

A POSTERIORI

Play · Experience · Learn

Filling a Gap In Constructionist Education

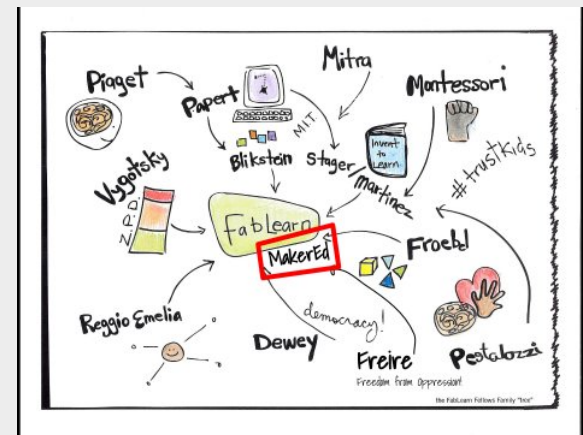
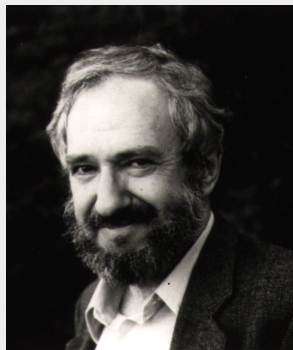
Constructionism

New Ideas From the 60's

“The scandal of education is that every time you teach something, you deprive a child of the pleasure and benefit of discovery”

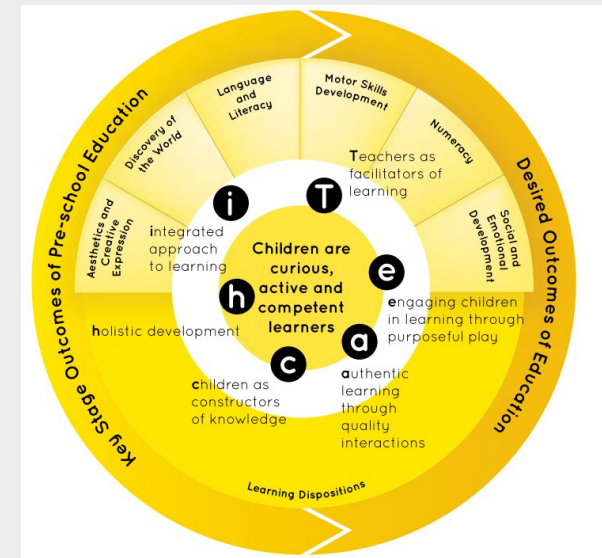
- Seymour Papert (1996)

- Learners build on previously acquired models to gain more knowledge and skills to expand those models
- Participation in project-based learning facilitated by a teacher through coaching or mentoring
- Learning happens most effectively when students are active in making tangible objects in the real world



CONSTRUCTIONISM IN SINGAPORE

- Nurturing Early Learners Framework
 - Holistic, inquiry-based, constructionist architecture
 - **iTeach** highlights:
 - Teachers as *facilitators* of learning
 - Engaging children in *purposeful play*
 - Authentic learning through *quality interactions*
 - Children as *constructors* of knowledge



Polytechnics, ITEs, and Beyond

- Tertiary and higher education is already built on collaborative models, with professors as facilitators
- Student-centered, self-paced learning
- Access to resources
- Work-Study Programs and Immersive Projects

Primary/Secondary Education

- 21st Century Competencies: An Awareness
- Holistic Assessment: Work in Progress
- Hybrid Implementation
 - Core subjects taught utilizing largely *traditional pedagogy*
 - *Experimentation*, especially during Co-Curricular, Extra-Curricular, and Enrichment Activities

STEM: Proven Track Record

- Physical Computing
 - Electronics
 - Robotics
- Programming
- Fabrication
 - Maker Movement
 - 3D Design & Printing



STEM Isn't Magic, or a Silver Bullet

- Main Pitfalls
 - Teaching students the most boring, mundane, easy-to-learn basics
 - Guided, Prescribed Step-By-Step Projects
 - Instructor Unpreparedness

Task

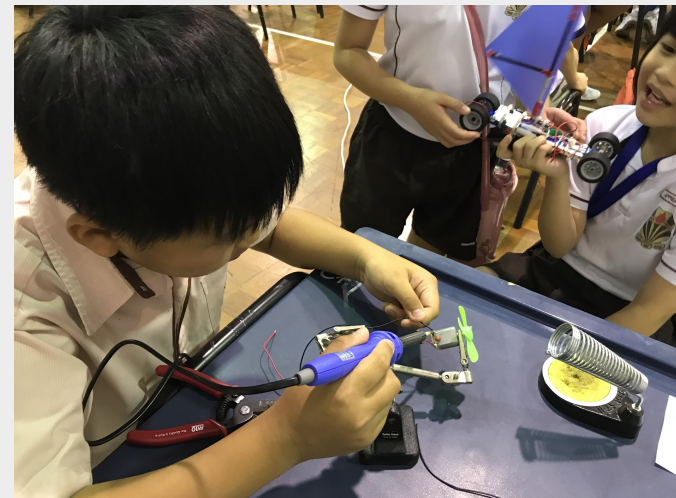
Program the servo motor to rotate to 90° when button A is pressed and rotate back to 0° when button A is released.

Instructor Certification

- Sports and Performing Arts vendor-provided activities in Primary/Secondary schools by and large require specially-certified instructors
 - **STEM activities don't require certified instructors!**

Building Trust, Focus on Scale

- *A Posteriori* is positioning itself as a leader in the MOE-based STEM Education marketplace
- *A Posteriori* is building a product, developing a pedagogy, and training a constructionist corps



Papert, Seymour (1996). *The Connected Family*. Longstreet Press.

Martinez, Sylvia Libow & Stager, Gary S. (2013). *Invent To Learn. Constructing Model Knowledge Press*.

Alesandrini, K. & Larson, L. (2002). Teachers bridge to constructivism. *The Clearing House*, 119-121.

Cakir, M. (2008). Constructivist Approaches to Learning in Science and Their Implications for Science Pedagogy: A Literature Review. *International Journal of Environmental & Science Education*, 3(4), 193-206.

Ministry of Education. (2012). *Nurturing early learners: A curriculum framework for kindergartens in Singapore*. Singapore: Ministry of Education.

<https://www.moe.gov.sg/education/education-system/21st-century-competencies>

<https://www.moe.gov.sg/about/singapore-teaching-practice>

<http://fablearn.stanford.edu/fellows/blog/constructionism-learning-theory-and-model-maker-education>