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## Vocabulary Builder Reference from...

Mary Lou Jepsen: Could future devices read images from our brains? | TED Talk

[https://www.ted.com/talks/mary\\_lou\\_jepsen\\_could\\_future\\_devices\\_read\\_images\\_from\\_our\\_brains](https://www.ted.com/talks/mary_lou_jepsen_could_future_devices_read_images_from_our_brains)

### Advanced Words Only

#### IMPORTANT

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## Session 1: Word List

### moonshot

*n.* an ambitious, risky, and innovative project or goal, especially one that is intended to bring about radical change or breakthroughs in a particular field or industry, often inspired by the lunar landing mission of Apollo 11 in 1969

*synonym*: initiative, endeavor, pursuit

(1) AI **moonshot**, (2) **moonshot** idea

The company's **moonshot** project aims to develop a revolutionary new technology within a tight deadline.

### stigma

*n.* a mark of shame or disgrace associated with a particular circumstance, quality, or person

*synonym*: mark, blemish, disgrace

(1) social **stigma**, (2) **stigma** against obesity

The mental health **stigma** often prevents people from seeking treatment.

### neurosurgery

*n.* medical operations conducted on the nervous system, including the brain, spinal cord, and individual nerves

(1) the department of **neurosurgery**, (2) specialize in **neurosurgery**

She has 20 years of experience in **neurosurgery**.

## neurotransmitter

*n.* a chemical that carries nerve impulses between neurons or between neurons and muscles

(1) **neurotransmitter** receptor, (2) **neurotransmitters** released from the brain

Endorphins are a type of **neurotransmitter** that gives a sense of well-being.

## arrogant

*adj.* having or revealing an exaggerated sense of one's importance or abilities

*synonym*: haughty, supercilious, disdainful

(1) an **arrogant** attitude, (2) grow **arrogant**

He was so **arrogant** that he thought he was always right.

## insecure

*adj.* not firm or firmly fixed; likely to fail or give way, or not assured of safety

*synonym*: uncertain, unsure, unconfident

(1) an **insecure** future, (2) **insecure** attachment

Children in an unstructured environment often feel **insecure**.

## inventive

*adj.* able to come up with novel and unique ideas

*synonym*: imaginative, creative, innovative

(1) have the **inventive** talent, (2) **inventive** approach

All language around the world is consistently **inventive** but not intrusive.

## sophistication

*n.* the quality or state of having a great deal of worldly experience; the quality or state of being intellectually or culturally refined

*synonym*: refinement, culture, elegance

(1) cultural **sophistication**, (2) linguistic **sophistication**

The new technology added a level of **sophistication** to the manufacturing process.

## bottleneck

*n.* a narrow or busy section of road or a junction where the traffic often gets slower and stops; anything that slows down development or progress, especially in business or industry

*synonym*: blockage, obstacle, barrier

(1) performance **bottleneck**, (2) **bottleneck** in production  
Memory bandwidth is a significant **bottleneck** in this computational simulation.

## neuroscience

*n.* the scientific study of the function, structure, and disorder of the brain and the nervous system

(1) the branch of **neuroscience**, (2) a theoretical concept in **neuroscience**

Our university is famous for its professors, who are well-versed in behavioral **neuroscience**.

## MRI

*n.* (abbreviation for magnetic resonance imaging) a medical imaging technique that uses a strong magnetic field and radio waves to produce detailed images of the inside of the body

(1) **MRI** brain image, (2) cardiac **MRI**

The **MRI** machine uses powerful magnets to produce detailed images of the inside of the body.

## subtract

*v.* to take away or deduct a quantity or amount from a total; to remove or eliminate something from a larger whole

*synonym*: deduct, take away, remove

(1) **subtract** numbers, (2) **subtract** one from the total

I need to **subtract** the cost of my expenses from my income to see how much money I have left.

## gallant

*adj.* brave, courageous, and honorable, often in a courteous manner; polite and attentive to women; elegant, stylish, or fashionable

*synonym*: brave, courageous, heroic

(1) **gallant** gesture, (2) **gallant** gentleman

The **gallant** knight saved the princess from the dragon, displaying bravery and chivalry.

## decode

*v.* to convert something, such as a message or piece of information, from a specific form into one that you can

understand

*synonym*: decipher, translate, interpret

(1) **decode** a message, (2) ability to **decode** the differences

The software could **decode** the encrypted data and reveal the hidden information.

## brainwave

*n.* a sudden idea or inspiration; a moment of great insight or creativity

*synonym*: inspiration, brainstorm, revelation

(1) **brainwave** idea, (2) sudden **brainwave**

The engineer had a **brainwave** and redesigned the product to be more efficient.

## recognizable

*adj.* easy to become aware of or identify

*synonym*: noticeable, perceptible, definite

(1) to a **recognizable** degree, (2) **recognizable** landmark

His car was easily **recognizable** in the parking lot.

## hundredfold

*adj.* a hundred times as great or as much

(1) rise nearly **hundredfold**, (2) improve **hundredfold**

The development team reported two **hundredfold** increases in performance.

## nanoscale

*adj.* on a scale that can be measured in nanometres (= one billionth of a meter); on a very small scale

(1) **nanoscale** device, (2) things at the **nanoscale**

This process improves the strength of the metal by controlling the **nanoscale** lattice structure of the metal.

## holography

*n.* a technique for creating three-dimensional images using lasers to record and reconstruct interference patterns

*synonym*: three-dimensional photography, laser holography, digital holography

(1) optical **holography**, (2) 3D **holography**

**Holography** technology uses light interference patterns to create a 3D image.

## ingeniously

*adv.* in a clever, inventive, or resourceful manner; with great skill, creativity, or ingenuity

*synonym* : cleverly, resourcefully

(1) **ingeniously** planned, (2) **ingeniously** crafted

The engineer **ingeniously** solved the complex problem with a simple yet effective solution.

## leapfrog

*n.* a children's game in which players take turns jumping over each other's stooped backs

*synonym* : hopping, jumpfrog

(1) **leapfrog** game, (2) **leapfrog** technology

During recess, the children played a game of **leapfrog** in the schoolyard.

## irresistible

*adj.* impossible to resist or refuse; very attractive, appealing, or compelling

*synonym* : resistless, overpowering, compelling

(1) **irresistible** charm, (2) **irresistible** force

The aroma of freshly baked cookies was **irresistible** to her.

## amplify

*v.* to enhance something, particularly sound or brightness

*synonym* : intensify, boost, argument

(1) **amplify** a signal, (2) **amplify** the effect

You might need to **amplify** this point.

## Alzheimer

*n.* a neurodegenerative disease that causes memory loss, cognitive decline, and behavioral issues; is the most common cause of dementia in older adults

*synonym* : dementia, memory loss, cognitive decline

(1) **Alzheimer's** brain, (2) **Alzheimer's** risk factors

My grandmother has **Alzheimer's** disease requires special care and attention from her caregivers.

## Session 2: Spelling

1. ing\_\_\_\_\_ly planned *adv.* in a clever, inventive, or resourceful manner; with great skill, creativity, or ingenuity
2. M\_I brain image *n.* (abbreviation for magnetic resonance imaging) a medical imaging technique that uses a strong magnetic field and radio waves to produce detailed images of the inside of the body
3. the department of neu\_\_\_\_\_ery *n.* medical operations conducted on the nervous system, including the brain, spinal cord, and individual nerves
4. le\_\_\_\_\_og game *n.* a children's game in which players take turns jumping over each other's stooped backs
5. am\_\_\_\_\_y the effect *v.* to enhance something, particularly sound or brightness
6. Al\_\_\_\_\_er's brain *n.* a neurodegenerative disease that causes memory loss, cognitive decline, and behavioral issues; is the most common cause of dementia in older adults
7. su\_\_\_\_\_ct one from the total *v.* to take away or deduct a quantity or amount from a total; to remove or eliminate something from a larger whole
8. irr\_\_\_\_\_ble force *adj.* impossible to resist or refuse; very attractive, appealing, or compelling
9. Al mo\_\_\_\_\_ot *n.* an ambitious, risky, and innovative project or goal, especially one that is intended to bring about radical change or breakthroughs in a particular field or industry, often inspired by the lunar landing mission of Apollo 11 in 1969

ANSWERS: 1. ingeniously, 2. MRI, 3. neurosurgery, 4. leapfrog, 5. amplify, 6. Alzheimer, 7. subtract, 8. irresistible, 9. moonshot

10. neu\_\_\_\_\_ter receptor *n.* a chemical that carries nerve impulses between neurons or between neurons and muscles
11. grow ar\_\_\_\_\_nt *adj.* having or revealing an exaggerated sense of one's importance or abilities
12. na\_\_\_\_\_le device *adj.* on a scale that can be measured in nanometres (= one billionth of a meter); on a very small scale
13. ga\_\_\_\_\_t gesture *adj.* brave, courageous, and honorable, often in a courteous manner; polite and attentive to women; elegant, stylish, or fashionable
14. ing\_\_\_\_\_ly crafted *adv.* in a clever, inventive, or resourceful manner; with great skill, creativity, or ingenuity
15. cultural sop\_\_\_\_\_ion *n.* the quality or state of having a great deal of worldly experience; the quality or state of being intellectually or culturally refined
16. mo\_\_\_\_\_ot idea *n.* an ambitious, risky, and innovative project or goal, especially one that is intended to bring about radical change or breakthroughs in a particular field or industry, often inspired by the lunar landing mission of Apollo 11 in 1969
17. bot\_\_\_\_\_ck in production *n.* a narrow or busy section of road or a junction where the traffic often gets slower and stops; anything that slows down development or progress, especially in business or industry

ANSWERS: 10. neurotransmitter, 11. arrogant, 12. nanoscale, 13. gallant, 14. ingeniously, 15. sophistication, 16. moonshot, 17. bottleneck

18. cardiac M\_\_l *n.* (abbreviation for magnetic resonance imaging) a medical imaging technique that uses a strong magnetic field and radio waves to produce detailed images of the inside of the body
19. sudden br\_\_\_\_\_ve *n.* a sudden idea or inspiration; a moment of great insight or creativity
20. linguistic sop\_\_\_\_\_ion *n.* the quality or state of having a great deal of worldly experience; the quality or state of being intellectually or culturally refined
21. the branch of neu\_\_\_\_\_nce *n.* the scientific study of the function, structure, and disorder of the brain and the nervous system
22. le\_\_\_\_\_og technology *n.* a children's game in which players take turns jumping over each other's stooped backs
23. improve hun\_\_\_\_\_ld *adj.* a hundred times as great or as much
24. de\_\_\_e a message *v.* to convert something, such as a message or piece of information, from a specific form into one that you can understand
25. neu\_\_\_\_\_ters released from the brain *n.* a chemical that carries nerve impulses between neurons or between neurons and muscles
26. am\_\_\_\_\_y a signal *v.* to enhance something, particularly sound or brightness
27. social st\_\_\_a *n.* a mark of shame or disgrace associated with a particular circumstance, quality, or person

ANSWERS: 18. MRI, 19. brainwave, 20. sophistication, 21. neuroscience, 22. leapfrog, 23. hundredfold, 24. decode, 25. neurotransmitter, 26. amplify, 27. stigma



28. ability to de\_\_\_e the differences      *v.* to convert something, such as a message or piece of information, from a specific form into one that you can understand
29. an ar\_\_\_\_\_nt attitude      *adj.* having or revealing an exaggerated sense of one's importance or abilities
30. optical hol\_\_\_\_\_hy      *n.* a technique for creating three-dimensional images using lasers to record and reconstruct interference patterns
31. rise nearly hun\_\_\_\_\_ld      *adj.* a hundred times as great or as much
32. an in\_\_\_\_\_re future      *adj.* not firm or firmly fixed; likely to fail or give way, or not assured of safety
33. rec\_\_\_\_\_ble landmark      *adj.* easy to become aware of or identify
34. 3D hol\_\_\_\_\_hy      *n.* a technique for creating three-dimensional images using lasers to record and reconstruct interference patterns
35. ga\_\_\_\_\_t gentleman      *adj.* brave, courageous, and honorable, often in a courteous manner; polite and attentive to women; elegant, stylish, or fashionable
36. specialize in neu\_\_\_\_\_ery      *n.* medical operations conducted on the nervous system, including the brain, spinal cord, and individual nerves
37. in\_\_\_\_\_ve approach      *adj.* able to come up with novel and unique ideas
38. su\_\_\_\_\_ct numbers      *v.* to take away or deduct a quantity or amount from a total; to remove or eliminate something from a larger whole

ANSWERS: 28. decode, 29. arrogant, 30. holography, 31. hundredfold, 32. insecure, 33. recognizable, 34. holography, 35. gallant, 36. neurosurgery, 37. inventive, 38. subtract

39. things at the na\_\_\_\_\_le *adj.* on a scale that can be measured in nanometres (= one billionth of a meter); on a very small scale
40. br\_\_\_\_\_ve idea *n.* a sudden idea or inspiration; a moment of great insight or creativity
41. irr\_\_\_\_\_ble charm *adj.* impossible to resist or refuse; very attractive, appealing, or compelling
42. to a rec\_\_\_\_\_ble degree *adj.* easy to become aware of or identify
43. a theoretical concept in neu\_\_\_\_\_nce *n.* the scientific study of the function, structure, and disorder of the brain and the nervous system
44. Al\_\_\_\_\_er's risk factors *n.* a neurodegenerative disease that causes memory loss, cognitive decline, and behavioral issues; is the most common cause of dementia in older adults
45. performance bot\_\_\_\_\_ck *n.* a narrow or busy section of road or a junction where the traffic often gets slower and stops; anything that slows down development or progress, especially in business or industry
46. in\_\_\_\_\_re attachment *adj.* not firm or firmly fixed; likely to fail or give way, or not assured of safety
47. have the in\_\_\_\_\_ve talent *adj.* able to come up with novel and unique ideas
48. st\_\_\_a against obesity *n.* a mark of shame or disgrace associated with a particular circumstance, quality, or person

ANSWERS: 39. nanoscale, 40. brainwave, 41. irresistible, 42. recognizable, 43. neuroscience, 44. Alzheimer, 45. bottleneck, 46. insecure, 47. inventive, 48. stigma

## Session 3: Fill in the Blanks

1. Memory bandwidth is a significant \_\_\_\_\_ in this computational simulation.  
*n.* a narrow or busy section of road or a junction where the traffic often gets slower and stops; anything that slows down development or progress, especially in business or industry
2. The development team reported two \_\_\_\_\_ increases in performance.  
*adj.* a hundred times as great or as much
3. Our university is famous for its professors, who are well-versed in behavioral \_\_\_\_\_.  
*n.* the scientific study of the function, structure, and disorder of the brain and the nervous system
4. I need to \_\_\_\_\_ the cost of my expenses from my income to see how much money I have left.  
*v.* to take away or deduct a quantity or amount from a total; to remove or eliminate something from a larger whole
5. The \_\_\_\_\_ knight saved the princess from the dragon, displaying bravery and chivalry.  
*adj.* brave, courageous, and honorable, often in a courteous manner; polite and attentive to women; elegant, stylish, or fashionable
6. His car was easily \_\_\_\_\_ in the parking lot.  
*adj.* easy to become aware of or identify
7. The mental health \_\_\_\_\_ often prevents people from seeking treatment.  
*n.* a mark of shame or disgrace associated with a particular circumstance, quality, or person

ANSWERS: 1. bottleneck, 2. hundredfold, 3. neuroscience, 4. subtract, 5. gallant, 6. recognizable, 7. stigma

8. The aroma of freshly baked cookies was \_\_\_\_\_ to her.  
*adj.* impossible to resist or refuse; very attractive, appealing, or compelling
9. This process improves the strength of the metal by controlling the \_\_\_\_\_ lattice structure of the metal.  
*adj.* on a scale that can be measured in nanometres (= one billionth of a meter); on a very small scale
10. Children in an unstructured environment often feel \_\_\_\_\_.  
*adj.* not firm or firmly fixed; likely to fail or give way, or not assured of safety
11. The engineer had a \_\_\_\_\_ and redesigned the product to be more efficient.  
*n.* a sudden idea or inspiration; a moment of great insight or creativity
12. My grandmother has \_\_\_\_\_ disease requires special care and attention from her caregivers.  
*n.* a neurodegenerative disease that causes memory loss, cognitive decline, and behavioral issues; is the most common cause of dementia in older adults
13. During recess, the children played a game of \_\_\_\_\_ in the schoolyard.  
*n.* a children's game in which players take turns jumping over each other's stooped backs
14. The engineer \_\_\_\_\_ solved the complex problem with a simple yet effective solution.  
*adv.* in a clever, inventive, or resourceful manner; with great skill, creativity, or ingenuity
15. She has 20 years of experience in \_\_\_\_\_.  
*n.* medical operations conducted on the nervous system, including the brain, spinal cord, and individual nerves

ANSWERS: 8. irresistible, 9. nanoscale, 10. insecure, 11. brainwave, 12. Alzheimer's, 13. leapfrog, 14. ingeniously, 15. neurosurgery

16. \_\_\_\_\_ technology uses light interference patterns to create a 3D image.  
*n.* a technique for creating three-dimensional images using lasers to record and reconstruct interference patterns
17. The \_\_\_ machine uses powerful magnets to produce detailed images of the inside of the body.  
*n.* (abbreviation for magnetic resonance imaging) a medical imaging technique that uses a strong magnetic field and radio waves to produce detailed images of the inside of the body
18. The new technology added a level of \_\_\_\_\_ to the manufacturing process.  
*n.* the quality or state of having a great deal of worldly experience; the quality or state of being intellectually or culturally refined
19. Endorphins are a type of \_\_\_\_\_ that gives a sense of well-being.  
*n.* a chemical that carries nerve impulses between neurons or between neurons and muscles
20. You might need to \_\_\_\_\_ this point.  
*v.* to enhance something, particularly sound or brightness
21. All language around the world is consistently \_\_\_\_\_ but not intrusive.  
*adj.* able to come up with novel and unique ideas
22. The company's \_\_\_\_\_ project aims to develop a revolutionary new technology within a tight deadline.  
*n.* an ambitious, risky, and innovative project or goal, especially one that is intended to bring about radical change or breakthroughs in a particular field or industry, often inspired by the lunar landing mission of Apollo 11 in 1969

ANSWERS: 16. Holography, 17. MRI, 18. sophistication, 19. neurotransmitter, 20. amplify, 21. inventive, 22. moonshot

23. He was so \_\_\_\_\_ that he thought he was always right.

*adj.* having or revealing an exaggerated sense of one's importance or abilities

24. The software could \_\_\_\_\_ the encrypted data and reveal the hidden information.

*v.* to convert something, such as a message or piece of information, from a specific form into one that you can understand

ANSWERS: 23. arrogant, 24. decode