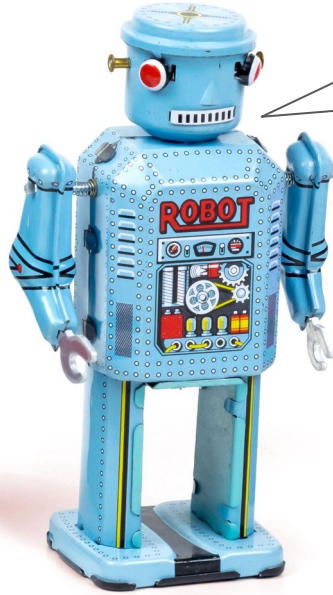


**AI: What's Your Position, Not Your**

**Position**



**Jared Colley**  
**Head of Learning & Innovation**  
**The Mount Vernon School**



**Matt Scully**  
**Director of Digital Integration & Innovation**  
**Providence Day School**

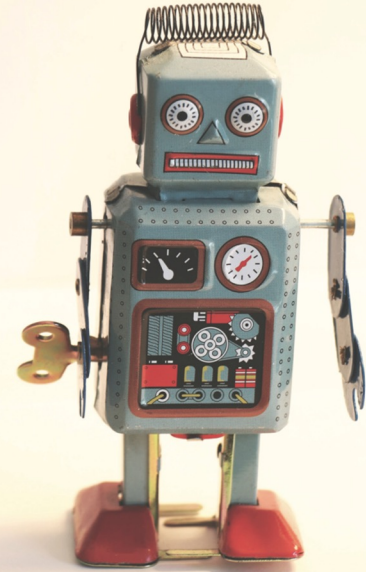
# **Introductions.**

# Learning Outcomes

1. Identify and describe in detail their position, strategically and systemically speaking, in relation to AI's role at their institution or in their class
2. Offer ideas and best practices for coaching stakeholders on what to do and not to do when it comes to incorporating AI into their organization
3. Describe in detail the competencies necessary for human learners to live a good life in the disruptive age of artificial and collective intelligence

# Transformation R&D Report

Mount Vernon Ventures publishes a quarterly Transformation R&D Report, analysing impactful topics in education for leaders and professionals navigating a complex world. Exploring the drivers, signals, and trends affecting the education sector, we serve schools by conducting extensive research, synthesizing ideas, identifying their implications, amplifying their potential, and providing recommendations for any school to consider.



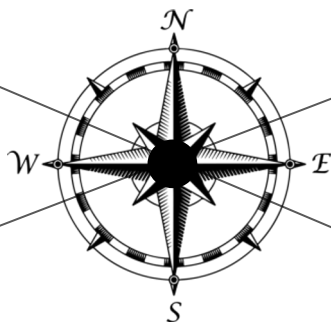
a people-centered organization  
LIVING IN AN AI WORLD ■



# WHERE ARE WE ON AI? COMPASS POINTS

When it comes to AI, what do you **need to know** or find out more about? What are your questions?

What do you find most **worrisome** about AI? *OR*, what rumors have you heard?



Is there anything that **excites** you most about AI's arrival?

What other thoughts are on your mind?

# Meeting People at Their Value in the Age of AI

## 2 Important Factors Shaping Perspectives and Attitudes:

1. The ubiquity of the internet seems to threaten a knowledge-based economy and marketplace.
2. The increased power of AI seems to threaten a skills-based economy and marketplace.



Source: Erik Brynjolfsson & Andrew McAfee's "The Business of Artificial Intelligence: What It Can - And Cannot - Do for Your Organization" from Harvard Business Review, Winter 2021

# Major Themes

- From coding and programming to data and learning
- From the predictable to the inexplicable
- From ethical transparency to regenerative capacity



# AI Timeline

## Dartmouth Workshop:

John McCarthy coins the phrase, "Artificial Intelligence" at a workshop he organized at Dartmouth University.

1958

## Expert Systems:

Researchers build DENDRAL, an early example of an Expert System that helps Chemists identify organic chemicals.

1997

## Deep Learning:

Geoff Hinton at University of Toronto experiments with Neural Net processors made of multiple layers (DNNs).

2016

## Artificial Neural Networks:

Frank Rosenblatt builds Peceptron, the first Artificial Neural Network, or the architecture that will make Machine Learning possible.

## Deep Blue:

IBM's Deep Blue beats the world champion of chess, Garry Kasparov, a culminating triumph for the progress on Expert Systems.

## AlphaGo:

AlphaGo defeats Lee Sedol, the champion of Go, showing the power of DNNs that can learn unpredictably through reinforcement.

## Sources:

1. Stan Franklin's "History, Motivations, and Core Themes," from *The Cambridge Handbook of Artificial Intelligence*, Eds. Keith Frankish & William M. Ramsay, Cambridge University Press, 2014
2. "A Brief History of AI," *AITopics.org*, The Association for Advancement of Artificial Intelligence (AAAI), Accessed 23 March 2023
3. Kartik Hosanger's *A Human's Guide to Machine Intelligence: How Algorithms Are Shaping Our Lives and How We Can Stay in Control*, Penguin Books, 2019
4. Amy Webb's *The Big Nine: How the Tech Titans and Their Thinking Machines Could Warp Humanity*, Public Affairs, 2019



# So, Why Now? Why the acceleration?

- The rise of Big Data in the information age
- More powerful, multi-layered computer processors (Deep Neural Networks)
- Development of more sophisticated algorithms (Backpropagation)
- Investment from major tech companies like Google, Microsoft, Amazon, Baidu, and Alibaba

## Sources:

1. Kevin Kelly's *The Inevitable: Understanding the Twelve Technological Forces That Will Shape Our Future*, Viking Press, 2016
2. Martin Ford's *The Rise of the Robots: Technology and the Threat of a Jobless Future*, Basic Books, 2015
3. Adam Greenfield's *Radical Technologies: The Designs of Everyday Life*, Verso Press, 2018



## Three Major Methods for Machine Learning

**UNSUPERVISED LEARNING:** In this case the programmer does not specify or set the conditions for correct, desired outputs. There is no pre-labeled data for the machine to filter novel inputs through: “Learning is driven by the principle that co-occurring features engender expectations that they will co-occur in the future.”<sup>110</sup> Beyond correlating and predicting certain co-occurrences, this kind of learning requires clustering similarities and analogical reasoning, skills humans are really good at, but machines not so much.<sup>111</sup>

“It is necessary to keep in mind that these machines demonstrate ‘artificial’ intelligence, albeit superhuman at times, but intelligence that pertains to specific tasks, whereas what makes human intelligence ‘authentic’ is that we can learn anything.”

-MV Ventures R&D Report, Summer 2023, “A People-Centered Organization Living in an AI World”



# Three Major Methods for Machine Learning

Recommended Sources for Machine Learning Methodologies:

1. Melanie Mitchell's *Artificial Intelligence: A Guide for Thinking Humans*, Picador Press, 2019
2. Margaret Bodin's *AI: Its Nature and Future*, Oxford University Press, 2016
3. Erik Brynjolfsson and Andrew McAfee's "The Business of Artificial Intelligence: What It Can—And Cannot—Do for Your Organization," *Harvard Business Review*, Winter 2021
4. Katheryn Hume and Matthew E. Taylor's "Why AI Teaches Itself to Achieve a Goal Is the Next Big Thing," *Harvard Business Review*, Winter 2021

# From Electrifying to Cognifying



*Just as electricity has transformed every industry [in the 20th century], AI is on a path to do so, too [in the 21st century].* (Andrew Ng, 2022)



*However, a major difference is that the science of electricity was well understood before it was widely commercialized.* (Melanie Mitchell, 2019)

## Sources:

1. Andrew Ng's "AI Doesn't Have to Be Too Expensive or Complicated," *The Year in Tech 2023*, Harvard Business Review Press, 2022
2. Melanie Mitchell's *Artificial Intelligence: A Guide for Thinking Humans*, Picador Press, 2019

# HOW MIGHT WE

Reframe your problem definition into a driving question that begins with, “How Might We...”

How might we take inventory of the myriad implications we should anticipate in order to steward and support our schools in a moment when there are no prefigurative frameworks to fall back on?

*Hat Tip: We are constantly inspired by the thought leadership of IDEO.  
Here are their tips for generating challenge questions:*

- Don't put a solution in the question.
- Questions should be generative and inspiring.
- Include who you're designing for.
- Get specific about what part of the journey you're designing for.
- Draw insights or inspiration from inside your organization.

the campus conversation.



# YOUR CURRENT POSITION?

The Upsides



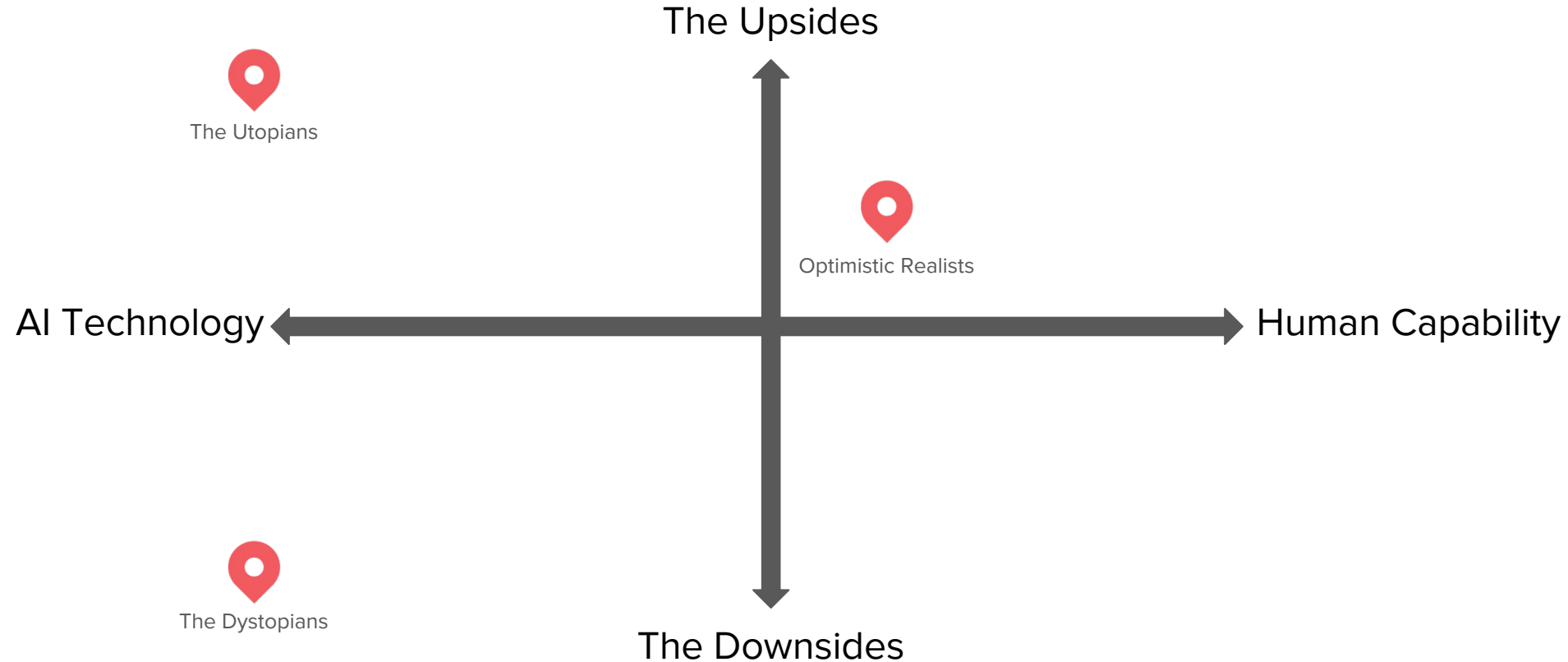
The Downsides

AI Technology

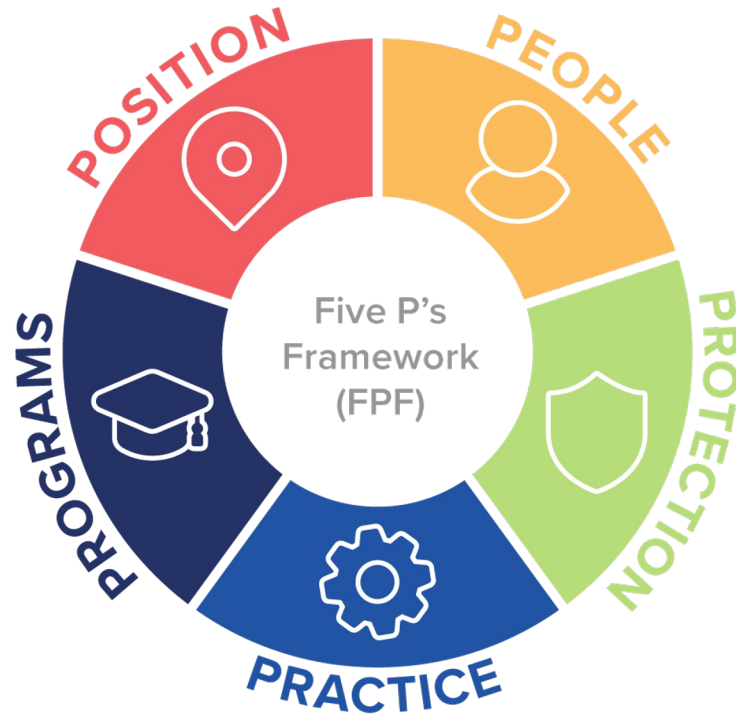


Human Capability

# SOCIETY'S CURRENT POSITION?



# The Five P's Framework - A Systems Thinking Approach:



# POSITION - Consider the Human Advantage:

1. We have common sense
2. We have a vast amount of background knowledge + lived experience
3. We understand how organic + inorganic objects behave
4. We are embodied
5. We recognize visual *situations*
6. We reflect metacognitively
7. We can interact with others in ambiguous situations
8. We know there is a world and defer to it

## Sources:

1. David de Cramer & Garry Kasparov's "AI Should Augment Human Intelligence, Not Replace It," *Harvard Business Review*, Winter 2021
2. Nada R. Sanders & John D. Wood's "The Secret to AI Is People," *Harvard Business Review*, Winter 2021
3. Melanie Mitchell's *Artificial Intelligence: A Guide for Thinking Humans*, Picador Press, 2019
4. Brian Cantwell Smith's *The Promise of Artificial Intelligence: Reckoning & Judgment*, The MIT Press, 2019



# HOW MIGHT WE

Reframe your problem definition into a driving question that begins with, “How Might We...”

How might we as people-centered leaders meet the challenge of supporting and empowering people in a world where machines are performing skills and tasks as well as (or even better than) humans and doing so in a market where “what you know” may be losing currency?

*Hat Tip: We are constantly inspired by the thought leadership of IDEO.  
Here are their tips for generating challenge questions:*

- Don't put a solution in the question.
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- Draw insights or inspiration from inside your organization.

# PEOPLE: Who might it impact? How do we support those people?

Consider the SAMR Model as it relates to tasks and processes, not jobs and people:

- **Substitution:** *What will AI technologies truly substitute for in terms of tasks and processes?*
- **Augmentation + Modification:** *How might AI technologies augment and modify human performance by maximizing the impact of certain tasks and processes?*
- **Redefinition:** *What processes, operations, or tasks might we truly redefine with the aid of intelligent technologies?*

Source: Ruben R. Puentedura's "Transformation, Technology, and Education," Strengthening Your District Through Technology Workshop, 18 August 2006. Accessed 14 March 2023, <http://hippasus.com/resources/tte>

# Authentic + Artificial = Augmented Intelligence

*While AI will radically alter how work gets done and who does it, the technology's larger impact will be in complimenting and **augmenting** human capabilities. (Wilson & Daugherty, 2021)*

*Most cognitive tasks currently being performed [by machines] **augment** human activity, perform a narrow task within a much broader job, or do work that wasn't done by humans in the first place, such as big-data analytics. (Davenport & Ronanki, 2021)*

*Note that machine learning systems hardly ever replace the entire job... If a successful completion of a process requires 10 steps, one or two of them may become automated while the rest become more valuable for humans to do. (Brynjolfsson & McAfee, 2021)*

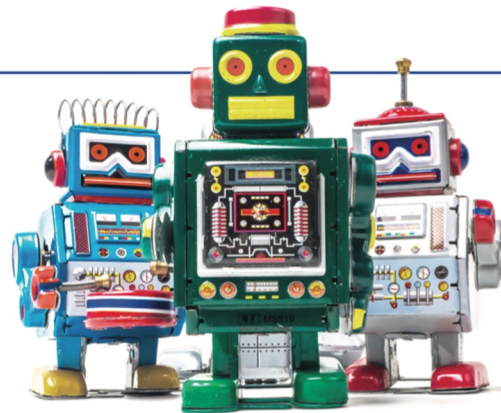
A Note on Sources: All the above authors' articles can be found the Winter 2021 special issue of Harvard Business Review titled, *How AI Is Changing Work*



# PROTECTION: What are the risks? How are you addressing them?

<b>TRUSTWORTHINESS</b>  <i>What is the machine actually learning?</i> Statistical reasoning vs. knowledge representation (Ex: Dog + frisbee example)	<b>EXPLAINABILITY</b>  <i>How is the machine actually learning?</i> Explaining deep subsymbolic neural networks (Agency Risk problem)
<b>BIAS</b>  <i>Who and what is the machine learning from?</i> (The necessity for both explicit and soft goals)	<b>VULNERABILITY</b>  <i>What could be done with or to this machine?</i> (Closed versus Open systems)
<b>THE VALUE ALIGNMENT PROBLEM</b>  <i>“Algorithms are literal, so they tend to be myopic... with no regard to other factors, values, or concerns.”</i> (The Paperclip Maximizer)	

To make AI ethical, we have to make clear for ourselves what our values are as leaders, as people-centered organizations, and as a human race. These are not technical issues; these are social and ethical challenges, and we need perspectives, ideas, and opinions of a diverse array of people, not just computer scientists.



# PROTECTION: What are the risks? How are you addressing them?

Recommended Sources for Understanding Protection & Ethical Use:

1. Brooke Gladstone, “It’s a Machine’s World,” *On The Media*, WNYC Studios, National Public Radio, 13 January 2023, Accessed 24 January 2023, <https://www.wyncstudios.org/podcasts/otm/episodes/on-the-media-its-a-machines-world>
1. Brian Cantwell Smith *The Promise of Artificial Intelligence: Reckoning & Judgment*, The MIT Press, 2019
2. Boris Babic, Daniel L. Chen, Theodoros Evgeniou, & Anne-Laure Fayard “A Better Way to Onboard AI: Understand It as a Tool to Assist Rather Than Replace People,” *Harvard Business Review*, Winter 2021
3. Adam Greenfield *Radical Technologies: The Design of Everyday Life*, Verso Press, 2018
4. David de Cramer and Garry Kasparov “AI Should Augment Human Intelligence, Not Replace It,” *Harvard Business Review*, Winter 2021
5. Michael Luca, Jon Kleinberg, and Sendhi Mullainathan, “Algorithms Need Managers Too: Know How to Get the Most Out of Your Predictive Tools,” *Harvard Business Review*, Winter 2021

## **PRACTICE: What are opportunities to put AI to work and scale it?**

- Focus on data, not coding (No-code AI platforms are the future)
- Locate both areas where you already are gathering good data and areas you might label as “pain points”
- Identify low hanging fruit opportunities: iteration before scaling up
- Create a “test kitchen” environment, preferably in a “closed system”
- Create connections between “frontline” innovators and people who need training and mentoring
- Help learners and workers master new ways of working well with intelligent machines

# CONDUCT AN AI SWOT ANALYSIS:

**Strengths** (unique)

**Weaknesses** (internal constraints)

**Opportunities** (actionable, measurable)

**Threats** (external impact)

the classroom conversation.

# MV Framework for Shaping the Classroom Conversation:

***I'm excited about what will happen...***

*Do's*

*Don'ts*

***I'm worried about what will happen...***

*Do's*

*Don'ts*

***I'm suspicious about has happened...***

*Do's*

*Don'ts*

***I know something happened, now what?***

*Do's*

*Don'ts*

# THE MOUNT VERNON SCHOOL'S GUIDELINES FOR CLASSROOM PRACTICE



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[bit.ly/aiatmv](https://bit.ly/aiatmv)





the competency conversation.

# HOW MIGHT WE

Reframe your problem definition into a driving question that begins with, “How Might We...”

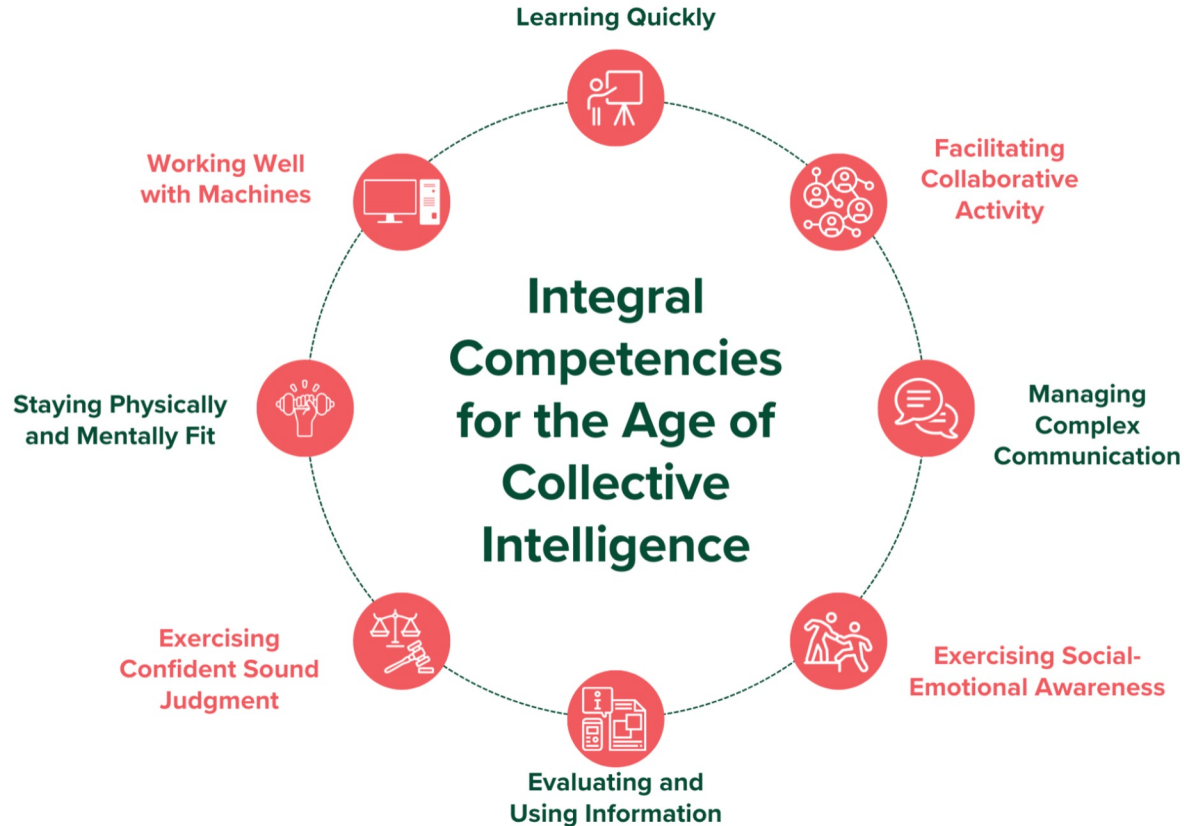
Instead of simply asking what can machines do better versus what are humans better at, how might we, first and foremost, determine what it is that humans *need* to do and learn to thrive and live well in the age of intelligent machines?

*Hat Tip: We are constantly inspired by the thought leadership of IDEO.  
Here are their tips for generating challenge questions:*

- Don't put a solution in the question.
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## PROGRAMS: How does this impact your programs and curricular offerings?

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# PROGRAMS: How does this impact your programs and curricular offerings?

## Recommended Sources for Understanding Protection & Ethical Use:

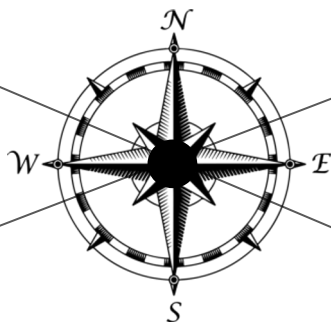
1. H. James Wilson & Paul R. Daughtery “Collaborative Intelligence: Humans and AI Are Joining Forces,” *Harvard Business Review*, Winter 2021
2. Erik Brynjolfsson & Andrew McAfee *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*, W. W. Norton & Co., 2014
3. Kevin Kelly *The Inevitable: Understanding the Twelve Technological Forces That Will Shape Our Future*, Viking Press, 2016
4. Alan M. Lesgold *Learning for the Age of Artificial Intelligence: Eight Education Competences*, Routledge Press, 2019
5. Zachary Stein *Education in a Time Between Worlds: Essays on the Future of Schools, Technology, and Society*, Brilliant Alliance, 2019
6. James Bridle *Ways of Being: Animals, Plants, Machines: The Search for Planetary Intelligence*, Farrar, Straus, & Giroux, 2022
7. Greg Toppo & Jim Tracy *Running With Robots: The American High School’s Third Century*, The MIT Press, 2021
8. Nada R. Sanders & John D. Wood “The Secret to AI Is People,” *Harvard Business Review*, Winter 2021
9. Brian Cantwell Smith *The Promise of Artificial Intelligence: Reckoning & Judgment*, The MIT Press, 2019



# WHERE ARE WE ON AI? COMPASS POINTS

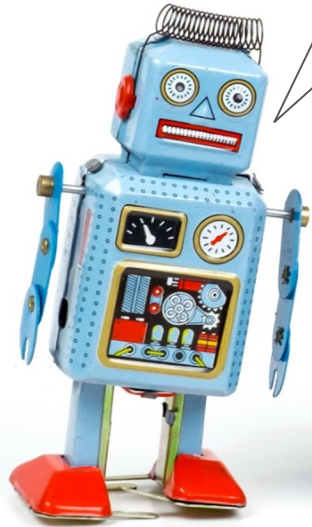
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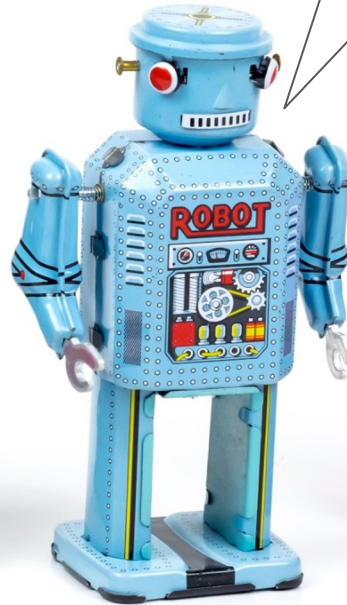


Is there anything that **excites** you most about AI's arrival?

What other thoughts are on your mind?



Thank you for attending this session. We had fun with you.



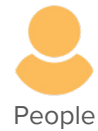
Please reach out to Matt or Jared if there are questions.



We promise not to take over... for now. Haha.



# SPIDEA WEB



Insert your “How Might We” driving question here.

