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Cover Page Footnote

The author wishes to thank Brigid Globensky, Amy Kirschke, Jessica Janzer, and the faculty and students of the Bank Street College Graduate School of Education Leadership in Museum Education program, 2012–14, for their support of both this article and the museum program it concerns.

Reflection and Technology in Theory & Practice: Teen Engagement in Art Museums

Chelsea Emelie Kelly

Picture this: For a full school year, 16 busy high school students from 10 different schools arrive weekly at their city's art museum for an unpaid internship. Once there, the students are talkative and attentive, amazed when hour-long discussions about historic works of art pass by quickly. They work on final projects and build technology skills to make videos that interpret works of art for museum visitors. They thoughtfully reflect on their experiences in video blogs, written responses, and one-on-one interviews. At the end of the program, one student says, "I feel like the museum is my second home." This isn't a utopian, futuristic ideal: it happens every week at the Milwaukee Art Museum's Satellite High School Program.

Meaning, engagement, and reflective practice are foundational concepts in education today, but facilitating such experiences poses new challenges, particularly when technology presents exciting and ever-changing tools for educators to use. Like classroom educators, museum educators struggle with the challenges of technology: its cost and upkeep, to be sure, but also its tendency to upend traditional



Rosaly shows her family the work of art she chose for her final project. Photo credit: Front Room Photography.

models of information delivery, in which technology is viewed as a distraction that interferes with engagement. However, when used alongside traditional methods, technology can deeply support and enhance student engagement. Because of its deep roots in constructivist education theory, the field of museum education is uniquely positioned to explore how technology, face-to-face interaction, and object-based learning can be used in tandem to create a hybrid method of instruction to foster engagement in art museums, especially within programs for high school students.

This case study shows how the Milwaukee Art Museum's after-school teen program fosters student engagement through a hybrid practice grounded in constructivist pedagogy. This article presents the museum's Satellite High School Program in theory and in practice, including its evaluation methods and its impact on students and the museum. In the spirit of the program itself, which celebrates student voices, participants' own videos, quotes, and experiences will frame my reflections from an educator's point of view.

Background

Museums have long been sites of informal learning for people of all ages. Although field trips for school-age students and traditional lectures for adults are often the first museum education experiences that come to mind, for many years cultural institutions have created innovative programs for diverse audiences that provide opportunities for meaning making, discovery, and personal reflection. Many museum educators use constructivist methods to create programs in which visitors can learn actively and build their own understanding of the world. Open-ended discussions, ongoing programs that foster communities of learners, and facilitated opportunities to connect content areas such as history, art, and science to one's own life underpin many museum educational programs.

Over a 30-year period, the Satellite High School Program has grown from a high school extension program for only two schools to one that reaches 16 students from 10 to 15 different schools in the Milwaukee area every year. From the beginning, the program incorporated aspects of constructivist pedagogy and now fosters 21st-century skills, includes workforce development workshops, and integrates technology while continuing to nurture the students' passion for art by offering direct experiences with objects in the museum's collection. The driving goal is to have students show an increased ability to reflect upon their own experiences and performance. The program's 2013–14 session took place once a week after school in the museum's galleries for the academic year. Students participated in object studies (hour-long dialogues about specific works of art), behind-the-scenes career talks with staff, and resume-writing workshops and gave tours of the permanent collection to elementary school students.

To showcase their thoughts and processes in a broader context, teens created a final project that would have an impact on the museum. They chose a work of art in the museum collection, researched it, and developed their own interpretation of it. Previously, students had used visual art, writing, or performance to create their responses. In 2013–14, students used iPads to produce videos about their chosen

artwork, explaining what the piece meant to them, what it has meant for others, and how it changed their thinking or their personal art practice. In every session, students spent time individually and in small groups with their chosen work of art, using a number of different prompts to continually view it anew: looking closely at a detail; reading a packet of art historical research about the artist and time period; developing questions to explore; imagining the artwork through senses other than sight; connecting it to a subject they were studying at school; and engaging in group critiques. Students participated in technology workshops in order to build their skills with the iPad and the filmmaking process and worked independently to plan, storyboard, write voice-over scripts, film, and edit their videos. We evaluated the program and student growth through pre- and postprogram interviews, weekly exit slips, and the video work the students produced.



View of the final celebration event for the Satellite High School Program. Photo credit: Front Room Photography.

To introduce a more in-depth discussion of the program's theory, pedagogy, and evaluation, what follows is a description, both from my point of view as educator and from the students', of one specific session that took place in the middle of this yearlong program. Although this is an example of one particular class, its structure, activities, and flow are representative of the program as a whole.

Session Description: February 20, 2014

On a winter Thursday in 2014, the 16 Satellite High School Program interns arrive at the Milwaukee Art Museum, greeting each other warmly—a stark contrast to the frigid temperatures outside—and have a quick dinner together. After an overview of our day—which will include an object study, work time on our final projects, and our weekly exit slips—I lead the group into the museum galleries, and we sit on a cluster of stools to study a painting by Agnes Martin.

After a silent minute of individual observation, I open the conversation by asking students to share any thoughts, comments, or ideas they have about the artwork. The teens are used to these dialogues, having been in the program together for a few months, but even so, they are wary as we begin. The painting, *Untitled #10* (1977), is a series of graphite lines on a neutral background. In photographs and at first glance, it looks like a plain grey canvas. From midrange, the pencil lines seem perfectly straight,



but as the teens begin to notice, the closer you get to the painting, the more you see: The lines are slightly shaky, and as one student comments, you can almost feel the hand of the artist in them. Meanwhile, from very far away, the lines disappear and the canvas is no longer a uniform color—a circle of lighter gray appears in the center of it. It's as if you are looking at an immensely subtle optical illusion.

And that's the trouble: there is nothing recognizable in *Untitled #10*, although the students try to find something to relate to it, offering up impressions of notebook paper or schoolyard concrete. I sense from their fidgeting and crossed arms that the group is getting frustrated—how could this be considered art? I decide to provide some information to spark new ideas. I share that the work is by an artist named Agnes Martin, and read a quote from her writings: “I hope I have made it clear that the work is about perfection as we are aware of it in our minds, but very far from being perfect—completely removed, in fact—even as we ourselves are” (Haskell, 1992, p. 25).

Agnes Martin (American, b. Canada, 1912–2004), Untitled #10, 1977. Gesso, India ink, and graphite on canvas. 72 × 72 1/8 in. (182.88 × 183.2 cm). Milwaukee Art Museum, Gift of Friends of Art, M1981.6. Photo credit: Dedra Walls. © Artists Rights Society (ARS), New York. Image link: <http://collection.mam.org/details.php?id=2669>

We begin to talk about the artist's intentions. The concept of perfection seems clear from the carefully traced, nearly straight lines, but the idea of imperfection proves more slippery. We parse out what she might mean, noting that the graphite lines are not in fact perfectly

straight and that the background is not flat. One student, Claire, says, “Her quote, and what she's doing in the painting—it's a lot like meditation, isn't it?” Although I have meditated before, I had never thought of this parallel. Claire and I explain that in meditation you accept the existence of chaos in order to find calm within your mind. It's a paradox, but when you stop pushing away that chaos and accept it, allowing it to be where it is, your mind begins to quiet. In the same paradoxical way, Agnes Martin's paintings can be about perfection while actually being imperfect.

There's a collective sigh, a group “hmm,” as Claire's ideas begin to shift into focus and Martin's quote suddenly makes sense. Without speaking, we all once again consider the painting, and I step away, studying the students' faces as they in turn study the work once more. Some, like Claire, look entranced by the painting; others remain skeptical, brows furrowed.

I bring the group back together and share that it's time to wrap up the conversation. As always, the teens are surprised that the hour has gone by so quickly. As our minds begin to focus on the here-and-

now again, I ask for final thoughts. “I was really frustrated with this work,” Evan admits. “I think I would have just walked right by it if we hadn’t stopped to look at it. I appreciate it more now that we’ve talked about her intentions, but even though I understand what Agnes was doing, I’m just not sure a work of art should be so difficult to figure out.”

“Being skeptical is important,” I assure him, thereby acknowledging others in the group who might feel similarly. “It’s just as valid as feeling totally taken by a work of art. In fact, we should all come at our interpretation of art with a healthy dose of skepticism, even if we like the piece, so that we can think critically about what the artist—and the museum itself—is telling us.” I pause to let this sink in, then move forward to wind up the discussion: “All the same, though, was it worth spending an hour with this painting?” Assent immediately rises from the group; they say it helped them to see more deeply and question more, and even that if we might not all agree that it’s art, in the end, it helped us as a group understand more about what art is.

For the second part of the session, the teens work independently on creating their **final project videos**. Each student has focused on one artwork for the full school year, working individually in the galleries to create a series of video blogs, or vlogs—stream-of-conscious thoughts about their artwork that evolved week by week (see example below)—and researching the piece in the museum’s library and archives.

Now the teens are in the independent phase of creating their final projects, armed with templates and their imaginations. The group had worked collaboratively to establish a general video format and had decided that the videos had to be three to five minutes long, reflect the student’s own voice, and





Alissa shares her experience with the audience at the final celebration event. Photo credit: Front Room Photography.

answer three questions: what the artwork meant to them, what it has meant to others, and how it has changed their thinking. As a group, we also decided that each student would use a voice-over to help content flow smoothly. That way, they could write out in advance what they wanted to say, get edits from their peers and me, and then decide what footage they would need to illustrate their words.

Today, the teens split up between our classroom and the galleries. Over the past year, we've had technology educators walk us through how to use an iPad, go over the basics of movie making, and show us how to use the iMovie app. Using this skill-based knowledge, the teens' mission is to transform their ideas into a video that will be on the museum's public YouTube channel, shared on the museum's blog, and eventually featured as a multimedia asset for visitor use in the galleries.

Students who are more process-oriented start to write out ideas for their voice-over scripts or storyboard out the shots that will go along with their words. Others, whose scripts have already been edited, find a quiet corner and begin to record their voice-overs. Another student is already beginning to piece together her clips in iMovie, and calls me over for a refresher on how to shorten them. Later, another asks for my thoughts on a rough cut of her video; we critique the piece together and talk about how to pronounce a few key art history terms she wants to include. Another group goes into the galleries to start filming shots of their artwork. Lots of students are using a particularly popular time-lapse app, iMotion, that one of our guest speakers had introduced and now are filming fast-paced walking tours from the museum entrance to their piece. Others borrow a tripod to take panning shots of their gallery, artwork, or even the museum architecture to give a sense of setting to their videos.

Finally, we meet back in the classroom, and the students open a web app called Infuse Learning¹ on their iPads to type up their exit slips, quick reflections on the day's session in which they share what they learned that day and what they're still wondering about. Kira, who spoke a lot during the class discussion about Agnes Martin, writes, "I feel like I really started to understand the piece that we studied today. It was through communicating with the group that helped me a lot." Alissa, who was more quiet, says, "I learned that sometimes the meaning behind the process is what makes something art." And Luis, a new student who had joined us only a few weeks ago, writes: "[At first I was] annoyed by some pieces of art like the one we saw today, that I really didn't see no meaning of at first [sic]. But then I realized what the artist was trying to show... Some artworks look like they don't have meanings but when you look at them up close, and learn background information about it, you figure out the meaning of it."

Combining Theory & Practice

The Satellite program is grounded in constructivism, and students are encouraged to build their own unique knowledge sets. My own understanding of constructivism is influenced by four scholar-practitioners—John Dewey, George Hein, Rika Burnham, and Elliott Kai-Kee—whose progressive theories on education, museums, and teaching have informed my practice and led me to integrate technology, face-to-face interaction, and object-based learning into this program.

At its core, the Satellite program is aligned with Dewey's (1938/1977) assertion that "the most important attitude that can be formed is that of desire to go on learning" (p. 48), an outlook that supports

1 Unfortunately, the Infuse Learning website has shut down. I now have students use Typeform to write their exit slips.

learners' motivation to build knowledge themselves. Putting Dewey's philosophy into practice in Satellite, I continually ask students to push their thinking beyond surface-level observations and personal associations, encouraging hour-long discussions about works of art that unpack universal themes and connections to 21st-century life; the creation of final projects that have a life beyond the student and the program; and the production of exit slips in which students reflect on their work each day. For Hein (1998), constructivism is the ideal educational theory for museums, where visitors are able to connect objects to their own lives and thereby create personal meaning from art and history. This happens when visitors are provided with many intellectual entry and exit points, varied opportunities for active learning, and exposure to multiple points of view (Hein, 1998, pp. 34–35). With discussions and projects driven by the students themselves, the Satellite program is decidedly constructivist—students actively shape the program and their experiences, and as the program educator, I consciously build an environment where that can occur.

Finally, narrowing my focus within the field of museum education to teaching with works of art, I use Burnham and Kai-Kee's (2011) dialogical teaching method throughout the program. For Burnham and Kai-Kee, a dialogue about art is an equal playing field in which participants, including the teacher, may take on and switch among four roles.² The dialogical method allows students to drive the content, gently challenge each other, and discover their own interpretations about the works of art we study. In addition, I consciously use it to organize our feedback sessions on our final projects and to teach resume writing. As a result, students become more comfortable offering new ideas and even challenging each other in contexts outside of discussions about art, such as when they share their final project work with each other. As one student wrote, "I learned how to communicate better. Sometimes I have a hard time communicating my thoughts into words; this semester has allowed me to practice my communication skills."

Put into practice, these three theories provide the foundation for the Satellite program, rooted in constructivism but using a hybrid method of employing technology, having face-to-face interactions, and studying art objects to help students reflect on art, the museum, and each other—and ultimately learn more about themselves.

Evaluation & Student Impact

Infusing theory into practice is not enough; as educators, we must also infuse theory into our evaluation methods, and evaluation into our practice. As we developed the program structure, I knew it was important to align our evaluation procedures with the goal of fostering students' abilities to reflect. Creating evaluation methods that dovetailed with activities in our sessions, as well as being transparent with the students about this goal, helped make evaluation not a cumbersome necessity but a useful tool, for both the students and me. Although I used one-on-one interviews to quantitatively

2 The four roles include the mover (who moves the dialogue forward in some way), the follower (who agrees, listens, and reinforces), the bystander (who is not inactive, but takes on a resting, attentive position), and the opposer (who offers respectful disagreement or challenge) (Burnham & Kai-Kee, 2011, pp. 87–90).

assess how students had developed reflection skills, primarily measuring the level of detail in their responses,³ the exit slips and final projects proved a much more nuanced way to document their growth.

The exit slips, which asked students, “What is something you learned today?” and “What is something you’re wondering about?” provided a large amount of qualitative data. In the short term, I used them to plan the next session and ensure that each student felt both safe and challenged during the program. In the long term, the responses provide a more detailed image of the students’ development in reflective ability. Although I tried to extract quantitative data from the exit slips by analyzing them in two readability tests,⁴ there were no discernible patterns in the scores of students’ earlier responses versus later ones. However, this analysis prompted me to take another look at the students’ responses, and I noticed that while a handful of students had improved readability scores for their responses to “What have you learned today?,” their scores had significantly decreased for “What are you still wondering about?” (See fig. 1.)

Figure 1. Sample responses to “What are you still wondering about?”

Student	Early Response	Late response
A	How do you distinguish different periods of art and their styles easier?	What really makes art art? Who specifically deems something as art and what causes us to recognize things as art. Is art just a linear way of thinking that we’ve adapted to over the century?
B	I am still wondering about the two men in the background of the painting and what their purpose was in the painting.	I’m still wondering about the meaning behind the artwork that [student] chose, specifically the use of skin color on the women.
C	The transition from Neoclassical to Impressionism.	I’m still thinking about destruction and reconstruction. It’s weird to think about how they are alike but different.

In their later responses, the teens stopped trying to use high-level vocabulary, began to ask questions about the purpose of art, and mused more informally on philosophical questions of art, destruction, and race. Their responses might not have become more readable according to the Flesch-Kincaid and

3 We used pre- and postinterviews to quantitatively measure reflective ability. Each student was privately asked the same set of questions and was scored on a rubric that measured the level of detail in their responses. Their total preprogram score was then compared to their total postprogram score as a measure of improvement. These one-on-one interviews, which were moments for individual reflection, were meant to be an extension of the program’s reflective group conversations. Every student’s score rose on average 2.5 points, but tested only the level of detail in their responses—just one aspect of reflective ability.

4 I used the Flesch-Kincaid Grade Level indicator, which approximates the average grade level at which a student could easily read a sample, and the Fog Scale, which indicates reading ease based on the number of syllables and sentence length (Tyler, n.d., para. 4–5).

Fog tests, but the students had begun asking questions that do not have obvious answers—a sign that they were developing their ability to reflect on the messy world within and around them and engage in higher-level critical thinking. Their responses also certainly display a Deweyan desire to continue learning.

Finally, the videos that the teens produced were intentionally structured to use a work of art as a personal reflective tool. The teens used their own experiences to share how an artwork had changed their way of thinking. The videos are a diverse representation of the students’ many different take-aways from the program, from art historical interpretations to personal connections, and a range of responses in between.

A full playlist of the teens’ videos as well as a talkback session at their culminating screening are **embedded** above. **Justine**, for example, used Ellsworth Kelly’s canvases to develop philosophical questions about art itself. She asks: “Most say that art is something that attracts attention... How exactly do we decide what is art and what isn’t?” [<https://www.youtube.com/watch?v=DJBnsZq-ifk>]

Alana dove deeply into describing the mythology and historical context of Anselm Kiefer’s *Midgard* (1982–85) and tied it all together by asserting, “Kiefer’s painting... has a background to it that could be impossible to guess without researching it. This relates to me because a person may see me, but they don’t automatically know everything about me.” [<https://www.youtube.com/watch?v=8JIG-GrHeZPE>]

Termeria also drew a connection between herself and her artwork, a glass sculpture by Beth Lipman, saying, “This [artwork] is a metaphoric representation of myself: I may appear fragile, but I have been built up in a way to be strong.” [https://www.youtube.com/watch?v=F09PWR_a67Q]



And **Rosalyn** chose a still life of flowers that transported her to a different kind of environment: “I grew up in a city, so...weeds are the closest thing to nature when I look down to the pavement. Looking at this piece shows me just how beautiful nature really is.” [<https://www.youtube.com/watch?v=7RGHbjjQ4gk>]

Other students drew direct inspiration for their own artistic practice from looking at a work of art for a full year. Inspired by artist Reginald Baylor, **Kira** began to incorporate more color and clean lines into her work, as well as deeper subject matter such as body image and racism. [<https://www.youtube.com/watch?v=c1lJJ1a-uto>]

Meanwhile, **Evan**, who had initially been underwhelmed by his chosen artwork, Jules Bastien-Lepage’s *The Wood Gatherer* (1881), ended up using it to develop his own point of view as an artist. “I want to be able to connect to my viewers through my art and potentially alter or change their lives for the better,” Evan says. [<https://www.youtube.com/watch?v=ysGq21Ee-xs>]

Inspired by a satirical painting by George Bellows, **Brandon** decided he could better show a personal point of view in his own art: “When working on a piece, I want to put a perspective of my own into [it].” [https://www.youtube.com/watch?v=Z1SNT_IhghI]

Combined, these evaluation tools dovetailed with the spirit of the program itself—teen-driven, reflective, and thus constructivist—while also showing how students were developing reflective ability both during the program and at its conclusion.



Rosalyn and Luis show their families and teacher a work of art in the museum. Photo credit: Front Room Photography.



Evan and Kira introduce the Satellite High School Program at the final celebration event. Photo credit: Front Room Photography.

Challenges

This format of the program emerged from three years of experimenting with technology use in teen programs, and the biggest lesson I've learned is that technology is a powerful tool that helps initiate, strengthen, and sustain student engagement with museums and art history. The teens themselves, all of whom had different comfort levels with technology, helped remind me of this as they experimented, asked questions, and worked individually or in groups to troubleshoot as they created their videos. The technology was a tool that they actively learned to use through this project; the ability to broadly showcase the students' thinking and process as well as the questions with which they grappled all gave a broader context to their reflections and interpretations and allowed larger audiences to learn from their work. Their videos have had over 1,300 views on YouTube, blog posts featuring their work have been visited over 250 times, and their work has been supported by curators at the museum who reviewed the videos for inclusion in the museum's forthcoming media guide to its reinstalled permanent collection galleries.

As illustrated above, the students' conclusions about works of art demonstrate well-informed, passionate connections to the museum's collection. Using video also allowed us to share that work well beyond the program itself, thereby building institutional support for youth voices. The videos allowed the passion of each individual student to shine through, and, taken as a whole, they have shown museum staff that youth have the ability to contribute to the museum at large. Indeed, program alumni have continued to engage with the museum, participating in other programs, applying for jobs and in-

ternships, and regularly bringing family and friends to visit. At a time when many museums are eager to attract youth and millennial audiences, in-depth programs such as this provide a key investment in building a new generation of visitors. As a result, the museum is now exploring the creation of a more integrated teen leadership program, convening a community task force to develop and fund an initiative that serves more students while keeping the key program components of constructivist-based pedagogy and reflection at the core.

Conclusion

Educators can foster teen engagement in art museums through constructivist-based, hybrid instruction that allows students to develop technology skills, have face-to-face interactions with each other and museum staff members, and participate in object-based learning exercises. Rather than discarding established museum teaching practices, we can balance tradition and technology, supporting and enhancing object-driven learning with student-centered pedagogy. Students in museum programs benefit from a variety of opportunities to interact directly with the institution: with specific works of art, through guided dialogue, and with staff members whom the students interview about career opportunities in the arts. In order to process their learning, students need the chance to reflect in multiple ways on what they've done—in this case, through writing, verbal interviews, and a video project with real impact on the museum. In turn, the museum itself must respect the voices of students so that teens feel valued and safe at the institution. Technology allows students to make connections beyond the museum by honing media-creation skills and showcasing their work in a broader context.



Group photo of the 2013–14 Satellite High School Program teen interns. Photo credit: Front Room Photography.

When all of these components align, the institution benefits from the students' contributions: after all, these teens are our future visitors, staff, and supporters. But more important, in addition to developing important life skills in reflection and critical thinking, the students find a safe space to be supported in their passion for art, plant seeds for their future careers, and learn more about themselves. As Evan said at the end of the 2013–14 Satellite Program, “I was able to change and evolve my thinking, now being able to look past the obvious. I learned that art holds all the answers to any questions anyone may have; you just have to search for it.”

Author Note

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