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Show Me What You See: An Exploration of Learning in Museums and Learning in Theatre

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Authors

Chou, Amy
Shih, Janet

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Introduction

The primary goal of this research study is to explore the interconnection between museum learning and theater learning. We will begin this exploratory process by analyzing the functions of role-playing and improvisation as teaching and learning strategies. We will then expand this analysis to the idea of storytelling as a link between learning in museums and learning in theater. The study will be established upon the idea that there is a possible correlation between learning in museums and learning in theater. Subsequently, it will investigate how storytelling in dramatic forms, such as a group improvisational performance, can affect students' thought processes regarding a series of images and/or objects in a museum exhibit.

Literature Review

Role-playing

Research in the field of learning through role-playing is broad and diverse, with much support and emphasis for role-playing as an effective teaching and learning tool. Role playing is a teaching strategy that often uses official accounts, personal narratives, and diaries to recreate a particular time period, specific event, or breathe life into a character from history (Cruz, B. et al., 2006). Cruz et al (2006) suggests that role-playing helps students tap into this inherent interest in historical events and the people that experienced them. The learning that is explored includes acquiring content knowledge represented in the topics of dramatization, interpersonal and personal understandings gained through enacting situations, and the development of attitudes and motivations regarding self and others (Catterall, 2007). As students take on feelings and voices of people from other times and places, the learning of historical content become more natural. Cruz's reading appears to be in dialogue with Kelin in that dramatic education strategies, such as role-playing, enrich children's understanding of a story by guiding them through an honest and spontaneous enactment. Acknowledging the potential of role-playing as a means to stimulate learning in a classroom setting leads to the question of how it can impact learning in a museum.

Works of art, like literature, also tell a story, whether the focus is historical, political, cultural, or social. Role-playing can be used as a tool to enhance students' understanding and appreciation of the story, as they apply their own experiences to those in the story. According to Barton and Booth (1990), drama allows the children's own subjective worlds to come into play, helping them understand the meanings of the story as they live through the drama experience. Kelin's (2007) writing also examines how such drama strategies, like role-playing, can enable children to be engaged in a character's experience by transposing it to their own, facing each situation with a similar sense of discovery and excitement. Supported by Barton and Booth, Catterall, Cruz et al., and Kelin, activities aimed at teaching dramatic arts can inspire children to draw a rich parallel experience that subsequently enriches their approach toward reading a book and/or viewing a work of art.

Improvisation

By examining the role of improvisation in teaching and learning, this section seeks to establish a logical connection between role-playing and inquiry. While an abundance of literature focuses on the process of learning and teaching music through improvisation, the role of improvisation, due to its formative nature, can be transferred to teaching and learning drama. According to Volz (2005), improvisation in music begins with exploratory learning. It is often difficult to teach improvisation in a large setting; nevertheless, it is still very important for all beginners to explore the possibilities associated with their musical instruments; the instruments and playing techniques are creative learning media, not obstacles. Similarly, improvisation in drama should begin with inquiry-based learning, in which students feel comfortable to question and think critically about play, the storyline, the characters, and thus begin the creative process in which they "try on different hats" to act like, think like, and simply be the character in the story.

While Volz provides a strong theoretical basis for the practice of improvisation, Riveire and Johnstone both explore more specific methods and activities to facilitate improvisation. Riveire (2006), a music teacher, began using improvisation activities to reinforce music learning. By doing this, Riveire (2006) gives students and herself the chance to develop their improvisational skills and overcome their fear of embarrassment and nervousness. Though daily participation in improvisational activities can help everyone learn to enjoy improvisation, Riveire (2006) suggests that the challenge lies in breaking away from traditional models and playing with an idea or skill to deepen the understanding of improvisation. In conjunction to Riveire's research, Johnstone (1981) also emphasizes that within this realm of rules, improvisers need to see what happens and not feel in any way responsible for the material that emerges. Improvisational games can help create both a playful and an encouraging environment, thus removing the element of fear and routines while individualizing and expanding exploration.

This attitude of exploration can provoke more thoughtful responses from the student who only does what the teacher suggests and generally does not go beyond what is expected. Johnstone (1981) states that the best improvisers do, at some level, know what their work is about. They may have trouble expressing it, but they do understand the implications of what they are doing; and so do the audience. With this in mind, teachers must 'trick' their students into believing that content isn't important because it looks after itself. Otherwise, the students might feel confined by the content and the dichotomous implication of how one must strictly follow the content to be "correct." In the end, the students learn to abandon control while at the same time exercising control (Johnstone, 1981). Along the same notion of improvisation as a teaching strategy, Riveire (2006) believes students learn to explore their instruments, which may unlock secrets of practice for some students. As a result, they are less concerned with playing accordingly and more interested in experimenting creatively. Using this approach to improvisation in a low-stress setting, students will begin to understand that the content, like its characters and all

other components, are multi-layered and hence learn to address the responsibilities of their independent thought through interpretation.

Role-playing and improvisation, identified previously as teaching and learning strategies, are mostly drama-focused and performance-based. It is worth noting that within the discipline of theater, improvisation and role-playing can play integral parts in storytelling (Johnstone, 1981; Smelstor, 1979). In connecting them with learning in museums, we want to start by first examining the aspect of storytelling shared by museums and theaters and move toward the direction of implementing drama-focused teaching and learning strategies in a museum-related setting where visual imageries are used.

Connecting Learning in Theater to Learning in Museums

Museums, much like theaters, are storytellers creating contexts that allow participants to tap into various aspects of human life. The idea of storytelling in museums is not new. According to Hughes (1998), the Holocaust Memorial Museum in Washington D.C. has used the idea of a "narrative thread," such as an identification card, that guides visitors through the daily lives of actual individuals, from their homes to the concentration camps. This approach is highly innovative in the sense that, instead of selecting bits of information on an object to create a specific context, the museum exhibit unfolds upon a story that is supported by the choice of objects. The museum recognizes that an object purports to be different symbols to different individuals (Hooper-Greenhill, 1992) and therefore creates a story that can be accessed from multiple entry points, allowing a narrative, with a highly interpretive content, to drive the exhibit. After all, museums are invented for and by human beings - objects selected for a museum are evidences of human activity (Trudel, 1989) not declarations of social elitism. Therefore, the driving force of modern day museums should incorporate themes, ideas, and relationships from which people can draw connections and thus cultivate the motivation and opportunities for learning (Hooper-Greenhill, 1992).

By integrating elements of theater, museums can boost the storytelling aspect of an exhibit. Hughes (1998) describes her performance as Ada Byron King at the Museum of Science in London. Instead of performing on a stage, she performed a set script in the gallery where the crowd gathered. After the script, she would improvise, as Ada, with the visitors. By including live actors, the exhibit highlighted the humanistic element of the storytelling aspect and by allowing the actors to interact and improvise with visitors based their individual questions and needs, the exhibit, much like Cruz et al.'s (2006) incorporation of personal narratives as a teaching strategy, "[breathed] life into history" and, furthermore, into learning.

Museums' shift of focus from objects as detached from people to objects as emblematic of people's experiences creates a unique place for theater in a museum, or as Hughes (1998) calls, "the museum theater." Hughes has discovered that in addition to providing visitors with multiple perspectives to examine a story narrated by the actor and a series of objects, the museum theater, within the context of a play, can facilitate

discussions that approach difficult topics without making visitors feel threatened or accountable for what they have to say. The stimulating yet comfortable environment, in which visitors feel personally involved yet distant enough to maintain a necessary sense of boundary, highly resonates with the low-stress setting described by both Riveire (2006) and Johnstone (1981) as an important basis for the effective practice of improvisation.

The parallel between learning in museums and learning in theater has become quite evident in that they are both concerned with connecting with the diverse public on a deeper level through live experiences (Hughes, 1998; Hooper-Greenhill, 1992). Visitors in a museum seek opportunities to learn about a specific exhibit or object by seeing it and "interacting" with it firsthand. Similarly, viewers at a play or other theatrical performances look for ways to connect emotionally and intellectually with a situation, a character, and/or a story. It is usually more than mere information that they seek because, if otherwise, they could easily access the information from the internet, television, and other forms of media instead of physically being in an art space.

As a research team, we hope to further connect the process of learning in museums with the process of learning in theater. Extensive research has been done on learning in museums as well as learning through drama by applying drama as a form of inquiry and classroom teaching strategy. However, it is apparent that additional studies on the integration of museum and theater, with an emphasis on learning, still need to be developed.

Connection to Learning

Drawing from Gardner's theory of Multiple Intelligences (1993), the integration of learning in museums and in theater provides an interdisciplinary environment with a focus on developing scholastic and personal qualities. Rather than simply transmitting a selected set of information that might seem irrelevant and lifeless to some learners, the qualities developed in an interdisciplinary environment would have a much more profound impact on the well-being of the individuals. From a museum's perspective, theater can help create live interactions and personal narratives that bring its collection to life. From a theater's point of view, museums consist of a dynamic and object-based stage, rich with history, culture, and boundless intellectual resources.

Because storytelling occurs both in museums and theaters (Hughes, 1998), many parts of this research will focus on storytelling as a process of the interplay between improvisation and the viewing of an image. Meanwhile, it is important to keep in mind that stories are not fixed entities of past events. According to King (2007), stories are abundant in imagination, creativity, and wisdom. She explains that by using images and props to involve students with collaborative story-making, the students are more likely to engage in active learning. Moreover, by including collaborative story-making in different subjects, educators inherently foster a supportive learning environment where the teacher and students can learn from one another to improve a variety of skills (i.e. reading, writing, and speaking). King's finding is a great instance of the Multiple Intelligences at

play. Moreover, her finding also demonstrates the possible benefit of combining theater techniques, such as improvisation, with museums learning (i.e. visual imagery) to create an atmosphere that nurtures Gardner's (1993) Multiple Intelligences.

Specific Research Question

Can an improvisational learning activity in a drama classroom impact students' thinking of an image during a museum visit?

Design

Pilot Research

The pilot research consisted of a drama activity in which subjects were placed in a group to create a scene based on an image presented to them and then to look at it quietly for one minute. They were then asked to write a scene consisting of twelve lines of dialogue, one exit, and three stage directions. After the scene was written, subjects performed their scene in front of an audience, which was comprised of their classmates, teacher, and the two researchers. A discussion followed the performance - first with the audience's interpretation of the scene, followed by the group's intention. Immediately following the discussion, subjects wrote down their responses to the following questions:

What did you think about this picture before the activity? What do you think about it now? Have your ideas and impressions changed?

The image used in the pilot research was a printout of the oil painting by Michelangelo Merisi da Caravaggio, *The Conversation on the Way to Damascus* (See Appendix), dated 1601, for the Church of Santa Maria del Popolo in Rome. The painting depicts a scene of two men, one lying on the foreground while the other is leaning over, with a horse as the central object. Caravaggio creates a provocative and mysterious atmosphere through the use of dark colors and the physical orientation of the two men and the horse. The image provides visual cues that are both abstract and vivid, therefore provoking inquiries to serve as entry points for the subjects to participate in the drama activity. The Caravaggio image was used in both the pilot and final data collection.

Based upon the experience of conducting the pilot research, the data collection methods were refined to rearranging and rewording the questions presented to the subjects. Because questions were posed after the discussion, subjects no longer recalled their initial impression of the image. As a result, two sets of questions were presented before and after the drama activity. The following questions were asked:

What do you notice about this picture? Do you find it interesting? Why or why not?

After the drama activity, the following set of questions were presented:

Did you notice something in the picture that you did not notice before? What do you think of the picture now? Do you find it more interesting now? Why or why not?

The changes allow the data collection to be clearer in comparing the subjects' initial response after the activity. The data collected from the pilot research reveal that the improvisational learning activity did have impact on subject's impression of the painting.

Subjects

The research took place in a sixth grade drama class at Cambridge Friends School, Cambridge, Massachusetts. The nine subjects participating in this study consisted of four girls and five boys, ranging from the ages of 11 - 12 years old. The subjects had no prior knowledge of the image presented to them or the study itself. Overall, the subjects were a relatively homogenous group.

Research Activities

The principal means of generating and gathering data was through questionnaires administered to all students prior to the intervention and again after the completion of the intervention. (This was a pre-test, post-test design.) The questionnaire included two to three open-ended response questions addressing students' views of what they had learned before and after the intervention. The same questions were asked from the pilot research. The intervention was comprised of a dramatic improvisational activity, during which subjects wrote and performed their scenes, plus a class discussion. In addition to the questionnaires, the scenes written by subjects were also used in the data collection process.

The data was collected during second period in a sixth grade drama course at the Cambridge Friends School. Prior to the study, the researchers had spoken to the teacher about the research details. The teacher was very cooperative and offered to manage the classroom during the intervention. At the beginning of the class, students were asked to participate in this research study. After looking at the image, those participants were asked to arrange themselves into a semi-circle and look quietly at the image for a minute. (They were asked multiple times to remain silent.) The pre-questionnaire was given, along with a writing utensil, to each participant once the "looking" period was over. Five minutes was allotted for completing questionnaires. Participants lay on their stomachs against the wooden floors, hunching over their papers as they scribbled down their responses and occasionally glancing at the displayed image. They were not allowed to share with, or receive, feedback from other subjects. Completed questionnaires were collected by researchers and placed in a folder out of the image display space so as not to influence other subjects. The researchers were present during the data collection but remained distant to reduce performance pressure.

All subjects were divided into groups of three, each of which was directed to a working table. Each group was then given ten minutes to write a scene consisting of nine

lines of dialogue, one exit, and three stage directions. Instructions were posted on a whiteboard located in a visible space. The image was made available on a canvas for participants to use as reference when deemed necessary. During this drama activity, participants discussed potential storylines while the teacher encouraged participants to think of ‘who, what, and where’ when brainstorming. Coincidentally, it was the first day of snow in Cambridge, and participants were informed they could perform outside in the snow. Once their scenes were completed, participants, researchers and the teacher each took a chair and placed their seats on the lawn facing the outdoor stage. With script held tightly in their hands, each group took two to three minutes to act out their scenes. A brief discussion followed each performance—first with the audience’s interpretation of the scene, followed by the group’s intention. The teacher facilitated the class as the researchers observed the intervention.

Immediately following the discussion, subjects hurried back into the classroom and were asked to complete the post-questionnaire individually. The image remained on and the scripts available for participants to refer back to. Participants were given five minutes to write down their responses in silence, not sharing with, or receiving feedback from, other subjects or spectators. Once again, completed questionnaires were collected by researchers, placed in a folder, and concealed to prevent influence on other subjects. The researchers were present during the data collection, but remained as bystanders.

The research conducted was ethically low-risk and did not require IRB permission. Subjects, along with the class teacher, participated willingly and with full knowledge of the questionnaires and intervention. Coding and analyzing the thinking gathered from the questionnaires and scripts require a rubric of various types of critical thinking skills. The *Critical Thinking Skills Rubric Year 3* has identified seven thinking skills as foundational cognitive processes. These skills were used to categorize the different responses: Observing, Interpreting, Evaluating, Associating, Problem-Finding, Comparing, and Flexible Thinking (Adams, M. et al., 2005). This design provides a starting point from which to examine the thinking and learning in the collected data.

Coding and Analysis

The research subjects submitted a pre- and post-questionnaire based on the visual image by Caravaggio and an intervention that included an improvisational drama activity and discussion. The data obtained from these questionnaires consisted of words, phrases, and statements, all of which documented the subject’s learning in relation to, and as a result of, the image and intervention. The subject group simply looked at the image and completed the pre-questionnaire. This was followed by an intervention as well as a post-questionnaire. The 18 response sheets were divided into *pre-questionnaire* and *post-questionnaire* groups to facilitate comparing and contrasting the results collected from the use of the intervention.

The coding criteria for analyzing the data from the questionnaires include the seven critical thinking skills by Luke, J. et al. in the *Critical Thinking Skills Year Rubric 3* (Adams, M. et al., 2005). *CTS* consists of seven “critical thinking skills”: Observation,

Interpretation, Evaluation, Association, Problem-Finding, Comparison, and Flexible Thinking. All responses on the questionnaires were coded based upon the criteria of each category. Emerging trends and themes were analyzed as they arose from the data.

Critical Thinking Skills

The seven critical thinking skills developed by Luke, J. et al. for *Thinking Through Art Research Project* at the Isabella Stewart Gardner Museum, Boston was well suited to the data collected from the subjects. It is important to note that researchers coded within what the subjects thought about the image. Some subjects used the language of Observing as Interpreting. In such cases, researchers coded some responses for more than one of the seven categories. For example, in reference to a figure in the image, one subject wrote, "The man has a gun in his hand," which is both Observation and Interpretation. In addition to coding for these seven categories, the number of times each category was identified was documented. These numbers and percentages were used to compare the pre-questionnaires to the post-questionnaires. The seven categories are defined based upon the descriptions from *Thinking Through Art Research Project* and here accompanied by examples from this project's data to exemplify thinking skills.

- Observing: *What something is or is not - naming or identifying something; action, what someone is doing - concrete and explicit actions; and how it looks - sensory and physical aspects; features - what it's made of and how it's made.* For example, one subject wrote on his questionnaire, "A horse is standing right near him but over him." Differentiating the horse's position in relation to the figure revealed the respondent's observation of what someone is doing or is not doing. Another subject wrote, "The dying man has bandages around his arms and it is very dark." Here, the respondent identified the various dimensions of the image's characters and environment.
- Interpreting: *The use or function of objects; implicit conditions, features, characteristics, feelings and emotions, mental states, status; identity - who people are, their relationships and identity; and actions or intentions - intentions of people, artists, or animals, or narrating what's going on, what people/animals are doing or did, what is about to happen, where people might be, "seeing the scene."* For instance, a subject interpreted one of the figures as dying, because he saw that he was about to be crushed by the horse. The subject wrote, "...man dying on the floor. Looks like man is about to be crushed." Another subject who described the picture as being "dark" supported her claim by offering the possibility that the event was "taking place in the night."
- Evaluating: *Based on personal opinion or preference; based on perceived merits of the work or artist's ability.* An example of evaluating based on personal opinion or preference include, "I don't find it more interesting now because I didn't notice anything new." Despite the subject's lack of interest, he contradicted himself in his response, "I don't know what the white animal

is hanging onto the horse. It seems strange.” This shows how a sixth grade student’s opinion can be inconsistent. The subject made a new observation and then immediately stated that he noticed nothing new.

- **Associating:** *The objects/situation arising directly from personal experience; making connections to prior knowledge or experience.* All examples of making connection to prior knowledge or experience refer to Bob,¹ one of the subjects in the study group. Examples include, “Dying picture that looked like Bob.” “Horse is stepping on Bob,” and “Bob and horse having fun.” It is important to note the social dynamic that emerged from these associations as the age and maturity level of the subject group played a factor in coding and analyzing the collected data.
- **Problem-Finding:** *Requests information or identification; notes missing information needed to form a conclusion/opinion; may propose a hypothesis.* For instance, a subject claimed he “want[s] to know what it means or represents.” The subject’s request for additional information demonstrated his cognitive skill in formulating a conclusion or opinion.
- **Comparing:** *What is similar or different; noticing relationships between situations/objects; noticing patterns.* With such a small study, we were unable to collect any data that fell into the Comparing category.
- **Flexible Thinking:** *Remaining open to multiple possibilities; seeing things from different perspectives, revise thinking.* Since responses were divided into pre- and post-, we were able to see the direct changes in the subjects’ view of the image. For example, one subject wrote in response to the pre-questionnaire, “It was a picture of a horse and a man dying on the floor next to it. It looks as if the man is about to be crushed. It is a very dark picture.” He then wrote, “The man is chaining the horse, getting it ready for riding. So the person may have fallen down trying to get on the horse,” in response to his post-questionnaire. Such responses demonstrate how the subject’s perspectives and thinking can change after the intervention.

Outside Factors

In addition to the categorizing of subject responses based on the *Critical Thinking Skills Year 3 Rubric*, each script written by the three groups was used to support the data collected from the pre- and post-questionnaires. While the content of the responses is rich, the scenes themselves serve as an open door to the subject’s thinking, particularly in a group setting. In an effort to capture the different characteristics of CTS, the scripts were analyzed in alignment to each individual subject.

¹ Name has been changed to protect the privacy of the subject.

Inter-Rater Reliability

Though this study was conducted on a small scale, an attempt was made at incorporating inter-rater reliability. Using the post-questionnaire sheets, one of the researchers coded the responses according to the seven critical thinking skills from the *Critical Thinking Strategies Year 3 Rubric*. The codes identified by this additional rater were compared to the codes of the partner researcher. Of the nine responses on the post-questionnaire, seven were coded in agreement. Two out of nine responses were in disagreement, as the researchers did not know whether to code in terms of reality or within what the subjects believed to be reality. For example, the researcher coded the response, “The man has a gun in his hand” as an *observation*, while the partner researcher coded the response as an *interpretation*. Both researchers eventually agreed that, though the man had no gun in his hand, it should be coded as an *observation* and an *interpretation*. In response to the rest of the data, the researchers decided that both would code according to how the subjects think about the image as well as according to the physical reality of the image, even if it falls into more than one category.

Results

The results of this study are organized according to the seven categories of *CTS*. Under each category, responses from the pre-questionnaire will be compared to responses from the post-questionnaire as a means to assess changes in thinking from before to after the intervention.

Critical Thinking Skills

- Observing: In the pre-questionnaire, prior to the intervention, all subjects provided responses that met the *CTS* criteria for observing. Seven out of nine subjects identified the characters in the image (i.e. the horse, the man on the ground, and the man standing), while only one subject specifically described the actions in the image. The subject wrote, “I saw a man lying on the ground...a horse is standing right near him, but not over him. There is another man standing to the right of the horse.” In terms of the look of the image, six out of nine commented on the color and light contrast in the image, describing the “picture scenery” as very dark, while two out of nine commented on the age of the image, identifying the image as “an old painting.”

In the post-questionnaire, only two out of nine subjects provided responses that met the *CTS* criteria for observing. As one subject wrote, “Yes, I noticed there is a man standing at the corner.” Moreover, as indicated in the section on inter-rater reliability, one subject responded with the identification of an object (i.e. a gun) that was not actually in the image. The researchers discussed whether this response was an interpretation or an observation. Because the nature of the response was not based on a narrative, which could lead to interpretation, and because the structure of the response was more closely related to naming objects and/or identifying actions, both researchers agreed to code this response as evidence of observing.

- Interpreting: In the pre-questionnaire, eight out of nine subjects provided responses that met the *CTS* criteria for interpreting. Four out of eight subjects identified the character on the floor as “a man dying” and “about to be crushed,” while one out of eight subjects described the character on the floor as “look[ing] happy.” The remaining three out of eight subjects commented on the horse and its actions by describing the horse as “rowdy” and “stepping on that person (Bob).” (Note: Bob was one of the subjects who participated in this study. On numerous occasions, as will be mentioned in succeeding paragraphs, the character on the floor had been identified as Bob or as looking like Bob). In addition, two subjects commented on the character behind the horse and described him as “an older man feeding the horse.” Finally, one subject made additional interpretation on the color and light contrast of the image by writing, “The picture is very dark. Maybe it is taking place in the night.”

In the post-questionnaire, four out of nine responded with descriptions that met the *CTS* criteria for interpreting. The subjects’ responses in the post-questionnaire focused more on actions and the intentions of the characters. One subject wrote, “The man is chaining the horse, getting it ready to be ridden. So the person may have fallen down trying to get on the horse,” while another subject wrote, “The man is trying to kill Bob.” Finally, the two remaining responses focused on the implicit conditions and features of the painting, as one of them wrote, “I notice that there was another pair of legs behind the horse” while the other wrote, with greater detail, “The guy standing was holding something and the horse's head was in a weird place, and there were two legs just standing there.”

- Evaluating: In the pre-questionnaire, seven out of nine subjects provided responses that met the *CTS* criteria for evaluating. All seven expressed personal opinions when asked whether they found the image interesting. Three out of nine reported not finding the image interesting, because they did not like paintings in general. Another three out of nine found the image interesting and provided reasons to support their claim. Their responses were: “It was interesting because the picture did not tell you the whole story”; “I found it interesting because it didn't look like something common”; “I think that it was interesting that it is detailed.” The remaining three subjects did not directly address the question of whether he found the image interesting. However, one subject responded in a way that indicated his personal opinion as he wrote, “[The painting] is very weird.”

In the post-questionnaire, nine out of nine subjects provided responses that met the *CTS* criteria for evaluating. Again, all subjects expressed personal opinions when asked whether they found the image more interesting and whether they noticed different traits of the image after the intervention. It is worth noting that while seven out of nine reported not finding the image more interesting, comparison of the pre- and post-questionnaires revealed that six out of the same seven subjects indicated noticing traits of

the image that they had not noticed before. For example, one subject wrote, "I don't find it more interesting. I think that it is just a picture of a person that is learning to ride a horse." The same subject, in the pre-questionnaire, did not describe the character on the ground as a "person that is learning to ride a horse." On the same note, another subject wrote, "The gun made [the painting] more dangerous and the man more evil." Although there was no apparent indication of a gun in the painting, the subject, who did not describe traits of the image or the characters in the pre-questionnaire, noticed the painting as being "more dangerous" and the character(s) as "more evil."

There was only one subject who did not directly address the questions of whether he had found the image more interesting or whether he had noticed different traits of the image. The subject wrote, "I still think [the painting] is very weird." Finally, one out of nine subjects indicated finding the image more interesting and offered support that was consistent with his claim. "I think [the painting] is more interesting because I got to think about it more."

- Associating: In the pre-questionnaire, five out of nine subjects provided responses that met the *CTS* criteria for associating. All five subjects made connections to prior knowledge and personal experience by identifying the character on the floor as Bob, one of the participating subjects. The responses included: "Dying picture that looked like Bob. They look [like they were] mad at Bob;" "The horse is stepping on Bob"; "Bob and horse having fun"; "A person that looked like Bob."

In the post-questionnaire, one out of nine subjects provided responses that met the *CTS* criteria for associating. That subject associated Bob as the man on the floor in the post-questionnaire, that is, after the intervention. He wrote, "The man [behind the horse] is trying to kill Bob."

- Problem-Finding: In the pre-questionnaire, two out of nine subjects provided responses that met the *CTS* criteria for problem-finding. Of the two subjects, one proposed a hypothesis of the image by writing, "I think it is dark because it's supposed to be depressing," while the other subject requested additional information by writing, "I want to know what it means or represents."

In the post-questionnaire, one out of nine subjects provided responses that met the *CTS* criteria for problem-finding. The subject noted the missing information and formed an opinion by writing, "I don't know what the white animal is doing hanging onto the horse. It seems strange."

- Comparing: In the pre-questionnaire, zero out of nine subjects provided responses that met the *CTS* criteria for comparing.

In the post-questionnaire, zero out of nine subjects provided responses that met the *CTS* criteria for comparing.

- Flexible Thinking: In the pre-questionnaire, zero out of nine subjects provided responses that met the *CTS* criteria for flexible thinking.

In the post-questionnaire, five out of nine subjects provided responses that met the *CTS* criteria for flexible thinking. Of the five subjects, three demonstrated openness to other possibilities by describing the impression of a gun in the image. The responses included: “The man has a gun in his hand”; “I notice that there were another pair of legs behind the horse. I notice that there was a guy holding a gun in his hand pointing to the man on the ground”; “The gun made [the painting] more dangerous and the man more evil.”

Furthermore, as mentioned previously in the section for coding and analysis, by comparing responses from the pre- and post-questionnaires, one subject was then identified as having demonstrated flexible thinking after the intervention. In the pre-questionnaire, prior to the intervention, the subject wrote, “It was a picture of a horse and a man dying on the floor next to it. It looks as if the man is about to be crushed. It is a very dark picture.” After the intervention, the same subject revised his thinking in the post-questionnaire by writing, “The man is chaining the horse, getting ready to be ridden. So the person may have fallen down trying to get on the horse.”

Scenes

Scenes were created during the intervention as a means to help the subjects remember their lines. Because the overall purpose of this study was to assess levels of critical thinking before and after the intervention, a detailed analysis of the scenes, which were mainly utilized as tools for memorization, was deemed irrelevant in the general context of this study. However, characteristics concerning the social dimension amongst the subjects had emerged from the scenes and should be considered as important factors in determining the outcomes of the study.

Summary and Conclusion

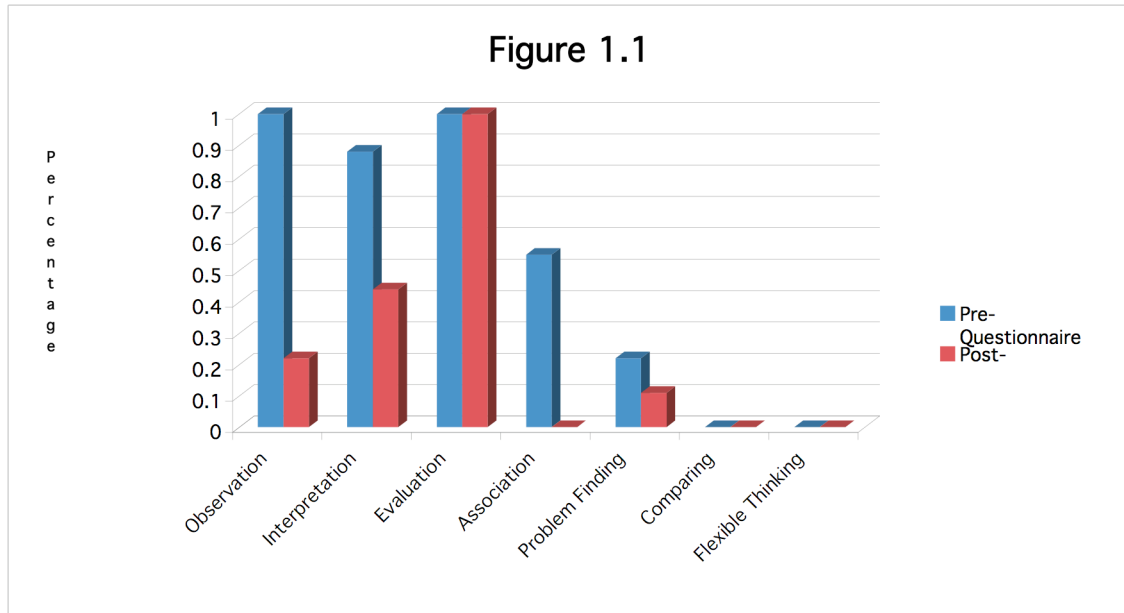
Summary

To summarize the results of the study, *CTS* criteria will be used again as an initial scheme to identify emergent trends and patterns.

According to the data, there was a drastic decline between responses that met the *CTS* criteria for observing in the pre-questionnaire from those in the post-questionnaire. The decline is worth noting in its implication that the focus on different forms of critical thinking could shift over time, in this case possibly due to the intervention of the study. The speculation on the shift of focus in critical thinking is further supported by a noticeable increase in responses that met the criteria for associating and flexible thinking after the intervention.

In addition, the responses that met the criteria for interpreting decreased by half. This could also be a demonstration of the shift of focus in critical thinking. Though

decreased by half from those of the pre-questionnaire, interpretive responses in the post-questionnaire were both more elaborate and action-oriented. This might be due directly to the effects of the intervention, which was comprised of an improvisational activity associated with the characters in the image. In sum, despite the fact that most subjects reported not finding the image any more interesting after the intervention, it was still evident that the distribution of responses amongst *CTS* criteria shifted after the intervention (See Figure 1.1). This could be a valid indication of the change in the subjects' critical thinking processes.



Another criterion that generated interesting responses was *associating*. Within this criterion, all responses in the pre-questionnaire were about identifying the participating subject, Bob, as the character on the floor. Since associating requires making connections to prior knowledge, most subjects gravitated toward the most obvious “prior knowledge,” that is, Bob. It became quite evident that the social dimension within the drama class plays a crucial role in determining how subjects, in this particular social and educational context, learn, interpret, and process information. In the pre-questionnaire for *associating*, every response identified Bob as the character on the floor. The fascinating thing to think about is: why Bob and the character on the floor rather than the horse or the man behind the horse? However, in the post-questionnaire, only one subject mentioned Bob. It was as if most subjects had lost interests in “teasing” Bob by making him “the guy on the floor” and then collectively decided move on. Although the scenes were never formally analyzed in the context of this study, they were read with careful attention. It was apparent that in two out of the three scenes, including the one that Bob co-wrote with his classmates, Bob was again portrayed as the man on the floor. Subsequently, the important factor of social dimension in an educational setting and in the intellectual development of subjects aged 11 - 12 should be further and more specifically examined in future studies that focus on developmental psychology.

Moreover, it is also interesting to note that no responses, in both pre- and post-questionnaires, met the *CTS* criteria for *comparing*. This is likely due to the fact that the study was conducted over a very short period of time and, therefore, that the subjects did not have enough prior knowledge or familiar context to notice meaningful patterns and compare relationships. Perhaps, for the same reasons, there was no response in the pre-questionnaire that met the *CTS* criteria for *flexible thinking*. Since *flexible thinking* requires openness to different perspectives, it might have been difficult initially for the subjects to think of different possibilities associated with an image without ever having seen the image or had any conversation about the image prior to the activities. Another probable assumption would be that most of the subjects were not used to looking at images or paintings in ways that were cultivated and required by the research activities.

Similarly, most responses did not meet the criteria for *problem-finding*. In each questionnaire, only one subject noted the missing information and proceeded to form a hypothesis about the image. If the study could be conducted over a long period of time, there would be great potential in exploring the development of critical thinking skills associated with *comparing*, *flexible thinking*, and *problem-finding*. Issues concerning the longevity of the study will be further explored in proceeding paragraphs. Meanwhile, the results of the study show that evidence of *problem-finding* and *flexible thinking*, though not apparent at first, would emerge after the intervention.

Limitations

In evaluating the course of this research, several situational factors should be considered as possible obstacles to the overall effectiveness of the study. One primary situational factor was the scheduling of research activities. For the purpose of data collection and collaboration with the class instructor, the activities were scheduled during one of the bi-weekly sessions of a drama class. Following the principle of research ethics, both researchers intended on interrupting as little as possible the progression of the drama class, in which all subjects were enrolled. Therefore, both researchers agreed to the class instructor's proposed to have the activities conducted the day before Thanksgiving Holiday. This, along with the first day of snow, had proven to be problematic in that nearly every subject had a hard time focusing on the activities and following instructions. It is very likely that the subjects' short attention span and the inability to concentrate on that particular day resulted in the briefness and frivolousness of several responses.

In addition to situational factors, other limitations within the study should be explored as a means to generate improvement for future studies in similar research strands. The most evident limitation was the small sample size of only nine students and the consequent lack of diversity in age and socioeconomic backgrounds. Although there are educational insights to be gained from the study and its activities, it is important to keep in mind that, due to the lack of diversity, the study might not be accurately representative of the wider population. Another evident limitation was the longevity of the study. Although the data did show indications of changes in critical thinking, the study as a whole was too short to support adequately such indications and the overall

effectiveness of the intervention and the study. It is apparent that change in thinking would be much more effectively accessed and interpreted when measured over a longer period of time (i.e. several class sessions over the course of a school semester or school year).

Another critical limitation involved the types of questions posted on the pre- and post-questionnaires. As demonstrated by the majority of the responses, most subjects did not directly answer the questions. Moreover, nearly all subjects were contradictory at various points in their responses. For example, when asked whether he had noticed something new or different in the image after the intervention, the subject would answer “no” yet wrote in another section of the post-questionnaire about objects and traits of the image that had not appeared in his pre-questionnaire. It is possible that the discrepancy between the individual responses could be attributed to the way the questions were structured and presented. Upon the initial completion of data collection, it was evident that the questions were highly metacognitive and therefore proven difficult for subjects, aged 11 - 12 years, to adequately answer. For future research, simplified questions that demand straightforward answers are highly recommended. Additionally, the option of multiple-choice questions in survey form should be considered.

Conclusion

Our study was social and collaborative by design and provided evidence that communities of practice engender engagement and progressions of learning when used with a sixth grade subject group. The development of individual knowledge is built upon the understandings of others, providing students with opportunities to learn by example. Students have to take some individual responsibility for their own learning. The fact that the adults did not facilitate small groups and mutual incentives to focus and contribute was evident. The data suggested the use of drama to advance cognitive and social goals in exploring a work of art cultivates a broad range of thinking skills. Such drama activities can begin in the school setting, which can possibly impact students' thinking of an image during a museum visit. This information could influence art museums' education departments, whose mission is to design and implement arts learning experiences for their visitors, and also help develop strong partnerships between museums and schools.

Not only does this study support the concept that programs where students gain artistic expression and perception are an important outcome, it also raises additional questions in regard to the social dynamics within a research. It is possible that the social relationships among the subject groups were the catalyst for the results of this study. In order to continue a more extensive and comprehensive research in this study, we would work with different age groups and bodies of work as well as increase the sample size. Although the effects reported above are small due to the size of the subject group, there is enough evidence to support further research.

Colophon

This publication was a research project for “Research on Learning in Museums: Issues and Approaches” graduate course, written in the fall of 2007, at the Harvard Graduate School of Education, Cambridge, MA.

Editors: Amy Chou, Ed.M and Janet Shih, Ed.M

Authors: Amy Chou, Ed.M and Janet Shih, Ed. M

Professor: Sherri Tishman, Ed.D, Director of Harvard Project Zero and a Lecturer on Education at HGSE

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Appendix



The Conversion on the Way to Damascus
Caravaggio, 1601
Oil on canvas
230 × 175 cm
Santa Maria del Popolo, Rome

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