Dave Ferrucci, Computer Scientist
Seeing the Future

Lesson Introduction

Interview Log: Interviewed on April 25, 2024 by Kevin Money

■ Access *The Thread* episode of Dave Ferrucci on our YouTube channel or at LifeStories.org and download the transcript here

■ Access his long-form interview on LifeStories.org

Learning Objectives

Social Studies Focus

■ Explore the changes in generational expectations over the past century

■ Define large language models and AI

■ Examine the evolution of AI in education and society

■ Analyze the impact of technology on individual lives, the workplace, and society as a whole

English Language Arts Focus

■ Examine perspective taking from the point of view of one computer scientist

■ Analyze the structure and purpose of a narrative, identify key themes in the episode, and synthesize information from a spoken text

■ Analyze, reflect on, and discuss the title "Seeing the Future" after watching the episode

■ Explore the idea of purposeful work and a meaningful life

■ Use Dave Ferrucci's episode as inspiration for a creative writing assignment

Episode Overview

Dave Ferrucci takes us on the intensely personal journey that led him to become one of the world's leading architects of artificial intelligence. Ferrucci famously led the IBM Watson team that designed the first computer system to win on *Jeopardy!*. Now his mission is to design artificial intelligence systems that combine the ChatGPT large language models (LLM) with reasoning engines that offer greater protection from the potential dangers of AI. In this episode of *The Thread*, we are in conversation with a true visionary whose unique gift is his ability to put technology in human terms that help us see the future with hope and excitement.

Biography

Dave Ferrucci is an award-winning artificial intelligence pioneer best known for leading the team behind IBM's "Watson," which made history in 2011 by defeating Jeopardy's greatest champions. After earning his B.S. in biology from Manhattan College and a Ph.D. in computer science from Rensselaer Polytechnic Institute, Ferrucci joined IBM's T.J. Watson Research Center, where he spent nearly two decades advancing AI. In 2013, he transitioned to Bridgewater Associates and later founded Elemental Cognition in 2015. As Founder, CEO, and Chief Scientist, Ferrucci is pushing AI beyond machine learning, creating systems that are powerful, trusted, and understood by people. With over 50 patents and numerous papers in AI, Automated Reasoning, and Natural Language Processing, Ferrucci's work has significantly shaped the field. His contributions earned him the title of IBM Fellow, along with prestigious awards like the Chicago Mercantile Exchange's Innovation Award and the AAAI Feigenbaum Prize.

Teaching Tip:

First Take

A **First Take** is a warm-up writing or conversation exercise created uniquely for *The Thread* that strengthens media literacy skills. Like an opening song in a musical, the first stanza of a poem, or even the first impression one person makes on another, the First Take asks students to reflect and share their initial thoughts and feelings about the episode's opening.

Suggested Steps

◻ **Watch and then read aloud** the opening of Dave Ferrucci's episode with students:

> "You think about data driven techniques, you think about language and you think about logic and inference. How do we build AI systems that combine these things? Because we love the incredible language abilities of large language models, but we need precise, reliable, accurate problem solving to solve tough enterprise problems. How do we do that? And we have an answer to that. So I think Elemental Cognition's vision for how to architect AI systems ended up being right with a vengeance, as you see now what's happening in the AI space."

◻ **Ask and Discuss:** What do you learn about Dave Ferrucci as a computer scientist and entrepreneur from the opening of his episode? What insights can you infer?

◻ **Next,** as a class, discuss the role of "the opening" in any form of storytelling – an interview, film, play, or song. What is their point of view on why the filmmakers chose this as the opening for the episode? What ideas, topics, or themes may the filmmakers be foreshadowing?

◻ **Last,** have students do a one-minute quick write reflecting on how the opening connects with the episode's title, "Seeing the Future." Then, have students get into pairs and share their thoughts and feelings.

Photos: Watson question answering computing system. (Dave Ferrucci) *top*; *Jeopardy* host Alex Trebek contestant Ken Jennings after his earnings from his record breaking streak. (Jeopardy Productions) *lower left*; Dave with his grandparents. (Dave Ferrucci) *lower right*

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Teaching Tip:
The Thread Up Close

Step One: Watch Dave Ferrucci's episode "Seeing the Future" here.
Next, have students discuss and debrief the episode using these suggested questions:

◘ How did his early life experiences shape his passion for computer programming?

◘ What family values did Ferrucci's parents instill that he carried into his career?

◘ Why do you think IBM's Watson was such a groundbreaking innovation?

◘ What new information did you learn about AI?

◘ What are some of the benefits and risks of AI according to Ferrucci?

Step Two: After discussing, have students return to *The Thread* episode and engage in a close read and analysis of his interview using the transcript and video as a reference. Depending on the lesson, question, or theme you are aligning *The Thread* with, have students annotate the transcript, select passages that reflect the assignment, and explain their reasoning in class.

Here is an example of a *Thread* lesson connection: If you are using or learning about AI (artificial intelligence), Dave Ferrucci, one of AI's early developers, offers this unique insight about the technology:

"What you're seeing now is the age of artifical intelligence. It is really beginning now. There are fears I have. We as a society have to focus on what we believe is right for us as people. How do we formulate, commit to, adhere to, the values that we care about? Excellence, integrity, honesty, commitment, compassion, and AI is going to be a tool so there will be things that will be harder to do, easier to do as a result of AI, that's fine. Learn how to use it, but use it in ways that help humanity, don't hurt humanity — and that's the way I position AI. When people say, 'What if it does something that I already know how to do?' I say, 'There's always places to go. There's always better ideas. There's always thinking about what matters to humanity. Learn how to use it to help humanity. It's really that simple.'"
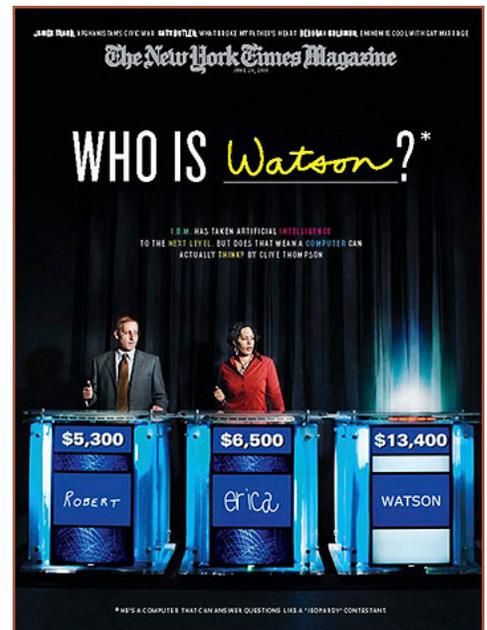

Photo: Watson Cover copy The New York Times Magazine. (David Ferrucci)

Connections: *The Thread* Up Close

- ◘ What new insights do you learn about AI from Dave Ferrucci?

- ◘ Dave Ferrucci remains moved by his time as an IBM fellow. As he explains, it offered him the freedom to create and pursue his own ideas. What environment allows you to be innovative and creative?

- ◘ Another quality Ferrucci believes was essential for his success was his internal strength to persist. How do you define persistence? What feeds your inner strength?

- ◘ How do you understand the title after watching this episode? What new or surprising insights about innovation, AI, and the future did you learn as a result of Dave Ferrucci's career and point of view?

- ◘ What new insight did you learn about (yourself, your community, your world) from his stories?

Activity: Seeing the Future

Dave Ferrucci saw his future differently than his parents' expectations and pursued a career path that did not yet exist. At times he even had to convince colleagues who were reluctant to be part of his team. "We're researchers," he recalls saying. "Even if we fail, at least we'll learn why we failed." His optimism, intellect, and imagination led to success at IBM with Watson, starting Elemental Cognition, and continuing to work in AI.

Using Dave Ferrucci's story as a source of inspiration and learning, have students write a short story from the perspective of an AI system in the future. The story should explain how AI interacts with the characters, the ethical challenges it faces, and the ways it works to help humanity.

Additional Resources

- ◘ Explore IBM Watson - official website

- ◘ Learn more about Elemental Cognition - official website

- ◘ Read *Final Jeopardy: The Story of Watson, the Computer That Will Transform Our World,* Stephen Baker

- ◘ Watch PBS Documentary: *Smartest Machine on Earth*