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Vocabulary Builder Reference from...

Stuart Kauffman: The "adjacent possible" -- and how it explains human innovation | TED Talk

https://www.ted.com/talks/stuart_kauffman_the_adjacent_possible_and_how_it_explains_human_innovation

Advanced Words Only

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Session 1: Word List

biosphere

n. the part of the Earth and its atmosphere in which living organisms exist, including plants, animals, and microorganisms

synonym : ecosphere, ecospace, ecosystem

(1) terrestrial **biosphere**, (2) artificial **biosphere**

The balance of the **biosphere** is crucial for the survival of species.

phylum

n. a major group or category of animals or plants characterized by shared physical, developmental, and evolutionary characteristics

synonym : division, group, classification

(1) animal **phylum**, (2) plant **phylum**

Arthropoda is the largest **phylum** in the animal kingdom, comprising insects, spiders, and crustaceans.

afterward

adv. after the time mentioned

synonym : later, thereafter, following

(1) a few years **afterward**, (2) go there **afterward**

We will explain the countermeasure concerning this problem **afterward**.

hanger

n. a device or object used for hanging or supporting something, often used for hanging clothes; a loop-shaped object used to hang clothes in a closet

synonym : hook, peg, rack

(1) clothes **hanger**, (2) coat **hanger**

I hung the coat on a **hanger** in the closet.

screwdriver

n. a tool used for turning screws, typically consisting of a handle and a metal rod with a flattened tip that fits into the slot on the head of a screw; a popular cocktail made with vodka and orange juice

synonym : screw, driver, wrench

(1) open the can with a **screwdriver**, (2) electric **screwdriver**

I need a flathead **screwdriver** to tighten the loose screws on this cabinet.

scraping

n. the act of removing a thin layer of material from a surface, often to clean or smooth it; a sound or sensation that is produced by something being removed or rubbed against another surface; (of computer technology) the automated extraction or collection of data from websites

synonym : abrading, scratching, rubbing

(1) **scraping** tools, (2) metal **scraping**

The **scraping** sound coming from the engine made us worry about the car's condition.

putty

n. a soft, pliable substance, typically made of clay, plaster, or dough, used for filling cracks, sealing glass panes, or molding

synonym : paste, adhesive, cement

(1) **putty** work, (2) moldable **putty**

She used a **putty** knife to smooth out the surface of the wall.

paperweight

n. a small, heavy object, often made of glass or metal, that is designed to hold down papers or other items on a desk or table; an object, usually an electronic device or

piece of machinery, that is non-functional or useless for its intended purpose

synonym : desk weight, document holder

(1) metallic **paperweight**, (2) **paperweight** gift

The stained-glass **paperweight** added a pop of color to the desk.

deduce

v. to arrive at an answer, a conclusion, or a decision by reasoning

synonym : conclude, infer, suppose

(1) **deduce** facts from the evidence, (2) **deduce** the meaning of a word

The researcher **deduced** the momentum of the particles from meteoritic velocities.

peel

v. to remove the skin of fruit and vegetables

synonym : pare, unclothe, disrobe

(1) **peel** a fruit, (2) **peel** off easily

The storm had **peeled** all paint off the siding.

deduct

v. to take away an amount or part of the money, points, etc. from a total

synonym : remove, subtract, withdraw

(1) **deduct** the interest, (2) **deduct** \$100 from the price

The bank **deducted** the premium amount from his bank account.

innovate

v. to introduce new methods, ideas, or products

synonym : bring in, introduce, found

(1) **innovate** a new method, (2) **innovate** the quality of his life

Companies developing self-driving cars consistently **innovate** the emerging technologies.

Newtonian

adj. relating to Sir Isaac Newton or his laws of motion and universal gravitation

synonym: classical, physics, mechanics

(1) **Newtonian** physics, (2) **Newtonian** mechanics

The motion of planets can be described using **Newtonian** mechanics.

clockwork

n. a mechanism in which a series of gears, springs and other mechanical elements are used to power a device, especially a clock

synonym: mechanism, movement, gears

(1) run like **clockwork**, (2) **clockwork** precision

The **clockwork** mechanism in the grandfather clock needed to be wound up every week.

recombine

v. to combine or put together again or differently; to cause genetic recombination (= the process by which genetic material is broken and joined to other genetic material)

(1) **recombine** at the surface, (2) ability to **recombine**

Some scientists argue that the genes in food should not be artificially **recombined**.

fiddle

v. to continuously touch or manipulate something with someone's hands, mainly when bored or nervous; to act dishonestly to try to get money, information, etc., or gain an advantage

synonym: tinker, diddle, play

(1) **fiddle** with a PC, (2) **fiddle** away the whole afternoon

She was able to **fiddle** a free trip to the United States.

Australopithecus

n. any of several extinct hominid species that lived in Africa between 4 million and 1 million years ago and are considered to be among the earliest ancestors of modern humans

synonym: hominid, primate, ape

(1) **Australopithecus** skull, (2) **Australopithecus** africanus

Australopithecus fossils have been found in Eastern and Southern Africa.

flourish

v. to grow or develop vigorously or successfully

synonym: boom, advance, succeed

(1) **flourish** economically, (2) **flourish** worldwide

The Ottoman Empire **flourished** for over five centuries.

flake

n. a small, thin piece or layer of something, often with a flat or irregular shape; a person who is unreliable or inconsistent

synonym: chip, bit, shred

(1) **flakes** of snow, (2) **flake** graphite

She found a paint **flake** on the wall and realized it was time to repaint the room.

chariot

n. a two-wheeled horse-drawn battle vehicle used in ancient Egypt, Greece, and Rome for warfare and racing

(1) **chariot** builder, (2) **chariot** race

The ancient Romans enjoyed spectating **chariot** races.

writ

n. a written legal order or command

synonym: legal document, order, legal process

(1) a **writ** of summons, (2) issue a **writ**

He was served with a **writ** of eviction, giving him the notice to vacate the property.

stylus

n. a thin, pointed tool used to write, draw, or select items on a touchscreen device

synonym: pen, pointer, cursor

(1) **stylus** pen, (2) **stylus** pocket

Many artists prefer to use a **stylus** over their fingers when drawing on a digital canvas.

crossbow

n. a weapon consisting of a bow mounted on a stock that shoots projectiles, such as arrows, by pulling a trigger

synonym: bow, arrow gun, slingshot

(1) medieval **crossbow**, (2) **crossbow** bolts

The hunter aimed his **crossbow** at the deer in the forest.

logarithm

n. a mathematical function that indicates the power to which a fixed number (the base) must be raised to produce another given number expressed as an exponent

synonym : mathematical function, exponent, power

(1) **logarithm** function, (2) **logarithm** table

To solve this equation, you must take both sides' **logarithms**.

Christ

n. the man that Christians believe is the prophet and the son of God, and whose life and sermons form the basis for Christianity

synonym : Savior, Jesus Christ, Jesus

(1) teaching of **Christ**, (2) before **Christ**

Christmas is the day to celebrate the birth of Christ.

explode

v. to burst or break open violently and noisily; to cause something to burst or break open

synonym : detonate, blast, rupture

(1) **explode** in anger, (2) **explode** in popularity

The old building **exploded** in a fiery inferno.

compost

n. a mixture of organic matter, such as food scraps, yard waste, and manure, that is allowed to decompose and is used as fertilizer for plants and garden soil

synonym : fertilizer, humus, manure

(1) organic **compost**, (2) **compost** pile

You can add coffee grounds and crushed eggshells to your **compost** to improve the pH balance.

pandemic

n. an outbreak of a disease that affects many people over a very wide area

synonym : outbreak

(1) flu **pandemic**, (2) global **pandemic**

They fear a **pandemic** of a new type of virus.

emit

v. to give off or send out something such as light, heat, sound, gas, etc.

synonym :

give off, radiate, expel

(1) **emit** a gamma ray, (2) **emit** air pollution

During the unloading, the container box **emits** a clicking sound.

fungus

n. a type of organism that includes yeasts, molds, and mushrooms, which are heterotrophic, meaning they do not produce their food and must consume organic matter to survive

synonym : mold, mildew, yeast

(1) **fungus** infection, (2) symbiotic **fungus**

Certain types of **fungus** can be toxic to humans, causing severe illness if ingested.

biochar

n. a material produced by heating organic matter under low-oxygen conditions often used as a fertilizer or soil amendment

synonym : biocharcoal, charcoal

(1) **biochar** carbon, (2) **biochar** soil amendment

Biochar production can be a way to manage organic waste while also generating renewable energy.

Session 2: Spelling

- | | |
|-----------------------------------|---|
| 1. a w__t of summons | <i>n.</i> a written legal order or command |
| 2. bi____r carbon | <i>n.</i> a material produced by heating organic matter under low-oxygen conditions often used as a fertilizer or soil amendment |
| 3. fi___e with a PC | <i>v.</i> to continuously touch or manipulate something with someone's hands, mainly when bored or nervous; to act dishonestly to try to get money, information, etc., or gain an advantage |
| 4. fl____sh economically | <i>v.</i> to grow or develop vigorously or successfully |
| 5. de___e facts from the evidence | <i>v.</i> to arrive at an answer, a conclusion, or a decision by reasoning |
| 6. co____t pile | <i>n.</i> a mixture of organic matter, such as food scraps, yard waste, and manure, that is allowed to decompose and is used as fertilizer for plants and garden soil |
| 7. symbiotic fu___s | <i>n.</i> a type of organism that includes yeasts, molds, and mushrooms, which are heterotrophic, meaning they do not produce their food and must consume organic matter to survive |
| 8. p__l off easily | <i>v.</i> to remove the skin of fruit and vegetables |

ANSWERS: 1. writ, 2. biochar, 3. fiddle, 4. flourish, 5. deduce, 6. compost, 7. fungus, 8. peel

- | | |
|----------------------------------|--|
| 9. go there af_____rd | <i>adv.</i> after the time mentioned |
| 10. re_____ne at the surface | <i>v.</i> to combine or put together again or differently; to cause genetic recombination (= the process by which genetic material is broken and joined to other genetic material) |
| 11. de___e the meaning of a word | <i>v.</i> to arrive at an answer, a conclusion, or a decision by reasoning |
| 12. p__l a fruit | <i>v.</i> to remove the skin of fruit and vegetables |
| 13. ch_____t builder | <i>n.</i> a two-wheeled horse-drawn battle vehicle used in ancient Egypt, Greece, and Rome for warfare and racing |
| 14. lo_____hm function | <i>n.</i> a mathematical function that indicates the power to which a fixed number (the base) must be raised to produce another given number expressed as an exponent |
| 15. fl__e graphite | <i>n.</i> a small, thin piece or layer of something, often with a flat or irregular shape; a person who is unreliable or inconsistent |
| 16. Aus_____cus skull | <i>n.</i> any of several extinct hominid species that lived in Africa between 4 million and 1 million years ago and are considered to be among the earliest ancestors of modern humans |
| 17. de___t \$100 from the price | <i>v.</i> to take away an amount or part of the money, points, etc. from a total |

ANSWERS: 9. afterward, 10. recombine, 11. deduce, 12. peel, 13. chariot, 14. logarithm, 15. flake, 16. Australopithecus, 17. deduct

18. issue a w__t *n.* a written legal order or command
19. metallic pap_____ht *n.* a small, heavy object, often made of glass or metal, that is designed to hold down papers or other items on a desk or table; an object, usually an electronic device or piece of machinery, that is non-functional or useless for its intended purpose
20. Ne_____an mechanics *adj.* relating to Sir Isaac Newton or his laws of motion and universal gravitation
21. st___s pocket *n.* a thin, pointed tool used to write, draw, or select items on a touchscreen device
22. medieval cr_____ow *n.* a weapon consisting of a bow mounted on a stock that shoots projectiles, such as arrows, by pulling a trigger
23. sc_____ng tools *n.* the act of removing a thin layer of material from a surface, often to clean or smooth it; a sound or sensation that is produced by something being removed or rubbed against another surface; (of computer technology) the automated extraction or collection of data from websites
24. flu pa_____ic *n.* an outbreak of a disease that affects many people over a very wide area
25. electric scr_____er *n.* a tool used for turning screws, typically consisting of a handle and a metal rod with a flattened tip that fits into the slot on the head of a screw; a popular cocktail made with vodka and orange juice

ANSWERS: 18. writ, 19. paperweight, 20. Newtonian, 21. stylus, 22. crossbow, 23. scraping, 24. pandemic, 25. screwdriver

26. cr_____ow bolts *n.* a weapon consisting of a bow mounted on a stock that shoots projectiles, such as arrows, by pulling a trigger
27. before Ch____t *n.* the man that Christians believe is the prophet and the son of God, and whose life and sermons form the basis for Christianity
28. open the can with a scr_____er *n.* a tool used for turning screws, typically consisting of a handle and a metal rod with a flattened tip that fits into the slot on the head of a screw; a popular cocktail made with vodka and orange juice
29. moldable pu__y *n.* a soft, pliable substance, typically made of clay, plaster, or dough, used for filling cracks, sealing glass panes, or molding
30. ex_____e in anger *v.* to burst or break open violently and noisily; to cause something to burst or break open
31. cl_____rk precision *n.* a mechanism in which a series of gears, springs and other mechanical elements are used to power a device, especially a clock
32. in_____te a new method *v.* to introduce new methods, ideas, or products
33. Aus_____cus africanus *n.* any of several extinct hominid species that lived in Africa between 4 million and 1 million years ago and are considered to be among the earliest ancestors of modern humans

ANSWERS: 26. crossbow, 27. Christ, 28. screwdriver, 29. putty, 30. explode, 31. clockwork, 32. innovate, 33. Australopithecus

34. teaching of Ch___t *n.* the man that Christians believe is the prophet and the son of God, and whose life and sermons form the basis for Christianity
35. plant ph___m *n.* a major group or category of animals or plants characterized by shared physical, developmental, and evolutionary characteristics
36. e__t a gamma ray *v.* to give off or send out something such as light, heat, sound, gas, etc.
37. global pa____ic *n.* an outbreak of a disease that affects many people over a very wide area
38. metal sc____ng *n.* the act of removing a thin layer of material from a surface, often to clean or smooth it; a sound or sensation that is produced by something being removed or rubbed against another surface; (of computer technology) the automated extraction or collection of data from websites
39. fl____sh worldwide *v.* to grow or develop vigorously or successfully
40. a few years af____rd *adv.* after the time mentioned
41. clothes ha____r *n.* a device or object used for hanging or supporting something, often used for hanging clothes; a loop-shaped object used to hang clothes in a closet
42. animal ph___m *n.* a major group or category of animals or plants characterized by shared physical, developmental, and evolutionary characteristics

ANSWERS: 34. Christ, 35. phylum, 36. emit, 37. pandemic, 38. scraping, 39. flourish, 40. afterward, 41. hanger, 42. phylum

43. terrestrial bi_____re *n.* the part of the Earth and its atmosphere in which living organisms exist, including plants, animals, and microorganisms
44. lo_____hm table *n.* a mathematical function that indicates the power to which a fixed number (the base) must be raised to produce another given number expressed as an exponent
45. ch_____t race *n.* a two-wheeled horse-drawn battle vehicle used in ancient Egypt, Greece, and Rome for warfare and racing
46. organic co_____t *n.* a mixture of organic matter, such as food scraps, yard waste, and manure, that is allowed to decompose and is used as fertilizer for plants and garden soil
47. artificial bi_____re *n.* the part of the Earth and its atmosphere in which living organisms exist, including plants, animals, and microorganisms
48. ability to re_____ne *v.* to combine or put together again or differently; to cause genetic recombination (= the process by which genetic material is broken and joined to other genetic material)
49. ex_____e in popularity *v.* to burst or break open violently and noisily; to cause something to burst or break open
50. st___s pen *n.* a thin, pointed tool used to write, draw, or select items on a touchscreen device

ANSWERS: 43. biosphere, 44. logarithm, 45. chariot, 46. compost, 47. biosphere, 48. recombine, 49. explode, 50. stylus

51. coat ha___r *n.* a device or object used for hanging or supporting something, often used for hanging clothes; a loop-shaped object used to hang clothes in a closet
52. e__t air pollution *v.* to give off or send out something such as light, heat, sound, gas, etc.
53. fu___s infection *n.* a type of organism that includes yeasts, molds, and mushrooms, which are heterotrophic, meaning they do not produce their food and must consume organic matter to survive
54. bi_____r soil amendment *n.* a material produced by heating organic matter under low-oxygen conditions often used as a fertilizer or soil amendment
55. pu__y work *n.* a soft, pliable substance, typically made of clay, plaster, or dough, used for filling cracks, sealing glass panes, or molding
56. de___t the interest *v.* to take away an amount or part of the money, points, etc. from a total
57. fi___e away the whole afternoon *v.* to continuously touch or manipulate something with someone's hands, mainly when bored or nervous; to act dishonestly to try to get money, information, etc., or gain an advantage
58. run like cl_____rk *n.* a mechanism in which a series of gears, springs and other mechanical elements are used to power a device, especially a clock
59. in_____te the quality of his life *v.* to introduce new methods, ideas, or products

ANSWERS: 51. hanger, 52. emit, 53. fungus, 54. biochar, 55. putty, 56. deduct, 57. fiddle, 58. clockwork, 59. innovate

60. Ne_____an physics

adj. relating to Sir Isaac Newton or his laws of motion and universal gravitation

61. fl__es of snow

n. a small, thin piece or layer of something, often with a flat or irregular shape; a person who is unreliable or inconsistent

62. pap_____ht gift

n. a small, heavy object, often made of glass or metal, that is designed to hold down papers or other items on a desk or table; an object, usually an electronic device or piece of machinery, that is non-functional or useless for its intended purpose

ANSWERS: 60. Newtonian, 61. flake, 62. paperweight

Session 3: Fill in the Blanks

1. Certain types of _____ can be toxic to humans, causing severe illness if ingested.
 - n.* a type of organism that includes yeasts, molds, and mushrooms, which are heterotrophic, meaning they do not produce their food and must consume organic matter to survive

2. The researcher _____ the momentum of the particles from meteoritic velocities.
 - v.* to arrive at an answer, a conclusion, or a decision by reasoning

3. The storm had _____ all paint off the siding.
 - v.* to remove the skin of fruit and vegetables

4. He was served with a _____ of eviction, giving him the notice to vacate the property.
 - n.* a written legal order or command

5. The stained-glass _____ added a pop of color to the desk.
 - n.* a small, heavy object, often made of glass or metal, that is designed to hold down papers or other items on a desk or table; an object, usually an electronic device or piece of machinery, that is non-functional or useless for its intended purpose

6. You can add coffee grounds and crushed eggshells to your _____ to improve the pH balance.
 - n.* a mixture of organic matter, such as food scraps, yard waste, and manure, that is allowed to decompose and is used as fertilizer for plants and garden soil

ANSWERS: 1. fungus, 2. deduced, 3. peeled, 4. writ, 5. paperweight, 6. compost

7. The bank _____ the premium amount from his bank account.
v. to take away an amount or part of the money, points, etc. from a total
8. The motion of planets can be described using _____ mechanics.
adj. relating to Sir Isaac Newton or his laws of motion and universal gravitation
9. The _____ sound coming from the engine made us worry about the car's condition.
n. the act of removing a thin layer of material from a surface, often to clean or smooth it; a sound or sensation that is produced by something being removed or rubbed against another surface; (of computer technology) the automated extraction or collection of data from websites
10. During the unloading, the container box _____ a clicking sound.
v. to give off or send out something such as light, heat, sound, gas, etc.
11. The balance of the _____ is crucial for the survival of species.
n. the part of the Earth and its atmosphere in which living organisms exist, including plants, animals, and microorganisms
12. She was able to _____ a free trip to the United States.
v. to continuously touch or manipulate something with someone's hands, mainly when bored or nervous; to act dishonestly to try to get money, information, etc., or gain an advantage
13. _____ is the day to celebrate the birth of Christ.
n. the man that Christians believe is the prophet and the son of God, and whose life and sermons form the basis for Christianity
14. Some scientists argue that the genes in food should not be artificially _____.
v. to combine or put together again or differently; to cause genetic recombination (= the process by which genetic material is broken and joined to other genetic material)

ANSWERS: 7. deducted, 8. Newtonian, 9. scraping, 10. emits, 11. biosphere, 12.

fiddle, 13. Christmas, 14. recombined

15. I need a flathead _____ to tighten the loose screws on this cabinet.
- n.* a tool used for turning screws, typically consisting of a handle and a metal rod with a flattened tip that fits into the slot on the head of a screw; a popular cocktail made with vodka and orange juice
16. They fear a _____ of a new type of virus.
- n.* an outbreak of a disease that affects many people over a very wide area
17. She found a paint _____ on the wall and realized it was time to repaint the room.
- n.* a small, thin piece or layer of something, often with a flat or irregular shape; a person who is unreliable or inconsistent
18. The old building _____ in a fiery inferno.
- v.* to burst or break open violently and noisily; to cause something to burst or break open
19. The Ottoman Empire _____ for over five centuries.
- v.* to grow or develop vigorously or successfully
20. She used a _____ knife to smooth out the surface of the wall.
- n.* a soft, pliable substance, typically made of clay, plaster, or dough, used for filling cracks, sealing glass panes, or molding
21. The ancient Romans enjoyed spectating _____ races.
- n.* a two-wheeled horse-drawn battle vehicle used in ancient Egypt, Greece, and Rome for warfare and racing
22. The _____ mechanism in the grandfather clock needed to be wound up every week.
- n.* a mechanism in which a series of gears, springs and other mechanical elements are used to power a device, especially a clock

ANSWERS: 15. screwdriver, 16. pandemic, 17. flake, 18. exploded, 19. flourished, 20. putty, 21. chariot, 22. clockwork

23. The hunter aimed his _____ at the deer in the forest.

- n.* a weapon consisting of a bow mounted on a stock that shoots projectiles, such as arrows, by pulling a trigger

24. I hung the coat on a _____ in the closet.

- n.* a device or object used for hanging or supporting something, often used for hanging clothes; a loop-shaped object used to hang clothes in a closet

25. To solve this equation, you must take both sides' _____.

- n.* a mathematical function that indicates the power to which a fixed number (the base) must be raised to produce another given number expressed as an exponent

26. We will explain the countermeasure concerning this problem _____.

- adv.* after the time mentioned

27. Arthropoda is the largest _____ in the animal kingdom, comprising insects, spiders, and crustaceans.

- n.* a major group or category of animals or plants characterized by shared physical, developmental, and evolutionary characteristics

28. _____ production can be a way to manage organic waste while also generating renewable energy.

- n.* a material produced by heating organic matter under low-oxygen conditions often used as a fertilizer or soil amendment

29. _____ fossils have been found in Eastern and Southern Africa.

- n.* any of several extinct hominid species that lived in Africa between 4 million and 1 million years ago and are considered to be among the earliest ancestors of modern humans

ANSWERS: 23. crossbow, 24. hanger, 25. logarithms, 26. afterward, 27. phylum, 28. Biochar, 29. Australopithecus

30. Many artists prefer to use a _____ over their fingers when drawing on a digital canvas.
- n.* a thin, pointed tool used to write, draw, or select items on a touchscreen device
31. Companies developing self-driving cars consistently _____ the emerging technologies.
- v.* to introduce new methods, ideas, or products

ANSWERS: 30. stylus, 31. innovate