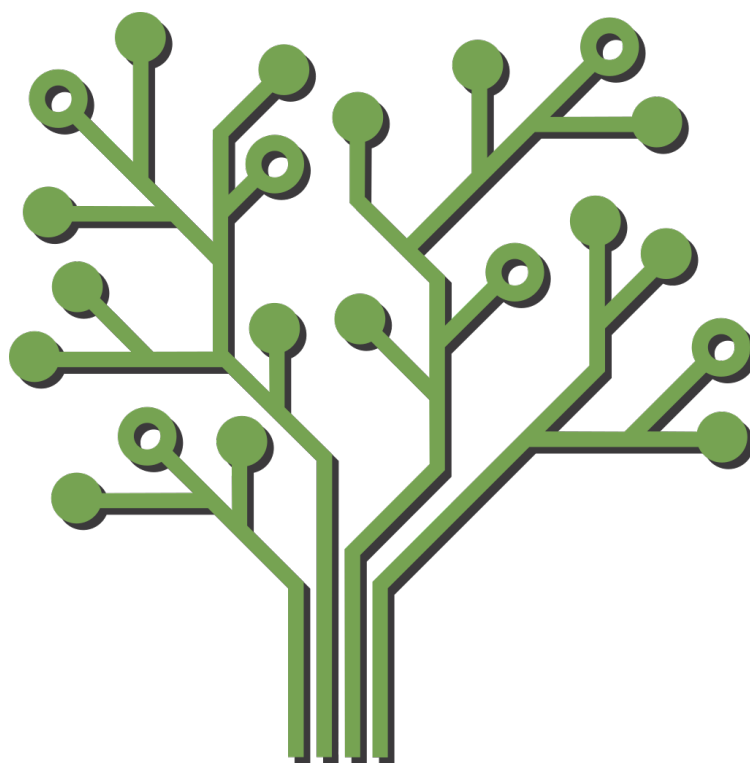


ThoughtSTEM Language Learning Tactics

Version 7.0

August 28, 2019









1 Disintegrating Code

Players write code from the whiteboard; each round more and more code disappears!

SUPPLIES

- Chromebooks (1 per player)
- Whiteboard and Markers
- Challenge Card
- Timer

ACTIONS

	1+	players
	10-20	minutes
	K+	grade level
	1/5	TM difficulty
	< 10	lines of code
	1v1 1	player difficulty

Prep & Round 0

1. **Write** the stimulus of [the-challenge-card] onto [the-whiteboard].
2. **Write** the code of [the-challenge-card] onto [the-whiteboard].
3. **Set** [the-timer] for as many minutes as there are lines of code.
4. **Tell** [the-players] to **type** up the code from [the-whiteboard] onto [the-chromebooks].

Round 1

1. **Erase** 2-4 identifiers from the code on [the-whiteboard].
2. **Tell** [the-players] to **erase** all code from [the-chromebooks].
3. **Tell** [the-players] to **type** up the code again, using their memory to fill in the blanks.

Repeat!

- **Repeat** Round 1, erasing more code each time until you are left with only symbols; then erase those too.

KATA CHALLENGE

- **Call** in the coach when you and the rest of the players are ready for your kata challenge. Pass the challenge to earn your kata.

2 Code Anatomy

Label and define the different parts of the code, then use the labels as a guideline to rebuild the code as a team.

SUPPLIES

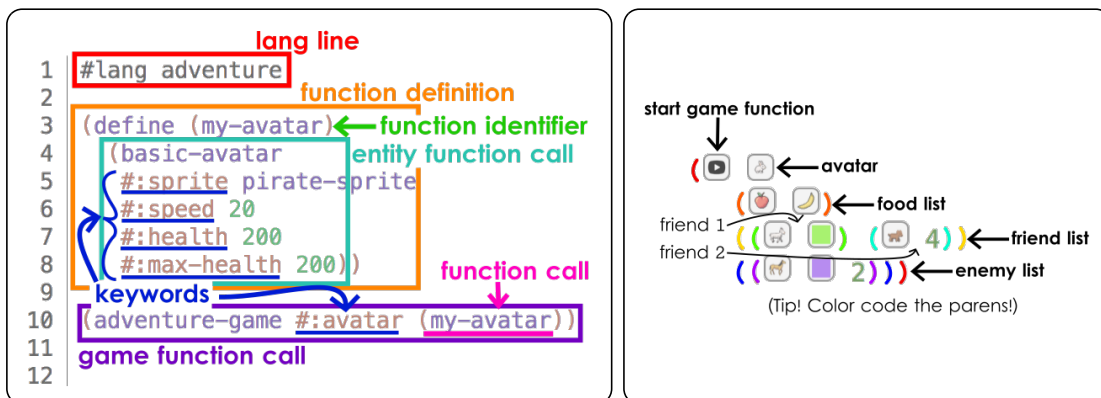
- Chromebooks (1 per player)
- Whiteboard and Markers
- Challenge Card
- Timer

ACTIONS

	1+	players
	10-15	minutes
	K+	grade level
	2/5	TM difficulty
	<10	lines of code
	1v1 1	player difficulty

Label & Define

1. **Write** the code of [the-challenge-card] onto [the-whiteboard].
2. **Label** and define the parts of the code with help from the players.



Fill In The Blanks

1. **Erase** all code, leaving the labels, from [the-whiteboard].
2. **Tell** [the-players] to **write** the code back in, working as a team.
3. **Repeat** this phase until players have succeeded without help twice.

Final Quiz

1. **Erase** all code again, leaving the labels, from [the-whiteboard].
2. **Set** [the-timer] for as many minutes as there are lines of code.
3. **Tell** [the-players] to **type** up the code independently from memory.
4. **Repeat** this phase if needed.

KATA CHALLENGE

- **Call** in the coach when you and the rest of the players are ready for your kata challenge. Pass the challenge to earn your kata.







3 Reverse Engineering

Starting with the finished game, players evaluate the elements of the game and how to code it.

SUPPLIES

- Master Chromebook (1 for the Tactics Master)
- Player Chromebooks (1 per player)
- Whiteboard and Markers
- Challenge Card
- Timer

ACTIONS

	1+	players
	15-25	minutes
	K+	grade level
	4/5	TM difficulty
	10+	lines of code
	1v1 2	player difficulty

Deconstruct The Game

1. **Type** up the code of [the-challenge-card] onto [the-master-chromebook].
2. **Run** the game and show it to the players, while hiding the code.
3. **Tell** [the-players] to **write** a list of all the elements in the game onto [the-whiteboard].
4. **Tell** [the-players] to **mark** any elements they don't know or have forgotten how to code.

Match Elements To Code

1. **Give** [the-challenge-card] to [the-players].
2. **Tell** [the-players] to **match** each element on their list to the code that creates that element and to also add any missing elements to their list.
3. **Tell** [the-players] to **write** any hints for the unknown elements onto [the-whiteboard].
4. **Take** back [the-challenge-card].

Round 1

1. **Set** [the-timer] for as many minutes as there are lines of code.
2. **Tell** [the-players] to **type** the code using just the list with hints.
3. **Erase** some hints from [the-whiteboard].
4. **Tell** [the-players] to **erase** all code from [the-player-chromebooks].

Repeat!

- **Repeat** Round 1 until no hints remain and the players succeed.

KATA CHALLENGE

- **Call** in the coach when you and the rest of the players are ready for your kata challenge. Pass the challenge to earn your kata.







4 Building Up!

Break down the process of building a more complex game into easy steps before coding it.

SUPPLIES

- Chromebooks (1 per player)
- Whiteboard/Paper
- Whiteboard Markers/Pen
- Challenge Card

ACTIONS

	1+	players
	10-20	minutes
	3+	grade level
	3/5	TM difficulty
	10+	lines of code
	1v1 2	player difficulty

Define The Process

1. **Read** aloud the stimulus of [the-challenge-card].
2. **Lead** a brainstorm with this prompt: "What should be the very first element to code?".

Example:

Stimulus: "Code a game with an NPC who has a quest to fetch their lost spear.
Give the NPC new dialog after the quest is complete."
Step 1: Code a basic adventure game.

3. **Write** the first step onto [the-whiteboard/paper].
4. **Write** additional steps (until the resulting game would meet the stimulus) onto [the-whiteboard/paper].

Example Continued:

Step 1: Code a basic adventure game.
Step 2: Add an avatar.
Step 3: Add an npc.
Step 4: Define a spear item.
Step 5: Give the NPC a fetch quest to find the spear.

Coding Step By Step

- **Tell** [the-players] to **type** up the code using the step-by-step process. Test after each step and then write their initials next to the step on [the-whiteboard/paper].

KATA CHALLENGE

- **Call** in the coach when you and the rest of the players are ready for your kata challenge. Pass the challenge to earn your kata.







5 Code Carousel

Players pair up and try to code a game, while rotating computers every 45 seconds!

SUPPLIES

- Chromebooks (1 per pair of players)
- Whiteboard/Paper
- Whiteboard Markers/Pen
- Challenge Cards (3 that do not contradict)

ACTIONS

	3+	players
	10-20	minutes
	3+	grade level
	4/5	TM difficulty
	10+	lines of code
	1v1 2	player difficulty

Get Started

1. **Write** the stimuli of [the-challenge-cards] onto [the-whiteboard/paper].
2. **Pair** up all players. If there are an odd number of players, create a trio or a solo coder.

Round 1

1. **Tell** [the-players] to **code** a game that fits all three stimuli, working together with their partner on one chromebook.
2. **Set** [the-timer] for 45 seconds and start it as soon as the players start coding.

Rotate & Round 2

1. **Stop** all players from coding as soon as the timer ends.
2. **Tell** [the-players] to **move** to the chromebook to their right with their partner.
3. **Tell** [the-players] to **continue** with the code on this new chromebook.
4. **Set** [the-timer] for 45 seconds and start it as soon as the players start coding.

Repeat!

1. **Repeat** *Rotate & Round 2* until all chromebooks have a running game that fits the stimuli.
2. **Encourage** players who have a completed game to add extra features until the round is over or the goal is achieved.

KATA CHALLENGE

- **Call** in the coach when you and the rest of the players are ready for your kata challenge. Pass the challenge to earn your kata.