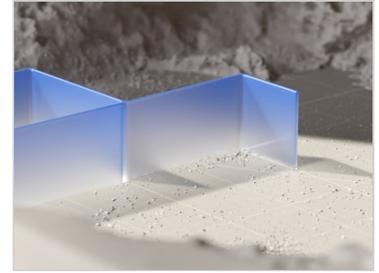


How Does AI Learn?

Reading Worksheet — Level F | tahricteaches.com



Have you ever wondered how a computer learns to recognize your face or recommend a song? The answer is **machine learning** — a method that lets computers learn from experience rather than following rules written by a programmer. Instead of telling a computer what to do in every situation, machine learning lets it figure things out by studying examples and finding patterns in **datasets** — large, organized collections of information such as photos, sentences, or numbers.

To understand this, imagine teaching a child to recognize a cat. You show them hundreds of pictures and say "this is a cat" each time. Machine learning works the same way. The AI studies **labeled** data — information tagged with the correct answer by humans — and adjusts its internal **parameters**, which are mathematical settings, until its **predictions** become accurate. This feedback loop repeats until the system learns reliably.

One of the most powerful tools in machine learning is **neural networks** — systems loosely inspired by the human brain. A neural network processes information through layers of connected nodes, each passing results to the next. **Deep learning** stacks many such layers together, enabling breakthroughs in speech recognition, image analysis, and language translation.

AI's learning quality depends on its training data. An **algorithm** — a set of mathematical steps — adjusts the system's settings after every mistake. Once training ends, the AI can **generalize**, applying what it learned to entirely new situations. This ability to transfer learning is what makes AI so broadly useful.

Despite its capabilities, machine learning has serious limitations. If training data reflects human prejudice, the AI will carry that **bias** into its decisions. This can cause unfair outcomes in hiring, lending, or law enforcement. Understanding how AI learns — and where it can go wrong — is now an essential part of modern **literacy**.

A. Vocabulary

- | | |
|---------------------------|---|
| 1. machine learning _____ | a. AI systems inspired by the human brain |
| 2. datasets _____ | b. AI guesses based on data patterns |
| 3. deep learning _____ | c. apply learning to new, unseen situations |
| 4. algorithm _____ | d. AI using many-layered neural networks |
| 5. parameters _____ | e. internal settings an AI adjusts while learning |
| 6. labeled _____ | f. unfair errors from flawed training data |
| 7. predictions _____ | g. AI learning from data, not fixed rules |
| 8. generalize _____ | h. large collections of data for training AI |
| 9. neural networks _____ | i. a step-by-step process for solving a problem |
| 10. bias _____ | j. data tagged with correct answers by humans |

B. True or False

1. Traditional software follows explicit instructions written by programmers. ____
2. Machine learning AI is also directly told exactly how to solve each problem. ____
3. Deep learning uses structures called neural networks. ____
4. Backpropagation adjusts connections between neurons when errors occur. ____
5. In supervised learning, training data is labeled with correct answers. ____
6. Unsupervised learning requires labeled data to function. ____
7. Biased training data can lead to unreliable AI results. ____
8. AI models automatically continue learning after they are deployed. ____
9. After training, AI uses inference to apply learning to new examples. ____

C. Fill in the Blanks

Word Bank: datasets, algorithm, supervised, unlabeled, data, inference, capabilities

1. AI learns through machine learning by being exposed to large _____.
2. Backpropagation is an _____ that adjusts neural network connections.
3. In _____ learning, training data is tagged with correct labels.
4. Unsupervised learning uses _____ data to find patterns independently.
5. Applying a trained model to new examples is called _____.

D. Comprehension Questions

1. How is machine learning different from traditional computer programming?
2. What is backpropagation and what does it do?
3. What is the difference between supervised and unsupervised learning?
4. Why does biased training data lead to unreliable AI?
5. What happens after an AI model finishes training?

E. Discussion Questions

1. Why might it be important for AI training data to be diverse and representative?
2. Should the public know what data was used to train AI systems they interact with?
3. How is the way neural networks learn similar to and different from how humans learn?

Answer Key

How Does AI Learn? — Teacher Reference Only

A. Vocabulary: 1-g, 2-h, 3-d, 4-i, 5-e, 6-j, 7-b, 8-c, 9-a, 10-f

B. True/False: 1-T, 2-F, 3-T, 4-T, 5-T, 6-F, 7-T, 8-F, 9-T

C. Fill Blanks: 1-datasets, 2-algorithm, 3-supervised, 4-unlabeled, 5-inference

D. Comprehension:

1. Machine learning learns from data; traditional programming follows explicit rules
2. An algorithm that adjusts neuron connection strengths when the model makes errors
3. Supervised uses labeled data; unsupervised finds patterns in unlabeled data
4. The model learns the wrong patterns from the biased examples
5. It can be deployed for inference — applying learning to new unseen data