



Developing Self-efficacy Through Interest-driven Learning

Jared O'Leary
BootUp PD



What's the plan?

- Clarifying terms
- What does interest-driven learning look like?
- Strategies and considerations
- Resources to dive deeper
- Let's explore and chat



How to reach the resources

- [Click here for a direct link](#)
- www.JaredOLEary.com
 - Presentations
 - Developing Self-efficacy Through Interest-driven Learning



Clarifying terms



What is self-efficacy?

- “Perceived self-efficacy is defined as people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives.” (Bandura, 1994, p. 71)



What is collective efficacy?

- “A group’s shared belief in its conjoint capabilities to organize and execute the courses of action required to produce given levels of attainment” (Bandura, 1997, p. 477).



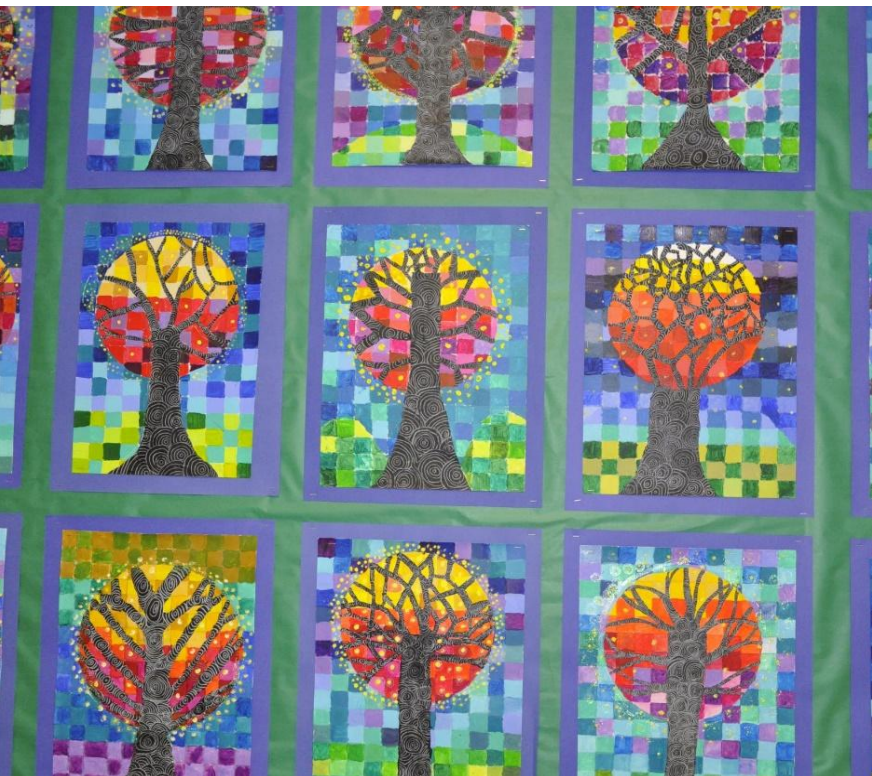
What is interest-driven learning?

- Individualized learning that is driven by a student's interests rather than external interests (e.g., standards, grades, mandatory projects, etc.)




What does interest-driven learning look like?









Technology Classes at Desert Thunder

Jared O'Leary
Arizona State University
Avondale Elementary School District



What were the results of this approach?

- Inquiry and interest
- Classroom climate
- Self-efficacy
- Collaboration
- Communication
- Feedback



Strategies and considerations



Characteristics of my former classroom

- Sampled multiple languages/platforms
- Interests drove choices
- Continuum of scaffolding
- No deadlines
- Grades were for participation, not completion
- Groups were optional
- Regular opportunities for feedback ([video demonstrating what that looked like](#))



Affinity space characteristics

1. Affinity spaces share a common endeavor
2. Affinity spaces are not segregated by age
3. Affinity spaces are not segregated by experience
4. Affinity spaces encourage, but do not require, active participation
5. Interaction transforms content within an affinity space
6. Affinity spaces encourage both intensive and extensive knowledge
7. Affinity spaces encourage individual and distributed knowledge
8. Affinity spaces encourage dispersed knowledge
9. Affinity spaces encourage and honor tacit knowledge
10. Affinity spaces encourage a multitude of engagement
11. Affinity spaces have multiple routes to status
12. Leadership is porous and leaders are resources

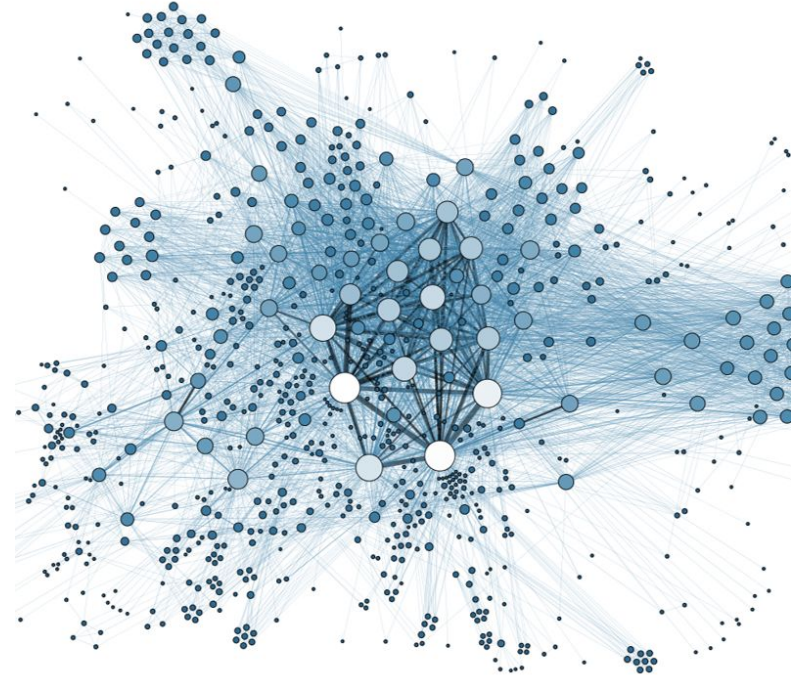


Characteristics of the curricula I design

Step 1

Step 2

Step 3



Sequential Design	Rhizomatic Design
Group-based learning	Individualized learning
Standards-driven	Interest-driven
Learning CS concepts and practices within a predetermined sequence	Exploring and creating through a multitude of CS concepts and practices
The teacher or curricula determines the group's path	Each student determines their own path
Teachers can stay one lesson ahead of students without being overwhelmed	Teachers should frontload much of their understanding of content knowledge before starting
The teacher's role is to guide students from one step to the next	The teacher's role is to facilitate student learning through discovery and inquiry
Direct instruction is usually from a teacher to a group of students	Direct instruction can be from a teacher or resource to an individual student
Easier to grade and assess	Harder to grade and assess
Administrators are likely familiar with this approach	Administrators might not be familiar with this approach

Considerations for self-efficacy and collective efficacy

- Self-efficacy of students
- Self-efficacy of teachers
- Collective efficacy of a school or district
- Collective efficacy of a region or state



Resources to dive deeper



Student-facing resources with rhizomatic design



Nyan Simulator

Nyan Simulator
by BootUp



Pumpkin Carver

Pumpkin Carver
by BootUp



What Can You Create? ...

What Can You Create? ...
by BootUp



Carve a Pumpkin with ...

Carve a Pumpkin with ...
by BootUp



Let's Dance

Let's Dance
by BootUp



Character Builder

Character Builder
by BootUp



An Amazing Maze Game

An Amazing Maze Game
by BootUp



Scenic Walk

Scenic Walk
by BootUp



Music Player

Music Player
by BootUp



Sprite Catcher

Sprite Catcher
by BootUp



Animate a Joke

Animate a Joke
by BootUp



Interactive Store Display

Interactive Store Display
by BootUp



Award Acceptance Speech

Award Acceptance Spe...
by BootUp



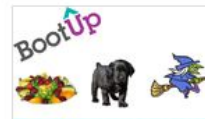
Coder Interview

Coder Interview
by BootUp



Animate Your Name

Animate Your Name
by BootUp



Interactive Collage

Interactive Collage
by BootUp



Superhero(ine) Project

Superhero(ine) Project
by BootUp



Photo Editor

Photo Editor
by BootUp



Photo Booth

Photo Booth
by BootUp



Beatbox Machine

Beatbox Machine
by BootUp



Jump Scare Slideshow

Jump Scare Slideshow
by BootUp



Knock, Knock

Knock, Knock
by BootUp



Animated Card

Animated Card
by BootUp



A Friend of Mine

A Friend of Mine
by BootUp



Teacher-facing lessons with rhizomatic design

Animate Your Name

Experience: 1st year, 1st quarter
Practice: Creating computational artifacts, Testing and refining computational artifacts, and Communicating about computing
Concept: Algorithms and Control
Length: 60-


- Watch this first
- At a glance
- Project sequence
- Extended learning
- Coder resources

Project Lesson Overview

[Lesson plan](#)
[Overview video](#)

If this is your first time navigating our lessons, please take the time to watch this video to learn how our lessons are formatted and how to quickly navigate between sections.

Animate Your Name - Project Preview



The video thumbnail shows the text 'Boot Up' in a stylized font above the word 'TAREED' in large, bold, yellow letters. The background is dark with light rays emanating from behind the text.



Learn more about rhizomatic learning

- [Rhizomatic Learning with Catherine Bornhorst, Jon Stapleton, and Katie Henry](#)
 - In this panel discussion with Catherine Bornhorst, Jon Stapleton, and Katie Henry, we discuss what rhizomatic learning is and looks like in formalized educational spaces, affordances and constraints of rhizomatic learning, how to support individual students within a group setting, standards and rhizomatic learning, why few people know and use rhizomatic learning approaches, how to advocate for and learn more about rhizomatic learning, and much more.
- [More resources on rhizomatic learning](#)



Learn more about affinity spaces

- O’Leary, J. (2020). [Applications of Affinity Space Characteristics in Music Education](#). In The Oxford Handbook of Social Media and Music Learning, edited by Janice Waldron, Stephanie Horsley, and Kari Veblen (pp.65-87). Oxford: Oxford University Press.
 - [Link to a preprint copy of this chapter](#)
- [Applications of Affinity Space Characteristics in \[Computer Science\] Education](#)
 - In this episode I unpack my (2020) publication titled “Applications of affinity space characteristics in music education,” which has twelve characteristics of informal learning spaces that I will discuss in relation to computer science education.



Learn more about self-efficacy

- Bandura, A. (1994). [Self-efficacy](#). In V. S. Ramachaudran (Ed.), Encyclopedia of human behavior (Vol. 4, pp. 71-81). New York: Academic Press. (Reprinted in H. Friedman [Ed.], Encyclopedia of mental health. San Diego: Academic Press, 1998).
- Bandura, A. (1997). Self-efficacy: The exercise of control. New York: W. H. Freeman and Company
- Rich, P., Mason, S., & O'Leary, J. (2021). [Measuring the effect of continuous professional development on elementary coding teachers' beliefs to teach coding and computational thinking](#). Computers & Education.



More resources on my website

- [Click here for a direct link](#)
- www.JaredOLEary.com
 - Presentations
 - Developing Self-efficacy Through Interest-driven Learning



Let's explore and chat



Standards for CS Teachers



Standard 1. CS Knowledge and Skills

+



Standard 2. Equity and Inclusion

+



Standard 3. Professional Growth and Identity

+



Standard 4. Instructional Design

+



Standard 5. Classroom Practice

+





Standard 5. Classroom Practice



Effective CS teachers are responsive classroom practitioners who implement evidence-based pedagogy to facilitate meaningful experiences and produce empowered learners of CS.

Indicators

[Expand All Indicators](#)

Effective CS teachers:

- 5a. Use inquiry to facilitate student learning
- 5b. Cultivate a positive classroom climate
- 5c. Promote student self-efficacy
- 5d. Support student collaboration
- 5e. Encourage student communication
- 5f. Guide students' use of feedback



1. STRATEGIES FOR STANDARD 5: CLASSROOM PRACTICE

0 LIKE

CSTA Chapter
LeaderJared O'Leary

Posted 22 seconds ago

REPLY 

I'm working on my session for the upcoming [Cultivating a Community of Learners Summit](#) and wanted to use this discussion forum to initiate dialogue before my session (and to continue dialogue after the session) around strategies for the [classroom practice standards](#).

If you were mentoring a new-to-CS educator on the [following standards](#), what strategies and considerations would you recommend?

- **Standard 5a. Use inquiry to facilitate student learning:**
 - Use inquiry-based learning to enhance student understanding of CS content.
- **Standard 5b. Cultivate a positive classroom climate**
 - Cultivate a positive classroom climate that values and amplifies varied perspectives, abilities, approaches, and solutions.
- **Standard 5c. Promote student self-efficacy**
 - Promote student self-efficacy by facilitating student creativity, choice in product and process, and self-directed learning.
- **Standard 5d. Support student collaboration**
 - Provide structured opportunities for students to collaborate in CS. Develop students' ability to provide, receive, and respond to constructive feedback in the design, implementation, and review of computational artifacts.
- **Standard 5e. Encourage student communication**
 - Create and scaffold meaningful opportunities for students to discuss, read, and write about CS concepts and how they integrate CS practices.
- **Standard 5f. Guide students' use of feedback**
 - Use formative assessments to provide timely, specific, and actionable feedback to students and to adjust instruction. Develop students' ability to interpret and use feedback from computers, teachers, peers, and community.

Jared O'Leary
Director of Education & Research
BootUp PD



What strategies or considerations do you have for each standard?

- Standard 5a. Use inquiry to facilitate student learning:
 - Use inquiry-based learning to enhance student understanding of CS content.
- Standard 5b. Cultivate a positive classroom climate
 - Cultivate a positive classroom climate that values and amplifies varied perspectives, abilities, approaches, and solutions.
- Standard 5c. Promote student self-efficacy
 - Promote student self-efficacy by facilitating student creativity, choice in product and process, and self-directed learning.
- Standard 5d. Support student collaboration
 - Provide structured opportunities for students to collaborate in CS. Develop students' ability to provide, receive, and respond to constructive feedback in the design, implementation, and review of computational artifacts.
- Standard 5e. Encourage student communication
 - Create and scaffold meaningful opportunities for students to discuss, read, and write about CS concepts and how they integrate CS practices.
- Standard 5f. Guide students' use of feedback
 - Use formative assessments to provide timely, specific, and actionable feedback to students and to adjust instruction. Develop students' ability to interpret and use feedback from computers, teachers, peers, and community.

