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AUTOMATION, AI, MACHINE LEARNING

&

THE INDEPENDENT SCHOOL LANDSCAPE

May 2, 2019

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What are schools / careers / relationships of the future?

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The current struggle

In the agricultural era, schools mirrored a garden. In the industrial era, classes mirrored the factory, with an assembly line of learners. In the digital-information-era, what will learning look like?

Lucy Dinwiddie
Global Learning & Executive Development Leader, General Electric

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CHARACTERISTICS OF SCHOOLS OF THE FUTURE

- Analytical and Creative Thinking and Problem Solving
- Adaptability, Initiative and Risk-taking
- Integrity and Ethical Decision Making
- Complex Communication - Oral and Written
- Digital and Quantitative Literacy
- Leadership and Teamwork
- Global Perspective

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Let's Brainstorm

THE UNIVERSALLY ACCEPTED RULES OF BRAINSTORMING

according to me . . . today

1. Defer / withhold judgment.
2. Encourage wild ideas
3. Build on the ideas of others ("Yes! And . . .")
4. Stay focused on the topic.
5. One conversation at a time.
6. Be visual.
7. Go for quantity.

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Brain Storm: Critical Characteristics

What are the critical characteristics required for successful employment in your school?

- When we debrief, you must agree on five characteristics.
- Key concepts: only five + must agree

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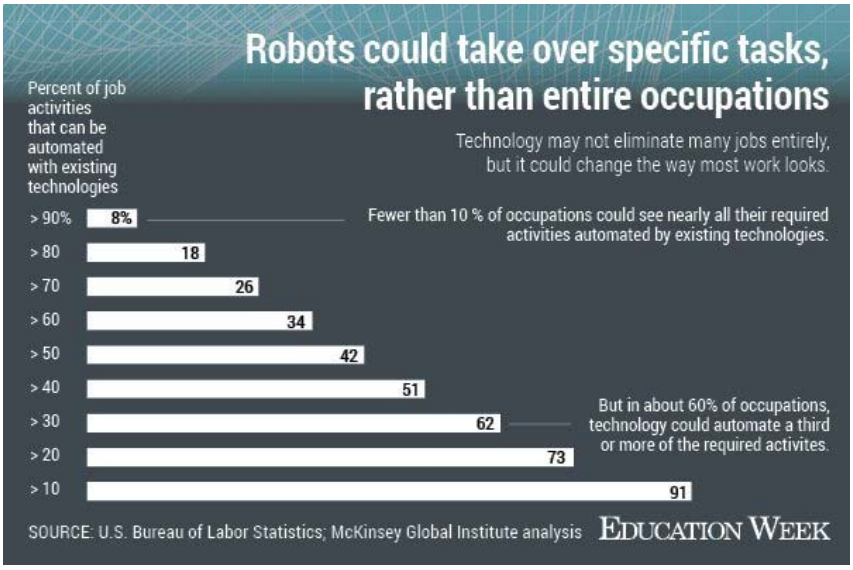

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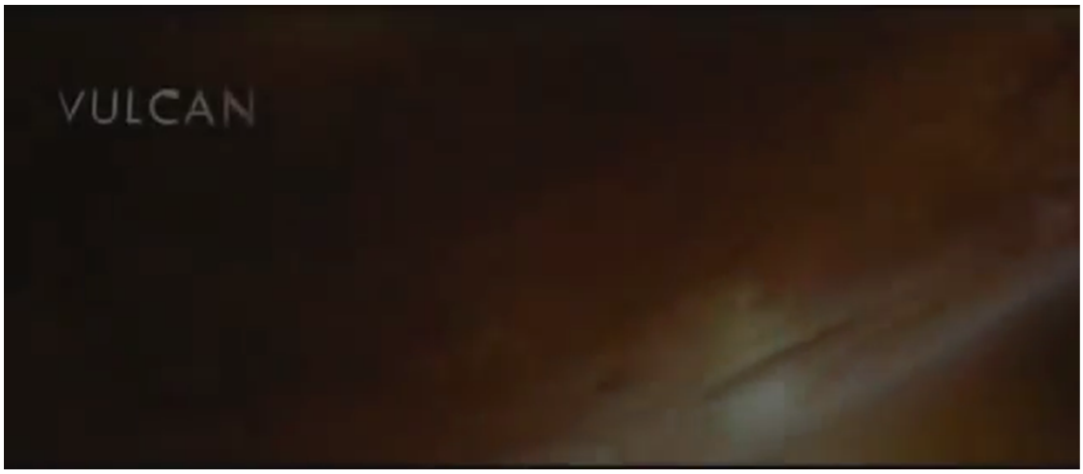
School of the Future, Part 1



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Robot Skippers? Automation in the workplace

THE ATLANTA JOURNAL-CONSTITUTION

THE INSIDER

THEY SAID IT

"It's a possibility ... I don't know if it would necessarily work. I know the players love having a guy (as manager) who is part of the group and working with you and communicating and is part of the journey. It means a lot that everyone has bought in on it together." — **Cubs starter Kyle Hendricks,** *on the possibility of a "robo-manager" taking over for a human*

BASEBALL

Manager Dave Roberts (above) is respected by Dodgers President Andrew Friedman, who believes a robo-manager wouldn't work. "Appreciating different guys' personalities. ... how to put (players) in the best position to succeed" is important for managers, Friedman said.

On the horizon: Robot skippers

With front offices relying more on analytics, could robo-managers take over MLB teams?

Left: The Cubs' Joe Maddon (with team President Theo Epstein) is viewed as a good manager — but as good as a robo-manager designed to make split-second, successful calculations? Right: Mariners manager Scott Servais said "people get caught up in the analytics" but "there's a feel to (managing), an art to it."

'I have a guy (manager Bob Melvin) who has a ton of experience and does a great job in part because of his experience. Any assumption that somebody could just pick numbers off a machine and manage 25 guys is incorrect.'

— It's general manager David Forst, who said "absolutely not" when the concept of robo-managers was brought up.

Automation is already in your workplace

- Slack / Todoist
- CIALFO
- Indeed
- Video interviews
- Help desk with Spoke
- Doodle
- You can book me
- LastPass
- Zendesk
- Chatbots
- Digital Signatures
- Social media

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Four fundamentals of workplace automation

1. The automation of activities
2. The redefinition of jobs and business processes
3. The impact on high-wage occupations
4. The future of creativity and meaning

https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/four-fundamentals-of-workplace-automation

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Capabilities that are being automated

Social
- Social and emotional sensing
- Social and emotional reasoning
- Emotional and social output

Cognitive
- Understanding natural language
- Generating natural language
- Retrieving information
- Recognizing known patterns/ categories (supervised learning)
- Generating novel patterns/categories
- Logical reasoning/problem solving
- Optimizing and planning
- Creativity
- Articulating/displaying output
- Coordinating with multiple agents

Physical
- Sensory perception
- Fine motor skills/dexterity
- Gross motor skills
- Navigation
- Mobility

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School of the Future, Part 2

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Name Innovative companies

airbnb

UBER

NETFLIX

amazon

Square

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Brain Storm: Innovative Companies

Pick one of the innovative companies. Brainstorm in your group about your company and their keys to innovation success.

- Why did they innovate?
- What did they innovate?
- How did they do it?

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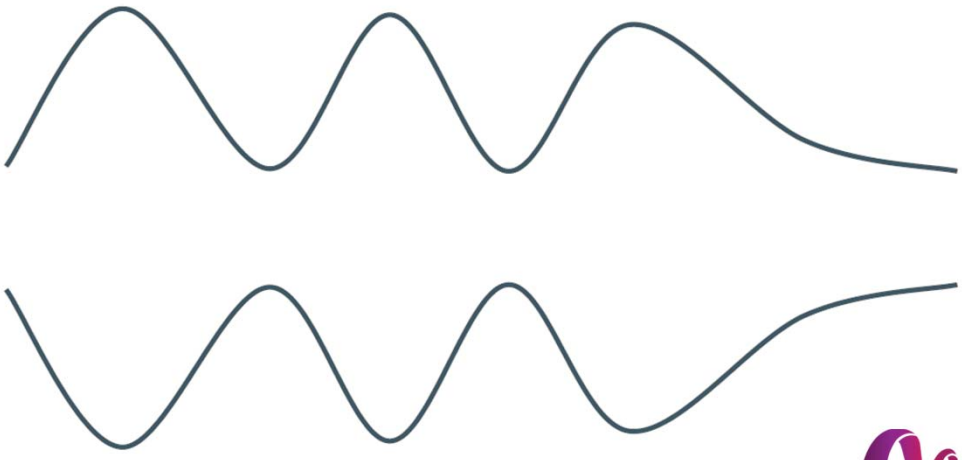
Innovation: Divergent / convergent thinking



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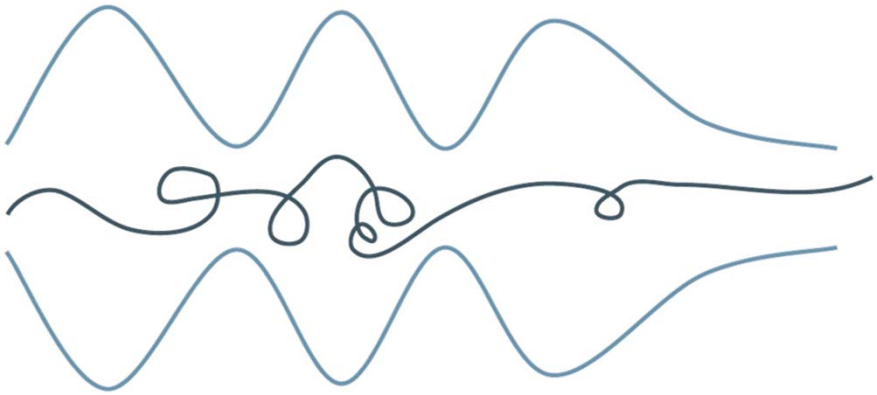
Innovation – more like this



"I've already tried that!"

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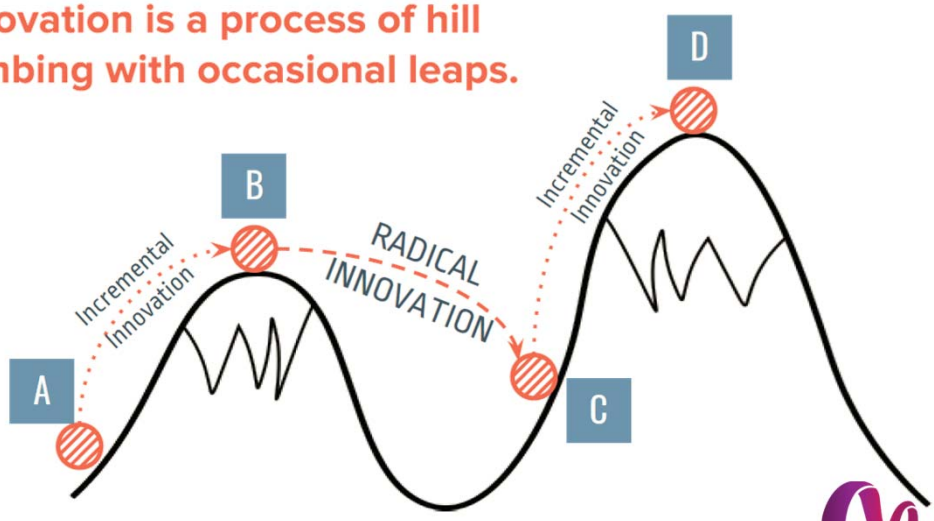
Innovation Process

Innovation is a process of hill climbing with occasional leaps.



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Successful Innovation Business Model

Six Keys to Success:

1) More personalized product or service
2) Closed loop process
3) Asset sharing
4) Usage-based pricing
5) More collaborative ecosystem
6) Agile and adaptive organization

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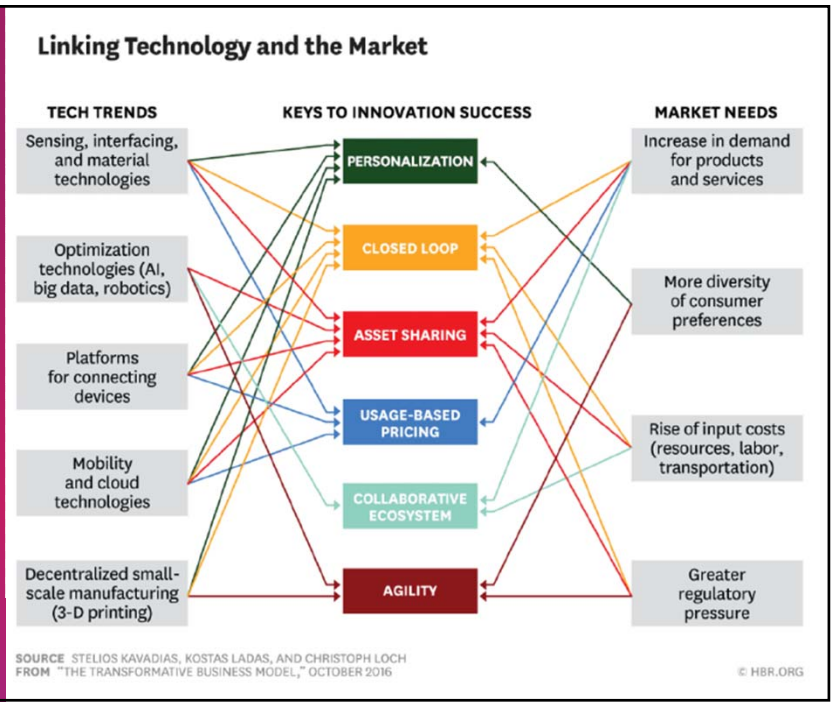
The features that characterize successful innovation link a recognized technology trend and a recognized market need.



If you were starting a new school:

What would you do differently?

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School of the Future, Part 3

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21 Future Jobs the Robots are Creating

1. Data detective
2. Bring-your-own IT facilitator
3. Ethical sourcing officer
4. Artificial intelligence business development manager
5. Master of edge computing
6. Walker/talker
7. Fitness commitment counselor
8. A.I. assisted health care technician
9. Cyber city analyst
10. Genomic portfolio director
11. Man-machine teaming manager
12. Financial wellness coach
13. Digital tailor
14. Chief trust officer
15. Quantum machine-learning analyst
16. Virtual store sherpa
17. Personal data broker
18. Personal memory curator
19. Augmented-reality journey builder
20. Highway controller
21. Genetic diversity officer

https://www.inc.com/jessica-stillman/21-future-jobs-robots-are-actually-creating.html

Kasparov's Law in chess

Chess
A computer playing alone generally loses to…
… a chess grandmaster using a computer, but with a poor process. Who generally loses to…
… a weaker human player using a computer, but with a strong process

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Kasparov's Law in football

Football
A statistical model that chooses which players to buy would generally do worse than…
… a highly knowledgeable team that uses data, but poorly. Who generally do worse than…
… a moderately knowledgeable team with a strong process for using data

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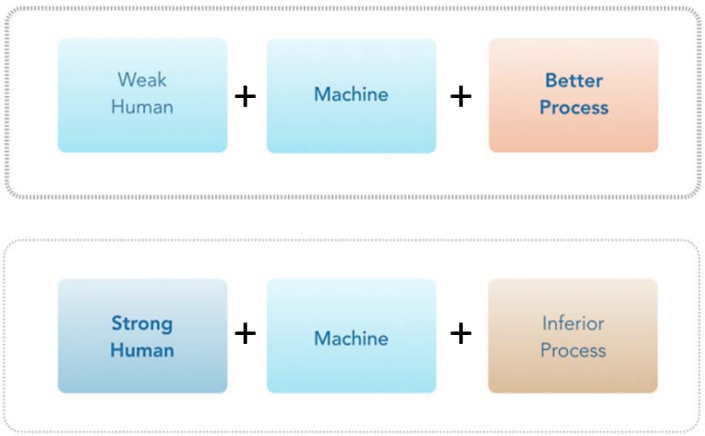
Kasparov's Law



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Wordle of mission statements

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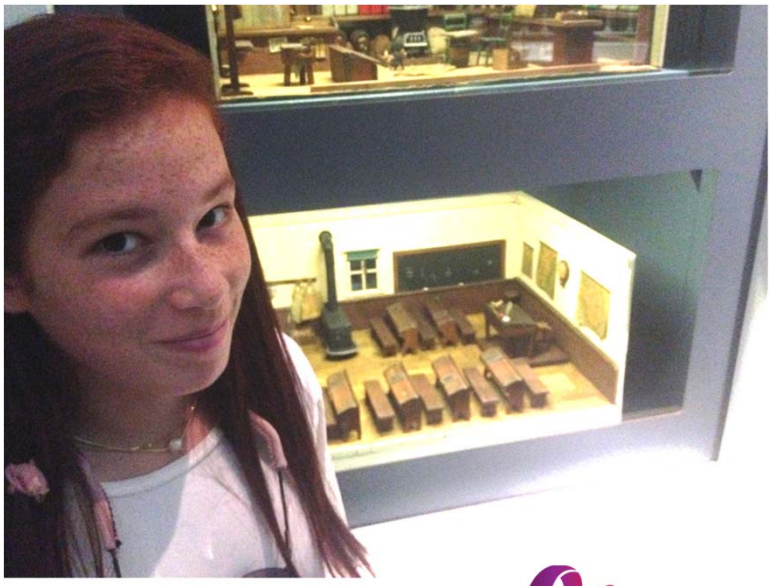

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Moving Independent Schools
Beyond Ordinary