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Mohamed Hijri: A simple solution to the coming phosphorus crisis | TED Talk

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

Advanced Words Only

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Session 1: Word List

algae

n. A simple plant that grows in or near water and lacks typical leaves and roots

(1) **algae** biofuel, (2) blue **algae**

Algae has jammed the inlet to the water turbine.

disappoint

v. to fail to meet someone or their hopes or expectations; to make someone feel sad

synonym: sadden, dismay, frustrate

(1) **disappoint** the audience, (2) don't **disappoint** me

She worked very hard not to **disappoint** her boss's expectations.

phosphorus

n. a chemical element with the symbol P and atomic number 15 that is a non-metallic, highly reactive, and luminescent element

synonym: P, phosphoric, phosphorous

(1) **phosphorus** element, (2) yellow **phosphorus**

Phosphorus compounds are commonly used to manufacture fertilizers to promote plant growth.

engender

v. to make a feeling or situation exist; to cause or give rise to

synonym: beget, spawn, generate

(1) **engender** a crisis, (2) **engender** the trust

The discussion about war helps **engender** a sense of shared humanity.

phospholipid

n. a type of lipid that is an essential component of cell membranes, consisting of a phosphate group (= a chemical compound made up of phosphorus and oxygen), glycerol (= a colorless, odorless, sweet-tasting, viscous liquid), and fatty acid chains

(1) **phospholipid** bilayers, (2) synthetic **phospholipid**

Liposomes are microscopic vesicles made up of **phospholipids** used in drug delivery systems.

illogical

adj. not making sense or not based on sound reasoning

synonym: irrational, senseless, nonsensical

(1) **illogical** argument, (2) **illogical** reasoning

His argument made no sense and was completely **illogical**.

wasteful

adj. characterized by excessive or unnecessary use or consumption; using resources or materials inefficiently or inappropriately, resulting in unnecessary waste or expense

synonym: uneconomical, extravagant, profligate

(1) **wasteful** practices, (2) **wasteful** habits

Buying new clothes every week is a **wasteful** use of money and resources.

biofuel

n. a fuel produced from organic matter, such as crops or waste material, that can be used to replace or supplement traditional fossil fuels

synonym: renewable energy, green fuel, alternative fuel

(1) **biofuel** production, (2) **biofuel** technology

The airplane was powered by a **biofuel** made from plant-based materials.

hydropower

n. electricity generated from the energy of moving water, usually using turbines and dams in rivers or other bodies

of water

synonym: hydroelectricity, waterpower, hydro

(1) **hydropower** plant, (2) **hydropower** energy

Many countries around the world have built dams to harness the power of **hydropower** for their energy needs.

paradox

n. a statement, situation, or person that has two opposite facts or features and therefore seems impossible, is difficult to understand, or is strange;

synonym: incongruity, dichotomy, contradiction

(1) French **paradox**, (2) the **paradox** of the heap

There are many theories to explain this **paradox**.

paradoxical

adj. seemingly contradictory or absurd because of having two opposite features or facts, though it is probably true

synonym: contradictory, conflicting, perplexing

(1) a **paradoxical** anecdote, (2) apparently **paradoxical**

it is **paradoxical** that the French, who prefer animal foods, live longer than people in other countries.

destine

v. to determine or set the course of something in advance, often in a way that seems predetermined or inevitable; to specify or choose someone or something for a particular fate or outcome

synonym: ordain, doom, predestine

(1) **destine** us to meet again, (2) be **destined** to become a great artist

Some people believe that we are all **destined** for greatness.

microscopic

adj. tiny; exceedingly precise and detail-oriented; of or used in microscopy

synonym: infinitesimal, tiny, atomic

(1) **microscopic** inquiry, (2) **microscopic** analysis

Inspectors noticed **microscopic** cracks in the submarine's hull.

mushroom

n. a type of fungus that grows on dead or decaying organic matter and typically has a stalk and an umbrella-shaped cap

synonym : fungus, toadstool

(1) **mushroom** spores, (2) **mushroom** cultivation

The **mushroom** risotto was delicious, but I couldn't identify all the mushrooms in it.

fascinate

v. to attract and hold the attention of someone deeply and irresistibly

synonym : captivate, intrigue, mesmerize

(1) **fascinate** the public, (2) **fascinate** the young

The magic tricks **fascinated** the children.

symbiosis

n. a close, prolonged association between two or more different species of organisms, typically to the advantage of all

synonym : cooperation, interdependence, mutualism

(1) industrial **symbiosis**, (2) **symbiosis** establishment

The **symbiosis** between the coral and the algae is an important example of mutualism.

bidirectional

adj. capable of functioning or moving in two opposite directions; involving or allowing communication or transmission in two opposite directions

synonym : two-way, reciprocal, dual

(1) **bidirectional** communication, (2) **bidirectional** street

The **bidirectional** flow of information allows for efficient communication between the two departments.

mycorrhiza

n. a mutually beneficial association between a fungus and the roots of a plant, in which the fungus helps the plant absorb water and nutrients, and the plant provides the fungus with sugars produced through photosynthesis

synonym : fungus, root, relationship

(1) **mycorrhiza** fungi, (2) orchid **mycorrhiza**

Some studies have shown that plants grown in soil with a

high population of **mycorrhizal** fungi are more resistant to drought and disease.

filament

n. a thin wire or thread, especially one used to produce light in an electric bulb

synonym: fiber, thread, filament

(1) **filament** lamp, (2) carbon **filament**

The **filament** in the light bulb burned out, and now it's not working.

proliferate

v. to grow or increase rapidly in number; to reproduce or spread rapidly, especially in an uncontrolled manner

synonym: multiply, spread, propagate

(1) **proliferate** cells, (2) **proliferate** weeds

The number of COVID cases continued to **proliferate** in many countries worldwide.

penetrating

adj. able to pierce or enter deeply into something; having a sharp, intense quality that cuts through superficiality or confusion

synonym: keen, piercing, sharp

(1) **penetrating** gaze, (2) **penetrating** analysis

The **penetrating** smell of freshly brewed coffee filled the room.

dissolve

v. to be or cause to be absorbed by a liquid to form a part of the solution; to close down or dismiss

synonym: disband, disappear, liquefy

(1) **dissolve** the sugar, (2) officially **dissolved** the marriage

The political party **dissolved** after much internal fighting.

sorghum

n. a type of grain grown in tropical countries

(1) **sorghum** grain, (2) seeds of **sorghum**

Sorghum is an important food grain in this country.

rectangle

n. a four-sided geometric shape with four right angles, where opposite sides are parallel and of equal length

synonym : oblong, square, quadrangle

(1) orthogonal **rectangle**, (2) **rectangle** box

The living room had a **rectangle-shaped** coffee table in the center of it.

diversify

v. to make something include more different types or things; to spread out activities or investments

synonym : branch out, expand, broaden

(1) **diversify** my portfolio, (2) **diversify** energy sources

This inclusive environment has allowed the plant species to **diversify**.

commercialize

v. to make something available for sale or use on a large scale

synonym : monetize, capitalize, marketize

(1) **commercialize** my patents, (2) **commercialize** idea

The company is trying to **commercialize** its new product.

grandchild

n. a child of someone's son or daughter

synonym : offspring, descendant, progeny

(1) **grandchild-grandparent** relationship, (2) **grandchild** development

The grandparents take care of their **grandchild** while the parents are at work.

Session 2: Spelling

1. di_____fy my portfolio *v.* to make something include more different types or things; to spread out activities or investments
2. bid_____nal communication *adj.* capable of functioning or moving in two opposite directions; involving or allowing communication or transmission in two opposite directions
3. fa_____te the young *v.* to attract and hold the attention of someone deeply and irresistibly
4. pho_____us element *n.* a chemical element with the symbol P and atomic number 15 that is a non-metallic, highly reactive, and luminescent element
5. seeds of so_____m *n.* a type of grain grown in tropical countries
6. fa_____te the public *v.* to attract and hold the attention of someone deeply and irresistibly
7. mic_____ic inquiry *adj.* tiny; exceedingly precise and detail-oriented; of or used in microscopy
8. bi_____l technology *n.* a fuel produced from organic matter, such as crops or waste material, that can be used to replace or supplement traditional fossil fuels
9. so_____m grain *n.* a type of grain grown in tropical countries
10. wa_____ul practices *adj.* characterized by excessive or unnecessary use or consumption; using resources or materials inefficiently or inappropriately, resulting in unnecessary waste or expense

ANSWERS: 1. diversify, 2. bidirectional, 3. fascinate, 4. phosphorus, 5. sorghum, 6. fascinate, 7. microscopic, 8. biofuel, 9. sorghum, 10. wasteful

11. pho_____pid bilayers *n.* a type of lipid that is an essential component of cell membranes, consisting of a phosphate group (= a chemical compound made up of phosphorus and oxygen), glycerol (= a colorless, odorless, sweet-tasting, viscous liquid), and fatty acid chains
12. de_____e us to meet again *v.* to determine or set the course of something in advance, often in a way that seems predetermined or inevitable; to specify or choose someone or something for a particular fate or outcome
13. il_____al reasoning *adj.* not making sense or not based on sound reasoning
14. pen_____ng gaze *adj.* able to pierce or enter deeply into something; having a sharp, intense quality that cuts through superficiality or confusion
15. en_____er the trust *v.* to make a feeling or situation exist; to cause or give rise to
16. pro_____te weeds *v.* to grow or increase rapidly in number; to reproduce or spread rapidly, especially in an uncontrolled manner
17. hyd_____er plant *n.* electricity generated from the energy of moving water, usually using turbines and dams in rivers or other bodies of water
18. re_____le box *n.* a four-sided geometric shape with four right angles, where opposite sides are parallel and of equal length

ANSWERS: 11. phospholipid, 12. destine, 13. illogical, 14. penetrating, 15. engender, 16. proliferate, 17. hydropower, 18. rectangle

19. carbon fi_____nt *n.* a thin wire or thread, especially one used to produce light in an electric bulb
20. fi_____nt lamp *n.* a thin wire or thread, especially one used to produce light in an electric bulb
21. sy_____is establishment *n.* a close, prolonged association between two or more different species of organisms, typically to the advantage of all
22. don't dis_____nt me *v.* to fail to meet someone or their hopes or expectations; to make someone feel sad
23. al__e biofuel *n.* A simple plant that grows in or near water and lacks typical leaves and roots
24. di_____ve the sugar *v.* to be or cause to be absorbed by a liquid to form a part of the solution; to close down or dismiss
25. yellow pho_____us *n.* a chemical element with the symbol P and atomic number 15 that is a non-metallic, highly reactive, and luminescent element
26. a par_____al anecdote *adj.* seemingly contradictory or absurd because of having two opposite features or facts, though it is probably true
27. be de_____ed to become a great artist *v.* to determine or set the course of something in advance, often in a way that seems predetermined or inevitable; to specify or choose someone or something for a particular fate or outcome

ANSWERS: 19. filament, 20. filament, 21. symbiosis, 22. disappoint, 23. algae, 24. dissolve, 25. phosphorus, 26. paradoxical, 27. destine

28. gra_____ld development *n.* a child of someone's son or daughter
29. gra_____ld-grandparent relationship *n.* a child of someone's son or daughter
30. bid_____nal street *adj.* capable of functioning or moving in two opposite directions; involving or allowing communication or transmission in two opposite directions
31. dis_____nt the audience *v.* to fail to meet someone or their hopes or expectations; to make someone feel sad
32. mic_____ic analysis *adj.* tiny; exceedingly precise and detail-oriented; of or used in microscopy
33. orchid myc_____za *n.* a mutually beneficial association between a fungus and the roots of a plant, in which the fungus helps the plant absorb water and nutrients, and the plant provides the fungus with sugars produced through photosynthesis
34. industrial sy_____is *n.* a close, prolonged association between two or more different species of organisms, typically to the advantage of all
35. orthogonal re_____le *n.* a four-sided geometric shape with four right angles, where opposite sides are parallel and of equal length
36. myc_____za fungi *n.* a mutually beneficial association between a fungus and the roots of a plant, in which the fungus helps the plant absorb water and nutrients, and the plant provides the fungus with sugars produced through photosynthesis

ANSWERS: 28. grandchild, 29. grandchild, 30. bidirectional, 31. disappoint, 32. microscopic, 33. mycorrhiza, 34. symbiosis, 35. rectangle, 36. mycorrhiza

37. pen_____ng analysis *adj.* able to pierce or enter deeply into something; having a sharp, intense quality that cuts through superficiality or confusion
38. pro_____te cells *v.* to grow or increase rapidly in number; to reproduce or spread rapidly, especially in an uncontrolled manner
39. synthetic pho_____pid *n.* a type of lipid that is an essential component of cell membranes, consisting of a phosphate group (= a chemical compound made up of phosphorus and oxygen), glycerol (= a colorless, odorless, sweet-tasting, viscous liquid), and fatty acid chains
40. com_____ize idea *v.* to make something available for sale or use on a large scale
41. blue al__e *n.* A simple plant that grows in or near water and lacks typical leaves and roots
42. hyd_____er energy *n.* electricity generated from the energy of moving water, usually using turbines and dams in rivers or other bodies of water
43. mu_____om cultivation *n.* a type of fungus that grows on dead or decaying organic matter and typically has a stalk and an umbrella-shaped cap
44. apparently par_____al *adj.* seemingly contradictory or absurd because of having two opposite features or facts, though it is probably true
45. com_____ize my patents *v.* to make something available for sale or use on a large scale

ANSWERS: 37. penetrating, 38. proliferate, 39. phospholipid, 40. commercialize, 41. algae, 42. hydropower, 43. mushroom, 44. paradoxical, 45. commercialize

46. en_____er a crisis *v.* to make a feeling or situation exist; to cause or give rise to
47. mu_____om spores *n.* a type of fungus that grows on dead or decaying organic matter and typically has a stalk and an umbrella-shaped cap
48. officially di_____ved the marriage *v.* to be or cause to be absorbed by a liquid to form a part of the solution; to close down or dismiss
49. French pa_____x *n.* a statement, situation, or person that has two opposite facts or features and therefore seems impossible, is difficult to understand, or is strange;
50. di_____fy energy sources *v.* to make something include more different types or things; to spread out activities or investments
51. il_____al argument *adj.* not making sense or not based on sound reasoning
52. wa_____ul habits *adj.* characterized by excessive or unnecessary use or consumption; using resources or materials inefficiently or inappropriately, resulting in unnecessary waste or expense
53. the pa_____x of the heap *n.* a statement, situation, or person that has two opposite facts or features and therefore seems impossible, is difficult to understand, or is strange;
54. bi_____l production *n.* a fuel produced from organic matter, such as crops or waste material, that can be used to replace or supplement traditional fossil fuels

ANSWERS: 46. engender, 47. mushroom, 48. dissolve, 49. paradox, 50. diversify, 51. illogical, 52. wasteful, 53. paradox, 54. biofuel

ANSWERS:

Session 3: Fill in the Blanks

1. The discussion about war helps _____ a sense of shared humanity.
v. to make a feeling or situation exist; to cause or give rise to
2. Many countries around the world have built dams to harness the power of _____ for their energy needs.
n. electricity generated from the energy of moving water, usually using turbines and dams in rivers or other bodies of water
3. The _____ risotto was delicious, but I couldn't identify all the mushrooms in it.
n. a type of fungus that grows on dead or decaying organic matter and typically has a stalk and an umbrella-shaped cap
4. The _____ smell of freshly brewed coffee filled the room.
adj. able to pierce or enter deeply into something; having a sharp, intense quality that cuts through superficiality or confusion
5. The _____ between the coral and the algae is an important example of mutualism.
n. a close, prolonged association between two or more different species of organisms, typically to the advantage of all
6. She worked very hard not to _____ her boss's expectations.
v. to fail to meet someone or their hopes or expectations; to make someone feel sad
7. _____ compounds are commonly used to manufacture fertilizers to promote plant growth.
n. a chemical element with the symbol P and atomic number 15 that is a non-metallic, highly reactive, and luminescent element

ANSWERS: 1. engender, 2. hydropower, 3. mushroom, 4. penetrating, 5. symbiosis, 6. disappoint, 7. Phosphorus

8. The company is trying to _____ its new product.
v. to make something available for sale or use on a large scale
9. Liposomes are microscopic vesicles made up of _____ used in drug delivery systems.
n. a type of lipid that is an essential component of cell membranes, consisting of a phosphate group (= a chemical compound made up of phosphorus and oxygen), glycerol (= a colorless, odorless, sweet-tasting, viscous liquid), and fatty acid chains
10. The airplane was powered by a _____ made from plant-based materials.
n. a fuel produced from organic matter, such as crops or waste material, that can be used to replace or supplement traditional fossil fuels
11. Inspectors noticed _____ cracks in the submarine's hull.
adj. tiny; exceedingly precise and detail-oriented; of or used in microscopy
12. The magic tricks _____ the children.
v. to attract and hold the attention of someone deeply and irresistibly
13. Some people believe that we are all _____ for greatness.
v. to determine or set the course of something in advance, often in a way that seems predetermined or inevitable; to specify or choose someone or something for a particular fate or outcome
14. _____ has jammed the inlet to the water turbine.
n. A simple plant that grows in or near water and lacks typical leaves and roots
15. The _____ flow of information allows for efficient communication between the two departments.
adj. capable of functioning or moving in two opposite directions; involving or allowing communication or transmission in two opposite directions

ANSWERS: 8. commercialize, 9. phospholipids, 10. biofuel, 11. microscopic, 12. fascinated, 13. destined, 14. Algae, 15. bidirectional

16. Some studies have shown that plants grown in soil with a high population of _____ fungi are more resistant to drought and disease.
- n.* a mutually beneficial association between a fungus and the roots of a plant, in which the fungus helps the plant absorb water and nutrients, and the plant provides the fungus with sugars produced through photosynthesis
17. His argument made no sense and was completely _____.
- adj.* not making sense or not based on sound reasoning
18. The grandparents take care of their _____ while the parents are at work.
- n.* a child of someone's son or daughter
19. _____ is an important food grain in this country.
- n.* a type of grain grown in tropical countries
20. The number of COVID cases continued to _____ in many countries worldwide.
- v.* to grow or increase rapidly in number; to reproduce or spread rapidly, especially in an uncontrolled manner
21. it is _____ that the French, who prefer animal foods, live longer than people in other countries.
- adj.* seemingly contradictory or absurd because of having two opposite features or facts, though it is probably true
22. The living room had a _____ coffee table in the center of it.
- n.* a four-sided geometric shape with four right angles, where opposite sides are parallel and of equal length
23. The _____ in the light bulb burned out, and now it's not working.
- n.* a thin wire or thread, especially one used to produce light in an electric bulb

ANSWERS: 16. mycorrhizal, 17. illogical, 18. grandchild, 19. Sorghum, 20. proliferate, 21. paradoxical, 22. rectangle-shaped, 23. filament

24. There are many theories to explain this _____.
- n.* a statement, situation, or person that has two opposite facts or features and therefore seems impossible, is difficult to understand, or is strange;
25. The political party _____ after much internal fighting.
- v.* to be or cause to be absorbed by a liquid to form a part of the solution; to close down or dismiss
26. This inclusive environment has allowed the plant species to _____.
- v.* to make something include more different types or things; to spread out activities or investments
27. Buying new clothes every week is a _____ use of money and resources.
- adj.* characterized by excessive or unnecessary use or consumption; using resources or materials inefficiently or inappropriately, resulting in unnecessary waste or expense

ANSWERS: 24. paradox, 25. dissolved, 26. diversify, 27. wasteful