

IELTS vocabulary for science and research

The language of experiments and evidence, from hypothesis and correlation to replicate and specimen, as used in Reading passages on the scientific method, twin studies and how discoveries happen.

Words

discipline /ˈdɪsəplɪn/ (noun, C1) a subject or area of study

An emerging discipline called neuroaesthetics is seeking to bring scientific objectivity to the study of art, and has already given us a better understanding of many masterpieces.

breakthrough /ˈbreɪkθruː/ (noun, B2) an important new discovery or development

Not long after that, Perkin made the scientific breakthrough that would bring him both fame and fortune.

hypothesis /ˈhaɪpəθəsis/ (noun, C1) an idea suggested to explain something, not yet proved

Bones, tools and other artefacts found on the site seem to support this hypothesis.

empirical /ɪmˈpɪrɪkl/ (adjective, C1) based on observation or experiment, not theory

Despite all this, there is limited empirical evidence to suggest that streaming results in better outcomes for students.

specimen /ˈspesɪmən/ (noun, C1) a single example of an animal or plant, used for study

Sadly, the passenger pigeon's existence came to an end on 1 September 1914, when the last living specimen died at Cincinnati Zoo.

analysis /əˈnæləsɪs/ (noun, B2) a detailed examination to understand something

DNA analysis showed that all six species of bat had fed on economically important insect pests.

methodology /ˌmeθəˈdɒlədʒi/ (noun, C1) the system of approaches and techniques used in a study

It is in the light of an expectation that some observations are held to be relevant and some irrelevant, that one methodology is chosen and others discarded, that some experiments are conducted and others are not.

phenomenon /fəˈnɒmɪnən/ (noun, B2) something that happens or exists, often unusual or interesting

Urban farming is not, of course, a new phenomenon.

variable /ˈveəriəbl/ (noun, C1) a factor that can change and affect results

Analysing the trends in each variable, the researchers discovered that species with more flexible lifecycles were more likely to be able to benefit from an earlier emergence driven by climate change.

correlation /ˌkɒrəˈleɪʃn/ (noun, C1) a link between two things that change together

One interesting correlation Manton uncovered is that better-educated people are likely to live longer.

finding /ˈfaɪndɪŋ/ (noun, B2) information discovered as a result of research

According to the researchers, this unexpected finding may be down to the life experiences of children growing up in slums.

observation /ˌɒbzəˈveɪʃn/ (noun, B2) watching something carefully to learn about it

With exceptionally keen powers of observation and great finesse with a paintbrush, she recorded subtle nuances of colour, shape, and light that enlivened her paintings and attracted a wide audience.

investigate /ɪnˈvestɪɡeɪt/ (verb, B2) to study something carefully to discover the truth

My colleague and I, both neuroscientists, wanted to investigate how the mind operates under stress, so we visited some local fire stations.

quantify /ˈkwɒntɪfaɪ/ (verb, C1) to measure something or express it as a number

Alternatively, by comparing the experiences of identical twins with those of fraternal twins, who come from separate eggs and share on average half their DNA, researchers can quantify the extent to which our genes affect our lives.

replicate /ˈreplɪkeɪt/ (verb, C1) to repeat a study to check that results are the same

Professor of Psychology Timothy Bates, who has been trying to replicate Dweck's work, is finding that the results are repeatedly null.

genetic /dʒəˈnetɪk/ (adjective, B2) relating to the cell units that parents pass to their children

They compared the genetic structure of polar bears with that of their closest relatives from a warmer climate, the brown bears.

organism /ˈɔːɡənɪzəm/ (noun, C1) a single living thing, such as a plant or animal

In biological systems, organisms may display new characteristics that result from random genetic mutations.

evolution /ˌiːvəˈluːʃn/ (noun, B2) gradual change in living things over many generations

It is by now a truism that the story of human evolution is being rethought.

evolutionary /ˌiːvəˈluːʃənəri/ (adjective, C1) relating to how living things develop over time

Like many others, Dawkins justifies his views with reference to the field of evolutionary psychology.

mutation /mju:'teɪʃn/ (noun, C1) a change in a gene that can be passed on

In humans, mutations of this gene are associated with increased risk of heart disease.

bacteria /bæk'tɪəriə/ (noun, B2) tiny living things, some of which cause disease

Once the water has drained away, bacteria and fungi then break down the carbon in the peat and turn it into CO₂ and methane.

rigorous /'rɪɡərəs/ (adjective, C1) very careful, thorough and exact

Once you have arrived at your hypothesis, which is a product of your imagination, you then proceed to a strictly logical and rigorous process, based upon deductive argument - hence the term 'hypothetico-deductive'.

excavation /,ekska'veɪʃn/ (noun, C1) digging in the ground to find ancient objects

Archaeological excavations indicate that the Rapanui went to heroic efforts to protect the resources of their wind-lashed, infertile fields.

archaeological /,ɑ:kiə'lɒdʒɪkl/ (adjective, B2) relating to the study of ancient remains

But to support this idea, they needed archaeological evidence for humans living in this remote area in the ancient past.

anecdotal /,ænɪk'dəʊtl/ (adjective, C1) based on personal stories, not careful research

Although quantitative evidence of AHI's initiatives at SAH are limited at present, anecdotal evidence clearly suggests that these practices are working.

Phrases for Speaking and Writing

camera traps cameras in the wild that take photos automatically

Because they live in such remote areas and are mostly active at dawn and dusk, much of what we know comes from camera traps rather than direct observation.

direct observation watching something yourself, as it happens

Because they live in such remote areas and are mostly active at dawn and dusk, much of what we know comes from camera traps rather than direct observation.

well-documented research studies with clear, recorded evidence

For instance, there's well-documented research showing that crows can recognise individual human faces and hold a grudge for years against people who've treated them badly.

by-products useful things produced while making something else

In addition to sugar, the process yields two by-products: bagasse and molasses.

impurities settle out unwanted substances sink to the bottom of a liquid

The juice is then heated with lime so that impurities settle out, and the water is boiled off to leave a thick syrup.

a series of refining steps stages that make a substance purer

The juice then undergoes a series of refining steps.

percentage points the units used to compare two percentages

Canada's progress was more even: its rate increased by 12 percentage points in the first decade and by 13 in the second, ending at 52%, almost double its 2005 level.