Using Agile to Introduce STEM to Young Minds

Popi Makris, After School Brilliance / STEM Kids NC
Welcome!

- Introduction
- Industry & Economy – Disruption
- My Eureka Moment!
- The Answer: Agile & Growth Mindset
- What is Agile?
- How do you Introduce Agile?
- Benefits of Agile
- Brilliant Teaching Philosophy ©
Introduction – Popi Makris, MBA, PMP, SPC4, LSP, ICP-ACC

- Originally from French Canada, of Greek descent

- Coach & Corporate Trainer (“The Agile Gardener”)
  - Executive and strategy coaching
  - Agile team coaching (200+ self-organized and high performing teams)

- Mom

- Entrepreneur
Industry & Economy: Digital Disruption

- A video – 18 Years of Tech Disruption in 1 Minute
- Ponder:
  - Who is no longer in the top 10?
  - Who is leading the market now?
  - Where will today’s leaders be in 10 years?
- Let’s watch that video again
- How can we prepare our Children (and ourselves) for what we can’t anticipate?
Our Economies Over Time

Early 1900s
- Industrial
  - Physical
  - Standard

1970s - Present
- Knowledge
  - Intellect
  - Experience

2000 -
- Creative
  - Passion
  - Creativity
  - Innovation

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My Eureka Moment

High Performing Agile Teams

Children’s Agile Team??
Today’s Realities

- Digitization is not going away
So How Do We Help Young Minds Embrace Technology?

How do we shift the mindset from CONSUMER to PRODUCER?
Precursor: Psychological Safety

Trust and Psychological Safety

WHAT'S THE DIFF? Trust and Psychological Safety
Psychological safety is the belief that your environment is safe for interpersonal risk-taking. It's similar, but slightly different from, trust.

**TRUST**
Will **YOU** give others the benefit of the doubt when you take a risk?

**PSYCHOLOGICAL SAFETY**
Will **OTHERS** give you the benefit of the doubt when you take a risk?

"Bob is probably going to freak out if I disagree with him."  "My team expects me to speak up. It's how we do things."

Sources:
Growth Mindset

The belief that you can get ‘smarter’, by putting in extra time and effort, thereby leading to higher achievement.
Learning Pyramid

When kids get their hands on exciting projects, it can inspire them to learn.
Agile

What is Agile?

Agile is about learning, people, and change. Agile is about focus and quick feedback loops.

Agile addresses uncertainty through incremental work delivered by self-organized and motivated teams, that are capable of adapting and responding to change and uncertainty.
Agile Values

We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:

- *Individuals and interactions* over processes and tools
- *Working software* over comprehensive documentation
- *Customer collaboration* over contract negotiation
- *Responding to change* over following a plan

That is, while there is value in the items on the right, we value the items on the left more.

http://agilemanifesto.org/
Agile Principles

- Our highest priority is to satisfy the customer through **early and continuous delivery** of valuable software.

- Welcome **changing requirements**, even late in development. Agile processes harness change for the customer's competitive advantage.

- Deliver **working software frequently**, from a couple of weeks to a couple of months, with a preference to the shorter timescale.

- Business people and developers must **work together** daily throughout the project.

- Build projects around **motivated individuals**. Give them the environment and support they need, and **trust** them to get the job done.
Agile Principles (Cont’d)

- The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.

- Working software is the primary measure of progress.

- Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.

- Continuous attention to technical excellence and good design enhances agility.

- Simplicity—the art of maximizing the amount of work not done—is essential.

- The best architectures, requirements, and designs emerge from self-organizing teams.

- At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

http://agilemanifesto.org/principles.html
The Agile Scrum Cycle

- Prioritized Ideas
- Planning
- Sprint Backlog
- Daily Scrum
- Cadence
- Sprint
- Sprint Review
- Retrospective

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Agile Ceremonies

- Sprint Planning
- Daily Scrum
- Sprint Review
- Retrospective
Agile: Sprint Planning

- Review the backlog and determine what items / stories will be brought into the time-bound sprint
- Determine the work and effort necessary and commit to the sprint
- Clarify expectations
- Receive instructions
- Commit and ‘hit the ground’ on the sprint
Agile: Daily Scrum

- Meet daily (quick) at the same time to provide individual updates to the team

- Answer:
  - What did I do yesterday
  - What will I do today
  - Do I need any help or is there anything in my way
Agile: Sprint Review

- Opportunity to showcase what the team has been working on and what they finalized in the sprint
- Sharing occurs with all stakeholders (i.e. other classes)
Agile: Retrospective

- The opportunity to reflect on what went well during the sprint and what could be improved
- Great opportunity to have a conversation on how the team can improve
How Do I Start Introducing Agile?

- Provide direction
- Commit to a sprint (cadence)
- Run time-boxed sprints – small components, short periods, inspect & adapt
- Sprints start with a planning session and end with a retrospective
- Agile is all about the team
  - Work together to accomplish a goal.
  - Cross-skill and support each other
- Ask for a regular (cadence) update
How Do I Start Introducing Agile? (cont’d)

- Ask:
  - What did you complete since we last met?
  - What will you do between now and when we next meet?
  - What’s in the way of completion?
  - Need help?

- Retrospect
  - What did we do?
  - How can we do it better?
  - Reflect and improve continuously

- Collaborate and communicate
Why Agile Works

- Prioritization (goal competition) and decomposition
- Value-add – Ask why?
- Kanban (work in progress limits)
- Commitment
- Cadence
- Teach back
- Inspect & adapt
- Empowerment
What does Agile teach our children?

“Soft” Skills

- Communication
- Listening
- Sharing
- Confidence
- Respect
- Empowerment
- Openness to Feedback
  - Vulnerability

Practical Skills

- Visualization
- Control
  - Purpose
  - Selecting what to work on
  - Progress
- Gamification
- Goal Setting
- Trust
- Freedom to Experiment
Our Brilliant Teaching Philosophy©

Step 1: Teach
Step 2: Build & Observe
Step 3: Teach Back
Step 4: Retrospect
Step 5: Inspect & Adapt

DEVELOP TRUST
ENSURE PSYCHOLOGICAL SAFETY

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Questions?

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