

**Edward M. Kennedy Academy  
for Health Careers (EMK)  
Grade 9 (Class of 2016) Year 1 Program  
Critical Thinking Skills Trends**

May 23, 2014

**Summary**

Preliminary analysis of Year 1 Critical Thinking Skill (CTS) data from the Edward M. Kennedy Academy for Health Careers (EMK) reveals a number of initial effects of the School Partnership Program and Visual Thinking Strategies (VTS) on students' ability to consider both visual art and non-art materials.

These results confirm the expectation that VTS will help develop critical thinking in oral language with art within one year of beginning the School Partnership Program, but that transfer across content (to non-art materials) and across context (to writing) requires more time and experience with the method. These results are consistent with previous VTS studies on younger students (<http://www.vtshome.org/research/research-studies>) that demonstrate that transfer of critical thinking skills to a different context typically occurs before transfer to a different content area.

**Program Intervention**

Gardner Museum educators trained all history and English language arts (ELA) teachers to facilitate Visual Thinking Strategies discussions through a 6-hour workshop in June 2012 and a 2 hour "refresher" workshop in October 2012, and provided all partnering teachers with a Year 1 high school VTS curriculum consisting of 10 VTS lessons, each made up of discussions of two images.

All Grade 9 subjects participated in 9 total VTS lessons during the 2012-13 academic year. Michael Baulier, the grade 9 ELA teacher, led four hour-long VTS discussions in the classroom, including observation and coaching by Gardner Museum educators during one of the lessons. He brought his classes to the Museum for an hour-long VTS lesson facilitated by Gardner Museum educators. Carrie Barrows, the grade 9 ELA teacher, led three hour-long VTS lessons in the classroom, including observation and coaching by Gardner Museum educators during two lessons, and brought her classes to the museum for an hour-long VTS lesson facilitated by Gardner Museum educators.

**Assessment Tool Descriptions**

Three major assessment tools were used:

1. Aesthetic Development Interviews (ADI): Students were asked individually to think aloud about a reproduction of a work of art. This image is not a part of the year's VTS curriculum.
2. Material Object Interview (MOI): Students were asked individually to think aloud about an object of some sort, not related to visual art. This assessment aims to measure content transfer of critical thinking skills to make meaning with something other than visual art.

3. Writing Sample: An image was projected in the classroom, and students were given up to 15 minutes to write in response to “What’s going on in this picture?” This tool measures transfer across context, from group discussions to individual writing. This image is also not a part of the year’s VTS curriculum.

Gardner Museum educators transcribed analyzed each tool for the following types of critical thinking:

- Supported Observations: *“I think they’re in the same room because they have the squares on the back.”*
- Speculations: *“And they might seem like that even though they’re different colors, they could be together.”*
- Revisions: *“The woman has, well, it looks like it has on a strange, or like, a strange outfit. Well, not strange, but uncommon for, like, for this day and age.”*
- Questions: *“What’s that called?”*
- Multiple Possibilities: *“And then I see, if these are bowls, or some type of circles”*

### Pre-Program Data Findings



Year 1 Pre-Program ADI image:  
Picasso, *Girl Before a Mirror*



Year 1 Pre-Program MOI object: Caliper



Year 1 Post-Program writing  
Image: Sargent, *Capri*

Baseline pre-program data collected September 2012 from a randomly selected subset of 14 subjects entering Grade 9 demonstrates that these students began their time at EMK able to respond using CTS in an engaged way with art and non-art objects.

The count of critical thinking instances found in Aesthetic Development Interviews (ADIs) totaled 32 for all subjects, while in Material Object Interviews (MOIs) the total for all critical thinking was 37. Across the critical thinking skills, students scored similarly in the pre-program ADIs and MOIs, with some skills like supported observations used more in the MOIs and other skills like revision appearing more frequently in ADIs. This subset of subjects scored lower on CTS in their writing samples, totaling only 25 CTS total.

<b>PRE-PROGRAM Critical Thinking Skills</b>	ADI Pre	MOI Pre	Write Pre	<b>TOTAL</b>
Question	12	13	1	<b>26</b>
Multiple Possibilities	4	6	12	<b>22</b>
Supported Observation	5	9	6	<b>20</b>
Speculation	6	6	6	<b>18</b>
Revision	5	3	0	<b>8</b>
<b>TOTAL</b>	<b>32</b>	<b>37</b>	<b>25</b>	<b>94</b>

In the pre-program data, questions and multiple possibilities were the critical thinking skills that appeared most often across data points, indicating that students were thinking openly and puzzling through the images and/or the data-collection processes with both art and non-art materials. For example, students asked, “Is this like another face?” and, “So you just want me to say whatever?” during the pre-program ADI. Questions during the pre-program MOI were similar, for example, “What else am I supposed to say?” and “how do people design this ruler?” In pre-program writing samples, we found questions such as, “Why is that person bare footed?” and “What is the message to this painting?” Multiple possibilities in the pre-program data ranged from, “probably friends, or associated with each other” in the ADIs, “so the back seems a little, either discolored or it’s reflecting from some kind of light” in the MOIs, and “where they are sitting looks like in Haiti or Brazil” in the writing samples.

### **Post-Program Data Findings**



Year 1 Post-Program MOI object:  
Anemometer

Year 1 Post-Program writing image: Seurat, A  
*Sunday Afternoon on La Grande Jatte*

The post-program data shows an increase of 48.9% critical thinking overall with the total rising from 94 in the pre-program data to 140 in post-program data, and a similar rate of growth within certain categories of critical thinking.

<b>POST-PROGRAM Critical Thinking Skills</b>	ADI Post	MOI Post	Write Post	<b>TOTAL</b>
Question	5	5	0	<b>10</b>
Multiple Possibilities	18	9	6	<b>33</b>
Supported Observation	26	6	20	<b>52</b>
Speculation	22	11	6	<b>39</b>
Revision	5	1	0	<b>6</b>
<b>TOTAL</b>	<b>76</b>	<b>32</b>	<b>32</b>	<b>140</b>

First, CTS counts increased by 137.5%, from 32 to 76 in ADIs while decreasing by 13.5%, from 37 to 32 in MOIs. CTS increased by 28.0%, from 25 to 32 in the post writing samples. The students in this subset clearly have increased their ability to use critical thinking to write about, and especially to discuss, works of art, while that thinking has not yet transferred to talk about non-art materials.

Second, while multiple possibilities are still highly prevalent in the post-program data, there is a strong rise in supported observations and speculations with a sharp decrease in questions. This indicates that the students continue to consider different possibilities in the art imagery and object, using conditional language such as “she is maybe setting it up for her family to eat” (ADI), “this object probably has something to do with the wind” (MOI) and “maybe someone died because there are lots of umbrellas” (writing sample).

The increase in supported observations suggests that the students are using evidence to ground their ideas about artwork, both in oral language and writing. In the ADIs, we found supported observations such as “it’s during the day or evening, because the blue clouds” and “I think the colors symbolize and help it seem like it’s a spring type day.” In MOIs, there were supported observations such as “black and orange, so probably one is good and one is bad” and “this reminds me of a Ferris wheel, because it goes around in like a circular movement.” In writing samples, some examples of supported observations were “I think this picture was painted based on a while back in time because of the way people are dressed” and “it seems to be summer or fall because of the glistening from the sun reflecting sea.”

As we continue to monitor these students’ growth over time, we hope to see this skill transfer into MOI data, as the ability to express support for interpretations across the curriculum would greatly benefit these students.

### **Next steps**

1. Share preliminary results with EMK teachers at May 2014 wrap-up meeting as well as internally with the Education department and Director
2. Complete analysis of all EMK class of 2016 subset (approximately 25 total students)
3. Include Year 1 questionnaires in the data analysis
  - a. Compare Post Year 2 teacher data to the pre-program teacher data from June 2012
4. Analyze a subset of students in grades 10, 11 and 12 Year 1 pre-program data (ADI, MOI, writing and questionnaires) from fall 2012 to use as a control group, helping us establish baselines of

particular behaviors of students in all four grade levels at EMK to compare to the students in class of 2016 over time

- a. Analyze pre- and post-writing samples for all students in EMK annually
5. Interview teachers in June 2014 to get a sense of the impact of our professional development program on the teachers over the past two years