages. Teachers are often restricted, as are museums educators, because of budgets and time. The numbers of museum programs that could work and be put into practice are endless; however, there is rarely enough staff, time or money to provide them.

In both types of institutions, schools and museums, education is the priority. Although chosen methods of teaching may be different, the topics are the

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Hooper-Greenhill, *Museums and the Interpretation of Visual Culture*, 139-140.
same. There are many successful cases of museums and schools partnering together to provide invaluable experiences for students. The foundation and guiding principles for teaching in schools and museums are the learning theories outlined in the previous chapters. It is more often in the informal learning environment that all children have the opportunity to learn to their maximum potential through interdisciplinary lessons, contact with tangible objects, and the opportunity to make meaning for themselves rather than worry about what will be on the upcoming exam.
Chapter 4
The Presence of the Past: Museum & School Collaborations

History museums make up the largest percent of museums. In an attempt to count museums in the United States, the Institute for Museum Services (now the Institute for Museum and Library Services (IMLS)) sponsored a “museum universe survey” in 1978 which defined a museum as “an institution organized on a permanent basis for essentially educational or aesthetic purposes, which utilizing a staff, owns or uses tangible objects, whether animate or inanimate, cares for those objects and exhibits them to the public on a regular basis.” The survey concluded that there were more than 4,400 museums in the United States, with half of them defined as history museums. Today the IMLS recognizes 17,500 museums in the United States, of which history museums still make up the majority.

Educators at history museums are doing essentially what their counterparts at other—usually larger—types of institutions are doing, but historical settings and residential focuses require a different approach to teaching and developing programs. Many history museums manage to stay open because of high visitation from school groups. Because most educators at these sites are not trained teachers or trained museum educators, however, it is useful for them to “investigate current pedagogic theory and audience research in hopes of creating useful and memorable experiences for visitors.” Providing

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81 Leon & Rosenzweig (ed.), History Museums in the United States, xiii-xiv
82 http://www.imls.gov/about/about.shtm
83 Donnelly (ed.) Interpreting Historic House Museums, 271
84 Ibid.
high quality, energetic school programs that provide a level of customer satisfaction is the goal of museums to inspire life-long learning in children.

Unlike schools, which cover many subjects each day for short periods of time, many history museums provide a concentrated examination of the history of one location, event, or area within a specific time period and context. In school a student might read in a textbook about a famous person like George Washington, but museums and historic sites offer students a look at actual homes and beds he "slept in," or battlefields where he fought the Revolutionary War. History museums bring the past into the present by offering an experience with tangible or intangible pieces of the past. Observations of teaching styles and lesson content at schools and museums, using learning theories as the basis for critique at both, help to determine the differences between history lessons in classrooms and history lessons at museums. The children that were observed, in the classrooms or museum programs, ranged from ages 3 to 16 (Pre-school through 10th grade). Observations took place at the Spring Cove Middle School in Roaring Spring, PA; the Mercer Museum in Doylestown, PA; Martinsburg Elementary School in Martinsburg, PA; Madison High School in Madison, NJ; and the Museum of Early Trades & Crafts in Madison, NJ between the months of November 2005 and December 2006. The Mercer Museum and the Museum of Early Trades & Crafts are both museums that focus on tradesmen, their crafts, and everyday life in pre-industrial America (c. 1700-1860). Since history is the subject of these two museums, when it was possible history, or social studies, lessons were observed in the schools as well.
The 5th grade social studies class at Spring Cove Middle School learned to create their own "world" through work on a cartography project. The class started with a review of the project and what they would be working on for the remainder of the class and why. Each student was working on creating a map of an island. There was a list of criteria to be included on the map. The students had devised their own themes, and all aspects of the island, from the name of the capital to the names of the mountain ranges had to relate to the theme. Ultimately, this project provided students with an opportunity to think critically about environments.

On the day of the observation, the teacher reviewed how to mark latitude and longitude on their maps. She used maps hanging on the wall as examples of how maps look. The wall maps were also a tool in explaining how latitude and longitude numbers change in relation to the equator and the prime meridian. As the teacher worked on a mock map as demonstration, she asked the students to tell her which way the numbers should go on the map, and used a pattern to ensure even spacing. Students spent the remainder of the period working on a "sloppy copy" of their island, using their textbook as a research tool. This project required students to think about the world. Students chose where on the globe they would place their island, and use the placement to determine the climate. This project gives students the ability to think about themselves, the world as it is, and what they would like the world to be like.
The concept of experiencing a different "world" is also evident in many history museum programs. A preschool program titled Life on a Farm was observed at the Mercer Museum. To begin the program, the educator had the small group of six children gather on a quilt on the floor. She opened a large book that was filled with smaller books, each featuring its own animal, which was actually a finger puppet. Each child picked one of the small books and animals. The educator read the small books one at a time and each child was responsible for making the animal sounds every time the name of his or her animal was mentioned. Each story opened with the questions "What do you see?" and "What sound does the animal make?" After reading each child's small story the educator shifted into a brief discussion about the museum and the community. She discussed what the town looked like in the past, and because it was mostly farms, that is why they were talking what life was like on a farm in Colonial times, or as the children identified it, "olden times."

For the remainder of the program the children were encouraged to "use your eyes and look around seeing if you can find..." and then identify artifacts from "olden times" used on farms. The teacher held up a barn lantern with a lit candle inside. She encouraged the children to blow out the candle. They could not succeed at this task because holes were punched outward to shield the flame from the wind. They also looked at things like an apple picker, apple peeler, and butter churn. After all the historic farm items were identified, the children were allowed to use real farm materials (i.e., apples and cream) and "old" farm items.
to peel apples and make butter from cream. At the end of the program, the children got to eat what they had made. This program showed what life was like for people hundreds of years ago, which to the children seems like another "world." The teacher started the program with stories about farm animals, because they demonstrate a common link between life then, and life now.

These two programs are very different in content, but can be compared through implementation of learning theory. *Life on a Farm* was an age-appropriate object-centered program for preschool aged children. Ideas from learning theories were present throughout the program. Scaffolding took place during the program as children took turns trying to identify historical farm objects since the educators would carefully continue to ask direct questions to lead the children to the right answer if their first guess was not quite right. In the cartography challenge, students were allowed to discuss their themes with each other; this allowed for free exchange and the ability for a student to get input from others and develop their idea more fully.

*Life on a Farm* also targeted a number of Gardner's "intelligences." Linguistic learners benefit from reading the books; spatial learners benefit from the pictures in the books, and the objects spread throughout the room; kinesthetic learners benefit from the physical tasks of peeling apples and churning butter; interpersonal learners benefit from the group interaction; and naturalist learners benefit from distinguishing between farm animals and the noises that they make. The cartography lesson also had outlets for different learning aptitudes. A mapping activity would appeal strongly to spatial learners,
as well as kinesthetic learners. There are also logical-mathematical tasks as well in implementing longitude and latitude. Linguistic learners would have excelled in the selection of a theme and the exercise of choosing words.

The cartography project relates to Constructivist theory as it involves the student taking an active role in transforming their mental structures. John Dewey said that principles by themselves are abstract and they only become concrete through application. Children come in contact with maps from a very young age, but through creation of their own they can better appreciate cartography and perhaps be able to transfer some knowledge to life situations, such as giving directions. *Life on a Farm* demonstrates Constructivist ideology as well by allowing the children to learn through action; the children each got to work the historic apple peeler and butter churn ultimately getting to eat the results. Much like the mapping project allowed the 5th graders to challenge their existing mental structures by taking something known like a map, and creating their own interpretation, *Life on a Farm* challenged the idea of what is known by having the preschoolers physically see how an item, such as an apple peeler, has changed over the years. The purpose of the object is the same, but the appearance has changed to match the needs of people today. Through creation of an ideological “world” or examination of a past “world,” both programs utilized ideas from learning theory which demonstrate learning as a social action. Yet it was *Life on a Farm* that provided a better picture of what life was really like in the past.

Educators at the Museum provided their students with an encounter that

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85 Hein & Alexander, 29.
combined many different learning theories, and a special environment to help the children remember that experience for years to come.

Not all learning theorists felt that children learn best through action. A comparison of programs at the Martinsburg Elementary School and Museum of Early Trades & Crafts demonstrates how learning was achieved through emphasis on specific facts.

Martinsburg Elementary School

The specific facts about a historical concept or a period in history are covered in school and museum programs, but the approaches are different. Fifth grade students at Martinsburg Elementary School each created their own set of trading cards featuring the images and information about early explorers. Previously, the students each received a list of explorers, not all lists were the same, some of the less famous explorers were listed less often. Each child used the Internet as a research tool to find pictures and facts about the explorers. They then pasted the information onto trading cards that they created. On the day of the observation, the students were allowed to trade cards with each other. They had to think about quality of card or how well it was made, quality of content, and also the idea of value as some cards were more “rare” than others. The students had a limited amount of time to walk around the room and barter with other students for their cards. The trading card activity was followed by an exercise in creating a phone conversation between Queen Elizabeth I of England and King Philip II of Spain where they were having an argument about an historic event. This argument ultimately leads to the Spanish Armada of 1588. The
nature of a trading card is that it provides specific information or facts about a specific person or thing, in this case a famous Explorer.

The Museum of Early Trades & Crafts

The Museum of Early Trades & Crafts took a different approach to teaching specific facts about the life of a child in early America. A group of 2nd graders was observed while participating in a program at the Museum of Early Trades & Crafts. A Child’s Life in Early America uses artifacts and ideas to teach about a child’s daily routine in Colonial America. After introductory remarks, the educator relocated the group from the entrance hall of the Museum to the education room, which is painted with an outdoor scene of Colonial children at play. Surrounding students with a representation of the past helps create in them the feeling that they are transported to a different time, and acts throughout the program as a constant reminder of the subject at hand. The program began with an explanation that the children from Colonial times lived on a farm. The group was asked, “How many of you do chores at home?” After determining that the majority of the children were familiar with chores, the educator began to discuss the chores children had to do in Colonial times. Using two student volunteers at a time, the educator involved the children in role-playing certain chores using museum artifacts, or replica items that would have been used in Colonial America. These items included cornstalk pillows, spider pots, drop-spindles, barn lanterns and butter churns. While carding wool and watching a demonstration of
the drop-spindle, the group sang “Ba ba black sheep,” a song that originated in Colonial times, as a black sheep was the only source of black wool.

After participating in many chores, students were asked how these chores were different from the chores they perform at home today. It was agreed that the chores were all very similar, but that the items used to perform the chores had changed. Students began to understand how something like electricity had made doing chores much easier and less time-consuming. The instructor passed around historic photographs so the children could see rather than just pretend what the past was like. The educator then inquired, “After doing all these chores, did kids ever get to play?” The group briefly discussed the limited amount of time children had to play with toys and where they got toys to play with. Children in early America had to make their own toys. The lesson ended with a craft activity in which the children made their own set of marbles out of clay.

A Child’s Life in Early America represents a different approach to “telling the facts.” The facts presented in this lesson all related to things children in Colonial America had to do everyday, but rather than making a list of these facts the educator chose to use artifacts from the time and role-playing activities as the vehicles for learning.

The trading card activity and A Child’s Life in Early America demonstrate an attention to the theory of Multiple Intelligences. A student with linguistic/verbal, spatial, or interpersonal intelligences, as defined by Gardner, had opportunities for learning through his preferred aptitude during the trading card activity. Linguistic learners could read the information on the trading cards which
contained facts about specific explorers. Spatial learners could focus on the images on the cards rather than the facts. Interpersonal learners had the opportunity to discuss the trading cards with many different classmates, and the ability to barter the cards turned the activity into a game. *A Child's Life in Early America* addressed several of Gardner's intelligences also. This program would have primarily appealed to spatial and kinesthetic learners because of the use of actual artifacts. Secondarily, there were portions of the program that also would have appealed to linguistic learners also. Each time a new artifact was introduced there was a discussion of the use and function of that item, as well as why it had the name it did. For example a spider-pot was named for its long, skinny legs that held it up over the flame of the fire, not because of actual spiders.

The idea of learning through experiences with objects also ties in with the Contextual Model of Learning. Performing chores by historical standards requires the children to transform an existing mental structure to make sense of the world on the basis of prior knowledge and understanding; this type of understanding usually occurs within the personal context. Examining the customs of a seemingly disparate culture, "the past," also allowed to students to think in the sociocultural context. The trading card challenge also demonstrates the Contextual Model of Learning. Requiring students to write a "phone conversation" between Queen Elizabeth I and King Philip II promotes thinking about the personal and sociocultural contexts; however, this exercise was not carried out in an appropriate way. Rather than writing a phone conversation, the students would have been better able to connect with the past by using a communication
medium accurate to the time period such as letter writing with quill pens. The trading card lesson and *A Child's Life in Early America* took very different approaches to teaching historical facts.

Although schools and museums usually work independently of each other to achieve similar goals, as was demonstrated through the cartographer's challenge, *Life on a Farm*, Explorer's trading cards, and *A Child's Life in Early America*, the ideal situation is actual collaboration between schools and museums. Madison High School, and the Museum of Early Trades & Crafts, both located in Madison, NJ have achieved this perfect union.

Students from a 10th grade United States history class at Madison High School worked hand-in-hand with the Museum of Early Trades & Crafts' curator and education coordinator to research and develop the museum's temporary exhibition *Designing Tools: Form & Function* which opened at the museum in January 2006. Months before the opening, the curator and education coordinator began working with the students. The curator carefully packed artifacts chosen to be in the exhibition and took them to the school library where the selected students were waiting. Wearing white curatorial gloves, teams of students selected artifact and began to try and guess their names and uses. With guidance from the school's teacher and education coordinator, each team was given a little information about their object. The students were then responsible for researching their objects and ultimately writing exhibit labels to accompany the objects in the museum exhibition. Students made multiple trips to the museum to look at their objects and use the museum library as a source of
The students were invited to the exhibition opening and acted as docents for museum visitors. Each team stood near their object and answered any questions visitors had.

The school and Museum worked together, ultimately allowing students to learn much more about a piece of history than would have been possible on their own. Students were eager to do research, and the pride of what they had accomplished was evident at the exhibit opening. Learning theory was applied in every facet of this project. Early cognitive psychologists felt that people could learn information more easily when it could be related to something already known. A good example of this occurred with the student responsible for researching the bed key. Bed keys historically were used to tighten the ropes under the mattress in Colonial times. The student discovered that this process of tightening the ropes each morning lead to the phrase still heard today, “Sleep tight.” This project also aligned in part with Vygotsky’s idea of scaffolding.

Scaffolding refers to learning that occurs for a student while using a support system. The support can come from peers, or adults, but the end result is that the student, with the help of others, was able to learn information that if they had been left to their own devices they would not have learned. Museum staff aided the students in their research process ultimately leading to increased learning and understanding. In contrast with the idea of scaffolding was Piaget’s idea that learning occurred through inquiry. The Designing Tools collaboration demonstrates this type of learning. At the very beginning of the process when students chose artifacts, they first had to hypothesize about the object. The
students then asked questions of each other and museum staff to learn more about the object. In support of Constructivist learning, this project required students to challenge what they knew about historic objects, the way people lived, and also to examine what they knew about museums and object care. Students had to assimilate new information to their existing knowledge, and then accommodate, or reorganize their mental structures to better understand the new historical information.

From the perspective of Multiple Intelligences, this collaboration provided outlets for nearly all types of learners. Linguistic learners excelled in the research component, using historical documents, books, and the Internet to gather information about their object. Interpersonal learners benefited from collaboration with other students and intrapersonal learners had plenty of time to work independently on the project. Naturalist learners were able to use their skills of taxonomization to group like objects together and find relationships between two artifacts that may have appeared to be very different. Kinesthetic learners got to demonstrate and explain how some of the artifacts functioned and spatial learners were able to recall what the artifacts looked like and identify similar items in pictures to aid in research.

This project not only met many qualifications for learning as defined by others, but also allowed for learning to occur within a specific context. Students were motivated during this project, not only because some of it was graded for school, but because the fruits of their labor were being exhibited for the public to see. The students worked together to increase understanding and develop a
shared meaning of how these objects were used in the past and situated in culture. This experience also allowed the students to become comfortable within a museum setting, hopefully giving them motivation to visit museums in the future.

Designing Tools: Form & Function was the second program collaboration between Madison High School and the Museum of Early Trades & Crafts. They are currently collaborating on a third project.

The observations of classrooms and museum programs demonstrate that learning is happening in schools and museums. The approaches to learning may be different, but the outcomes are similar. Schools and museums both provide irreplaceable experiences and knowledge to students, but this is done best when schools and museums work together. True collaboration, like Madison High School and the Museum of Early Trades & Crafts, should be the ultimate goal of schools and museums to assure that students are learning to their best ability.

Whether learning is structured as formal or informal ultimately may not matter; what is important is that all types of learners are acknowledged and an effort is made for all students to really enjoy the task of learning.
Conclusion

In 1984, the Commission on Museums for the New Century addressed the fabric and future of American museums. The Commission recommended that education is the primary purpose of American museums, and asked that museums function not as a supplement to schools but as institutions of equal status that embrace teaching and learning in an informal setting that augments formal instruction. Informal education is still education; the goals and objectives are the same as the goals and objectives of formal education. It is true that museums do not have to meet the mandates set out by the government such as those outlined in the No Child Left Behind Act; museums do have to assure that the programming they are offering meets the mission of the museum, and also must design programming that will utilize their specific collection, yet still align with State Core Curriculum Standards in order to give school groups a reason to visit that is more than purely entertainment.

In order for history museums to continue to be learning destinations for school groups, and groups of children in general, it is absolutely necessary that the educators facilitating programs in the museum are familiar with theories of learning. Based on the observations made in schools and museums, it becomes apparent that both types of institutions are focused on learning. In some instances museums may be able to open up a world of understanding and discovery in children where they previously felt as if learning, based solely on the school experience, was not something they could do successfully. Bonnie Pitman, 86

Museums were powerful places for discovery, imagination, and memories. I learned about history and art, and developed an awareness of and respect for other cultures. Because I am dyslexic, reading is not my preferred method for learning. Instead, I observe, touch, listen, imagine, and create. I was successful in museums where I was not successful in school. A door had opened to learning and understanding the world around me, and I rushed through it.

Museums can provide this type of powerful experience for children and adults alike. Learning in a museum is an experience that can and will instill in children the idea that not all learning is done in school, and can introduce them to the idea that learning can be meaningful in ways that might not be always evident in the classroom. As Frank Oppenheimer, founder of the San Francisco Exploratorium, said, “No one flunks museum.” Without the pressure of an upcoming exam, children are free to learn at the museum but to aid in lifelong learning, museums and schools need to work together. If teachers and museum educators continue to utilize learning theory in lessons and programs, children will develop an appreciation for learning. There are not many things more magical in this world than seeing a child become excited to learn and museums are the perfect venue in which that excitement can occur.

Ibid., 22.
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