Thinking Routines

Replicating Classroom Practices within Museum Settings

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Abstract   This article describes thinking routines as tools to guide and support young children's thinking. These learning strategies, developed by Harvard University's Project Zero Classroom, actively engage students in constructing meaning while also understanding their own thinking process. The authors discuss how thinking routines can be used in both classroom and museum settings.

Routines are an expected and integral component of classroom settings. For young children, the repetition of routines contributes to creating a sense of comfort and understanding about the world and how it operates. Routines are particularly significant in early childhood environments, providing the structures in which the youngest students thrive and learn. Within any classroom culture, various routines are used to accomplish specific goals.[1]

Thinking routines from Project Zero offer a defined sequence of actions that lead to making meaning and at the same time help the student gain intellectual control and awareness of the thinking process. For example, children are encouraged to see, think, and wonder when encountering a new object or image. This thinking routine, See/Think/Wonder, establishes specific steps toward gaining new knowledge. When used consistently, it becomes a natural approach that students are able to apply independently.

Project Zero developed thinking routines to strengthen students' thinking abilities and dispositions toward thinking.[2] It involved schools across the world and made use of research from projects such as Innovating with Intelligence and the Artful Thinking Project. Project Zero conducted professional development

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programs to provide teachers with opportunities to revise and modify specific routines to meet their educational needs and goals for students. [3]

Patterns of Thinking

According to Ron Ritchhart, a research associate and principal investigator of the Cultures of Thinking project at Project Zero, routines can help structure classroom conversations. These conversations are purposeful, nurturing students' "patterns of thinking and patterns of behavior."[4]

An important goal of thinking routines is to expose students to the language of thinking.[5] Conversations are extended and the thinking process becomes transparent through the structure and repeated use of the routines. The routines are easy to learn, simple, and goal-directed, and can be used in various contexts to enrich content-specific learning. Certain thinking skills, such as being able to understand different points of view or providing evidence, do not come naturally to young children and must be taught explicitly and strengthened within a learning environment that actively supports the individual student as well as a collective group of children.[6]

Built into each thinking routine is a series of steps that provide teachers with a protocol for facilitating thoughtful discussion amongst students.[7] For example, Think/Puzzle/Explore is useful for examining something new. The routine draws upon students' prior knowledge and encourages them to make connections with what they already know as they inquire about something they may be seeing for the first time. The teacher starts by asking a student, or a group of students, "What do you think you know about this topic or thing?" The teacher follows with the prompt, "What questions or puzzles do you have about it?" The routine ends with the question, "How can you explore this further?" This routine provides time for students to articulate their thoughts and engage in discussions centered on each question. The resulting conversations easily build upon the ones that came before and influence the quality of the next.

Thinking routines can be used to introduce something new, or at the beginning of a lesson or project to generate inquiry. They can be utilized to compare and contrast different works of literature or objects as the teacher moves through a unit. Routines lead toward deeper learning and provide students with strategies for self-directed exploration of concepts and ideas.

Thinking routines are instruments used for the purpose of making students' thinking and learning more visible to themselves, their teachers, and their peers. They contribute to a classroom culture that encourages students to be self-di-

rected learners by giving them the tools to drive their own thinking. This works best when teachers model thinking, allow time for students' thinking, and provide opportunities for students to have purposeful conversations.[8]

Experts in learning theory recognize that thinking routines are tools appropriate for engaging young children in activities that develop and enhance their thinking.[9] Studies have shown that when used within a classroom culture that actively promotes learning and thinking, young children develop positive attitudes toward thinking. One qualitative study, conducted with children between the ages of 3 and 6, concludes that utilizing thinking routines within a classroom culture that supports quality interactions helps to make students more sensitive to situations that call for specific thinking skills.[10] Children are more alert and readily able to participate in activities, such as those that encourage further inquiry and exploration.

Thinking routines are successfully being used in formal learning environments. But are thinking routines useful in informal learning environments? Are they appropriate for engaging students with art and artifacts in museums? Will they serve the educational goals of museums and facilitate open-ended inquiry and deeper conversations that delve beneath the surface? Our experience suggests that when utilized strategically by museum educators, thinking routines can further enhance a child's learning even within the limited time frame of a museum visit. The learning is enhanced further when similar patterns of thinking are used to engage students in museums and classrooms. When reinforced and supported across a variety of settings learning has greater impact on promoting understanding, especially for the young child.

Examining Developmental Principles That Inform Educational Practices

Providing high-quality education for young children is receiving significant attention and investment in today's world, particularly in relation to standards that influence educational practices.[11] As such, educators working in early childhood settings must balance curricular expectations with developmentally appropriate practices. Three interconnected principles serve as the theoretical framework behind the utilization of thinking routines.

According to the first principle, the experience of constructing meaning involves a variety of social contexts and experiences. Developmental psychologist, Jean Piaget, believed that children have the capacity to construct meaning out of interactions with their environment.[12] Graham Nuthall, a pioneer researcher

whose research focused on the relationships between teachers and students, makes similar observations and posits, "What creates or shapes learning is a sequence of events or experiences, each one building on the effects of the previous one."[13]

The second principle addresses language acquisition. Progress in language attainment carries over into other areas of the young child's life. Most notably, language directly affects cognitive development. Psychologist Lev Vygotsky "viewed language as the main 'engine' of intellectual growth."[14] When teachers give young children a common language of thinking, the children receive tools they can use, adapt, and practice in other areas of their life.

The third principle emphasizes the fundamental role of social interaction in promoting understanding. Project Zero's David Perkins and Ron Ritchhart assert that the "classroom culture . . . can support or undermine the rhythm of thoughtful learning."[15] One can easily insert "museum culture" into that statement, as an environment that can set the expectation and provide ways for children to learn and create meaning through their engagement with art and cultural artifacts.

There is a legitimate argument for replicating the classroom "culture of thinking" into museums, which provide a distinct informal learning experience.[16] "Thinking" encompasses a range of cognitive abilities that include making comparisons, reasoning, analyzing, deducing, and reflecting, skills that are relevant regardless of the learning environment. A child who is exposed to different types of thinking in the museum becomes more aware of new and meaningful ways for interacting with art and artifacts. Effective learning strategies are useful in multiple settings.

Guiding a Conversation with See/Think/Wonder

What exactly occurs during a thinking routine? What follows is a description of a See/Think/Wonder routine with preschool students.

Palm Beach Day Academy (PBDA) teachers are diligent in their efforts to establish thoughtful learning environments within their classrooms. The utilization of thinking routines is an example of how teachers elicit and support thinking moves (e.g., observing, getting at the essence of something, looking through the lens of multiple perspectives) in their students.

The See/Think/Wonder (STW) routine provides a straightforward pattern of discourse that encourages students to be curious and creative in their thinking. It is grounded in "careful observations and thoughtful interpretations" revolving around an image or artifact.[17] Students describe initial observations, share why

they think an object or image looks the way it does, and then ponder about any other aspects that remain unclear to them. It is one of the most popular routines because it is straightforward, fairly easy to implement, and naturally leads to open-ended inquiry. [18]

Jessica Laliberte, a primary teacher working with preschool students, incorporated STW during a lesson on camouflage. Laliberte presented her young pupils with a picture of a tiger lurking behind some foliage in a jungle setting. This image served as the provocation toward further inquiry. When Laliberte asked, What do you SEE?" children replied, "I see orange and black stripes," "I can see lots of leaves and trees," and "I see the tiger is in the jungle." As the children shared their thoughts, Laliberte recorded the student responses on the white board. This action captured the children's thoughts in a concrete format and made their thinking visible.

Laliberte followed up with the question, "What do you THINK about what you see?" At this point in the discussion, students needed to provide further insight into their initial observations. One child stated, "I think the tiger is hunting for food." A young girl, after much thought stated aloud, "I think he's [the tiger] looking at something he's hunting for." After jotting down a number of responses, Laliberte modeled for her class what wondering about something might look like. She placed her index finger to her temple, scratched, and sighed aloud "Hmm, I wonder" before asking the children to share anything in the picture that still puzzled them.

At this prompt, one little girl asked, "I WONDER if the tiger has babies?" Another student responded loudly with the statement, "I wonder if the tiger is looking at a predator." In modeling for the students what puzzling over something may look like, Laliberte opened a doorway for them to share some very original and advanced thoughts. There were no right or wrong answers, simply opportunities for the children to share their thoughts within an evolving conversation.

It is essential to nurture within young children the inclination to use their thinking skills in various situations. A teacher does this through modeling what thinking looks like for their young students. When children see how their teacher thinks, questions, and wonders aloud, it affects how they view their own thinking. Young children become more capable of making jumps and leaps in the thinking process when they see it being modeled and practice these skills in different contexts. A museum provides a different setting for practicing the skills, and museums' art and artifacts, often not part of the children's daily life experiences, can excite, stimulate, and inspire.

Young Children and Thinking in the Museum

Museums often find young audiences challenging, especially when they can't allow children to touch collection items. The Henry Morrison Flagler Museum's education department has successfully used the "thinking" component of Think/Puzzle/Explore to engage young children within the constraints of museum rules.

The Mission of the Henry Morrison Flagler Museum is to preserve, research, and interpret Whitehall, its associated collections, and materials related to the life of Henry Morrison Flagler, as unique and important elements of Florida's history and America's Gilded Age. The overall goal of the museum's education department is to provide programming that serves to engage, inspire, and educate all audiences. Much of the museum's programming comes in the form of traditional interpretive tours, but when deeper, concise learning is the desired outcome and when time is limited, museum educators turn to the "thinking" strategy to provide information while energizing students to be expressive with their thoughts.

The "thinking" component of Think/Puzzle/Explore is similar to Abigail Housen and Philip Yenawine's Visual Thinking Strategies (VTS).[19] Thinking routines lead to open-ended inquiry by asking young visitors to first react to a visual cue then go beyond the cue and make an inference or formulate an idea based on reason. The ability to extend the process in Think/Puzzle/Explore is seen as a way to encourage young visitors to make personal connections and process information within the experience of viewing, learning and enjoying an object or concept. The use of thinking routines fosters more creative and dynamic thinking and ultimately a more effective understanding of history for the young visitor.

The education department seeks to incorporate formal learning strategies into all of its school-age programming, whether it is in the form of arts integration into core subjects such as math and science, incorporating K-12 curriculum standards in language arts and social studies lesson plans, or adopting classroom management techniques on an individualized level during tours and outreach programming.

One goal of the education department's school-based programming is to become an extension of the traditional classroom; to be a resource for teachers and students where learning continues and connections are made. Without integrating the teaching methods already in place in a young visitor's learning routine, a museum tour or program is an esoteric experience outside of the classroom and often results in little or no transference beyond that isolated experience.

Museums are a unique learning environment in comparison to classrooms. With access to historic documents, images, and collection items, young visitors are not only exposed to primary resources as learning tools but also to interpretations of the past, guided connections to history. By adopting the existing methods of partner schools and individual classrooms, museum educators are able to disseminate interpretive material without the additional challenge of introducing new teaching approaches. When this happens, the Flagler Museum functions as an extension of classroom learning and exposure to the museum's collection and interpretive material is efficient and effective.

In one example, museum educators use thinking routines with first grade students. The main goals of the lesson of focus are to introduce the concepts of community development and Henry Flagler's influence on the development of Florida. Thinking routines help educators gauge the students' prior knowledge and the use of props and role-play provide tactile exposure to the Gilded Age. After introducing core concepts, the museum educator initiates a prop-based tableau that combines interpretive delivery and the thinking routines "What do you see/What makes you say that?"

A student volunteer represents the settlers of the Lake Worth region using a straw hat as a prop symbolic of the pioneer community. The educator poses a series of questions asking students to describe a typical day or the most challenging part of a job. The educator probes, "What makes you say that? Knowing what you do about the history we have discussed so far, how do you think farming has changed since 1873?"

While young visitors to the Flagler Museum are exposed to art through the building's architecture and the cultural artifacts found within, Whitehall is a historic house museum. Interpretation and programming focuses on history; the lives of the people who lived at Whitehall and their significance in history, rather than on the collection objects themselves. While VTS is effective, especially when objects are visually accessible, the museum's use of thinking routines expands the students' visual thinking and encourages them to use it in the exploration of even the more abstract concepts. Using thinking routines, the information gathered by a student comes not just from visual cues within the collection, but also from thoughtful inference, reason, and deduction.

As a result, the museum educator receives immediate feedback as to whether students understand the main concepts of the lesson. When students respond with thoughtful answers, gathered from image or object inference, that interaction confirms for the educator that it is appropriate to continue to add content to the learning platform.

Museum experiences are about looking, reflecting, and making meaning from the objects and interpretation presented. Strategies such as thinking routines engage students in this same process of making meaning but offer a more structured routine where students also begin to understand the process of thinking and its application to learning.

The Classroom and Museum Collaboration: A Bridge to Strengthening Thinking

Museum educators have access to a variety of educational materials that can enhance the thinking skills that classroom teachers encourage and promote. Educational partnerships between schools and museums can strengthen student learning, or in general, enrich the learning experience of young children.

A collaborative model using thinking routines is in place between Palm Beach Day Academy, the Flagler Museum, and the Morikami Museum. This year, both museums will partner with the school on a new curricular project for first grade students focusing on the concept of communities. Through archived photographs and cultural artifacts that will be used in a series of presentations conducted by museum educators, the children will learn about the unique communities that existed in early South Florida history. The children will also learn and recognize the role that museums play in preserving the legacy and history of communities. It is not only the content introduced through the museum experiences that is important in this collaboration, but the reinforcement of ways of thinking that will cut across the boundaries of school and museum.

This type or partnership cannot happen within a vacuum. It is a social endeavor that requires diverse educators working together across their spheres of expertise and choosing strategies that are relevant and practical to each setting. Thinking routines are simple, yet effective techniques that can enhance students' experiences and understanding because they are adaptable for various contexts.

Various thinking routines, such as See/Think/Wonder and Circle of Viewpoints, in which students pick a point of view and speak from it, will be used specifically to give the children an opportunity to glean information from what they see, build connections, make associations, and form interpretations. The children will explore new ideas through introductory sessions at school as well as field trips to the respective museums. Collectively, these experiences will create a narrative of the students' learning and thinking about communities.

Conclusion

A collaborative model in which school and museum educators are both utilizing an effective learning strategy, such as thinking routines, strengthens and supports student learning and thinking. Given the opportunity to use strategies and develop skills within multiple contexts nurtures the learning process and makes the entire experience more personal and relevant to the children and educators. The purpose of thinking routines — supporting the disposition toward thinking — — is a common goal for both formal and informal learning environments. Research by Harvard's Project Zero documents the success of thinking routines for supporting student learning in the classroom setting. These same strategies can be utilized in museums, independently or in partnership with a traditional educational entity, such as a school. The routines, because they are simple, explicit, easy to learn, and goal-directed offer museum educators another strategy for creating powerful learning experiences for visitors, in particular, young children.

Notes

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