“STEM Leadership for Parents”

Presenter

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The Engineering Dilemma

- The U.S. is not producing enough engineers.
- U.S. companies can hire engineers from other countries at ¼ the cost.
- One third of the engineers at The DoD are ready for retirement but can't because of the shortage.

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The Situation

- How do we bring hi-tech jobs back to North Carolina?
- How do we prepare your child to compete for these jobs locally and globally?
- How do we keep pace with the fast rate of technological change?

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Leadership versus Management

- Leadership and management are not the same thing.
- Leadership is synonymous with “direction”.
- Management consists of the people, processes and procedures that are needed to go in a certain direction.
- Both are needed for effective leadership.

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The Rate of Technological Change

- Most technology companies make enhancements to their products every two to three years.
- These enhancements transform at least one industry every three to five years.
- These two factors have a major impact on learning and career opportunities.

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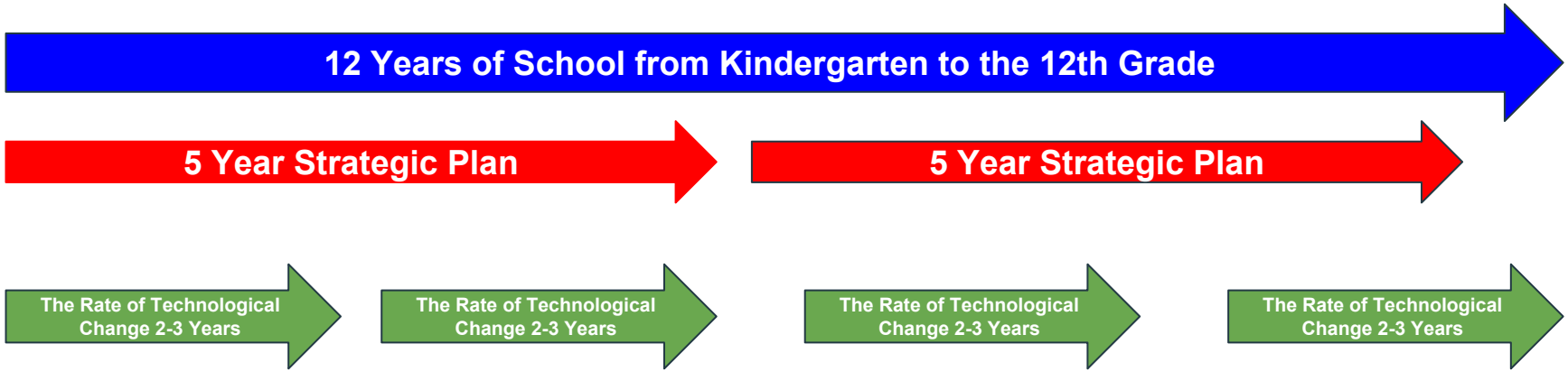
Education Strategic Plans and The Rate of Technological Change

- Most colleges, universities, and K-12 schools are operating based on a 5 year strategic plan.



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The Disconnect

- There is a disconnect between technology and instruction in the classroom.
- Instruction is the driving force at any institution of learning, not technology.
- Most technology departments fail to understand this.
- Instructional leaders **must** become technology leaders.

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The Real Reason Factory Jobs are Disappearing

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Lots of high-tech factory jobs in U.S., but skilled workers are lacking

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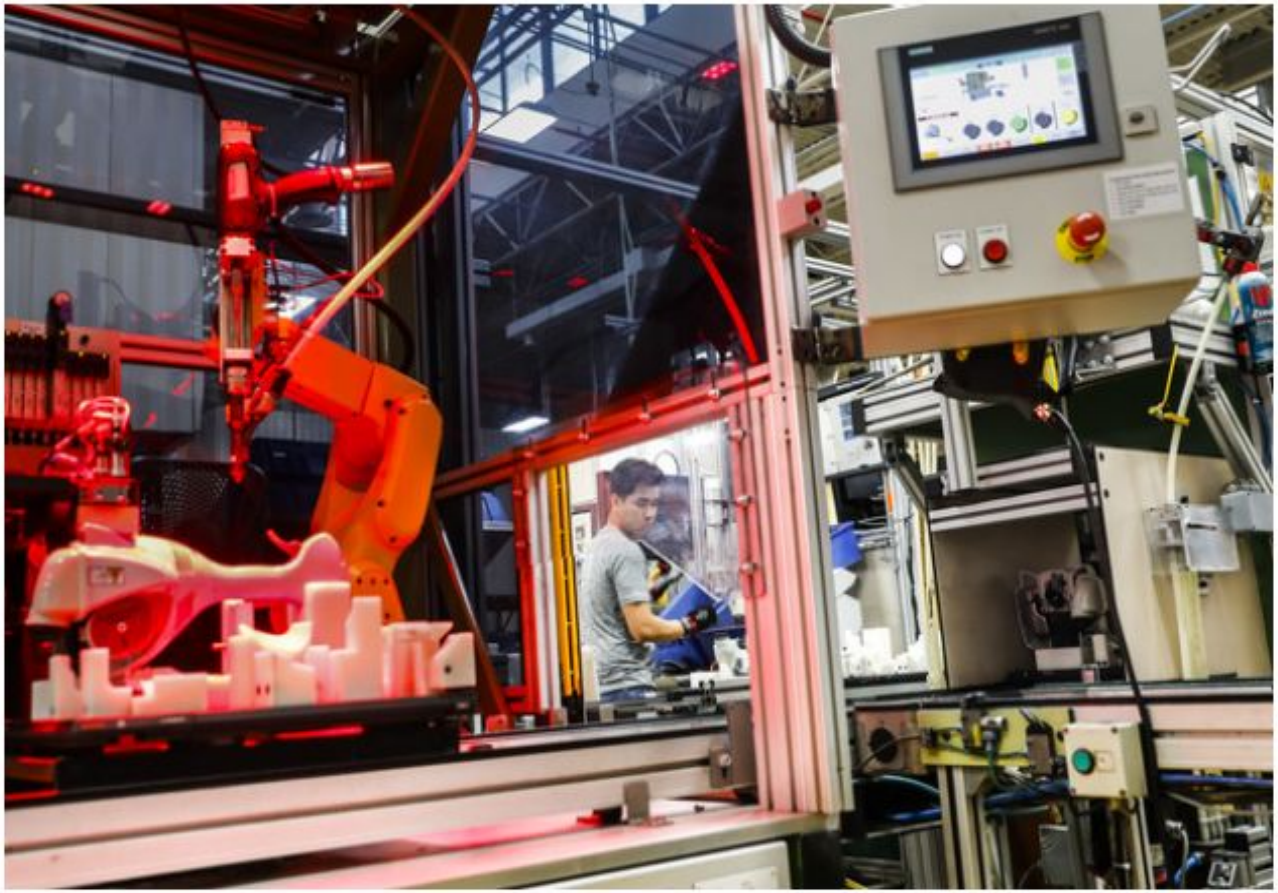

1 of 17 *In this Thursday, May 25, 2017 photo, an assembly line laborer works alongside a collaborative robot, left, on a chainsaw production line at the Stihl Inc. production plant in Virginia Beach, Va. Despite efficiency... (AP Photo/John Minchillo)* **More**

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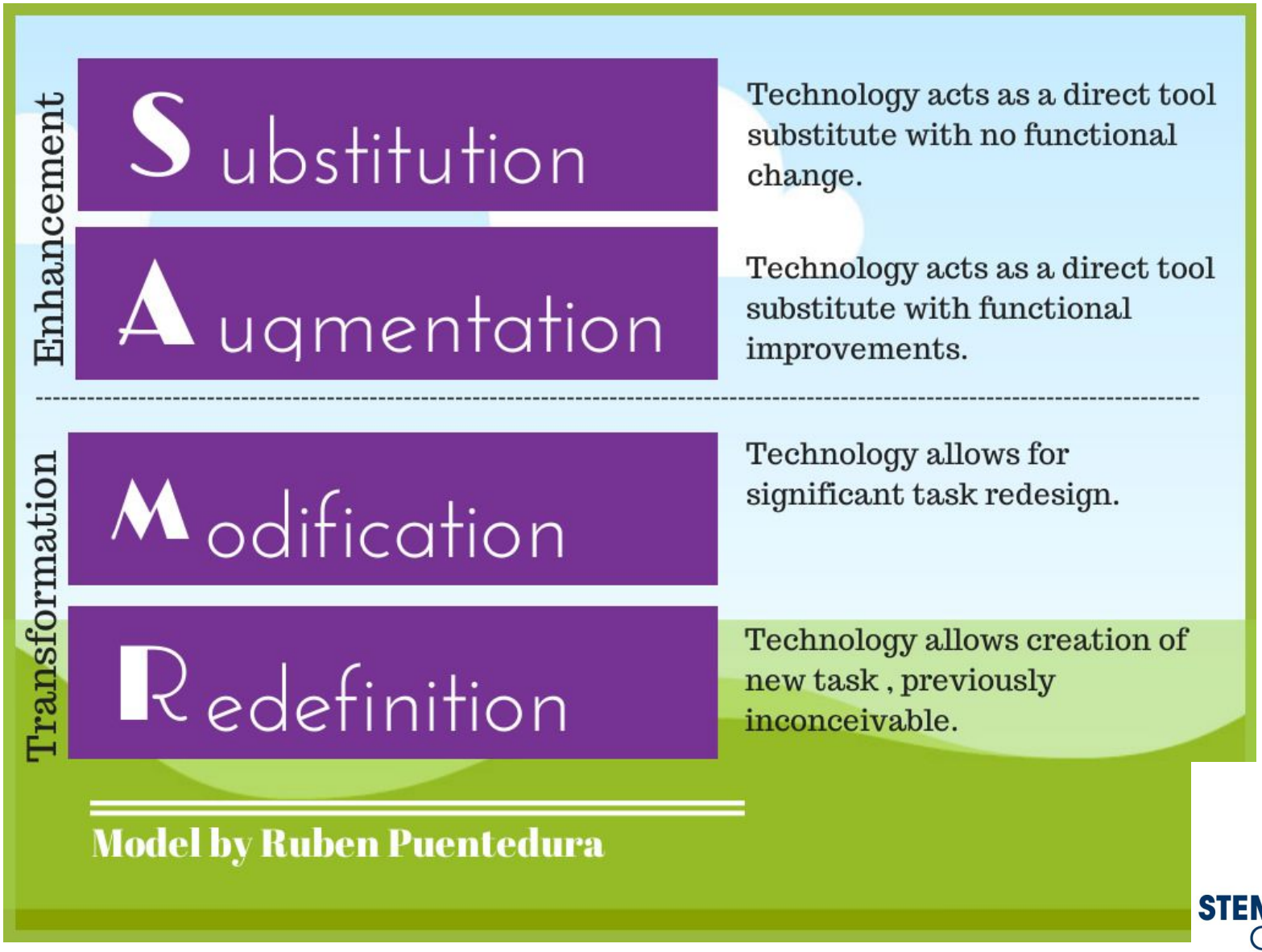
The SAMR Model



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Soft Skills and Technical Skills

- Coding is a technical skill that sharpens the following soft skills:
  - Logical Thinking
  - Problem Solving
  - Controlling the Sequence of Events
  - Analysis

- Coding also enhances the following writing skills:
  - Subject Verb Agreement
  - Syntax and Punctuation

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Creation versus Consumption

- Students learn best when they are creating (engineering).
- When they create something they have no alternative but to understand it.
- Consumption technologies (handheld devices, tablets, smartphones) are “placebos”.
- The best technology investment for any family is a computer.

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Failing to Fail via Failure

- Classroom management and instruction is based on a paradigm of efficiency that uses the clock and the calendar as its symbol.
- When students create they can visually see their mistakes and go into problem solving mode.
- Having the time to create and recreate is the key to mastery.
- Consumption is the gray area between mastery and failure.

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The Solution

- The solution is early and often exposure to STEM learning programs that are **rooted** in math and science and emerging technologies.

- What are some emerging technologies?
  - Coding
  - Mechanical Engineering (3D Modeling)
  - Electrical Engineering

Theses are the **core** disciplines for automation and robotics.

- When they are integrated with math and science, they create a true STEM learning experience.

- Students also gain “verifiable” years of exposure .

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The Impact

- In March of 2014 we exposed 55 low performing students to 3D technology rooted in the 6th grade Common Core Math Standards. June of 2014, the result was 44% overall growth.

- In July 2014, we exposed 27 rising 3rd, 4th, 5th, and 6th grade students to 3D technology and the CCMS. On their fall benchmarks the result was an average of 16% growth per student.

- In May of 2018, STEMERALD City, will graduate 25 high school seniors who have accumulated a minimum of 256 STEM contact hours and are certified in 3D printing.

- They have 64 hours of coding, 64 hours of 3D modeling, 64 hours of 3D simulation, and 64 hours of IT training.

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Best Practices

- Invest in a computer.
- When searching for a STEM learning program, ask the following:
  - How does this program integrate into my child's current curriculum?
  - Will this program raise my child's achievement in the classroom? If so, how?
  - To what technologies will my child be exposed?
  - Do you have certified teachers on staff?

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Thank you ☺

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