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Report on the Pilot Assessment Project
Thinking Through Art, 1997-8

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Executive Summary

In Fall 1996, the Boston Museum of Fine Arts and the Boston Public Schools initiated a collaborative program for fifth grades, *Thinking Through Art (TTA)*. TTA is a visual arts program, focused on art appreciation, specifically aimed at developing students' skills at making meaning out of diverse, complex, ambiguous art objects. Teachers quickly noted that TTA had the desired impact on students' capacities to examine, think about, and discuss art. Significantly, they also saw that TTA experience seemed to effect students' thinking and communication skills more generally and that they applied these to lessons outside the TTA classes.

The Museum of Fine Arts (MFA) and the Boston Public Schools (BPS) were intrigued by these reports because of their commitment to seeing students meet new city and state learning standards that address thought and communication, as well as their desire to strengthen art education in schools. The following year, therefore, the MFA asked Visual Understanding in Education (VUE), TTA's co-creator, to conduct a study to see if teachers could 1) document their observations and 2) learn to assess objectively student gains in thought and communication. The following report addresses the findings of that study.

TTA is based on VUE's *Visual Thinking Strategies (VTS) Starter Lessons*, a set of classroom lessons that culminate in a visit to the MFA. The lessons--based on six years of research--involve extended discussion of works of art, initiated by questions and facilitated by classroom teachers. The basic questions constitute a learning strategy that is tailored to decoding meanings in art. The same strategy can be applied to other unfamiliar material. The behaviors it nurtures--extended observation, drawing conclusions based on evidence, and consideration of various interpretations of the evidence--are ones that are useful in the examination of many kinds of objects and texts. Teachers observed the transfer of this strategy from art discussions to other studies, and it was this phenomenon that VUE set out to examine.

In very basic terms, the study was based on two questions: could teachers find concrete evidence of what they observed? And further, was there a way they could they demonstrate, within a reasonable time frame, their ability to assess what they documented? In order to find out, six BPS teachers who had participated in the initial year's pilot project were asked to collect student writing samples during the second year; they also videotaped classroom discussions of images. They were helped to analyze the writing and tapes for evidence of student behaviors that indicated gain. By examining the teachers' written reports, we found that they were able to:

- identify, document, track, reflect on, and analyze changes in student thinking (such as making increasingly detailed observations, providing more supporting evidence for opinions, and increasing their speculation among possibilities);

- similarly identify and study improvements in student communication (such as listening to one another, building on each others' comments, and constructively articulating agreement or disagreement);
- understand the correlation between the TTA teaching method and the development of the above skills;
- note skill changes not only within the TTA classes but also when transferred to other disciplines;
- establish the correlation between skills fostered by TTA and those Massachusetts Department of Education goals which address the advancement of thinking and communicating.

In summary: by the end of the first year of the TTA program, assessment data showed there was a trend toward significant growth in terms of students' art viewing skills. Moreover, there were reports--substantiated by independent data--of students applying these skills to other lessons. By the end of the second year, it was clear that a diverse group of experienced teachers could document and assess specific skills and demonstrate their transfer from one learning situation to another. Teachers could also draw direct links between the learning they saw in TTA classes and the realization of Massachusetts' current educational goals.

Project Background

1996-97 Thinking Through Art Program

The Boston Museum of Fine Arts (MFA) and the Boston Public Schools (BPS) have had a significant partnership since the mid-1960s focused on fifth grades. Beginning in the mid '80s, their social studies-based program, American Art: Then and Now, provided visits to classrooms by the MFA's Gallery Instructors as well as return visits to the museum by these same classes. The program emphasis was selected to connect museum objects to classroom teaching. Aided by a coordinator paid by the BPS but housed at the MFA, virtually all fifth grades participated. After ten years, both parties found themselves wanting to make changes to integrate art objects even more seriously into the school curriculum, deepen the learning experience, and provide more professional development for teachers.

One of the primary incentives for change was the adoption of revised teaching guidelines and the implementation of newly-created curriculum standards by the BPS. The new standards articulated the development of learning behaviors in students that stress their ability to think and to solve problems--to help them master the process of learning. The guidelines called for increasing opportunities for teachers to engage in peer learning and mentoring as the means of expanding their repertory of methods to meet the new standards.

In response to this, the MFA and the BPS began to investigate the possibility of using an experimental curriculum, the Visual Thinking Strategies (VTS), as the basis for a new collaboration. The VTS was created by Visual Understanding in Education (VUE), and it was based on empirical research by Abigail Housen, VUE's principal researcher, into the patterns of thinking people employ as they find meaning in art--a complex amalgam of thoughts virtually synonymous with what people refer to as critical and creative thinking. Extracting her theory from hundreds of interviews, Housen discovered the developmental pathway viewers travel as they go from novice to expert. Using this data, she and her colleague Philip Yenawine developed the VTS. Their first intention was to teach art appreciation, but they also knew that the richness of this experience could influence thinking more generally. Further, the discussion-based practice of the VTS could also produce gains in communication skills. Over the years of piloting the curriculum, a method of teacher training had been developed that emphasized peer interaction. It seemed, therefore, that the VTS could be adapted for use by the MFA/BPS, addressing their multiple goals.

The MFA/BPS called their new program Thinking through Art (TTA), and in 1996, they began implementing it by way of professional development for groups of self-selected fifth grade teachers and museum Gallery Instructors (GIs) to enable them to use the VTS Starter Lessons. In the first year, twenty-nine fifth-grade teachers and twelve GIs participated in the training. The fifth grade classes represented twenty schools, and provided a useful sampling of students with a range of abilities and challenges including a substantial number for whom English was not the first language.

TTA consists of the set of six Starter Lessons, the first five of which are taught in the classroom by a teacher using slides. The final lesson is taught in the museum, where classes are split between the teacher and one of the GIs who has attended and co-taught one classroom lesson; a partnership between teacher and GI develops as result. The mode of teaching is discussion in both settings, with the teacher/GI acting as facilitator. The method involves open-ended questions designed to stimulate thorough examination of images as well as rigorous discussion about a work's many possible interpretations; all opinions must be grounded in evidence. The facilitator responds to students in a number of ways, listening carefully, validating their opinions, and indicating how their thoughts interconnect.¹

The training for both teachers and GIs combines practice of the method, with critique, and reflection on that practice. The process is discussion based, allowing both groups to draw upon their existing knowledge and experience to come to understand what is new to them. It is initiated by day-long workshops, and maintained over the course of several months by debriefings--some with the two groups meeting together--interspersed among the teaching of lessons or practicing the method in galleries. Journals are encouraged to help both groups keep track of their growing understanding of how and why the method works. Guides and lesson plans provide useful information, but most of the training results from discussion of both the method and the theory behind it. During the discussions, many topics are covered, including current issues in education, such as student-centered learning; the effects of peer interaction and the use of discussion in learning; aesthetic development/visual literacy and their relationship to learning more generally; and the role of information in learning. Many teaching skills are honed, including listening in order to monitor student thinking and language; paraphrasing as a means of expanding student language flexibility; remaining neutral in order to encourage maximum student effort and

¹ In an ERIC Digest on "Strategies for Teaching Critical Thinking" (ERIC/AE Digest ED385606) Bonnie Potts describes the following goals for student learning which seem completely congruent with the goals and methods of the TTA program:

- Promoting interaction among students as they learn - Learning in a group setting often helps each member achieve more.
- Asking open-ended questions that do not assume the "one right answer" - Critical thinking is often exemplified best when the problems are inherently ill-defined and do not have a "right" answer. Open-ended questions also encourage students to think and respond creatively, without fear of giving the "wrong" answer.
- Allowing sufficient time for students to reflect on the questions asked or problems posed - Critical thinking seldom involves snap judgments; therefore, posing questions and allowing adequate time before soliciting responses helps students understand that they are expected to deliberate and to ponder, and that the immediate response is not always the best response.
- Teaching for transfer - The skills for critical thinking should "travel well." They generally will do so only if teachers provide opportunities for students to see how a newly acquired skill can apply to other situations and to the student's own experience.

participation; seeking rigor and appropriate challenge through tailored questions and discussions; and developing abilities to manage and extend healthy debate.²

The MFA and BPS asked VUE to assess the effects of TTA. An interim report was prepared by VUE in Spring 1997 based on notes taken during discussions as well as extensive journal entries. It provided a good deal of commentary from participants indicating their positive feelings about the new program. Despite some initial reservations, the GIs came to appreciate a role different from their more traditional role as dispenser of information. The classroom teachers enjoyed the pleasure, involvement, and growth they noted in their students. Using data from tools described in Appendix A, VUE prepared a second report Thinking through Art: A Pilot Project to Restructure the BPS-MFA Fifth Grade Program, November 1997. Despite the short duration of the program, this report documented a trend toward aesthetic growth--changes in students' thinking about and understanding of art--when talking unaided about works of art. VUE researchers also followed up on reports from teachers that skills fostered by the VTS were transferred by students to assignments in other subject areas; non-directive interviews with students using unfamiliar objects from material culture showed a trend toward development in thought. Interestingly, these data corroborated evidence in other studies being conducted by VUE at the time.

The MFA/BPS team was pleased with the enthusiasm that TTA engendered as well as the reports of useful learning. Of particular interest was the evidence of skills transferring across disciplines, reported anecdotally by teachers and concretely documented by the research data. These findings carried obvious significance for discussions of the usefulness of art in schools and also indicated the effectiveness of the VTS as a stimulant for cognitive growth--the goal of the new city and state standards. The logical next step was to see if a method could be created to allow teachers to document the learning they reported. The remainder of this report discusses the study made by VUE of a pilot assessment method and assessment training.

² The need for teachers to possess skills to support the learning of critical thinking is addressed by Mark Smylie and Jean Conyers in their article "Changing Conceptions of Teaching Influence the Future of Staff Development" (Journal of Staff Development, 12(1), 1991, 12-16). They argue that the current rapid and dramatic changes in the learning needs of students will persist and that our understanding of teaching and learning will have to expand in response to these changes. They suggest that these changing conditions "will create unprecedented demands for the development of teachers' knowledge and skills" (page 12) and recommend several changes to teacher development, including:

- Considering teachers' knowledge and experience as assets
- Using carefully-designed case studies instead of external assessment tools
- Allowing practicing teachers to focus more on analytical and reflective learning
- Encouraging teachers to learn together instead of separately

Assessment Method and Training

Project Description and Goals

In the 1997-98 academic year, the MFA/BPS team recruited additional teachers and GIs to implement TTA, a task made simpler by the positive word of mouth regarding the program's first year. New teachers and GIs were trained by BMFA and VUE staff working together. Some of the first group of TTA teachers taught in schools which "looped" fourth and fifth grades--the teacher remaining with a class for two years. In these instances, the program began to operate at both grade levels (see Appendix B for overall program groups and participant numbers). New sets of images were developed to accommodate this.

In addition, the first year's teachers were invited to return for a "refresher" session. These VTS veterans were asked to participate in the new assessment program designed by VUE. The purpose of the program was to test a method by which teachers could substantiate and reflect on the student growth that they felt could be attributed to the VTS, and to see what kind of assistance was required to enable teachers to use the method.

As explained to the teachers, the goals of this pilot assessment effort were:

- To provide the opportunity for TTA teachers to work as action researchers with the VUE staff supporting and encouraging reflective pedagogy;
- To increase teacher awareness of student learning gained through TTA, allowing teachers themselves to discern if and how the program encourages growth;
- To train teachers in an assessment method that allows them to document and analyze creative and critical thinking and communication skills developed in the TTA program, and to determine if the transfer of TTA skills can be reliably detected in other areas;
- To provide a framework to increase understanding of how the TTA program relates to new BPS standards.

Project Design and Implementation

Because VUE researchers have been working on an assessment design for a number of years, they had several concerns. Knowing that teachers' time is limited and precious, training had to be efficient and respectful of time constraints. The assessment design had to relate to what the program taught, measuring learning behaviors that were intrinsic to the TTA. It also had to feel natural to teachers, layering any new components on existing strengths and interests. Finally, it had to fit within other ongoing agendas.

With all of this in mind, the VUE design modeled a process for teachers, instead of giving them explicit instructions. It utilized peer group interaction to recall

and reflect on the learning that teachers had observed the preceding year and that they thought was the result of the TTA. Working together teachers found how they could look for those behaviors in classes--via videotapes--and how they transferred to another area of study--via writing samples. They were encouraged to think openly and be prepared for surprises.

Six teachers, paid a modest honorarium, agreed to participate in this pilot assessment training. They represented the following schools: Eliot, Holland, Jackson Mann, Mattahunt, Channing, and Bates. They were asked to submit educational autobiographies of their training, teaching experience and the methods they used, in order to contextualize and give weight to their framework for assessing their students. Their teaching background experiences were diverse, ranging from five years of working with "advanced work" students to forty years of teaching "problem kids."

Each teacher was instructed to select three students for observation, based on students' class placement--one each from the high, middle and low range of abilities represented in their classrooms. The selection represented various aptitudes from learning disabled to gifted. Teachers also described the students as representing different classroom mixes and varied cultural experiences.

All teachers agreed to continue teaching their TTA classes, as outlined in the lesson plans. To provide research data, teachers were asked to collect several writing samples from each of their three students before the program began, in the midst of it, and at its conclusion. In addition, they were asked to videotape two or three of their TTA lessons--capturing at least one at the beginning and one at the end.

Teachers attended three training sessions throughout the academic year. During these, teachers spent time doing exercises that helped them discern specific learning behaviors. They examined and discussed writing samples and videotapes, focusing on the stability or variability of skills identified in specific students. They were asked to generate a written report to be turned in at the conclusion of the year. Details of the agendas for the sessions appear below.

The timeline for the assessment project follows:

September 17, 1997	General meeting for returning VTS teachers
October 2, 1997	Meeting 1: project presentation
November 13, 1997	Meeting 2: examining writing samples
January 22, 1998	Meeting 3: examining videotapes
February 25, 1998	Submission of teachers' reports to VUE

Meeting 1: Presentation of assessment project

At the first meeting, VUE researcher Abigail Housen, and head of school programs in the MFA Division of Education and Public Programs, Margaret Burchenal, described project tasks and deadlines. Tasks to be completed by the teachers with the support of VUE and MFA staff included:

1. Videotaping the VTS Lessons 1, 3, 5 (for logistical reasons lessons 1 and 5 only were taped in most classes);
2. Collecting student writing samples before, during and after the set of lessons, the first group of which was to be brought to the second meeting;
3. Writing reports based on reviewing the writing assignments and videotapes, noting their observations of the changes occurring in their students as a result of the program;
4. Writing their educational autobiographies.

During this meeting teachers reflected on the previous year's program. Their open-ended discussion moved freely among a variety of issues, ranging from the mechanics of the TTA practice to the responses of students--and of their own responses.

In terms of the overall pedagogy, teachers recalled a number of advantages. One teacher called the TTA practice a whole new approach that enables students' natural knowledge to emerge. Another noted that the non-evaluative question and response structure of the VTS allows students a sense of freedom to discover answers. Others mentioned that teacher validation of student responses encourages the taking of risks and willingness to go beyond the surface to seek multiple layers of meaning in works of art.

In speaking more specifically, teachers commented on the improvement in student communication and observation skills, as well as the ability to speculate. Students began to enrich their observations with details and provide visual evidence to support their points of view. Many teachers were surprised at how well their students began to listen to one another as all students participated more in the discussions. Teachers felt students were learning from one another, referring to each other's comments, and noting agreement or disagreement with preceding remarks.

Teachers also cited examples of skills transferring to other subjects. For example, when discussing stories that they read, students used observations picked up from the texts as evidence to back up opinions. They did the same thing in writing assignments. As result of applying the TTA method to illustrations in a book, one student --normally "not a reader"--surprised his teacher by wanting to take home a reading book. One teacher felt the TTA provided a chance for students she referred to as "non-factually-oriented" to practice capacities for reasoning and logic, and she said that it improved their performance on open-ended questions on tests.

The teachers found the curriculum met students' and teachers' needs. They felt the training was thorough and practical, offering continuing support throughout the process. They felt they learned from the iterative process of participating in peer group discussions, practicing the method, and then reflecting on their practice. One teacher mentioned how relaxed she felt teaching the lessons, how much fun it was, and how warm the classroom felt. The TTA also provided a "user-friendly" approach to the BMFA, motivating the desire for repeat visits.

Meeting 2: Using writing samples

This meeting began by teachers discussing a list of observed learning behaviors consolidated by Housen from notes taken at the previous meeting. Housen modeled the method of a field researcher. As she explained, she had listened carefully to what the teachers said and took careful notes. Later she culled from the notes a complete set of issues and ideas mentioned. She now asked the teachers to reflect on that list, as preparation for going back into the field (their classrooms) to test it against “reality”--at which point the process of begins again. The following list summarizes the insights--”criteria for gain”, as Housen called them--heard at the first meeting, in the random manner in which they came up. Students were:

- improving communication skills
- learning from each other
- talking more
- listening more
- learning to agree and disagree without rancor
- observing more details
- using details to back up opinions
- finding layers of meaning
- remembering
- recognizing
- speculating
- hypothesizing
- learning to take risks
- thinking independently
- developing greater self-esteem

Teachers were asked to reflect on this list to see if it coincided with their recollections of what happens as result of TTA classes. Finding the list to be satisfactory, they next compared this list to the TTA goals found in their lesson plans. (See Appendix C for complete goals of lessons.) The teachers were also excited to note the coincidence between the behaviors they observed and these goals.

After these exercises, teachers examined the first, pre-TTA writing samples from their three students, in view of the listed “criteria for gain.” From these early examples of writing, teachers noted a number of the behaviors that were missing. For example, students omitted supportive evidence that might substantiate a point, and did not provide observations that would strengthen a description. Housen recommended that they not only keep this list in mind as the proceeded to observe their students, but also to watch for additional behaviors that they might have overlooked.

Meeting 3: Using videotapes

With the guidance of VUE research associate, Karin DeSantis, teachers examined videotapes of TTA lessons to become acquainted with ethnographic video observation procedures used to analyze classroom discussions. As teachers watched segments of TTA lessons, they noted and discussed the kinds of thinking and communication skills exhibited by individual students and by the group as a whole, again referring to the list of learning behaviors fostered by TTA. Interestingly, teachers noted that, as the program progressed, students began to explain their opinions without needing a prompt. They also pointed out that students began to refer to previously stated ideas by articulating concurrence or disagreement, mirroring the strategy modeled by teachers.

Teacher Findings

Building on the exercises undertaken during their training sessions, teachers analyzed the remaining writing samples and videotapes. As mentioned earlier, teachers were encouraged to look beyond their original criteria for gain as they examined their written and taped data. Their reports reflected that the list continued to cover the bulk of what they saw, although you will see that a new category was added.

The following discussion draws from the reports of five of the six participating teachers. One report was not submitted for personal reasons of the teacher.

Increase in Thinking Skills

As predicted, teachers noted an increase in students' abilities to observe details, to draw conclusions from their observations, and to support these with evidence. In addition, they observed that students who began by writing lists of what they saw in the pictures increasingly created stories from them. The emergence of the ability to construct a narrative out of the elements in an image is an example of a behavior teachers had not noted earlier, and which therefore expanded the original criteria for gain.

The following analysis by a teacher of "advanced work, culturally diverse" students compares two writing samples by "one of [her] lower-middle writers." She wrote:

In B's October piece he gives seven terse sentences in which he states exactly what he sees but adds no critical thinking to his factual observations although he is a very bright boy.

I see Paul Revere pointing at a man. The man has a gun in his hand. I see the Old North Church with it's big, big belfry. I see a cobble-stoned road that Paul Revere is riding on. I see a big bucking horse bucking Paul Revere off of him. I see a nice brick house that belongs to the man with a gun in his hand. And that's what I see in the picture.

In January, B is obviously doing more critical thinking as evidenced in his paragraph on the "Fog Warning."

I think a man was fishing and he's coming home. I noticed he was fishing because he has two big fish on the back of his boat. I think he is going home because he looks sleepy. I see his anchor hanging out of the boat. I see a barrel that he probably fished out of the water. The reason I think the barrel is from the water is because I can see water on it. In the background I see a sailboat and he is on a rowboat. The fisherman looks poor because his clothes look old. I see fog in the [background] so [that's] probably why he's going home. And that's what I see in the picture.

It would seem that participating with his classmates in discussing the "Fog Warning" twice really helped B apply some critical thinking skills to his writing. The idea of writing is daunting for many children, but they begin to gain

confidence when they sit down to the task with a head full of ideas. [Using details from his source to support his ideas, B should be] able to do a similar analysis of a work of art or literature.

In the above excerpt, the teacher underlined the words “because” and “probably” indicating that she understands critical thinking to include providing supporting evidence and speculating--learning behaviors she attributes to the TTA discussions.

A teacher of a class of fourth graders from an economically-disadvantaged area of Boston reflected on one of her student’s increased capacity to observe details and to find layers of meaning in an image. In her report, she writes:

A is a talented writer but frequently she cannot support the ideas or answers she gives to key questions. Her first artistic response was to “Watson and the Shark.” She did a nice job of writing and she certainly deserved an A- for her efforts. She was able to concoct a plausible story, but her observations were very basic and she did not display a really intellectual depth or understanding of the piece.

In the picture some people were taking a boat ride and one of the passengers fell off the boat. Then a shark tried to eat him. One of the passengers saw the shark so he tried to kill it. Then the shark tried to bite the man who fell off, but the only thing it bit was his clothes. Everyone tried to pull Watson up but the waves just kept pushing him back down. Then one of the other passengers almost fell off so everyone was trying to pull two people up at the same time. So more sharks kept coming. Then they pulled him out of the water.

After lesson five, A chose to respond to “We Regret to Inform You.” This time A created a whole scenario that reflected the emotional trauma the woman was suffering. I felt the student was finally using the picture as a springboard for her thoughts. This was a much richer piece that had a better eye for detail.

In the picture a lady was waiting for her mail. So finally her mail came and she got a letter. Then she opened it and read it. After she finished reading the letter she began to cry for some reason. The letter had probably said that one of her close family members had passed away and she was very sad. Then finally she sat down and wiped her face off with a towel.

The woman put her night cap on and turned on the radio to get her mind off the sad letter. Then she lifted up the shade in her kitchen and finished crying. She couldn't get her mind off that sad letter.

Increase in Communication Skills

The videotaped classroom discussions contributed to the available information by providing records of students' speaking abilities and their interactions with one another. Upon examining these tapes, teachers reported an increase in their students' overall participation in the discussions. They also noted an improvement in students' ability to listen to each other, to articulate agreement or disagreement with comments of fellow classmates, and to accept each other's opinions.

One fourth grade teacher described her students as being from economically disadvantaged families. They present, she said, "a challenge to any teacher." She reported that "From day one the class seemed especially happy that their opinions were valued. As ordinary social manners (such as listening to a speaker and then raising your hand to respond) were not practiced by this class, listening was the first hurdle to be faced..." She also commented that "By the fifth set of slides the children were eager to demonstrate their abilities, especially with regard to furnishing reasons for the statements they made."

An advanced-work fourth grade classroom teacher wrote:

There was about a month's time between the fourth and fifth sessions. The children did not seem to pick up automatically the 'agree' and 'disagree' language [noted in the previous lesson] while discussing the first slide. J makes some remarks about the letter being from the woman's husband informing her that he had run off with another woman to Las Vegas which was why she was so sad. This caused a little tittering, but the next child just picked up the thread of the girl who had spoken before J and expanded it. No one went back to J's remarks since they didn't seem to fit the picture. R, who spoke after J, actually began her statement by saying "I agree with S," the child who had spoken before J. It was as if J had never spoken. L states that she agrees with S and R but also agrees with C. She backs up both positions with further evidence of her own. In the final slide B gives his ideas and at the end included something someone else had said and acknowledged that by saying, "like T said."

In the conclusion to her report the teacher writes that "The VTS curriculum was stimulating for both children and me. It really fostered class discussions and raised them to a higher level through the use of polite language such as "I agree with..." or "I disagree with..." modeled repeatedly by the teacher. It also fostered the development of oral language which is a natural predecessor of written language."

Another teacher writes of her class--one of the most challenging groups of students she had encountered in almost forty years of teaching:

As I look back on the sessions, these kids really did come a long way. It really gave them something to think about in a way they never really did before... At the beginning of the school year, the kids told me they had never had discussion time before. We had to set ground rules and it was weeks before I could get them to talk one at a time and listen to what other people were saying. Having an art work to focus on helped them to begin to pull their thoughts together and be able

to speak. Something, I'm not sure what, about the [TTA] session helped them begin to listen seriously to their fellow students' ideas. But once they started really getting the idea, students who were either too hyper to be attentive or too shy to speak out really began to get into the discussions with really in-depth ideas.

Observations on the Museum Visit

While it was not assigned as a specific task of the assessment, teachers referred to the museum visit in their reports, as these visits further confirmed their classroom observations. One teacher wrote that "Giant strides could easily be noted during the museum visit--especially because of the clarity of what they were seeing. I have no way of darkening my classroom, hence seeing the slides on a bright day was difficult. The class was especially cognizant of the fact that all art does not consist of paintings. They were awed by the grandiosity of the Egyptian statues."

Another teacher describes her fifth grade class as the most difficult she had ever encountered. "There are some kids in this class that, even with the toughest teachers, did whatever they felt like doing..." she wrote. "There is so much anger and pain and acting out that it's like living on the edge of a volcano." She reports on her museum visit as follows:

For my group, the MFA visit was really their 5th session. There were delays with [the videographer] so that he taped our fifth slide set the day after our Museum visit on January 22nd. But there are things that happened during and after that visit that are very significant!

This was the first time I ever had an opportunity to observe the class in small group settings. It was also the first time I had realized totally the injustice that had been done to this class by putting such a large number (28) of disturbed, angry, and learning disabled kids in one class, with one teacher and no assistance.

We divided into two groups of 10 & 11 students respectively. Six or seven kids had to be left behind because we had absolutely not one chaperone from among the parents or school personnel. In these small groups we heard from kids who never volunteer in class. Kids who had behavior problems became model citizens. One of the ADHD [attention-deficit hyperactivity disorder] kids was so transfixed with two of the paintings that he was there for 5 minutes taking in every detail. He commented on every work of art with profound depth and understanding. He even took time to write down what he had seen. He really needs more of this type of activity.

Changes in Teacher Practice in Other Subjects

Teachers reported that it was not only the students who transferred strategies learned in TTA classes, but also they adapted the TTA question and response methods to teaching other subjects. One teacher employed the TTA method when students encountered illustrations in their reader. Another went further; she writes:

All fifth grade classes in Boston have to read Mildred Taylor's *Mississippi Bridge*. It is an historical fiction novella set in the south in the 1930s. It clearly portrays what the social structure of the time was like. It raised a lot of issues so I decided to do another one of her novellas. Using the opaque projector, I displayed some of the illustrations from the beginning of the book; I did not inform the children that the pictures were from a "chapter book." We discussed them just as if they were slides from the [TTA] curriculum. After a few minutes of discussion, one of the youngsters stated that the children on the ground reminded him of the children in *Mississippi Bridge*. I did not confirm or deny his projection. The discussion built up a lot of curiosity and many of the children continued on the track that these were the same characters from *Mississippi Bridge*. I had the children write about what they thought was going on in one of the pictures and then I introduced the new novella. Never were youngsters so anxious to begin reading a book. They wanted to see how close their projections were to what was in the book. Later, I Xeroxed some of the illustrations in the latter part of the book before we came to them and had the children write about what they thought would happen next in the story.

Another teacher showed her fifth grade students one of their own videotaped lessons and the class discussed the tape. She includes some of the students' comments on this viewing in the report to illustrate the profound effect it had on them: "...because, of course, no one had videotaped them before and it was quite an experience for them to see the whole class mirrored before their eyes... It was some sort of turning point for the whole class." One of her students commented, "You didn't realize how much was going on in the classroom until you saw the tape and saw all these different people turning around talking to each other."

Relationship of Thinking Through Art to the New Boston Public School Standards

According to the Massachusetts Department of Education website, the state standards for defining, analyzing and solving problems are to:

- Make careful observations and ask pertinent questions.
- Seek, select, organize and present information from a variety of sources.
- Analyze, interpret and evaluate information.
- Make reasoned inferences and construct logical arguments.
- Develop, test and evaluate possible solutions.
- Develop and present conclusions through speaking, writing, artistic and other means of expression.

Teachers note that the TTA program inherently supports the kind of thinking required for “defining, analyzing, and solving problems.” Students are taught a series of questions that help them organize their approach to any unfamiliar material. They are asked to make many observations, and to continue the observation process beyond the obvious. As they collect visual information, they are forced to recall and apply what they know in order to identify what they see. Open-ended group process encourages multiple interpretations, as students reason and speculate about what different sorts of conclusions might be drawn from their observations. They are asked to supply logical support--visual evidence--for their interpretations. They use discussion to test and expand hypotheses. Throughout the process--with most students participating which is not often the case with classroom discussions--students articulate their views, practicing their oral language skills. Later teachers often assign opportunities for writing about their discoveries to enrich that practice.

In their reports and discussions, the teachers frequently point out the similarities between the learning outcomes of the TTA program and the new state/city standards. As one teacher summarizes, “The emphasis on critical thinking skills connect[s] readily with our new curriculum standards.” Another explains more specifically, “The new statewide standards, and Boston’s standards in particular, require responses to key questions. Key questions differ from factual questions in that the child must answer a key question with a hypothesis. The hypothesis is usually stated in the first sentence and the following sentences are proofs for the hypothesis. Obviously, the [TTA] method and Boston’s writing standard [have] similar goals.”

Conclusion

TTA was initiated jointly by the MFA and the BPS in order to offer an experience that allowed students to grow in their viewing skills, develop lasting rapport with art objects, and come to see the museum as a useful and interesting place. They also wanted to create a new program for teachers, one that would nurture professional growth, increasing their capacities to integrate art in ways that were broadly meaningful. The MFA/BPS staffs decided to undertake TTA specifically because they hoped it could accomplish both.

TTA is a bold endeavor, in part because it demands, as Margaret Burchenal of the MFA has written, a “paradigm shift. Instead of teaching *about* works of art, which requires that teachers have a set of facts they want students to learn, the [TTA] approach gives teachers the skills to teach *from* objects. Teacher and student change roles dramatically, so that the observations and ideas are coming from the students while the teacher listens carefully and facilitates the discussion.”³ Educational reform efforts and museum programs in many places articulate similar intentions. The challenge is making a program that works, where the sought-after goals are reached. Could and would teachers effectively teach the TTA? Would students learn from it? And in both cases, how would you know?

³Burchenal, M. K. (1998). Thinking Through Art. *Journal of Museum Education*, 23(2), 13-15.

The first year of the program, reported in earlier documents, provided convincing data of student learning. The instruments used to measure this are listed in Appendix C. It also engendered much teacher enthusiasm which could be observed and heard in classes, meetings, and journal entries. Teachers were excited partly because they could see the effects of TTA classes on students as they did other work. At that point, other serious questions arose: could teachers document what they reported anecdotally? Furthermore, could they measure changes they thought were going on?

The above summary of Teacher Findings indicates that teachers can identify significant learning behaviors and point out change. In its concern to prove this, VUE researchers examined the teachers reports carefully. VUE staff viewed reference to two or more behaviors listed in the “criteria for gain” as illustrating two things: both evidence of gain on the part of the students and evidence of the teachers’ ability to measure that gain.

The following excerpt from a teacher report provides a thoughtful listing of the range of behaviors she observed:

I think getting the children to discuss their ideas politely by leading them to state that they agree and disagree with each other is a skill painlessly developed through the VTS curriculum and a very important skill. The standards require students to express their ideas clearly and logically and the VTS curriculum supports this nicely. The VTS curriculum also provides a method of showing the children how important it is for them to support their opinions with evidence from the source they are studying. The children transfer first from orally expressing their ideas about their pictures to expressing their ideas in writing. In both instances, of course, they back up their ideas with evidence from the pictures. Next, they use the technique on written passages for defining, analyzing and solving complex problems.

The VUE researchers noted that there are five “criteria for gain” listed here (the capacity to express disagreement “politely;” ability to express ideas clearly; use of logic; providing evidence to back up opinions; and the transfer of these capacities to writing), a considerably longer list than VUE set as a minimum. It also shows an understanding that it was her use of the curriculum that promoted this learning.

While it is satisfying to all concerned with TTA that this teacher seems to credit the curriculum with eliciting growth, what is more important is that she is connecting a particular strategy--one that involves teaching in ways that are new to her--with significant learning. She is conscious of the cause and effect relationship; she facilitated and the kids learned in direct relationship to each other. Perhaps this should be obvious, but it does not seem to be. When kids fail--as so many do--we seldom conclude that part of the problem is how and what we teach.

In their reports the teachers also raised concerns about the program that do not appear in the citations we have included. One of the most important of these is

that they make it clear that the mastery of new teaching methods and a new method of evaluation takes time. They were also clear that a program of the short duration of TTA has its limits. Most of the teachers realized that although changes in student writing and discussions were discernible, a three-month period is probably too short to effect permanently the changes they believe are possible.

On a more practical note, a continuing problem is the difficulty of viewing slides in classrooms which cannot be darkened. The unavailability of projection equipment in schools remains a challenge to many. In addition, several teachers had difficulty videotaping their classes, because of lack of equipment and the need for someone to handle the camera--as well as related scheduling problems. This pilot proved to teachers the potency of video as a tool for understanding process, which is indeed the awareness teachers need if they are to improve practices. Since they found the tapes useful, even in ways the TTA staff did not imagine, it should be simple for teachers to record, routinely, what is going on in their classes.

The VUE staff has other recommendations that it feels might be useful for TTA organizers to consider: first is the fact that one teacher failed to turn in her report. Although the cause is not known, it does not appear to be a case of inability to perform the tasks required, or even a lack of interest--both because of her earlier participation and because of the nature of the other teachers' reports. Time is more likely the issue, and if that is the case, a red flag should go up. Demands on teachers' schedules at this point are so severe that many feel incapable of adding to their work loads, and therefore are discouraged from engaging in new activities even if they prove advantageous. Those interested in seeing change occur must address the issue of overload. For change to occur, time must be allocated for professional development and there must be both time and flexibility in teachers' schedules and workload.

Second, there is indication that teachers appreciate and benefit from time spent discussing educational issues, and these included exploring solutions to ongoing and new educational challenges. The debriefings that are part of the initial TTA training continue to be acknowledged as helpful by teachers, and the training sessions that were part of the second year's assessment pilot proved to be productive, especially from the standpoint of sharing ideas and knowledge. It is difficult to manage such discussions if teachers have to travel some distance at the end of already-long and demanding school days, but regular, scheduled peer discussions among teachers on pertinent topics either within schools or among nearby schools might be a way to use this invaluable tool.

Third, some means must be found to upgrade and expand the equipment available in schools and to provide technical assistance in using and maintaining it. Similarly, viewing circumstances need to be improved, making it possible to darken classroom as necessary. Obviously computers are a part of this, as well as internet connections. Projectors of various sorts should also be routinely available and convenient, though in the not-so-long run, it is going to be more useful to have multimedia projection equipment allowing for group viewing of

material available on CD-ROMs and the internet. Curricula like the TTA will ultimately be available by computer allowing for many extensions of the program as well as for the tailoring of images to the interests of students in particular classrooms. The availability of technical staff--even if it is trained students--could make it possible to tape interactions between students and teachers. These could then be used in many ways to study teaching and learning.

Finally, some clearer and more specific definition of terms such “critical and creative thinking” are needed in order to assist all involved--teachers, parents, students--with teaching and assessing these essential but as of now inexact skills. A particularly important aspect of this focuses on developmental capabilities: what thinking skills are possible at particular ages and stages? The educational community has to define, describe, and sequence the skills we hope to help inculcate. The teachers who worked as part of the pilot assessment project are ready to make changes in their classrooms, but they need help in understanding what they are to do differently, and why. And when prioritizing some thing new, they need help and support in deciding what gets displaced as result.

From the standpoint of the training design, VUE recommends one change to itself: upon presenting the “criteria for gain,” we think it would be instructive to ask teachers to reflect on them in order to sort out 1) learning behaviors which were observable because of concrete actions (“observing more details,” “talking more,” “using details to back up opinions” etc.) from 2) implied growth for which behavioral evidence is needed to “prove” the assessment. “Improving communication skills” or “developing greater self esteem,” are examples of this; in the future, teachers should be asked what concrete actions they see that makes them aware that this inferred growth is occurring.

The pilot assessment project indicated that teachers can identify and assess complex learning behaviors, and this is relevant not only to the needs of the Boston Museum of Fine Arts and the Boston Public Schools but also to a larger audience of educators nationwide. The 1990s have witnessed increased interest in creating educational experiences for students that foster the development of thinking and communication skills in order to meet the demands of contemporary society. This puts a burden on teachers to identify the skills central to such goals, as well as to develop approaches to teaching that support them. TTA represents a kind of teaching that is becoming increasingly pertinent in education today because of how it seems to assist students to think and communicate better. Because of the assessment method we have tested this year, we have evidence that a student-centered approach to measurement, which builds on teachers’ classroom experiences and capacity to observe, can lead them to successful monitoring of this growth.

Appendix A

Central to the *Thinking through Art* program is an evaluation using methods developed by VUE researchers. Evaluation components consist of:

Aesthetic Development Interviews

Housen's main instrument is a non-directive interview--the Aesthetic Development Interview (ADI)--that involves showing subjects a reproduction of a work of art and asking them to talk about it as though thinking out loud. This interview is tape-recorded, transcribed, and parsed. A sampling of thought units is coded using a manual covering thirteen different domains of thinking that was derived over a fifteen-year period using the same interview protocol. Housen further studies each interview in context to understand how each thought unit fits into an over-all pattern of thinking.

Material Object Interviews

Originated from the ADI, the Material Object Interview (MOI) utilizes a material object such as a coin, a fossil, or a map in place of a work of art to elicit thoughts. As with the ADI, this non-directive interview follows the same procedures of collecting, coding, and analysis.

Questionnaires

Questionnaires are used to collect demographic information (e.g. age, economic background, education) for statistical calculations and comparisons. Questions which probe the participant's art and museum experience are also asked. These art exposure questions serve as a check to determine whether any stage change is due to participation in the program or to other factors.

Writing samples

Because of consistent teacher reports that the students write more and better as a result of their VTS discussions, writing assignments are collected to empirically assess the differences that teachers point out anecdotally.

Videotaping

VTS lessons and teacher training sessions are also recorded on videotape. This data regarding behavior within groups is used to analyze the dynamics of group learning processes as well as providing further insight into the learning of individuals. This material also is useful to provide concrete examples of particular phenomena and behaviors which illustrate statistical and clinical data.

Appendix B

1996-99 Thinking Through Art Program Groups and Numbers

	Teachers	Students	Gallery Instructors
1996-97	29	576	9
1997-98	35	570	16
1998-99	15	300 (projected)	10
Total	79	1446	35

Appendix C

The *Visual Thinking Strategies Starter Lessons*, which are the basis for the TTA teaching program, lists the following goals:

- Students will look at art from different times and places;
- They will begin to understand that many art objects tell stories and to trust that they can interpret these stories;
- They will initiate personal relationships to art;
- They will develop communication skills and hear various points of view through group discussion;
- They will develop fundamental thinking skills by answering the structured questions;
- Teachers will learn how to facilitate this learning at the same time as expanding their own aesthetic experience.

The VTS, of which the Starter Lessons are a shortened form, has been field tested in Byron, Minnesota; Minneapolis, Minnesota; Urbana, Illinois; San Antonio, Texas; and Boston, Massachusetts; also in St. Petersburg, Russia; Almaty, Kazakhstan; Tallinn, Estonia; Vilnius, Lithuania; Skopje, Macedonia; Bishkek, Kyrgyzstan; and Kiev, Ukraine. The curriculum practiced at each site adheres to the methodology of the VTS, but is modified to suit particular schools and communities. Images from local museums are incorporated into the curriculum to add local cultural content.