

What Can Kesler Science Do for You?

4th - 8th grade science teachers love our Life, Earth, and Physical Science materials! With these easy and engaging materials, teachers can save planning time and put their focus back on the teaching that really matters.



5E LESSONS

Two-week lessons with over 100 topics



ESCAPE ROOMS

Engaging activities for review



INQUIRY LABS

Three different levels to fit every student



AMAZING ANCHORS

Anchoring phenomenon to book-end your lessons



SUB PLANS

Never worry about planning for a sub again.



WARM-UPS

Bellringers for the entire year



STATION LABS

Student-led exploration



INTERACTIVE NOTEBOOKS

Bring science journals to life.



WIKI TICKETS

Quick formative assessments



STEM CHALLENGES

Real-world STEM problem-solving



GRAPHING

Table and charts and graphs ... OH MY!



SCIENCE READING COMPREHENSION

Leveled reading passages with mini-activities



SPANGLER COLLABORATION

Exclusive Steve Spangler lessons and videos



WRITING PROMPTS

Writing activities covering 100+ topics

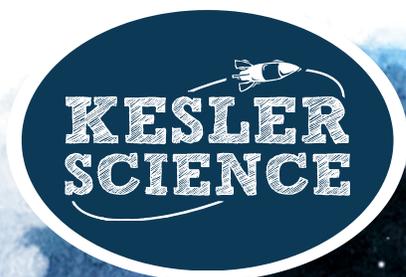


EXPLORIES

Story-driven units with integrated activities



The Kesler Science Professional Learning Network (PLN) group on Facebook has a huge community of engaged and supportive science teachers - come join us!



Incredible Things AI Can Do

My kids showed me something pretty unbelievable. It's a game where you make a random drawing on your tablet screen. Next, AI will analyze the original artwork looking for patterns in color, open space, and any text or faces that were in the drawing. It will then compose a piece of music to capture the mood of what's going on in the picture. When I saw it work, I couldn't help but ask myself in astonishment, "what am I watching here?"

We see the letters "AI" all over the place today. It comes up when we search for anything on Google, it's built into popular apps like Instagram, and the newest version of ChatGPT is flooding the headlines.

The biggest news lately is *generative AI*, where the system processes data to **make** something. ChatGPT giving feedback on student work, computers making their own ultra-realistic images, and songs based on my kids' drawings are all generative AI.

AI has been around longer than you might think, though. Remember when the computer Watson beat human opponents on the Jeopardy game show? That was an AI program that was fed 25,000 questions to help it make decisions during the game.

Most agree that the first AI program was developed in **1956!** This was a program called **Logic Theorist** that set itself apart from other computer applications because it could remember information before making new decisions.

AI has evolved quite a bit since the early days, though. A very popular version of artificial intelligence right now is called "deep learning." This is where information is processed through layers of different nodes, just like the neurons inside of our brain. Deep learning is so powerful because it can find patterns in messy, unstructured data - photos, pieces of text, maps, or genetic information.

Deep learning can make and refine predictions based on the information it's been fed. Just like a dog learning a new trick, it will remember and respond to feedback. I think it's so interesting to see college courses are now teaching students to train AI programs using special prompts so that it's more likely to give you the output you want.

If there's a task that requires mountains of data to be sifted with extreme precision, AI is the tool for the job. A team used AI to decipher text on an ancient scroll that was burned to a crisp by the Mount Vesuvius eruption. 🏰 AI can scan human DNA and spot genes that could potentially lead to disease.

Astronomers use AI to crunch observation information in the search for exoplanets and galaxy mergers.

That's not even the tip of the iceberg. Scientists at the University of Michigan developed an AI system to perform **10,000 experiments** on bacteria **a day!** Similarly, ecologists have been running soil through an AI-based chemical analysis to determine exactly what nutrients, and their precise quantities, that need to be added for maximum plant growth. 🌱

Where can we expect to find AI in the near future? Everywhere! The finance district is refining programs that will predict trends in the markets. Pharmaceutical companies will be using AI to develop new drugs. There are even teachers in California that are openly using AI to grade student work and give feedback (from what I read, it isn't super consistent yet).

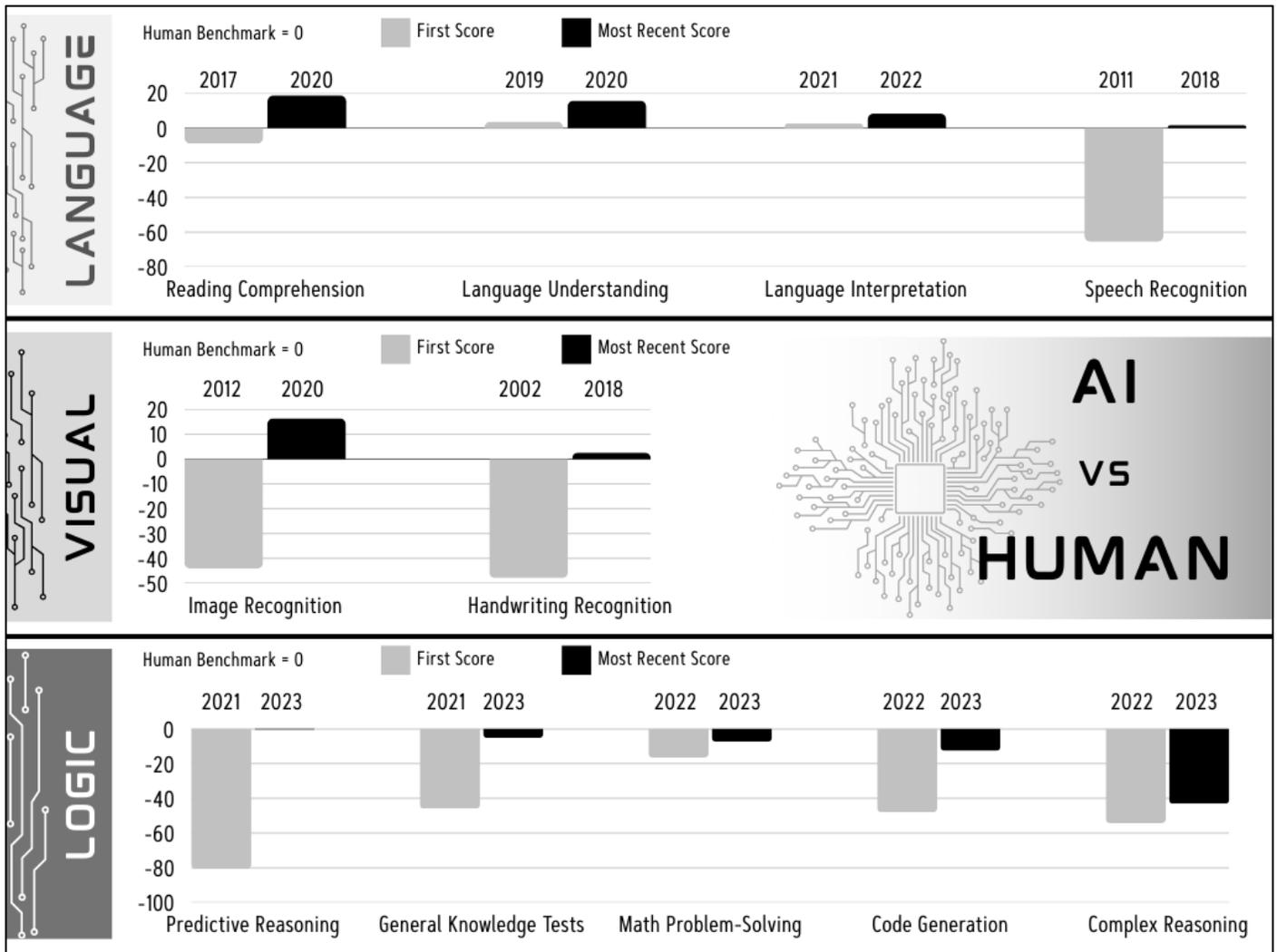
Progress in AI is measured based on tests called *benchmarks*, which compare the success of AI at a specific task compared to a human. In each of the following graphs, the first score for each category shows the year the test was done and the score AI earned compared to a human. The human score is set to zero as a benchmark.

To see how AI is progressing in language skills, check out the first graph. In the *language* graph, for reading comprehension, in 2017, AI scored -9, or nine points worse than a human. In 2020, AI scored almost 20 point better than a human!

The *visual* graph shows how AI has progressed in making sense of images. You can see that AI has had some huge gains from where it started in this category! For example, in 2012, AI scored almost 50 points worse than a human would on handwriting recognition. (If they were using my handwriting, it would have been much worse! 😊) By 2018, AI had caught up and passed the average human.

Now check out the bottom graph of *logical* skills. It might look like AI doesn't have much to brag about here compared to humans, but check out the dates of the first tests. They were all just a few years ago! Predictive reasoning caught up to human scores in just two years. 😊

Right now, AI performs better on these specific tests than it does in general use. That may not be the case in a few years, though! Are you excited to see what the future of AI brings?



1. What trends do you notice in the data?

2. Which test category had the biggest change from the first test to the most recent test?

3. What were some of the earliest tests done by AI?

4. Why do you think the first AI tests for math and logic were so recent?

5. Where do you think AI test scores will be in a few more years?

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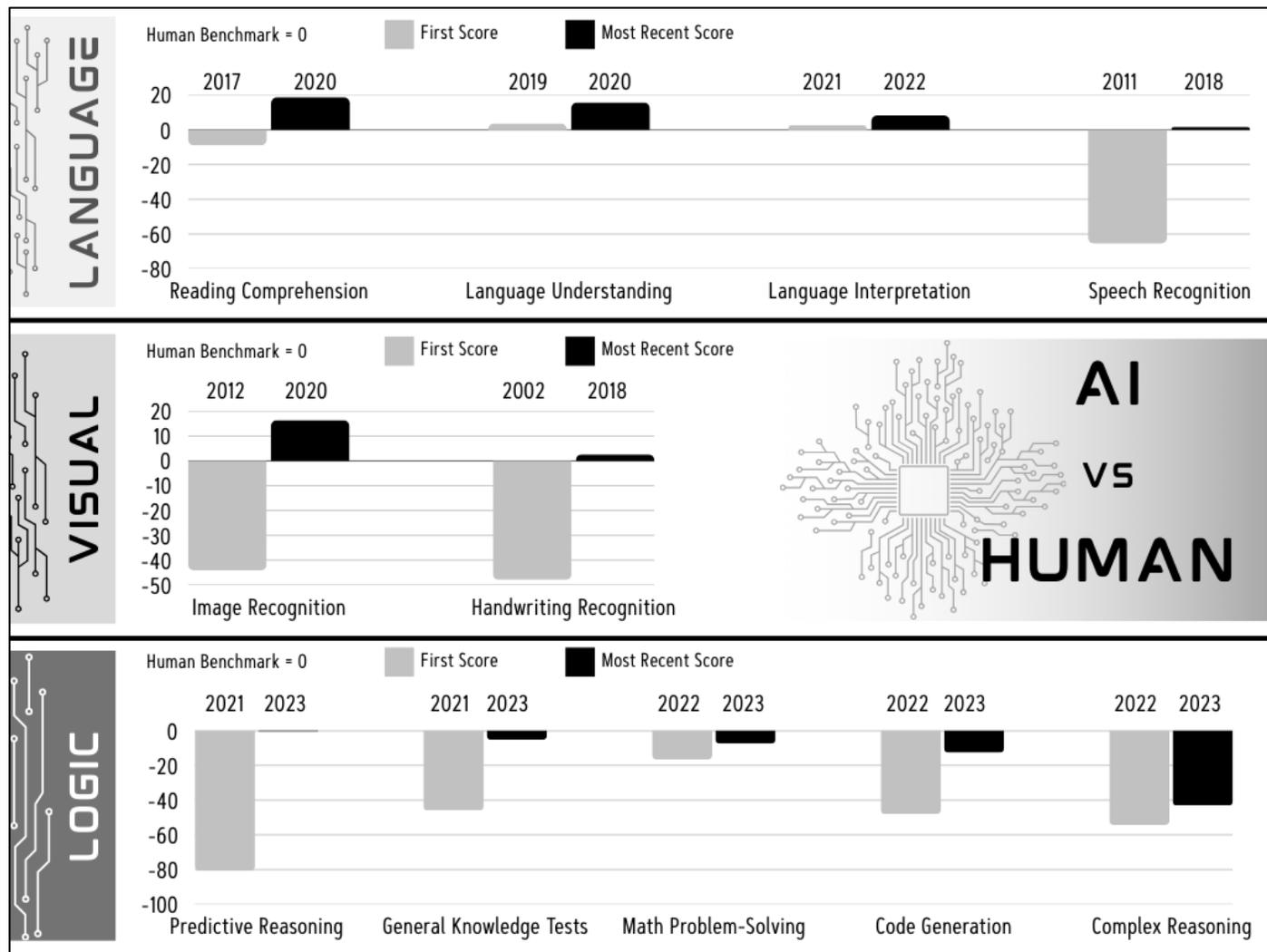
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- What trends do you notice in the data?
For example, every single test has shown AI improving over time.
- Which test category had the biggest change from the first test to the most recent test?
Predictive reasoning gained 80 points between the two test dates.
- What were some of the earliest tests done by AI?
Handwriting recognition, speech recognition, and image recognition were the first tests.
- Why do you think the first AI tests for math and logic were so recent?
There isn't a right answer to this, but students might think about how much better AI had to get before it could do logic tests versus being able to scan images or read handwriting.
- Where do you think AI test scores will be in a few more years?
There isn't a right answer to this, but students might see how much AI has gained since the first test. If anyone really wants to dive in, they can visit the additional resource linked in the header to see how the test scores have progressed through the years!

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