That’s Beautiful!
Aesthetics and Science Education

Yore Kedem
Assistant Professor of Hebrew
Dept. of Linguistics & Germanic, Slavic, Asian and African Languages
Michigan State University
What For?

What are the goals of science education?

How do students grow?

What is experiential learning, and what is its role in science education?

What can we learn from aesthetics to teaching and learning design in science education?
Things Every Student Should Know

Standards of knowledge
Skills
Measurement and Evaluation
Conservative Teaching

Knowledge exists
Possessed by the teacher
Transferred to students
Measurement of knowledge / understanding / skills
The things of the spirit do not lend themselves easily to that kind of external inspection which goes by the name of examination. They do not lend themselves easily to exact quantitative measurement. Technical proficiency, acquisition of skill and information, present much less difficulty” (Dewey, 1901, p. 271).
Creative Teaching

What do teachers create?

Can we teach teachers to be creative?
Aesthetic Experience

**Beethoven Symphony no. 7 2\textsuperscript{nd} movement**

Performed by Vienna Philharmonic, conducted by Leonard Bernstein (1978)

What happened here?

- Temporal and complete
- Unified by emotion and reaches culmination
- Immersive
- Can be understood only upon reflection
Understanding an Experience

Reflection
- What happened?
- How did I feel?
- Why does it feel important?

Perspective
- An experience changes the understanding of prior experiences
- Used to understand future experiences
- Can bring deep conceptual change
- Nuanced conceptual change
Conservation and Creativity in Music Performance

Conservative Interpretation
  Truth originates from the composer
  Traditions
  Knowledge and skills

Creative Interpretation
  Understanding text itself
  Understanding text through performance
  Creating experiences
Erlebniskunst (the Art of Experience) (Gadamer, 1988)

Erlebniskunst obviously meant originally that art comes from experience and is an expression of experience. But in a derived sense the concept of Erlebniskunst is then used for art that is intended for the aesthetic experience. Both are obviously connected. The significance of that, the being of which is to be the expression of an experience, cannot be grasped except through an experience (p. 63).
Research in Music Studios
Pacifica Quartet

Conservation
  Sibbi’s Violin Studio

Creativity
  Masumi’s Viola Studio

Collaborative Experiences
  Brandon’s Cello Studio
Study Abroad in Israel

Inquiry-based courses
Creating connections between readings and students’ experiences
Structured written and in-class reflections
Courses designed as an arch uniting experiences
Change and Growth

For Students
  Significant understanding of central course topics
  Dealing with emotion and conflict
  Deeper understanding of course topics in personal, local, and global perspectives

For Me
  Continuous growth in understanding course topics
  Understanding grows through interactions with students
  Strengthening of educational identity
Teachers as Crafts People

Teachers know and understand the material
Structure the material for the students
Demonstrate scientific notions
Develop scientific skills in students
Are able to assess students’ knowledge and skill level based on standards
Teaching as Art

Teachers as Creators of Experiences

- What experiences were meaningful for them?
- How has their understanding of the material changed?
- How can they take scientific activities and use them to create meaningful experiences?
- How are activities connected to material?
- What reflective activities can be created?
- How can this kind of learning be evaluated?
How should we educate and empower science educators?
Yore Kedem
ykedem@msu.edu