Arts Assessment for Learning: Practice and Research

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Maria Palma, NYC DOE Office of Arts and Special Projects
Agenda

• Who we are
• What we do: Formative assessment in the arts
• Why we do it
• What it looks like
• How we know it works
Who We Are

• Heidi Andrade, UAlbany—SUNY
• Angela Fremont, PS 69 Vincent D. Grippo School
• Maria Palma, NYC DOE Office of Arts & Special Projects
• Joanna Hefferen, ArtsConnection
• Funders
  – Arts Education Development and Dissemination
  – Investing in Innovation (i3)
  – Professional Development for Arts Educators
• Metis Associates
What We Do

• The Arts Assessment for Learning work provides professional development to hundreds of music, dance, theater, and visual arts teachers in New York City.

• Purposes include
  – promoting students’ achievement in the arts
  – helping arts educators assess their students’ learning based on local and national standards
  – sharing effective formative assessment practices with others

• The professional development includes workshops about formative assessment, participation in professional learning communities, and action research.
Why We Do Formative Assessment in the Arts

• Formative assessment is associated with achievement in core subjects (Bennett, 2011) but little had been done in the arts

• Formative assessment processes mirror the artistic process

• Success criteria are key components of formative assessment (Hattie & Timperley, 2007; Sadler, 1989)

• Students can be useful sources of feedback via peer and self-assessment, under the right conditions (Andrade, 2010; Topping, 2013)
WHAT IT LOOKS LIKE
Arts teachers are assessing learning, transforming practice, and promoting achievement in **visual arts, dance, theater, and music.**
What It Looks Like

• Angela Fremont’s art studio in her elementary school
Kindergarten
The criterion is pattern
Bilingual Kindergarten
Creating and using visual criteria from primary sources
Kindergarten Visual criteria, self-assessing
1st grade visual rubric for self portraits
3rd grade giving, receiving and using peer feedback with Post Its.
5th grade special needs

Student-created clear criteria in response to the question, “What will we need to think about to build a house with blocks?”

Architects build houses that:

Balance – will not fall

Height -- very tall

Volume—very fat

Opening—windows and doors
5th grade

Peer assessing using a rubric and the Ladder of Feedback protocol
The formative assessment tools: Protocol and rubric

**Expedition Map of the Western Hemisphere**

<table>
<thead>
<tr>
<th>DRAWING 画图：</th>
<th>MAP COMPOSITION 图片的组成 (How the picture fills the paper 照片是如何填满纸张)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Fills the page with big and small organic shapes 明大明小的有机形状填满了页面。</td>
<td>- Fills the page with big and small organic shapes 明大明小的有机形状填满了页面。</td>
</tr>
<tr>
<td>- Fantastic trip lines, I used my imagination with details. 壮观的旅行线路，我用了充满细节的想象。</td>
<td>- Fantastic trip lines, I used my imagination with details. 壮观的旅行线路，我用了充满细节的想象。</td>
</tr>
<tr>
<td>- Some organic shapes in the space but needs more work to fill the space 有一些有机形状，但需要更多的工作来填满空间。</td>
<td>- Some organic shapes in the space but needs more work to fill the space 有一些有机形状，但需要更多的工作来填满空间。</td>
</tr>
<tr>
<td>- Interesting trip lines. My imagination is beginning. 有趣的旅行线路。我的想象力开始启动了。</td>
<td>- Interesting trip lines. My imagination is beginning. 有趣的旅行线路。我的想象力开始启动了。</td>
</tr>
<tr>
<td>- Working on creating big and small organic shapes. Lots of empty space. 工作中创造大而小的有机形状。有很多空白。</td>
<td>- Working on creating big and small organic shapes. Lots of empty space. 工作中创造大而小的有机形状。有很多空白。</td>
</tr>
<tr>
<td>- Trip lines yet. My imagination is asleep. 旅行线路还没有。我的想象力已经睡着了。</td>
<td>- Trip lines yet. My imagination is asleep. 旅行线路还没有。我的想象力已经睡着了。</td>
</tr>
</tbody>
</table>

**WHAT I DID TO IMPROVE MY WORK:**

- I need to try different colors. 我需要尝试不同的颜色。
- I need to mix two colors together. 我需要把两种颜色混合在一起。
- Working on creating big and small organic shapes. 工作中创建大而小的有机形状。
- Trying to use the right brush on the big or small areas. 尽力在大而小的区域使用正确的画笔。
Ivan’s completed map after feedback, including additional painting, labeling, border design, trip lines and imaginative elements
5th grade group project: Day 1
Van Gogh masterwork and photos of a tree and tree bark

Research
Drawing with chalk
Mixing browns
Self- and peer assessment
Day 2

What criteria did the artists use to design and paint their tree?
5th grade Clay
1st rubric, then student revision, then reflection on the revisions.

<table>
<thead>
<tr>
<th>Vessel</th>
<th>Exemplary</th>
<th>Proficient</th>
<th>Developing</th>
<th>Something I learned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>Slab is about one finger thick. Seam on side is scored and slip added. Bottom fits tightly.</td>
<td>Slab may be a bit thicker or thinner but can stand up. Side seam may be dry. Bottom fits but I need to score/slip seam.</td>
<td>Slab is too thin, can't stand on its own. Now I'm working on: Re-roll slab. Side seam score/slip. Bottom score/slip.</td>
<td></td>
</tr>
<tr>
<td>Texture</td>
<td>Covers entire surface with a wide variety of waves, lines, stamp impressions and images, may be creating a pattern, rhythm and movement.</td>
<td>Surface is worked on with tools creating some texture. Now I'm working on more rhythm and movement.</td>
<td>Some holes in the clay from tools. Now I'm working on: creating rhythm and movement with lines, stamp impressions, drawing.</td>
<td></td>
</tr>
<tr>
<td>Attachments</td>
<td>Even thickness of slabs or coils. Even wetness of clay. Excellent use of score/slip.</td>
<td>Slabs and coils may be too dry or too thin or too thick. Score and slip holes attachment in place.</td>
<td>Now I'm working on: making attachments of even wetness and thickness. Score/slip will hold attachment in place.</td>
<td></td>
</tr>
</tbody>
</table>

What I would like to do next time: Improve on my texture and smoothness.

Most challenging, most fun: Most challenging: shaping. Most fun: shaping.
## Revised Clay Rubric

<table>
<thead>
<tr>
<th>Vessel</th>
<th>Exemplary</th>
<th>Proficient</th>
<th>Developing</th>
<th>Something I learned or wonder about</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Construction</strong></td>
<td>Slab is about one finger thick, can stand on its own &lt;br&gt;Seam on side is scored and slip added &lt;br&gt;Bottom fits tightly</td>
<td>Slab may be a bit thicker or thinner but can stand up &lt;br&gt;Side seam may be dry &lt;br&gt;Bottom fits but I need to score/slip seam</td>
<td>Slab is too thin, can't stand on its own &lt;br&gt;Now I’m working on: Re-roll slab &lt;br&gt;Side seam score/slip &lt;br&gt;Bottom score/slip</td>
<td></td>
</tr>
<tr>
<td><strong>Texture</strong></td>
<td>When I turn the vessel, I see the entire surface is covered with a wide variety of waves, lines, stamp impressions and images. May be creating a pattern, rhythm and movement</td>
<td>Surface has areas of waves, lines, stamp impressions and images but when I turn the vessel, I also see empty areas. &lt;br&gt;Now I’m working on: using tools to create texture in the empty areas. May be creating a pattern, rhythm and movement</td>
<td>Surface looks empty. If I touch the surface it feels flat or smooth. I may have holes in the clay from tools. &lt;br&gt;Now I’m working on: using tools to create texture, covering the surface of my vessel. May be creating a pattern, rhythm and movement</td>
<td></td>
</tr>
<tr>
<td><strong>Attachments</strong></td>
<td>The slabs and coils look smooth, evenly thick and wet. &lt;br&gt;The slabs and coils are stuck to the vessel and don't fall off even when I turn it.</td>
<td>The slabs and coils have small dry cracks. The slabs and coils stick at first but fall off as they dry or when I turn my vessel. &lt;br&gt;Now I’m working on: rescoring/more slip on attachments</td>
<td>The slabs and coils have big dry cracks or are rumbling. The slabs and coils are so thin they flop like spaghetti or are so thick they keep falling off. &lt;br&gt;Now I’m working on: making attachments of even wetness and thickness. Score/slip will hold attachment snugly in place</td>
<td></td>
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</tbody>
</table>
How We Know it Works

• An empirical investigation of criteria-referenced formative assessment in the arts (Chen, Lui, Andrade, Valle, & Mir, 2017)

• Arts Achieve, http://www.artsachieve.org
Purposes of the Arts Achieve Study

- To investigate the effects of criteria-referenced formative assessment on students’ achievement in the arts: dance, music, theater, visual arts
- Criteria-referenced formative assessment was operationalized as the use of rubrics or checklists to scaffold peer and/or self-assessment, followed by revision
Background on Arts Achieve

• Goals
  1. Improve student achievement in the arts by implementing balanced arts assessment aligned to standards for high-need students
  2. Translate assessment results into classroom practices
  3. Promote innovation in student/teacher access to content and assessment feedback through technology

• Supported by two federal grants: Arts Education Development and Dissemination, and Investing in Innovation (i3)
Research Questions

• Is there a difference in achievement between students whose teachers engaged them in criteria-referenced formative assessment and those who did not?

• If so, does that difference vary by school level (elementary, middle, or high) and/or arts discipline (dance, music, theater, visual arts)?
Hypothesis

- Criteria-referenced formative assessment would increase students’ achievement in the arts even when controlling for pre-treatment measures and key demographic characteristics.
Participants

Arts Achieve Year One

4066 Students
(77 Schools, 5 Boroughs, 36 Districts)

2830 Students

Treatment
(n=1766)

Control
(n=1064)

Art Forms:
- Dance (22.3%)
- Music (13.3%)
- Theater (26.8%)
- Visual Arts (37.6%)

School Level:
- Elementary (56.7%)
- Middle (23.5%)
- High (19.8%)

Art Forms:
- Dance (25.5%)
- Music (32.3%)
- Theater (18.3%)
- Visual Arts (23.9%)

School Level:
- Elementary (39.6%)
- Middle (35.1%)
- High (25.3%)
## Participant Demographics

<table>
<thead>
<tr>
<th>Category</th>
<th>Control (n=1766)</th>
<th>Treatment (n=1064)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>English Language Learner (ELL)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELL</td>
<td>217 (12.3%)</td>
<td>166 (15.6%)</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minority</td>
<td>1476 (83.6%)</td>
<td>874 (82.1%)</td>
</tr>
<tr>
<td>White</td>
<td>289 (16.4%)</td>
<td>190 (17.9%)</td>
</tr>
<tr>
<td><strong>Free or Reduced Lunch (FRL)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRL</td>
<td>994 (56.3%)</td>
<td>689 (64.8%)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>744 (42.1%)</td>
<td>455 (42.8%)</td>
</tr>
<tr>
<td>Female</td>
<td>1022 (57.9%)</td>
<td>609 (57.2%)</td>
</tr>
<tr>
<td><strong>Special Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Ed</td>
<td>87 (4.9%)</td>
<td>61 (5.7%)</td>
</tr>
</tbody>
</table>
Instruments

- Benchmark Arts Assessment (pre & post)
  - Standardized assessment
  - Dance, music, theater, visual arts
  - Authentic, performance-based tasks
  - Aligned with:
    - NYCDOE Blueprints for Teaching and Learning in the Arts
    - Common Core State Standards in English Language Arts
Instruments

• Implementation Logs
  – Regular teacher documentation of use of formative assessment
  – Fidelity of implementation variable (0, 1, 2)
    • Rubrics, checklists, or other tools to share criteria with students
    • Peer and/or self-assessment to judge and generate feedback about quality of work
    • Opportunities for revision during which students could deepen learning and improve quality of work
Procedures

- Arts Achieve Year 1 (2011-2012)
- Pre-post randomized block design
  - Treatment—PD and technical assistance emphasizing FA practices
  - Control—Business-as-usual Instruction
Procedures

- Arts Achieve
- Missing Data

- Data imputation using MICE package in R
- Archival demographic variables
- Data was not imputed for cases with missing outcome variable
Procedures

**Arts Achieve**

**Missing Data**

**PSA Matching**

**PSA: PHASE 1**
- Estimating propensity scores using logistic regression modeling

**PSA: PHASE 2**
- One-on-one matching by propensity score with partial exact matching by school level & discipline
- Balance check
Procedures

- Arts Achieve
- Missing Data
- PSA Matching

• Comparisons between control and treatment performance on the 2012 post-assessment.
Limitations

- Validity evidence for instruments
- Sample sizes at the level of discipline/school
- Some systematic missingness
Results

- Statistically significant average treatment effect (ATT), favoring students in treatment group
  - small effect size, $d=0.24$
- Positive effects of treatment on student performance at all three school levels and all four disciplines
- Different impacts of treatment within school levels and disciplines
Discussion & Conclusions

• Our experimental design study showed that criteria-referenced feedback in the form of feedback from teachers, peers, and students themselves increased achievement on standardized, performance-based evaluations.

• Ten years of anecdotal evidence also suggests that formative assessment promotes student self-direction, in part because it is engaging and fun.

• Teachers also applied formative assessment strategies to their own work through self- and peer-feedback in the PLCs.
Bibliography


http://artsassessmentforlearning.org/
http://www.artsachieve.org/