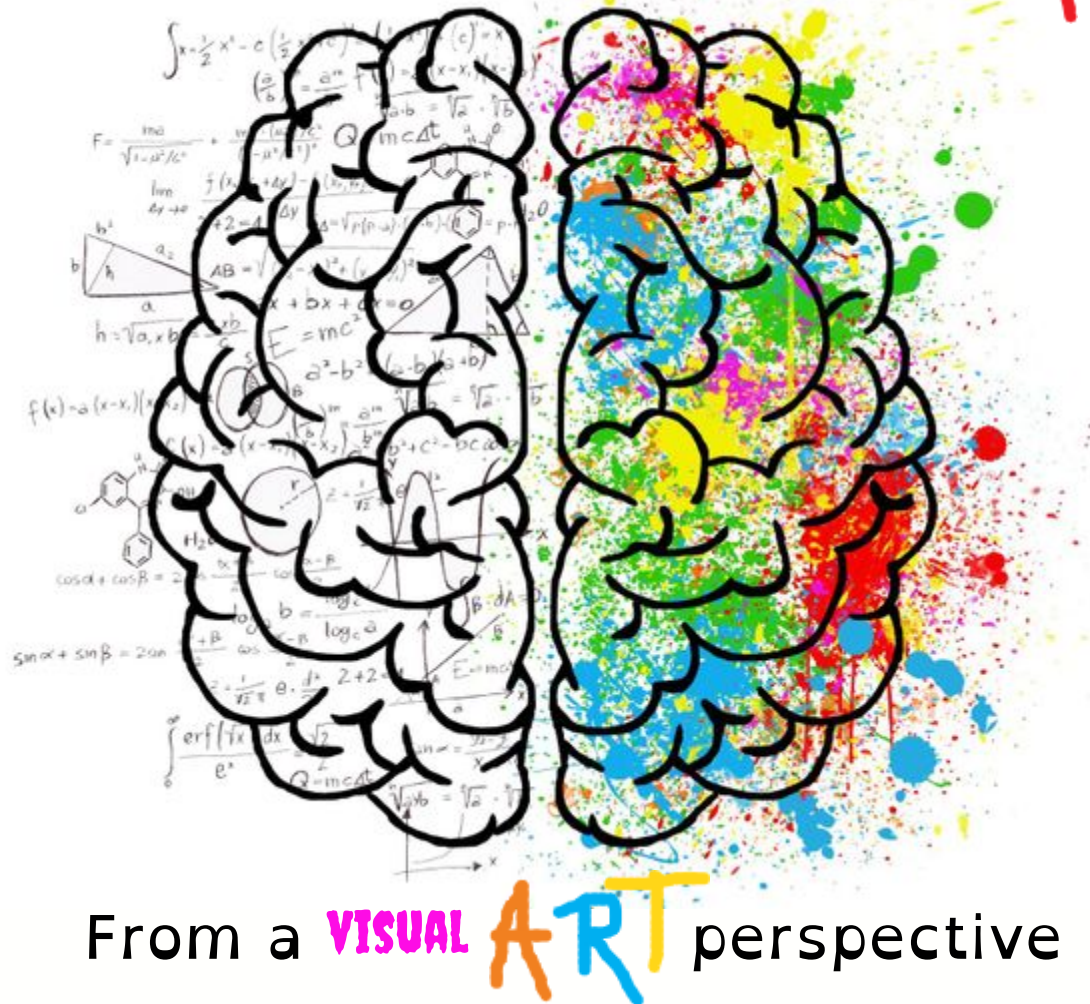


Critical review of STEM to STE~~A~~M



From a **VISUAL ART** perspective

Table of Contents

Part One Literary Review

Innovation

Art Provision

STEM to STEAM

Pedagogy

Concluding thoughts

Part Two Resource Pack

S Science- Gina Czarnecki + Resources

T Technology- Tim Burton + Resources

E Engineering - + Resources

A Art Resources

M Maths - Cleary & Connolly and Resources

Reference List

Caroline Keane
Student No.
Module 4: Visual Arts, Inclusion &
Innovation
Michael Flannery



INNOVATION

- "Creativity is thinking of something new. Innovation is the implementation of something new." (Sloane, 2010, para.1).
- The connection between art and innovation is underappreciated. Innovation and art making share the same skill set.
- But innovation is not just to be seen in what an artist perceives, believes and produces but also in the very act of how the artwork is produced.
- When art and science combine forces, they become an activator of innovation.



ART PROVISION



A quality program should embody a structure which allows students to explore, experiment with and engage with art forms and contemporary practices of their time. (O'Donoghue, 2012)



It should exercise, creativity imagination, experimentation, expression, critical thinking, collaboration, observation, inquiry and reflection.
Also providing opportunities to be introduced to a variety of art mediums and processes.



Allow students to experience the unique qualities of visual art such as expression of emotions, an emphatic perspective and the ambiguous nature of art making, where there is no right or wrong.
(Hoffman, 2008).

STEM TO STEAM



STEAM = Science-Technology- Engineering- **ART**-Maths

Why add the arts to STEM?

- The arts embrace skills vital to STEM subjects
- There are believed to be cognitive benefits.
- Arts help support students to be successful in STEM.
- Improves employ ability power for the 21st century by nurturing skills such creativity.(Katz-Buonincontro & Perignat, 2018)
- The arts element helps advertise the STEM subjects as more approachable, grabs student's attention and engages a wider variety of students (Sousa & Pilecki, 2018)



PEDAGOGY

Katz- Buonincontro & Perignat, (2018) research reveals there is growing confusion about the arts pedagogy in STEAM. Are teachers to approach it from and art integration perspective trans disciplinary, multidisciplinary or a cross disciplinary approach.

If the visual arts will be limited to a tool for STEM learning and advocated as a time saver, it is disregarding a huge portion of the rich and wonderful visual art content and its possibilities.

Non-arts educators have struggled with strategies for reintroducing the arts into STEM curricula, with the purpose of developing students' creativity and critical thinking (Rabkin & Hedberg, 2011). If this is not addressed, visual arts will be a secondary goal to students understanding the STEM disciplines

The STEAM program it is shining a light on the importance of art but also illuminating the shortcomings of the curriculum of the curriculum which can provide a chance to reform and update the visual art provision.

CONCLUDING THOUGHTS

From a visual art perspective STEAM can create exciting, new and dynamic approaches to visual art and introduce students to more relevant practice for the contemporary art learning.

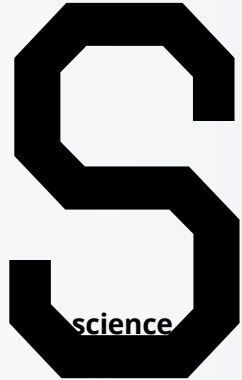
But there are aspects which need to be addressed regarding using a STEAM program

There is a lack of broad in depth research and outcomes on integrating the arts

There is no consensus on the pedagogical approach to implementing STEAM and a lot of confusion on how to maintain a clear balance between all the subjects

Educators need to become fluent and creatively confident in the area of visual arts, if they are going to use the STEAM provision to allow the visual arts to be fully catered for.





Gina Czarnecki

<https://www.ginaczarnecki.com/>

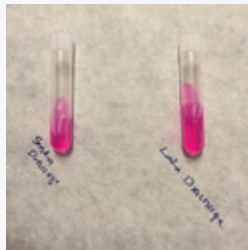


Figure 2. Czarnecki, *Heirloom* 2018.



Figure 3. Czarnecki, *Heirloom* 2018.

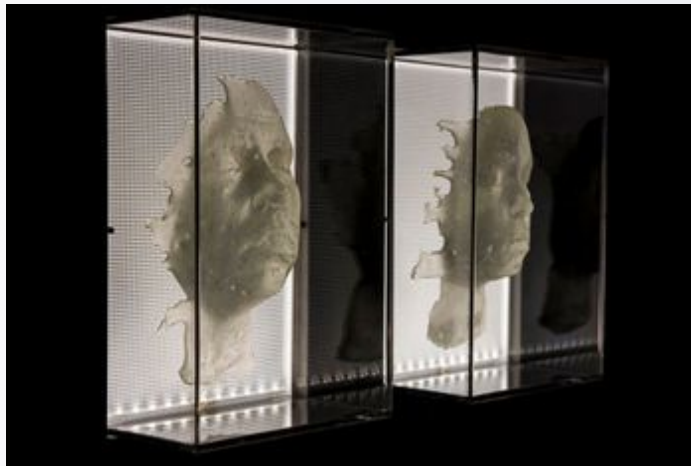


Figure 4. Czarnecki, *Heirloom*, 2018.

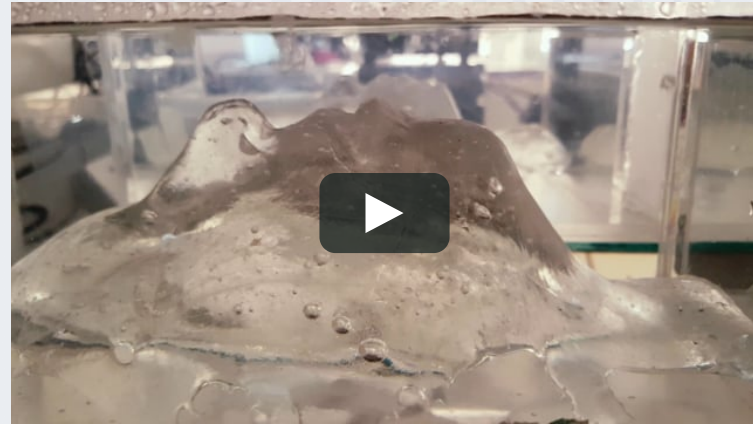


Figure 1. Czarnecki, *Heirloom*, 2018.

The artwork titled *Heirloom*, grows living portraits of the artist's daughters from their own cells that have been cultured from a single sample.

Figure 2 - skin cell test tubes

Figure 3 - bioreactors growing new skin

Figure 4 - first skin growth casts

Louise Whiteley's article about *Heirloom*:
<http://url.ie/13zdr>

RESOURCES

Links, websites, books etc to help link science aspects into art making.

Gina Czarnecki
Sculpture, Installation, Video

<http://stemtosteam.org/>

<http://www.artteachers.ie/content/steam>

The Search for Method in STEAM
Education by Jaime E. Martinez

<http://insea.org/insea-pub>

<https://www.dkfindout.com/uk/>

<https://dublin.sciencegallery.com/>

<http://trustmeimanartist.eu/>



Figure 5. Czarnecki, *Palaces*, 2011.



Figure 6. Czarnecki, *I*, 2014.



Figure 7. Czarnecki, *Cell Mass N2*, 2018

WHAT COUNTS AS PORTRAIT?

**TRY CREATING A PORTRAIT USING A
FORM OF TECHNOLOGY..**

T

TIM BURTON



Figure 8. Burton, Sparky (2012)



Figure 9. Burton, Sparky (2012)

<https://www.lacma.org/sites/default/files/TBEssay.pdf>



<http://timburton.com/>



Figure 10. Burton, Vincent, 1982

RESOURCES

Artists & Technology
<http://url.ie/1403q>

**Artists/Engineers
Using Science and
Tech to Create
Modern Masterpieces**
<http://url.ie/1403t>

<http://www.artthou.co.uk/notes/technology-on-art>



<https://www.tech4learning.com/>

Toon Tastic,
iMovie,
Seesaw

<http://www.doink.com/>

Figure.11 , Green Screen Gif (own photo)

<http://lovingvincent.com/the-movie,3,pl.html>



Figure. 12, Kobiela & Welchman, Loving Vincent - making of, 2017

E

RESOURCES

Artists And Engineers Create The Future Of Art And Technology

https://www.vice.com/en_us/article/qkza9b/artists-and-engineers-create-the-future-of-art-and-technology

How artists and engineers collaborate

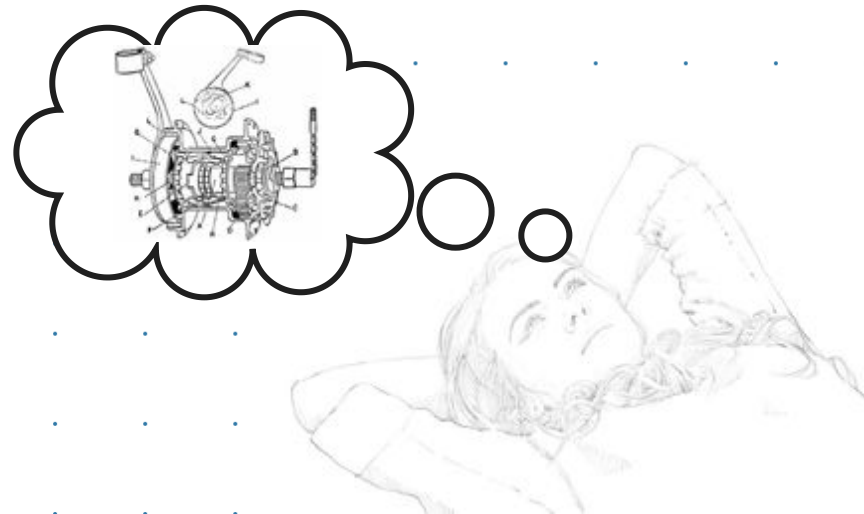
<https://medium.com/@SOM/creative-construction-how-artists-and-engineers-collaborate-ef4a80f0b6c5>

Artists and Engineers

<http://artistsandengineers.co.uk/>

<http://www.kinetica-museum.org/>

Cheap lesson supplies <http://url.ie/13zfy>





What is ?

<http://url.ie/14039>

Books

Playing in the Gallery by Grayson Perry

The art of looking sideways by Alan Fletcher

A series of curated Art Books by Phaidon

Vitamin Series on Drawing, ,painting, sculpture, design

Vitamin D & Vitamin D2 - New perspectives in Drawing

Vitamin P, Vitamin P2 & Vitamin P3 - New perspectives in Painting

Vitaimin 3-D - New perspectives in Sculpture and Installation

Vitamin Green

Curation

Bring the Gallery and Museum to you with

<https://artsandculture.google.com/explore>

<http://kidcurators.com/>

<https://www.artsy.net/article/artsy-editorial-contemporary-art-museum-kids>

Websites - Contemporary Art

<https://www.artsy.net/articles>

<https://www.thisiscolossal.com/category/art/>

<http://magazine.art21.org/invisible-landscapes-issue/>

Resources

<https://ark.ie/>

<https://visualartists.ie/>

<https://recreate.ie/>

M

CLEARY &
CONNOLLY

<http://url.ie/1402f>

<http://url.ie/13zdv>

<http://www.schooloflooking.org/SoL/home.html>



Figure 13 . Cleary & Connolly, *view from horse head helmet*, 2015



Figure 14. Cleary & Connolly, *helmets at Galway International Arts Festival*, 2015



Figure 15 . Cleary & Connolly, *view from chameleon head helmet*, 2015



Figure 16 . Cleary & Connolly, *Hammerhead*, 2015



Figure 17. Cleary & Connolly, *Chameleon*, 2015



Figure 18. Cleary & Connolly, *Horsehead*, 2015



Figure 19. Cleary & Connolly, *Cheshire cat*, 2015

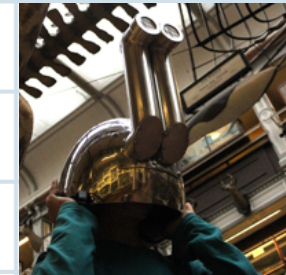


Figure 20 . Cleary & Connolly, *Giraffe*, 2015

Reference List

Cleary, A. & Connolly, D., Retrieved from <http://www.connolly-cleary.com/Home/helmets-video.html>

Czarnecki, G. (2019). Retrived from <https://www.ginaczarnecki.com/artworks>

Hoffman, Davi, J. (2008). *Why are schools need the arts*. New York: Teachers College Press.

Katz-Buonincontro, J. & Perignat, E. (2018). STEAM in Practice and Research: An Integrative Literature Review, *Thinking skills and creativity*. Retrieved from <https://doi.org/10.1016/j.tsc.2018.10.002>

Kobiela, D. & Welchman, H. Retrieved from https://www.youtube.com/watch?v=QE9Q_7bfHsM

O'Donoghue, D., (2012). Questions that never get asked about Irish art education curriculum theory and practice. In Gary Grenville (Eds.), *Art education and contemporary culture Irish experiences international perspectives*(pp.131-143). Bristol, UK: Intellect

Rabkin, N., & Hedberg, E. C. (2011). *Arts education in america: What the declines mean for arts participation*. *National Endowment for the Arts*. Retrieved from <https://www.arts.gov/sites/default/files/2008-SPPA-ArtsLearning.pdf>

Sloane, P. (2010). *What is the difference between innovation and creativity?* Retrieved from <https://innovationexcellence.com/blog/2010/06/07/what-is-the-difference-between-innovation-and-creativity/>

Sousa, D.A. & Pilecki, T. (2018). *From stem to steam brain-compatible strategies and lessons that integrate the arts* (2nd ed.). Thousand oaks, CA: Corwin A Sage company.

Burton, T. (2019). Retirieved from <http://timburton.com/>