School District of New Berlin
Expect Excellence

your digital future in
northeast wisconsin

new IT alliance

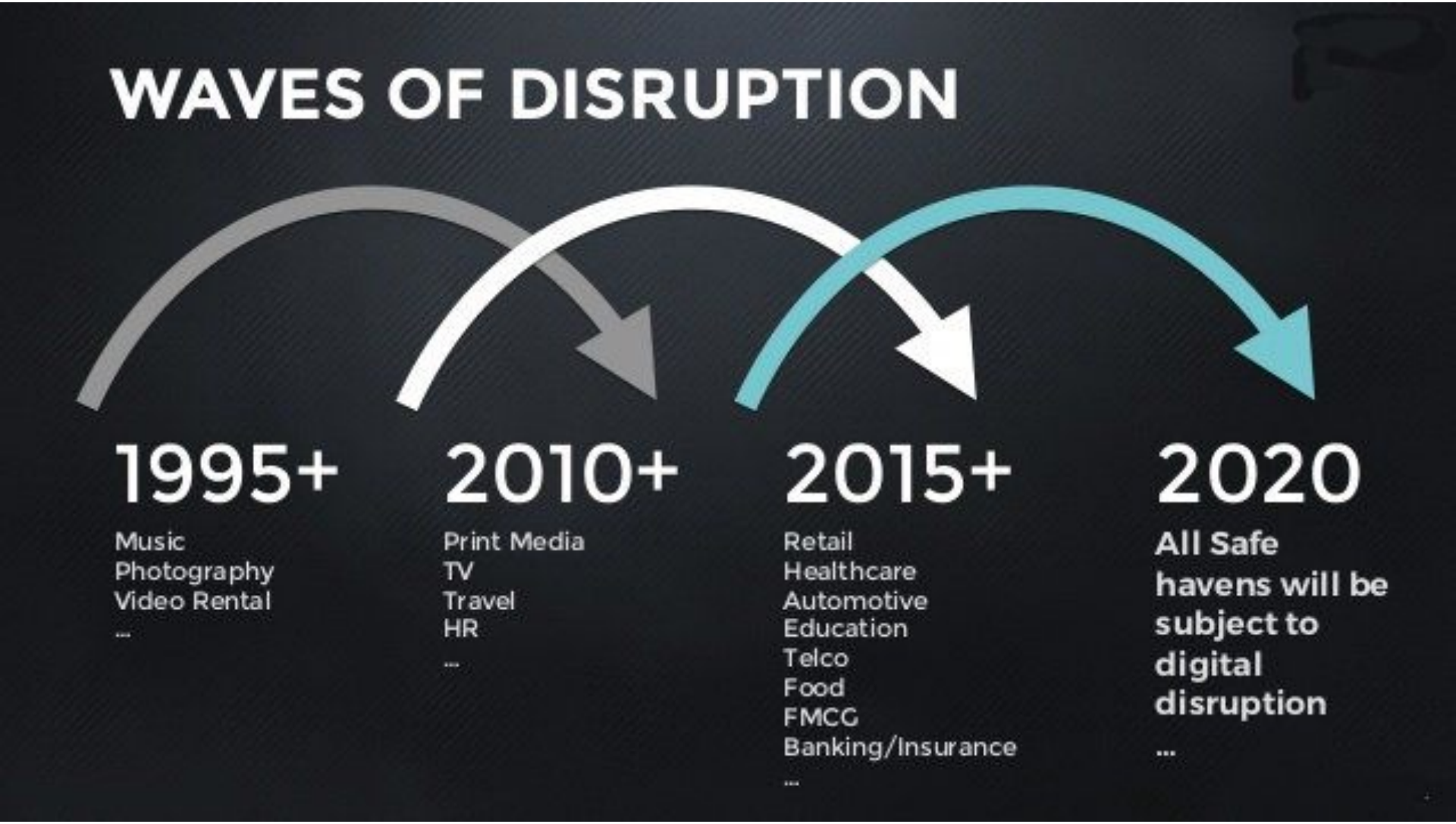
Tech Community Meeting
AI: Impact on Talent Pipeline

Fox Valley Technical College
July 12, 2018

Laura Schmidt
Strategic Advisor to the Superintendent

Key Topics Today

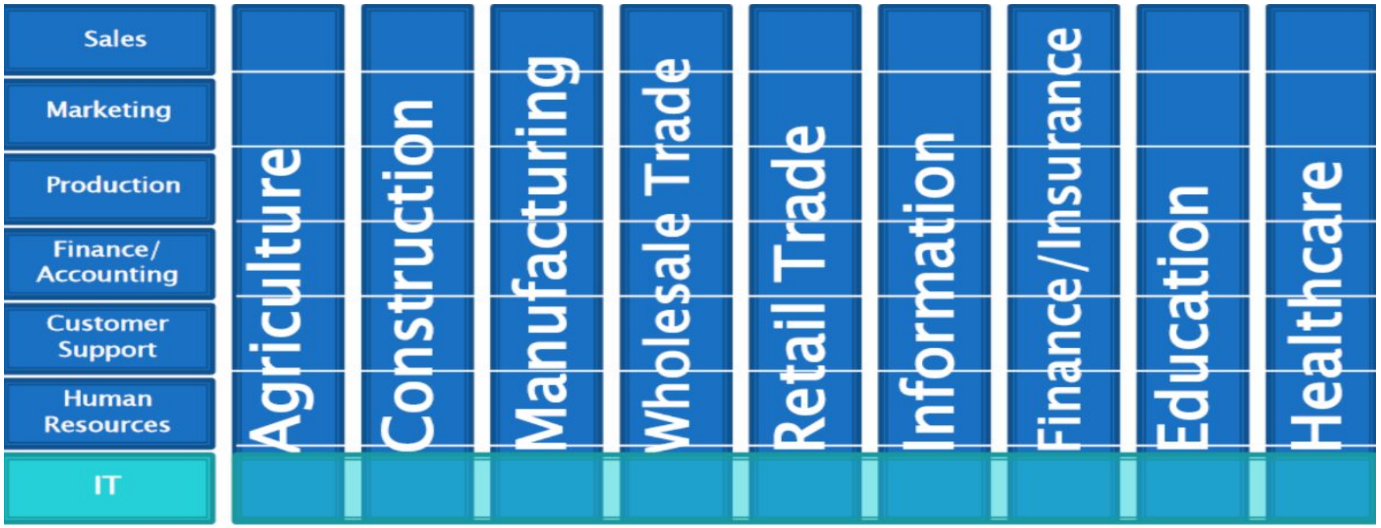
- What is Digital Transformation? What is AI?
- Why does AI (and other disruptive tech) matter to K12?
- What key strategies are employed in K12?
- What are the perceived barriers? Proposed solutions?


WAVES OF DISRUPTION
1995+
Music
Photography
Video Rental
...
2010+
Print Media
TV
Travel
HR
...
2015+
Retail
Healthcare
Automotive
Education
Telco
Food
FMCG
Banking/Insurance
...
2020
All Safe havens will be subject to digital disruption
...

DIGITAL TRANSFORMATION

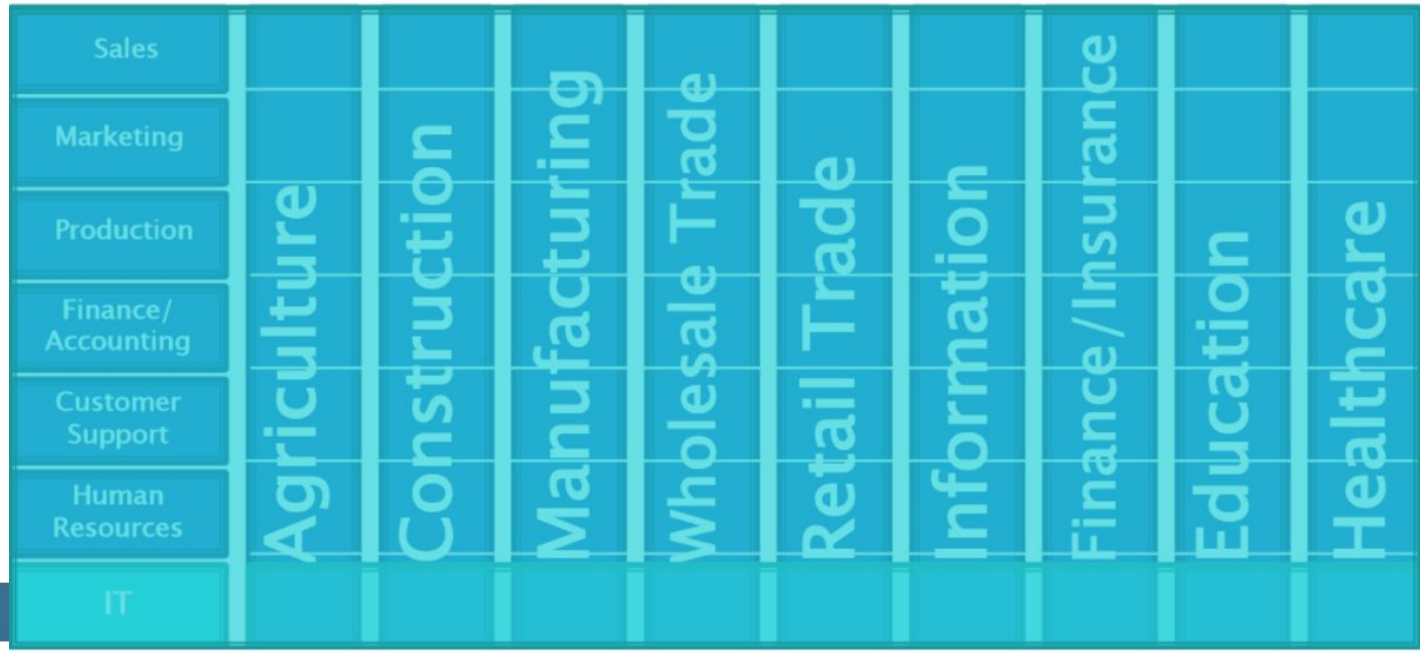
> The change associated with the application of digital technology in all aspects of human society

NEW ERA “Tech Talent” Survey, 2015



“Tech” Historical

“Tech” Today



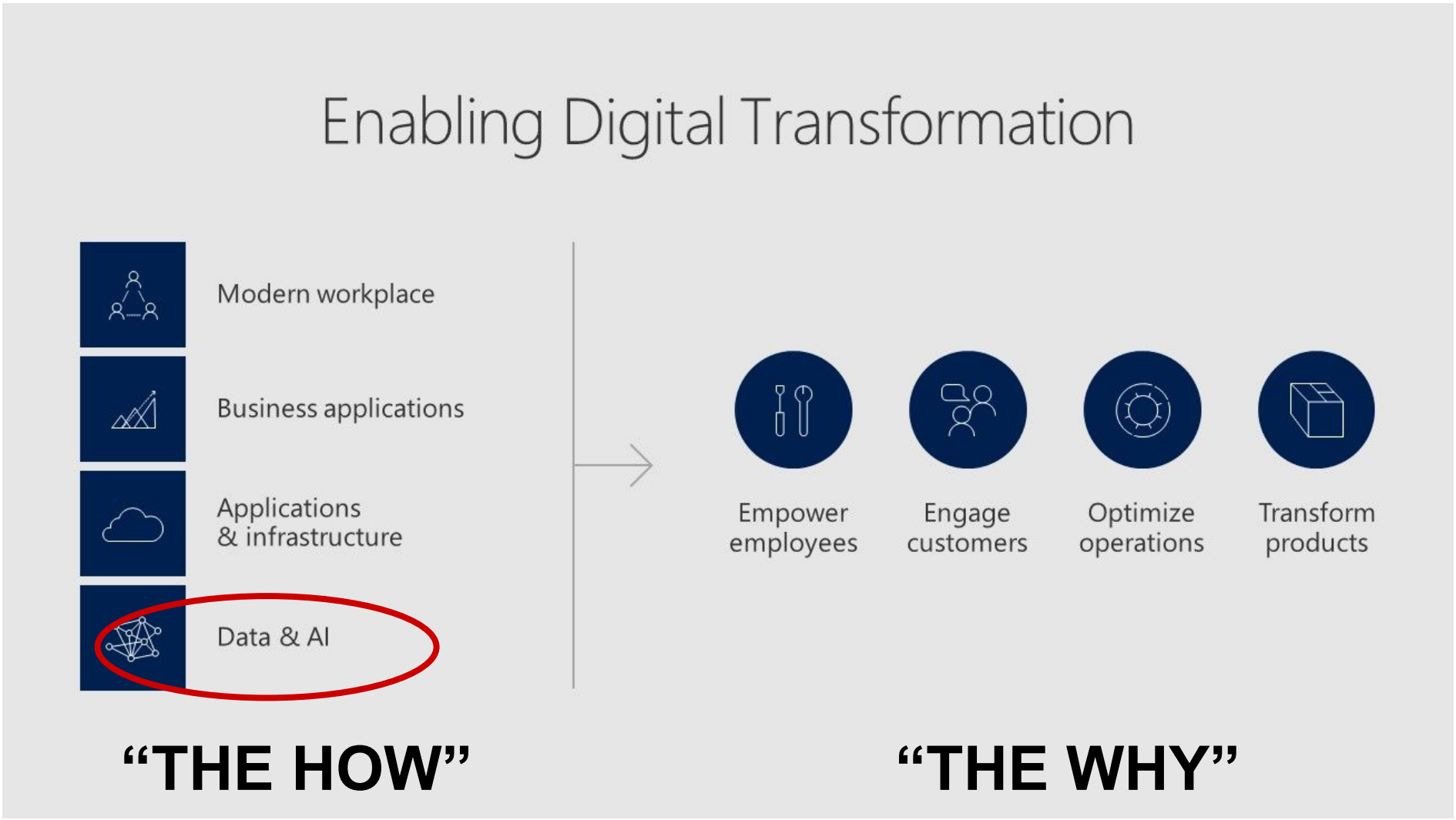
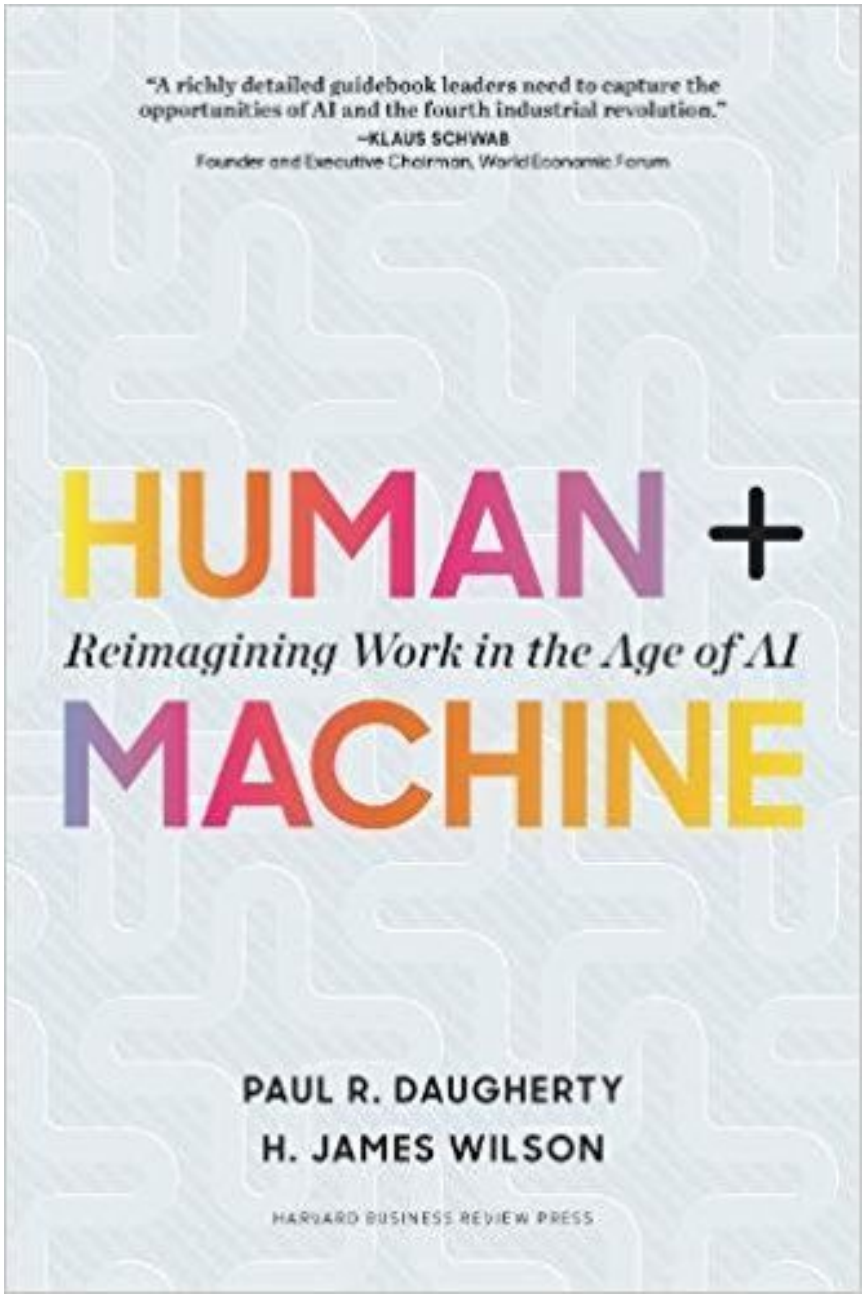


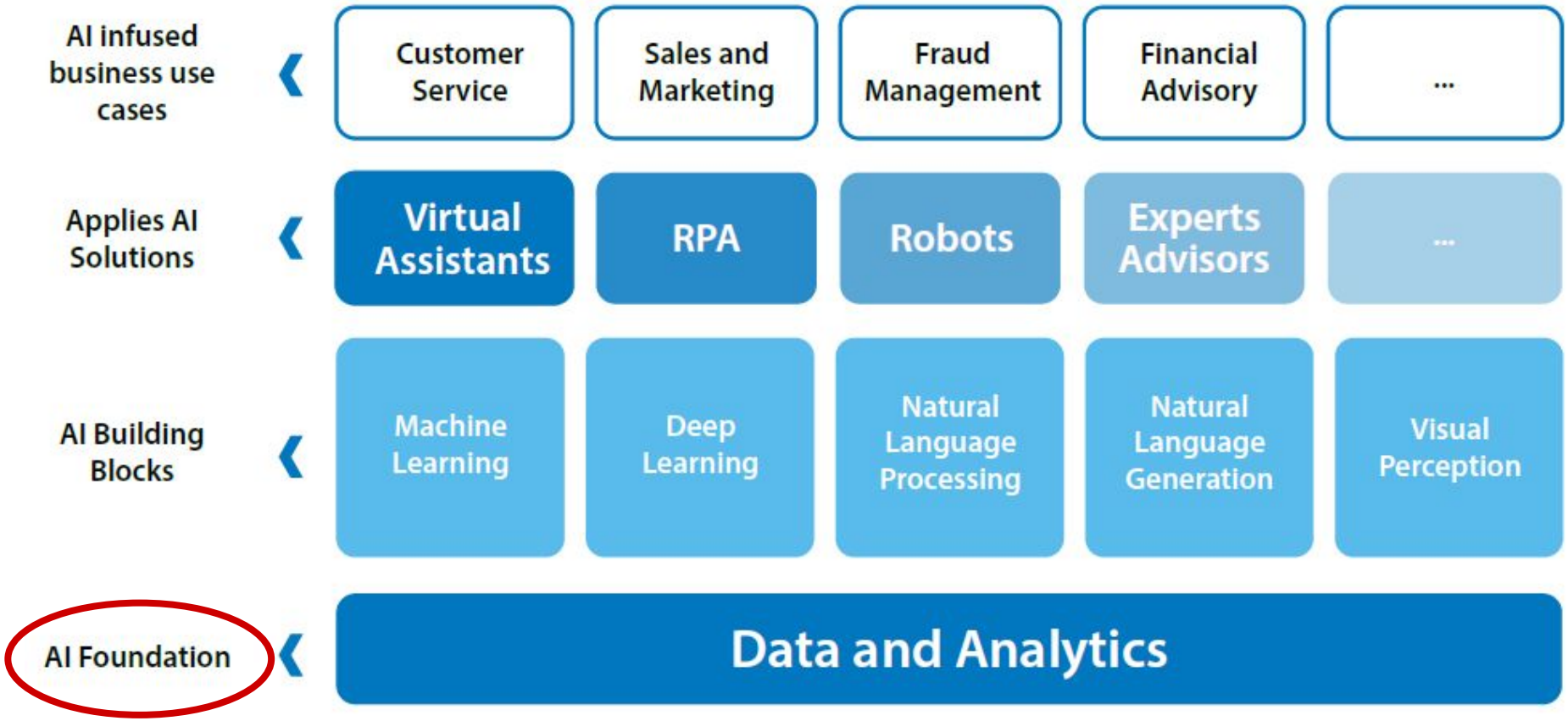
Image credit: Microsoft

“Artificial Intelligence is a branch of computer science dealing with the simulation of intelligent behavior in computers.”



- Management "playbook" for AI era
- AI is changing the all the rules on how companies operate.
- AI's true power is in augmenting human capabilities to create "collaborative intelligence"
- Hybrid Human + Machine Roles
  - Trainers, Explainers, Sustainers
- AI Fueled Business Principles
  - Leadership, Mindset, Enterprise, Data, Skills

The AI Stack: Banking



edgeverve
An Infosys company

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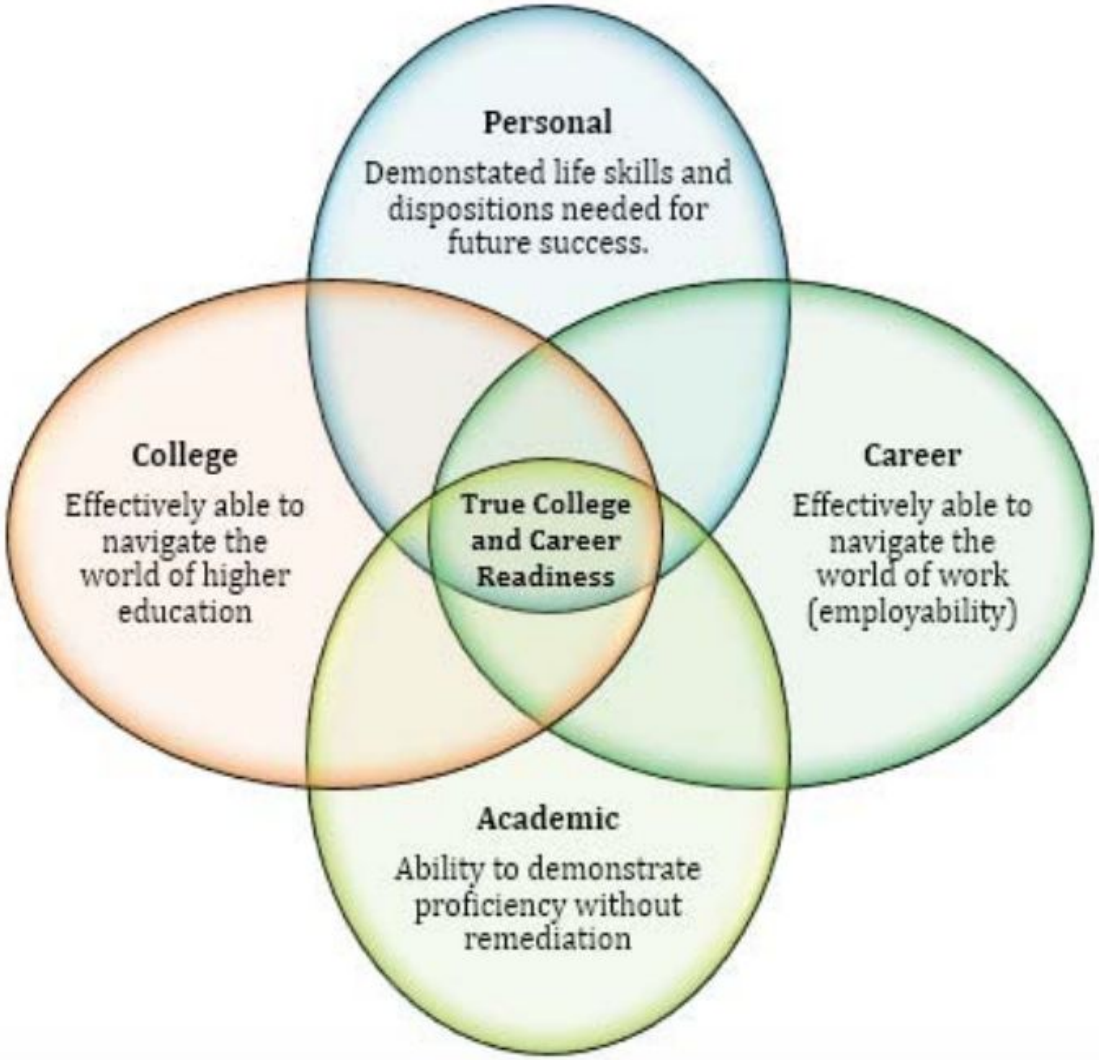
Always Start With Why



“Computer Science is a liberal art: it’s something that everybody should be exposed to and everyone should have a mastery of to some extent.”

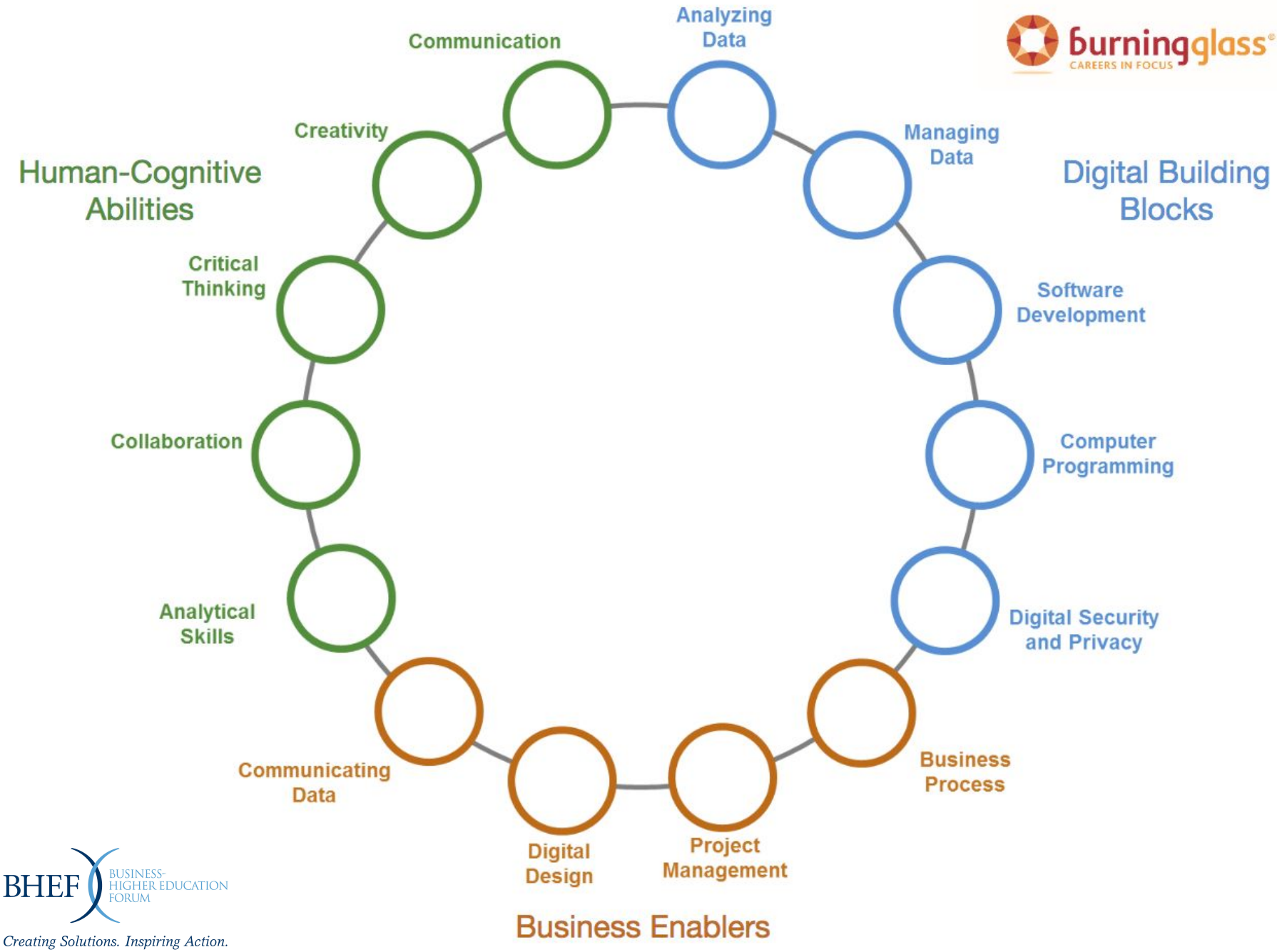
— Steve Jobs

Students (K16) today will be working in environments impacted by disruptive technologies. We need all students to graduate AWARE and PREPARED for the changing world of work.

JOI ITO

“THIS YEAR, ARTIFICIAL INTELLIGENCE WILL BECOME MORE THAN JUST A COMPUTER SCIENCE PROBLEM. EVERYBODY NEEDS TO UNDERSTAND HOW A.I. BEHAVES.”

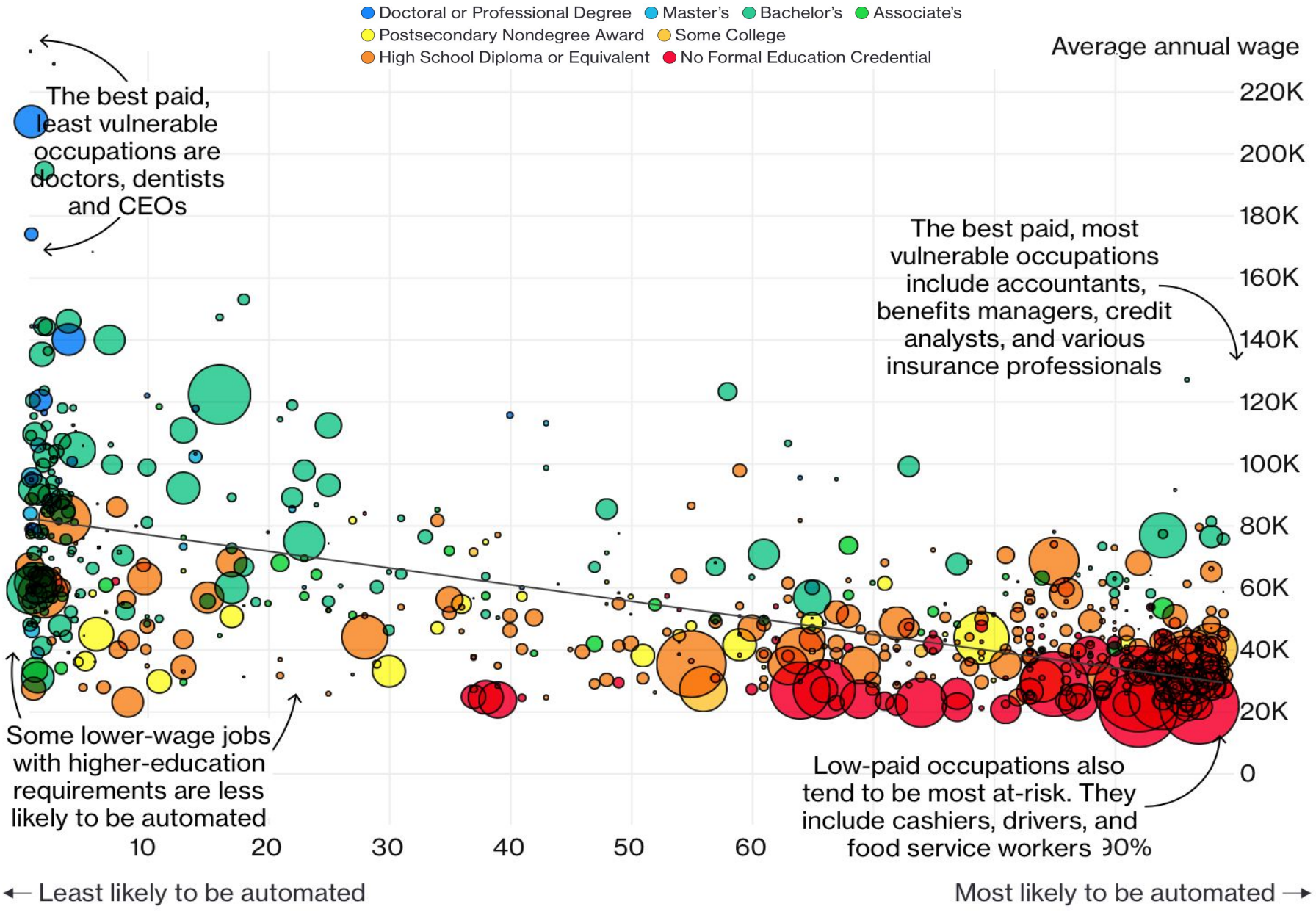
Wired, August 24, 2016, Joi Ito, MIT Media Lab



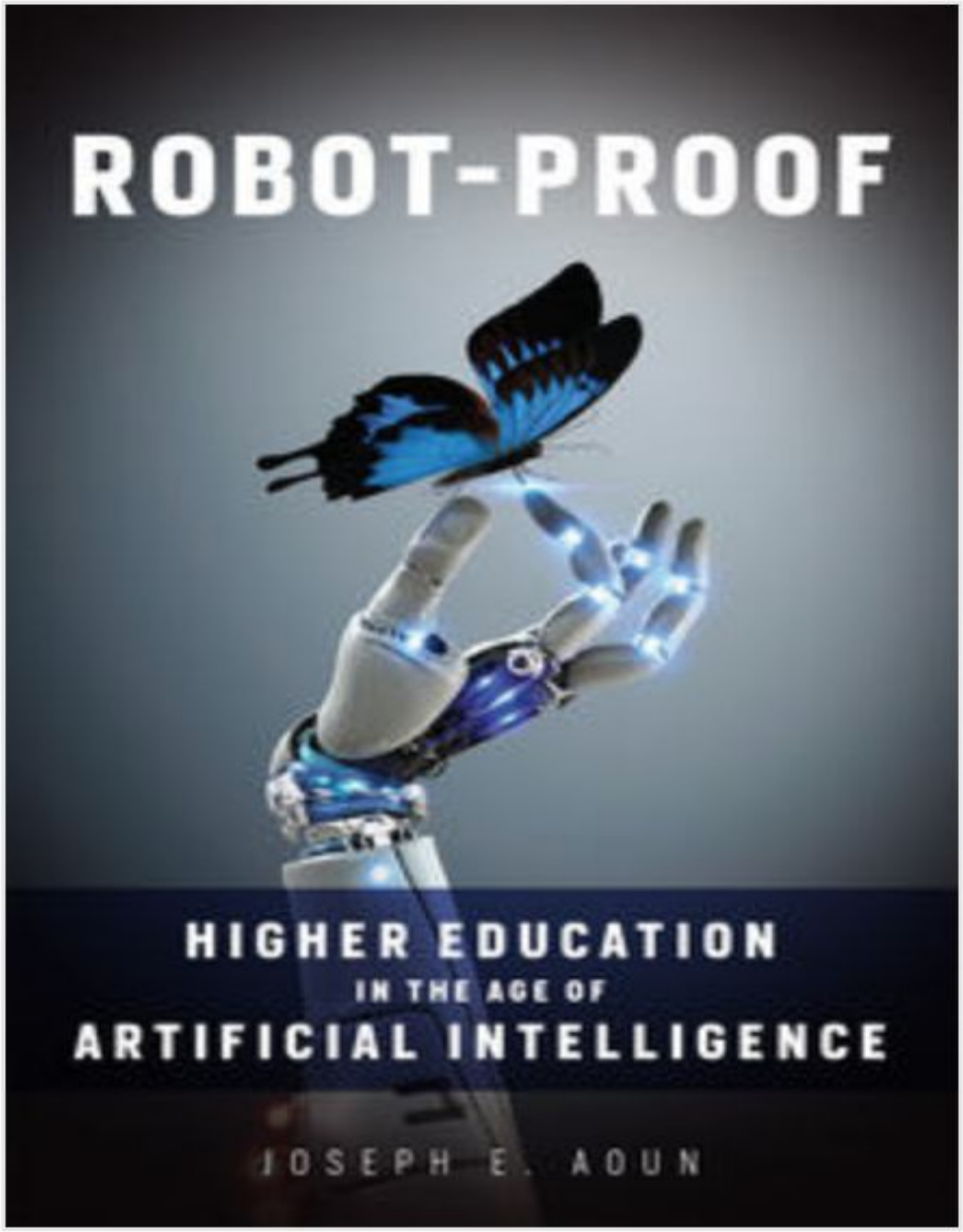
BHEF BUSINESS-HIGHER EDUCATION FORUM

Creating Solutions. Inspiring Action.

AWARENESS INFORMS PLANNING

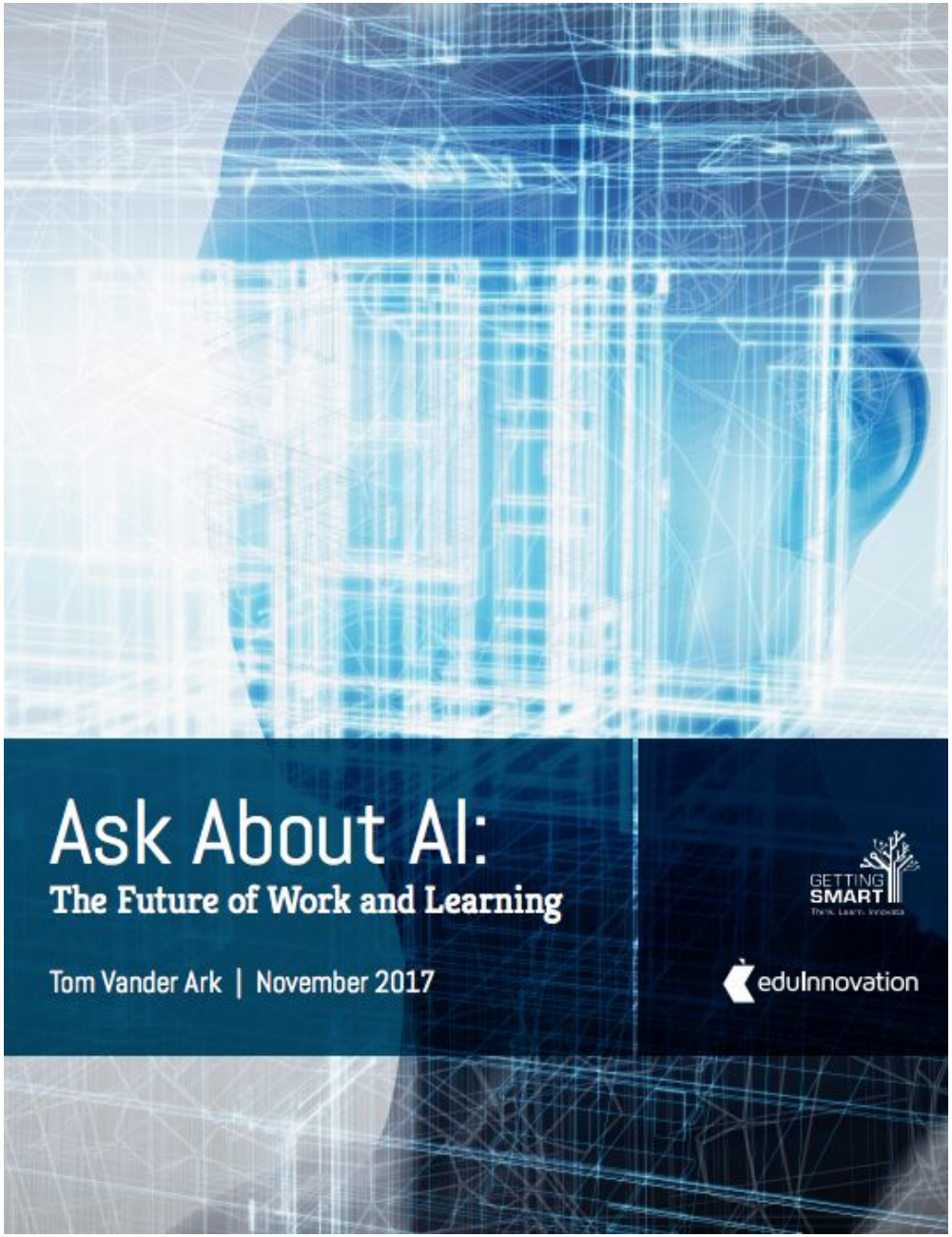


DATA: FREY & OSBORNE, BUREAU OF LABOR STATISTICS



Foundational Skills:

- Data Literacy
- Human Literacy
- Technological Literacy

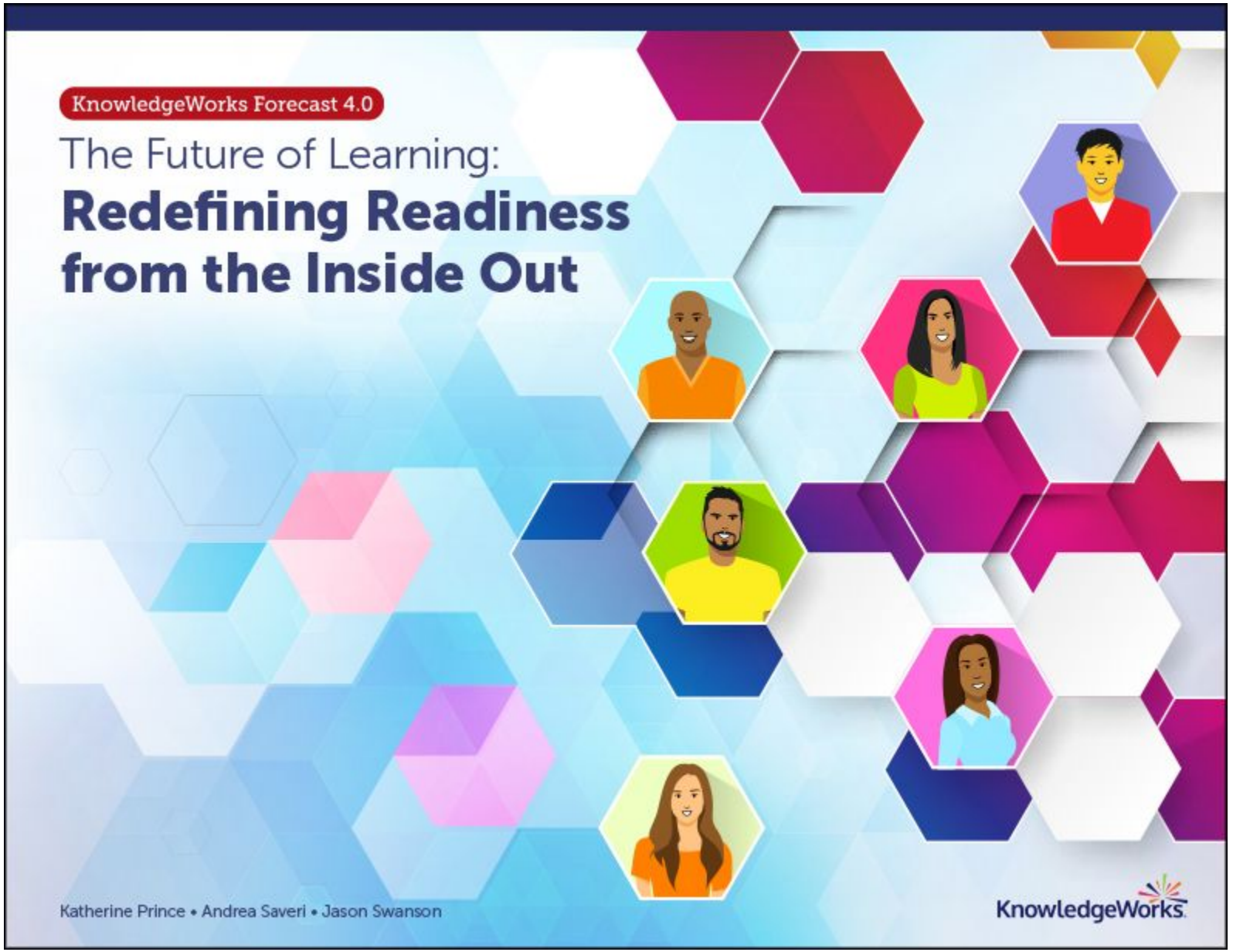


Focus Areas:

- **Employment**
- **Ethics & Impact**
- **Education**

http://www.gettingsmart.com/futureofwork/

#AskAboutAI


KnowledgeWorks Forecast 4.0
The Future of Learning:
Redefining Readiness from the Inside Out
Katherine Prince • Andrea Saveri • Jason Swanson
KnowledgeWorks

Talent Whitepaper - Outline

- Let Humans Be Humans
- Humans Must Interact With Technology
- Jobs Will Certainly Be Lost
- New Jobs Will be Created
- We Must Prepare!
  - K12
  - Post-secondary
  - Corporate Reskilling
- Building the Future of Work

https://advancingaiwisconsin.com/home/talent-whitepaper/

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Key Strategies Employed In K12

- Digital Learning, Digital Citizenship
- New Electives, Course Sequences
- Applied/Experiential Learning
- Academic and Career Planning
- Educating Parents on “The Why”
- TBD?

Maker Culture (PBL)

Data Literacy

- Math, Statistics
- Science
- Applied Data Science

Technological Literacy

- Digital Learning
- ITL Standards
- CS Framework
- CTE, Industry 4.0

Human Literacy

- Liberal Arts
- Design Thinking
- Entrepreneurial Skills, Agile
- Dispositions

Education for Employment (E4E)

Includes "Technological Literacy" But how do districts define it? Measure it?

One of the key components of our "Vision of a Graduate" is technological literacy.

Technological literacy* refers to one's ability to use, manage, evaluate and understand technology. In order to be a technologically literate citizen, a person should understand what technology is, how it works, how it shapes society and, in turn, how society shapes it.

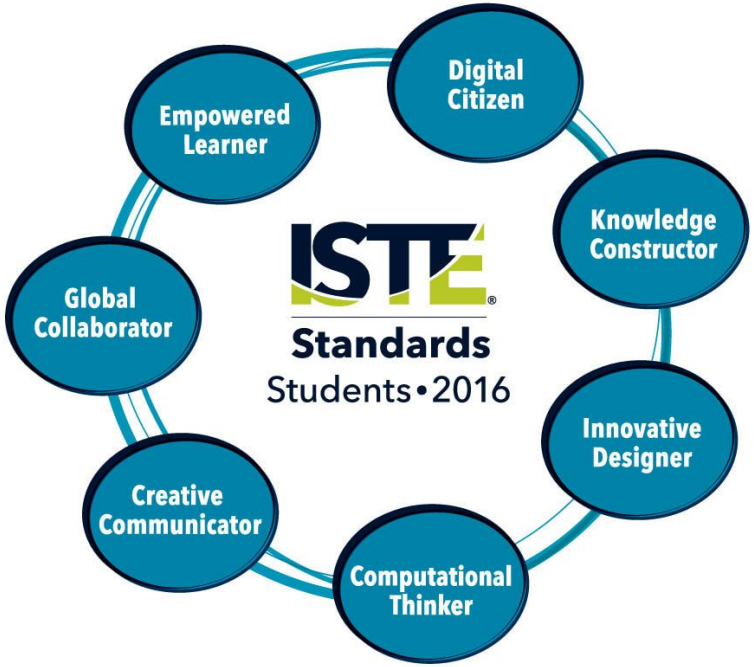
Additionally, a technologically literate person leverages their inventiveness to design and build things and to solve practical problems that are technological in nature.

Technological literacy involves a vision where every person has a degree of knowledge about the nature, behavior, power and consequences of many aspects of technology from a real-world perspective.

* definition adapted from ITEAA.org

Key Strategies

- Instructional Standards
- Digital Citizenship
- Digital Learning
- Online Coursework
- Computer Science Curriculum
- IT TechKNOW Program
- Advanced Innovation and Design

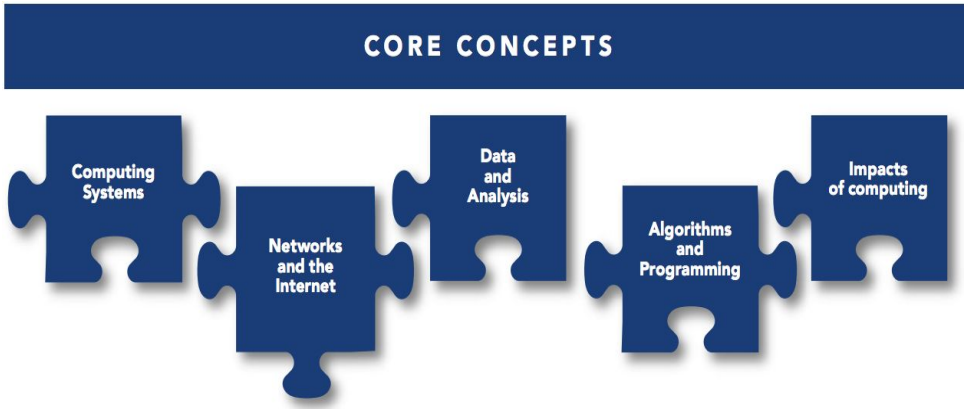


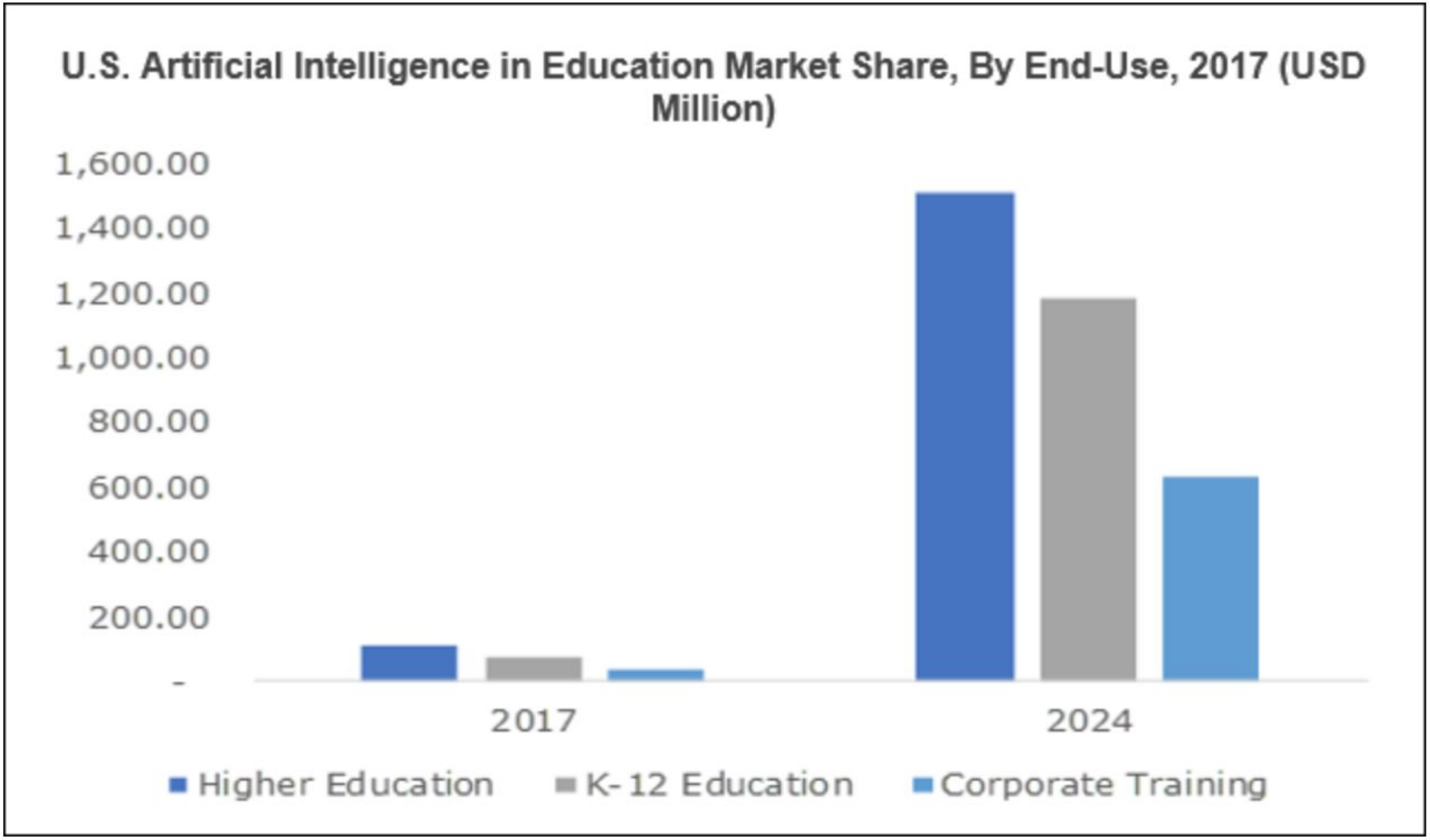
AND

/OR

?

K12 COMPUTER SCIENCE FRAMEWORK



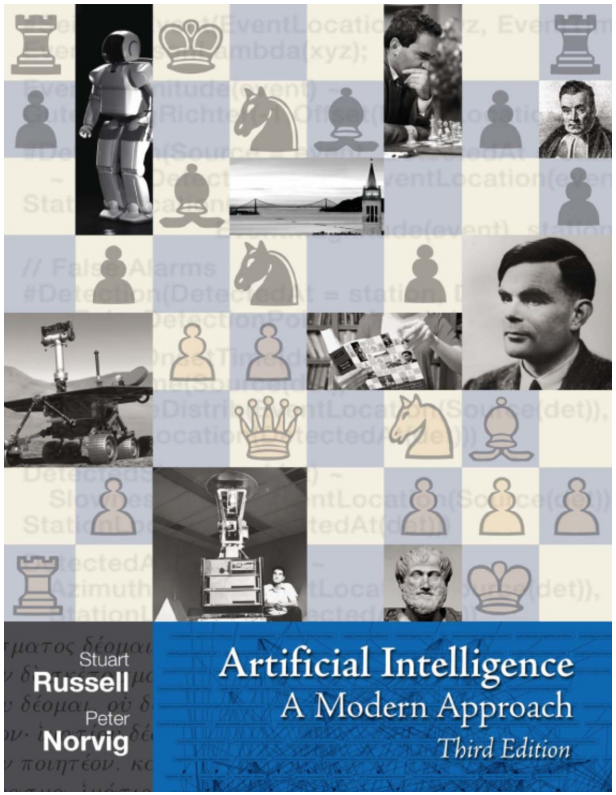


Source: Global Market Insights, Inc.

What Should Students Know about AI?

- AI is a branch of **Computer Science**, has several subdisciplines
- AI is part of the technologies you use **everyday**
- AI will impact the way in which you will do **your job** in the future
- AI systems are designed by **decomposing a problem** into lots of small problems, and enabling the solutions to communicate
- AI is **now possible** because of the speed at which we can access and interpret large amounts of data (i.e. Big Data, IoT)
- In ACP, consider computational math vs. continuous math.
- People who design AI systems must be able to build **teams**, work in teams, and integrate solutions created by other teams.
- Engineering intelligence into systems requires **ethical** decision making and a **diverse workforce.**

#AI4K12



https://github.com/touretzkyds/ai4k12/wiki

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Perceived Barriers in K12

- Lack of urgency, incentive funding, accountability
- Minimal industry/post-secondary engagement with K12
- Lack of qualified computer science teachers
- No state guidelines to raise awareness through ACP
- Standards exist but may not be prioritized
- Statistics, Computer Science not required/valued
- Hard to scale project based learning in tech

93% of parents want their child's school to teach computer science, but only 40% of schools teach it.

50% of Americans rank computer science as one of the two most important subjects of study after reading and writing.

75% of Americans believe computer science is cool in a way it wasn't 10 years ago.

Students who learn computer science in high school are 6 times more likely to major in it, and women are 10 times more likely.

67% of parents and 56% of teachers believe students should be required to learn computer science.

Wisconsin

7,673
Open computing jobs
(**2.9x** the state average demand rate)

918
Computer science graduates

- No dedicated state funding for CS PD
- Does not require all high schools to offer CS
- K-12 CS curriculum standards

▼ AP Stats

- 13% of schools teach AP CS
- 1,036 AP CS exams were taken last year
- 17% of them were female
- 55 were underrepresented minorities

Wisconsin Fact Sheet

Expect Excellence
School District of New Berlin


TIPPING
POINT

Building Capacity in SE WI - www.MKETechTalent.com

All Hands On Deck

An "all hands on deck" approach to retaining and upskilling the region's workers will be required by all players. Industry leaders will need to take a direct leadership role.

$27.6B

one quarter of the total regional economic output

$4.7B

direct annual earnings from tech talent

31K+

job openings in the next 5 years

Points of Light Emerge:

Northwestern Mutual®

MARQUETTE UNIVERSITY

UWM®

MSOE UNIVERSITY

TEALS

CODE

Industry Support is Key:

- Create a sense of urgency
- Consider your influence on public policy
- Consider your influence on post-secondary education programs (including teacher prep)
- Develop experiential learning opportunities that support a **diverse set** of learners
- Support educators interested in teaching CS
  - TEALS requires corporate volunteers
  - Ongoing professional development needed to keep skills and curriculum relevant

Thank you

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