

KEYWORDS FOR IELTS READING

CAMBRIDGE IELTS 18

Academic Module



"A must-have for anyone who aims to get BAND 8+ in the IELTS Reading test"

IELTS HUNG NGUYEN

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Mặc dù vậy rất nhiều bạn đã học các bộ sách này không đúng phương pháp qua đó không khai thác triệt để được nội dung của các đề thi trong sách. Nếu chỉ giải đề và đối chiếu đáp án các bạn sẽ chỉ nắm được cách làm bài mà không tận dụng được sách để học từ vựng.

Hiểu được việc tốn thời gian và khó khăn khi chưa đủ trình độ để có thể học tất cả các từ vựng trong các đề Cam một cách chính xác. Mình và team đã giúp các bạn soạn ra đầy đủ những từ vựng (gần như là 99%) tất cả những từ vựng trong quyển Cambridge IELTS 18.

Nội dung của sách là highlight những từ vựng quan trọng đồng thời giải nghĩa chúng bằng tiếng việt có kèm theo từ đồng nghĩa. Công việc của các bạn chỉ đơn giản là cầm quyển sách sách lên và đọc chúng cho đến khi nhớ được toàn bộ hoặc phần lớn các nghĩa của các từ vựng trong mỗi bài đọc.

Sách được biên soạn 100% bởi mình - Hùng Nguyễn (8.5 IELTS) và team, vì vậy các bạn có thể yên tâm về chất lượng của nó. Đây là nguồn tài liệu quý giá cho bất cứ ai muốn đạt đến những điểm số IELTS Reading tối đa.

Mặc dù rất cố gắng trong quá trình biên soạn tuy nhiên không thể tránh khỏi các sai sót. Bất cứ ý kiến nào của các bạn cũng sẽ giúp mình hoàn thiện quyển sách này hơn. Xin hãy gửi các đóng góp đến địa chỉ: nguyenquochung0709@gmail.com

Một lần nữa xin chân thành cảm ơn các bạn!

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Hiện tại mình cũng xây dựng các khóa học IELTS Online, khóa học tổng hợp đầy đủ các phương pháp làm các dạng bài, tips, từ vựng nhằm giúp các bạn rút ngắn hơn nữa quá trình học IELTS cũng như có thể tự học được các kỹ năng khó như Writing và Speaking. Các bạn có thể tìm thấy các khóa học Online của mình ở ielts-hungnguyen.com.

The infographic is divided into five colored sections, each representing a different IELTS course. Each section includes an icon, a title, a target score, and a list of course features.

- WRITING TASK 1 COURSE** (Yellow background):
 - Icon: Bar chart with an upward arrow.
 - Target: TARGET 7+
 - Features:
 - 20 video bài giảng
 - Phương pháp làm tất cả dạng bài
 - Bài tập theo dạng
 - Bài tập ôn luyện từ vựng
- WRITING TASK 2 COURSE** (Orange background):
 - Icon: Document with a pencil.
 - Target: TARGET 7+
 - Features:
 - 28 video bài giảng
 - Phương pháp làm tất cả dạng bài
 - Cấu trúc ngữ pháp nâng cao
 - Bài tập theo dạng
 - Bài tập ôn luyện từ vựng
- SPEAKING COURSE** (Blue background):
 - Icon: Speech bubbles.
 - Target: TARGET 7+
 - Features:
 - 30 video bài giảng
 - Phương pháp trả lời tất cả các dạng câu hỏi
 - Từ vựng, cấu trúc, template
 - Bài tập từ vựng theo chủ đề
- READING COURSE** (Green background):
 - Icon: Stack of books.
 - Target: TARGET 7, 8, 9
 - Features:
 - 30 video bài giảng
 - Phương pháp trả lời tất cả các dạng câu hỏi
 - Bài tập luyện tập có video giải
 - Ebook Highlight từ vựng
- KHÓA COMBO IELTS ONLINE** (Yellow background):
 - Icon: Microphone, headphones, and books.
 - Target: TARGET 7 +
 - Features:
 - Writing
 - Speaking
 - Reading
 - Listening (tặng kèm)

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TEST 1 - READING PASSAGE 1 - URBAN FARMING

In Paris, urban farmers are trying a soil-free approach to agriculture that uses less space and fewer resources. Could it help cities face the threats to our food supplies?

On top of a **striking** new exhibition hall in southern Paris, the world's largest urban rooftop farm has started to bear fruit. Strawberries that are small, intensely flavoured and resplendently red **sprout** abundantly from large plastic tubes. Peer inside and you see the tubes are completely **hollow**, the roots of dozens of strawberry plants dangling down inside them. From **identical vertical** tubes nearby burst row upon row of **lettuces**; near those are aromatic herbs, such as **basil**, sage and **peppermint**. Opposite, in narrow, **trays** packed not with soil but with coconut **fibre**, grow cherry tomatoes, shiny **aubergines** and brightly coloured chards.

- | | |
|-----------------------------|-------------------------------|
| - striking (adj) unusual: | - basil (n) cây húng quế |
| - sprout (v) mọc, nảy mầm | - peppermint (n) cây bạc hà |
| - hollow (adj) rỗng | - horizontal (adj) ngang |
| - identical (adj) đồng nhất | - tray (n) khay |
| - vertical (adj) thẳng đứng | - fibre (n) sợi, thớ, chất xơ |
| - lettuce (n) rau diếp | - aubergine (n) cà tím |

Pascal Hardy, an engineer and **sustainable** development **consultant**, began experimenting with **vertical farming** and aeroponic growing towers- as the soil-free plastic tubes are known – on his Paris apartment block roof five years ago. The urban rooftop space above the exhibition hall is somewhat bigger: 14,000 square metres and almost exactly the size of a couple of football pitches. Already, the team of young urban farmers who tend it have **picked**, in one day, 3,000 lettuces and 150 **punnets** of strawberries. When the remaining two thirds of the **vast** open area are in production, 20 staff will **harvest** up to 1,000 kg of perhaps 35 different **varieties** of fruit and vegetables, every day. 'We're not ever, obviously, going to **feed** the whole city this way,' cautions Hardy. 'In the urban environment you're working with very significant practical **constraints**, clearly, on what you can do and where. But if enough unused space can be developed like this, there's no reason why you shouldn't **eventually** target maybe between 5% and 10% of **consumption**.'

- | | |
|--|---|
| - sustainable (adj) bền vững | - variety (n) kind, type: loại |
| - consultant (n) cố vấn | - feed (v) cung cấp thức ăn cho |
| - pick (v) hái | - constraint (n) giới hạn |
| - punnet (n) giỏ (đựng rau quả) | - eventually (adv) finally, ultimately: cuối cùng |
| - vast (adj) huge, extremely large: rộng lớn | - consumption (n) sự tiêu thụ |
| - harvest (v) thu hoạch | |

Perhaps most **significantly**, however, this is a real-life **showcase** for the work of Hardy's **flourishing** urban agriculture **consultancy**, Agripolis, which is currently fielding **enquiries** from around the world to design, build and equip a new **breed** of soil-free inner-city farm. 'The method's advantages are many,' he says. 'First, I don't much like the fact that most of the fruit and vegetables we eat have been treated with something like 17 different **pesticides**, or that the **intensive farming** techniques that produced them are such huge **generators** of greenhouse gases. I don't much like the fact, either, that they've travelled an average of 2,000 **refrigerated** kilometres to my plate, that their quality is so poor, because the varieties

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are selected for their **capacity** to **withstand** such **substantial** journeys, or that 80% of the price I pay goes to **wholesalers** and transport companies, not the producers.'

- significantly (adv) importantly: một cách quan trọng
- showcase (n) tủ trưng bày
- flourishing (adj) thành công, hưng thịnh
- consultancy (n) công ty tư vấn
- field (v) trả lời (hàng loạt)
- enquiry (n) inquiry, question: câu hỏi
- breed (n) loài
- pesticide (n) thuốc trừ sâu
- intensive farming (n) thâm canh nông nghiệp
- generator (n) cái tạo ra
- refrigerate (v) làm lạnh
- capacity (n) ability: khả năng
- withstand (v) chịu được, chống lại
- substantial (adj) lớn, đáng kể
- wholesaler (n) nhà bán buôn

Produce grown using this soil-free method, on the other hand- which relies **solely** on a small quantity of water, enriched with organic **nutrients**, pumped around a closed **circuit** of pipes, towers and trays- is 'produced up here, and sold locally, just down there. It barely travels at all,' Hardy says. 'You can select crop varieties for their flavour, not their **resistance** to the transport and storage chain, and you can pick them when they're really at their best, and not before.' No soil is exhausted, and the water that gently showers the plants' roots every 12 minutes is recycled, so the method uses 90% less water than a classic intensive farm for the same **yield**.

- solely (adv) only: duy nhất
- nutrient (n) chất dinh dưỡng
- circuit (n) hệ thống khép kín
- resistance (n) sự chống lại
- yield (n) sản lượng

Urban farming is not, of course, a new phenomenon. Inner-city agriculture is booming from Shanghai to Detroit and Tokyo to Bangkok. Strawberries are being grown in disused shipping containers, **mushrooms** in underground car parks. **Aeroponic farming**, he says, is '**virtuous**'. The equipment weighs little, can be installed on almost any flat surface and is cheap to buy: roughly 100 to 150 per square metre. It is cheap to run, too, consuming a tiny fraction of the electricity used by some techniques.

- mushroom (n) nấm
- aeroponic farming (n) khí canh
- virtuous (adj) có đức, có đạo đức

Produce grown this way typically sells at prices that, while generally higher than those of classic intensive agriculture, are lower than soil-based organic **growers**. There are limits to what farmers can grow this way, of course, and much of the **produce** is suited to the summer months. 'Root vegetables we cannot do, at least not yet,' he says. 'Radishes are OK, but carrots, potatoes, that kind of thing- the roots are simply too long. Fruit trees are obviously not an option. And beans tend to take up a lot of space for not much **return**.' **Nevertheless**, urban farming of the kind being practised in Paris is one part of a bigger and fast-changing picture that is bringing food production closer to our lives.

- grower (n) cây trồng
- produce (n) nông sản
- nevertheless (adv) however: tuy nhiên
- return (n) lợi nhuận

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TEST 1 - READING PASSAGE 2 - FOREST MANAGEMENT IN PENNSYLVANIA, USA

How managing low-quality wood (also known as low-use wood) for bioenergy can encourage sustainable forest management

A.

A tree's 'value' depends on several factors including its species, size, form, condition, quality, function, and accessibility, and depends on the management goals for a given forest. The same tree can be valued very differently by each person who looks at it. A large, straight black cherry tree has high value as **timber** to be cut into **logs** or made into furniture, but for a **landowner** more interested in **wildlife** habitat, the real value of that **stem** (or trunk) may be the food it provides to animals. **Likewise**, if the tree suffers from black knot disease, its value for timber decreases, but to a **woodworker** interested in making bowls, it brings an opportunity for a unique and beautiful piece of art.

- | | |
|---|---|
| - timber (n) gỗ xây dựng | - stem (n) trunk: thân cây |
| - log (n) cây gỗ, khúc gỗ | - likewise (adv) similarly: tương tự |
| - landowner (n) chủ đất, địa chủ | - woodworker (n) carpenter: thợ xẻ, thợ mộc |
| - wildlife (n) cây trồng, vật nuôi hoang dã | |

B.

In the past, Pennsylvania landowners were **solely** interested in the value of their trees as high-quality timber. The norm was to remove the stems of highest quality and leave behind poorly formed trees that were not as well **suited** to the site where they grew. This practice, called 'high-grading', has left a **legacy** of 'low-use wood' in the forests. Some people even call these 'junk trees', and they are **abundant** in Pennsylvania. These trees have lower economic value for traditional timber markets, compete for growth with higher-value trees, shade out **desirable regeneration** and decrease the health of a stand' leaving it more **vulnerable** to poor weather and disease. Management that **specifically** targets low-use wood can help landowners manage these forest health issues, and wood energy markets help **promote** this.

- | | |
|----------------------------------|--|
| - solely (adv) only: duy nhất | - regeneration (n) sự cải tạo, sự đổi mới |
| - suited (adj) suitable: phù hợp | - vulnerable (adj) dễ bị tác động |
| - legacy (n) di sản | - specifically (adv) một cách cụ thể, riêng biệt |
| - abundant (adj) dồi dào | - promote (v) thúc đẩy, đẩy mạnh |
| - desirable (adj) đáng thèm muốn | |

C.

Wood energy markets can accept less expensive wood material of lower quality than would be suitable for traditional timber markets. Most wood used for energy in Pennsylvania is used to produce heat or electricity through **combustion**. Many schools and hospitals use wood boiler systems to heat and **power** their **facilities**, many homes are primarily heated with wood, and some coal **plants incorporate** wood into their coal streams to produce electricity. Wood can also be **gasified** for electrical generation and can even be made into liquid fuels like ethanol and **gasoline** for lorries and cars. All these products are made **primarily** from low-use wood. Several tree- and plant-cutting **approaches**, which could

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greatly improve the long-term quality of a forest, focus strongly or solely on the use of wood for those markets.

- combustion (n) sự cháy, sự đốt cháy
- power (v) cung cấp năng lượng
- facilities (n) tiện nghi, cơ sở vật chất
- plant (n) factory: nhà máy
- incorporate (v) include: bao gồm, hợp nhất
- gasify (v) khí hóa
- gasoline (n) gas, petrol: xăng
- primarily (adv) mainly: chính, chủ yếu
- approach (n) method, measure: phương pháp

D.

One such approach is called a Timber Stand Improvement (TSI) Cut. In a TSI Cut, really poor-quality tree and plant material is cut down to allow more space, light, and other resources to the highest-valued stems that remain. Removing **invasive** plants might be another primary goal of a TSI Cut. The stems that are left behind might then grow in size and develop more **foliage** and larger crowns or tops that produce more coverage for wildlife; they have a better chance to **regenerate** in a less crowded environment. TSI Cuts can be **tailored** to one farmer's **specific** management goals for his or her land.

- invasive (adj) xâm lấn
- foliage (n) tán lá, bộ lá
- regenerate (v) tái tạo, hồi phục
- tailor (v) adjust: điều chỉnh
- specific (adj) cụ thể

E.

Another approach that might **yield** a high amount of low-use wood is a Salvage Cut. With the many **pests** and **pathogens** visiting forests including hemlock wooly adelgid, Asian longhorned beetle, emerald ash borer, and gypsy moth, **to name but a few**, it is important to remember that those working in the forests can help **ease** these issues through cutting procedures. These types of cut reduce the number of sick trees and seek to manage the future spread of a pest problem. They leave **vigorous** trees that have stayed healthy enough to survive the **outbreak**.

- yield (v) produce: tạo ra, mang lại
- pest (n) vật gây bệnh
- pathogen (n) mầm bệnh
- to name but a few: dùng khi muốn đề cập đến một vài ví dụ
- ease (v) làm giảm, làm dịu
- vigorous (adj) mạnh khỏe
- outbreak (n) sự bùng phát

F.

A Shelterwood Cut, which only takes place in a **mature** forest that has already been **thinned** several times, involves removing all the mature trees when other **seedlings** have become established. This then allows the **forester** to decide which tree species are regenerated. It leaves a young forest where all trees are at a similar point in their growth. It can also be used to develop a **two-tier** forest so that there are two **harvests** and the money that comes in is spread out over a decade or more.

- mature (adj) trưởng thành
- thin (v) tỉa bớt
- seedling (n) cây con
- forester (n) nhân viên lâm nghiệp

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- two-tier (adj) hai lớp

- harvest (n) sự thu hoạch

G.

Thinnings and dense and dead wood removal for fire **prevention** also center on the production of low-use wood. However, it is important to remember that some **retention** of what many would **classify** as low-use wood is very important. The tops of trees that have been cut down should be left on the site so that their nutrients cycle back into the soil. In addition, trees with many **cavities** are extremely important habitats for insect **predators** like **woodpeckers**, bats and small **mammals**. They help control problem insects and increase the health and **resilience** of the forest. It is also important to remember that not all small trees are low-use. For example, many species like hawthorn provide food for wildlife. Finally, rare species of trees in a forest should also stay behind as they add to its structural **diversity**.

- prevention (n) sự ngăn chặn

- retention (n) sự giữ lại

- classify (v) categorise: phân loại, xếp loại

- cavity (n) lỗ hổng

- predator (n) thú săn mồi

- woodpecker (n) chim gõ kiến

- mammal (n) động vật có vú

- resilience (n) sự phục hồi nhanh chóng

- diversity (n) sự đa dạng

TEST 1 - READING PASSAGE 3 - CONQUERING EARTH'S SPACE JUNK PROBLEM

Satellites, rocket shards and collision debris are creating major traffic risks in orbit around the planet. Researchers are working to reduce these threats

A.

Last year, commercial companies, **military** and civil departments and **amateurs** sent more than 400 **satellites** into **orbit**, over four times the yearly average in the previous decade. Numbers could rise even more **sharply** if leading space companies follow through on plans to **deploy** hundreds to thousands of large **constellations** of satellites to space in the next few years.

All that traffic can lead to disaster. Ten years ago, a US commercial Iridium satellite smashed into an inactive Russian communications satellite called Cosmos-2251, creating thousands of new pieces of space **shrapnel** that now threaten other satellites in low Earth orbit — the zone stretching up to 2,000 kilometres in **altitude**. Altogether, there are **roughly** 20,000 human-made objects in orbit, from working satellites to small rocket pieces. And satellite **operators** can't steer away from every potential crash, because each move consumes time and fuel that could otherwise be used for the **spacecraft's** main job.

- | | |
|----------------------------------|--|
| - military (adj) thuộc quân sự | - constellation (n) group: nhóm |
| - amateur (n) người không chuyên | - shrapnel (n) mảnh (bom, đạn...) |
| - satellite (n) vệ tinh | - altitude (n) độ cao |
| - orbit (n) quỹ đạo | - roughly (adv) approximately: xấp xỉ |
| - sharply (adv) đột ngột và mạnh | - operator (n) người điều khiển |
| - deploy (v) dùng, triển khai | - spacecraft (n) spaceship: tàu vũ trụ |

B.

Concern about space junk goes back to the beginning of the satellite era, but the number of objects in orbit is rising so **rapidly** that researchers are **investigating** new ways of attacking the problem. Several teams are trying to improve methods for **assessing** what is in orbit, so that satellite operators can work more **efficiently** in ever-more-crowded space. Some researchers are now starting to **compile** a massive data set that includes the best possible information on where everything is in orbit. Others are developing **taxonomies** of space **debris** — working on **measuring properties** such as the shape and size of an object, so that satellite operators know how much to worry about what's coming their way.

The **alternative**, many say, is unthinkable. Just a few uncontrolled **space crashes** could **generate** enough debris to **set off** a **runaway cascade** of **fragments**, **rendering** near Earth space unusable. 'If we go on like this, we will reach a point of no return,' says Carolin Frueh, an astrodynamical researcher at Purdue University in West Lafayette, Indiana.

- | | |
|---|---|
| - rapidly (adv) quickly: nhanh chóng | - debris (n) mảnh vỡ, mảnh vụn |
| - assess (v) đánh giá | - measure (v) đo lường |
| - investigate (v) examine: nghiên cứu, khảo sát | - property (n) quality, attribute: đặc điểm |
| - efficiently (adv) có hiệu quả, có hiệu suất | - alternative (n) lựa chọn (thay thế) |
| - compile (v) thu thập (thông tin...) | - crash (n) vụ va chạm |
| - taxonomy (n) hệ thống phân loại | - generate (v) create: tạo ra |
| | - set off (phr v) (làm) bắt đầu |

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- runaway (adj) out of control: mất kiểm soát
- cascade (n) thác (nước...)
- fragment (n) debris, piece: mảnh vỡ, mảnh vụn
- render (v) make, cause: gây ra, làm cho

C.

Even as our ability to **monitor** space objects increases, so too does the total number of items in orbit. That means companies, governments and other players in space are **collaborating** in new ways to avoid a shared threat. International groups such as the Inter-Agency Space Debris Coordination Committee have developed guidelines on space **sustainability**. Those include **inactivating** satellites at the end of their useful life by **venting** pressurised materials or leftover fuel that might lead to **explosions**. The intergovernmental groups also advise lowering satellites deep enough into the atmosphere that they will burn up or **disintegrate** within 25 years. But so far, only about half of all missions have **abided** by this 25-year goal, says Holger Krag, head of the European Space Agency's space-debris office in Darmstadt, Germany. Operators of the planned large constellations of satellites say they will be responsible **stewards** in their **enterprises** in space, but Krag worries that problems could increase, despite their best intentions. 'What happens to those that fail or go **bankrupt**?' he asks. 'They are probably not going to spend money to remove their satellites from space.'

- monitor (v) observe: quan sát, theo dõi
- collaborate (v) cooperate: hợp tác
- sustainability (n) sự bền vững
- inactivate (v) làm ngưng hoạt động
- vent (v) làm thông hơi
- explosion (n) vụ nổ, sự nổ
- disintegrate (v) phân rã, tan rã
- abide by (phr v) chịu tuân theo
- steward (n) tiếp viên (trên máy bay, tàu..)
- enterprise (n) company, business, organisation: doanh nghiệp
- go bankrupt = go out of business: phá sản

D.

In theory, given the vastness of space, satellite operators should have plenty of room for all these missions to fly safely without ever nearing another object. So some scientists are tackling the problem of space junk by trying to find out where all the debris is to a high degree of **precision**. That would **alleviate** the need for many of the unnecessary **manoeuvres** that are **carried out** to avoid potential **collisions**. 'If you knew precisely where everything was, you would almost never have a problem,' says Marlon Sorge, a space-debris **specialist** at the Aerospace Corporation in El Segundo, California.

- precision (n) accuracy, correctness: sự chính xác
- alleviate (v) mitigate, ease: làm dịu, làm giảm bớt
- manoeuvre (n) sự điều khiển
- carry out (phr v) conduct: thực hiện
- collision (n) vụ va chạm
- specialist (n) chuyên gia

E.

The field is called space traffic management, because it's similar to managing traffic on the roads or in the air. Think about a busy day at an airport, says Moriba Jah, an astrodynamist at the University of Texas at Austin: planes line up in the sky, **landing** and **taking off** close to one another in a carefully **choreographed** routine. Air-traffic controllers know the location of the planes down to one metre in **accuracy**. The same can't be said for space debris. Not all

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objects in orbit are known, and even those included in databases are not **tracked consistently**.

- land (v) hạ cánh
- take off (phr v) cất cánh
- choreograph (v) biên đạo (múa, nhảy...)
- accuracy (n) precision: sự chính xác
- track (v) observe: theo vết, theo dõi
- consistently (adv) một cách liên tục

F.

An additional problem is that there is no **authoritative** catalogue that accurately lists the orbits of all known space debris. Jah illustrates this with a web-based database that he has developed. It **draws on** several sources, such as catalogues maintained by the US and Russian governments, to **visualise** where objects are in space. When he types in an **identifier** for a particular space object, the database draws a purple line to **designate** its orbit. Only this doesn't quite work for a number of **objects**, such as a Russian rocket body designated in the database as object number 32280. When Jah enters that number, the database draws two purple lines: the US and Russian sources contain two completely different orbits for the same object. Jah says that it is almost impossible to tell which is correct, unless a third source of information made it possible to **cross-correlate**.

Jah describes himself as a space **environmentalist**: 'I want to make space a place that is safe to operate, that is free and useful for generations to come.' Until that happens, he argues, the space community will continue devolving into a **tragedy** in which all **spaceflight** operators are **polluting** a common resource.

- authoritative (adj) có căn cứ chính xác
- draw on (phr v) dựa vào, sử dụng
- visualise (v) envision, imagine: hình dung, mường tượng
- identifier (n) ký hiệu định danh
- designate (v) chỉ rõ, thể hiện
- object (n) vật thể
- cross-correlate (v) tương quan chéo
- environmentalist (n) nhà môi trường học
- tragedy (n) bi kịch, thảm kịch
- spaceflight (n) cuộc du hành vào không gian
- pollute (v) contaminate: làm ô nhiễm

TEST 2 - READING PASSAGE 1 - STONEHENGE

For centuries, historians and archaeologists have **puzzled** over the many **mysteries** of Stonehenge, a prehistoric **monument** that took an estimated 1,500 years to **erect**. Located on Salisbury Plain in southern England, it **is comprised of** roughly 100 massive **upright** stones placed in a circular layout.

Archaeologists believe England's most **iconic** prehistoric ruin was built in several stages with the earliest **constructed** 5,000 or more years ago. First, Neolithic* Britons used **primitive** tools, which may have been **fashioned** out of deer **antlers**, to dig a massive circular **ditch** and bank, or henge. Deep pits dating back to that era and located within the circle may have once held a ring of **timber** posts, according to some **scholars**.

- puzzle over (phr v) bối rối, thắc mắc (về vấn đề gì đó)
- mystery (n) điều huyền bí
- monument (n) công trình tưởng niệm
- erect (v) build: dựng lên
- be comprised of: bao gồm
- upright (adj) vertical: thẳng đứng
- iconic (adj) mang tính biểu tượng

- construct (v) build: xây dựng
- primitive (adj) primeval: nguyên thủy
- fashion (v) shape: tạo hình (bằng tay)
- antler (n) gạc (hươu, nai..)
- ditch (n) hào, rãnh, mương
- timber (n) gỗ (xây dựng)
- scholar (n) academic: nhà học giả

Several hundred years later, it is thought, Stonehenge's builders **hoisted** an estimated 80 bluestones, 43 of which remain today, into standing positions and placed them in either a **horseshoe** or circular formation. These stones have been **traced** all the way to the Preseli Hills in Wales, some 300 kilometres from Stonehenge. How, then, did prehistoric builders without **sophisticated** tools or engineering **haul** these **boulders**, which weigh up to four tons, over such a great distance?

- hoist (v) nâng lên (bằng dây thừng, tời...)
- horseshoe (n) móng ngựa
- sophisticated (adj) complex, complicated: tinh vi, phức tạp

- trace (v) xác định nguồn gốc
- haul (v) kéo
- boulder (n) tảng đá

According to one **long-standing** theory among **archaeologists**, Stonehenge's builders fashioned **sledges** and **rollers** out of tree trunks to lug the bluestones from the Preseli Hills. They then transferred the boulders onto **rafts** and floated them first along the Welsh coast and then up the River Avon toward Salisbury Plain; **alternatively**, they may have **towed** each stone with a fleet of **vessels**. More recent archaeological **hypotheses** have them transporting the bluestones with supersized **wicker** baskets on a combination of ball bearings and long **grooved planks**, hauled by **oxen**.

- long-standing (adj) có từ lâu đời
- archaeologist (n) nhà khảo cổ học
- sledge (n) sled: xe trượt tuyết
- roller (n) trục lăn, con lăn
- raft (n) bè
- alternatively (adv) một cách khác, hoặc
- tow (v) kéo (xe, tàu, thuyền...)

- vessel (n) tàu, thuyền lớn
- hypothesis (n) giả thuyết
- wicker (adj) đan
- grooved (adj) có rãnh, có khe
- plank (n) tấm ván
- ox (n) (plural : oxen) bò đực thiến

As early as the 1970s, **geologists** have been adding their voices to the debate over how Stonehenge came into being. Challenging the classic image of industrious builders pushing,

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carting, rolling or hauling giant stones from faraway Wales, some scientists have suggested that it was **glaciers**, not humans, that carried the bluestones to Salisbury Plain. Most archaeologists have remained **sceptical** about this theory, however, wondering how the forces of nature could possibly have **delivered** the exact number of stones needed to complete the circle.

- geologist (n) nhà địa chất học
- cart (v) chở bằng xe bò
- glacier (n) tảng băng (lớn)
- sceptical (adj) skeptical: hoài nghi
- deliver (v) vận chuyển, giao

The third phase of construction took place around 2000 BCE. At this point, sandstone **slabs** – known as ‘sarsens’ – were arranged into an outer **crescent** or ring; some were **assembled** into the iconic three-pieced structures called trilithons that stand tall in the centre of Stonehenge. Some 50 of these stones are now **visible** on the site, which may once have contained many more. **Radiocarbon dating** has revealed that work continued at Stonehenge until **roughly** 1600 BCE, with the bluestones in particular being **repositioned** multiple times.

- slab (n) tấm, phiến (đá..)
- crescent (n) hình lưỡi liềm
- assemble (v) ráp, lắp ráp
- visible (adj) nhìn thấy được
- radiocarbon dating (n) phương pháp xác định niên đại bằng carbon
- roughly (adv) about, approximately: khoảng, xấp xỉ
- reposition (v) relocate: thay đổi vị trí

But who were the builders of Stonehenge? In the 17th century, archaeologist John Aubrey made the claim that Stonehenge was the work of **druids**, who had important religious, **judicial** and political roles in Celtic** society. This theory was widely **popularized** by the **antiquarian** William Stukeley, who had **unearthed** primitive **graves** at the site. Even today, people who identify as modern druids continue to gather at Stonehenge for the summer **solstice**. However, in the mid-20th century, radiocarbon dating **demonstrated** that Stonehenge stood more than 1,000 years before the Celts **inhabited** the region.

- druid (n) một dạng thầy tu - phù thủy
- judicial (adj) thuộc pháp luật, thuộc tòa án
- popularize (v) truyền bá
- antiquarian (adj) thuộc về đồ cổ
- unearth (v) excavate: đào lên, khai quật
- grave (n) tomb: nơi chôn, mồ mả
- solstice (n) (thiên văn học) chí, điểm chí
- demonstrate (v) chứng minh
- inhabit (v) sống ở

Many modern historians and archaeologists now agree that several distinct **tribes** of people contributed to Stonehenge, each **undertaking** a different phase of its construction. Bones, tools and other **artefacts** found on the site seem to support this hypothesis. The first stage was achieved by Neolithic **agrarians** who were likely to have been **indigenous** to the British Isles. Later, it is believed, groups with advanced tools and a more communal way of life left their mark on the site. Some believe that they were **immigrants** from the European **continent**, while others maintain that they were probably native Britons, **descended** from the **original** builders.

- tribe (n) bộ lạc
- undertake (v) đảm nhiệm
- artefact (n) đồ tạo tác
- agrarian (n) người ủng hộ cải cách ruộng đất
- indigenous (adj) native: địa phương, bản địa
- immigrant (n) người nhập cư
- continent (n) châu lục

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- be descended from: xuất thân từ, là hậu duệ của
- original (adj) ban đầu

If the facts surrounding the **architects** and construction of Stonehenge remain **shadowy** at best, the purpose of the striking monument is even more of a mystery. While there is **consensus** among the majority of modern scholars that Stonehenge once served the function of **burial ground**, they have yet to **determine** what other purposes it had.

- architect (n) kiến trúc sư
- shadowy (adj) không rõ ràng, khó hiểu
- consensus (n) agreement: sự nhất trí
- burial ground (n) cemetery: nghĩa địa
- determine (v) quyết định

In the 1960s, the **astronomer** Gerald Hawkins suggested that the **cluster** of **megalithic** stones operated as a form of calendar, with different points **corresponding** to **astrological** phenomena such as **solstices**, **equinoxes** and **eclipses** occurring at different times of the year. While his theory has received a considerable amount of attention over the decades, **critics** maintain that Stonehenge's builders probably lacked the knowledge necessary to predict such events or that England's dense cloud cover would have **obscured** their view of the skies.

- astronomer (n) nhà thiên văn học
- cluster (n) nhóm
- megalith (n) megalithic stone: cự thạch
- corresponding (adj) tương ứng
- astrological (adj) thuộc chiêm tinh
- solstice (n) điểm chí (thiên văn học)
- equinox (n) điểm phân (thiên văn học)
- eclipse (n) thiên thực (nhật thực, nguyệt thực)
- critic (n) nhà phê bình
- obscure (v) làm khó hiểu, làm tối

More recently, signs of illness and injury in the human remains unearthed at Stonehenge led a group of British archaeologists to **speculate** that it was considered a place of healing, perhaps because bluestones were thought to have **curative** powers.

- speculate (v) guess: đoán
- curative (adj) trị bệnh, chữa bệnh

* Neolithic – The era, also known as the New Stone Age, which began around 12,000 years ago and ended around 3500 BCE

** Celtic – The Celts were people who lived in Britain and northwest Europe during the Iron Age from 600 BCE to 43 CE

TEST 2 - READING PASSAGE 2 - LIVING WITH ARTIFICIAL INTELLIGENCE

Powerful artificial intelligence (AI) needs to be reliably aligned with human values, but does this mean AI will eventually have to police those values?

This has been the decade of AI, with one **astonishing feat** after another. A chess-playing AI that can **defeat** not only all human chess players, but also all previous human-programmed chess machines, after learning the game in just four hours? That's yesterday's news, what's next? True, these **prodigious** accomplishments are all in so-called narrow AI, where machines perform highly **specialised** tasks. But many experts believe this **restriction** is very temporary. By mid-century, we may have artificial general intelligence (AGI) – machines that can achieve human-level performance on the full range of tasks that we ourselves can tackle.

- astonishing (adj) astounding, very surprising: làm sửng sốt
- feat (n) impressive achievement: thành tựu, chiến công
- defeat (v) đánh bại
- prodigious (adj) extremely great: phi thường
- specialised (adj) chuyên biệt
- restriction (n) sự giới hạn

If so, there's little reason to think it will stop there. Machines will be free of many of the physical **constraints** on human intelligence. Our brains run at slow biochemical processing speeds on the power of a light bulb, and their size is restricted by the **dimensions** of the human **birth canal**. It is remarkable what they **accomplish**, given these **handicaps**. But they may be as far from the physical limits of thought as our eyes are from the **incredibly** powerful Webb Space Telescope.

- constraint (n) restriction, limitation: sự hạn chế, giới hạn
- dimensions (n) kích thước
- birth canal (n) cổ tử cung
- accomplish (v) achieve: hoàn thành, đạt được
- handicap (n) disadvantage: bất lợi
- incredibly (adv) extremely: vô cùng, khó tin

Once machines are better than us at designing even smarter machines, **progress** towards these limits could **accelerate**. What would this mean for us? Could we ensure a safe and worthwhile **coexistence** with such machines? On the plus side, AI is already useful and **profitable** for many things, and super AI might be expected to be super useful and super profitable. But the more powerful AI becomes, the more important it will be to **specify** its goals with great care. Folklore is full of tales of people who ask for the wrong thing, with **disastrous** consequences- King Midas, for example, might have wished that everything he touched turned to gold, but didn't really intend this to apply to his breakfast.

- progress (n) sự tiến bộ
- accelerate (v) speed up: tăng tốc
- coexistence (n) sự chung sống, sự cùng tồn tại
- profitable (adj) sinh lợi
- specify (v) định rõ
- disastrous (adj) extremely bad: tai hại

So we need to create powerful AI machines that are 'human-friendly'- that have goals **reliably aligned** with our own values. One thing that makes this task difficult is that we are

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far from reliably human-friendly ourselves. We do many terrible things to each other and to many other **creatures** with whom we share the planet. If superintelligent machines don't do a lot better than us, we'll be in deep trouble. We'll have powerful new intelligence **amplifying** the dark sides of our own **fallible** natures.

- reliably (adv) một cách đáng tin cậy
- aligned (adj) similar: giống với, tương tự
- far from = not: không
- creature (n) sinh vật
- amplify (v) khuếch đại, thổi phồng
- fallible (adj) có thể mắc sai lầm

For safety's sake, then, we want the machines to be **ethically** as well as **cognitively superhuman**. We want them to aim for the **moral high ground**, not for the **troughs** in which many of us spend some of our time. Luckily they'll be smart enough for the job. If there are routes to the moral high ground, they'll be better than us at finding them, and **steering** us in the right direction.

- ethically (adv) có đạo đức
- cognitively (adv) về nhận thức
- superhuman (adj) siêu phàm
- moral high ground: nền tảng/giá trị đạo đức cao
- trough (n) cái máng
- steer (v) lái

However, there are two big problems with this **utopian** vision. One is how we get the machines started on the journey, the other is what it would mean to reach this destination. The 'getting started' problem is that we need to tell the machines what they're looking for with **sufficient clarity** that we can be confident they will find it – whatever 'it' actually turns out to be. This won't be easy, given that we are **tribal** creatures and **conflicted** about the **ideals** ourselves. We often ignore the **suffering** of strangers, and even contribute to it, at least **indirectly**. How then, do we point machines in the direction of something better?

- utopian (adj) không tưởng
- sufficient (adj) adequate: đủ
- clarity (n) sự rõ ràng
- tribal (adj) thuộc bộ lạc
- conflicted (adj) confused: bối rối, mâu thuẫn
- ideal (n) lý tưởng
- suffering (n) sự đau đớn, sự đau khổ
- indirectly (adv) một cách gián tiếp

As for the 'destination' problem, we might, by putting ourselves in the hands of these moral guides and **gatekeepers**, be **sacrificing** our own **autonomy** – an important part of what makes us human. Machines who are better than us at **sticking** to the moral high ground may be expected to discourage some of the **lapses** we presently **take for granted**. We might lose our freedom to **discriminate** in favour of our own communities, for example.

Loss of freedom to behave badly isn't always a bad thing, of course: denying ourselves the freedom to put children to work in factories, or to smoke in restaurants are signs of progress. But are we ready for ethical silicon police limiting our options? They might be so good at doing it that we won't notice them; but few of us are likely to welcome such a future.

These issues might seem **far-fetched**, but they are to some extent already here. AI already has some input into how resources are used in our National Health Service (NHS) here in the UK, for example. If it was given a greater role, it might do so much more efficiently than humans can manage, and act in the interests of **taxpayers** and those who use the health system. However, we'd be **depriving** some humans (e.g. senior doctors) of the control they

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presently enjoy. Since we'd want to ensure that people are treated equally and that policies are fair, the goals of AI would need to be **specified** correctly.

- far-fetched (adj) khó xảy ra
- taxpayer (n) người đóng thuế

- deprive (v) take away: lấy đi, tước đi
- specify (v) định rõ

We have a new powerful technology to deal with- itself, **literally**, a new way of thinking. For our own safety, we need to point these new thinkers in the right direction, and get them to act well for us. It is not yet clear whether this is possible, but if it is, it will require a **cooperative** spirit, and a **willingness** to **set aside self-interest**.

- literally (adv) theo nghĩa đen
- cooperative (adj) hợp tác
- willingness (n) sự sẵn lòng

- set aside (phr v) gạt sang một bên
- self-interest (n) lợi ích cá nhân

Both general intelligence and moral **reasoning** are often thought to be **uniquely** human **capacities**. But safety seems to require that we think of them as a package: if we are to give general intelligence to machines, we'll need to give them moral **authority**, too. And where exactly would that leave human beings? All the more reason to think about the destination now, and to be careful about what we wish for.

- reasoning (n) sự suy luận
- uniquely (adv) một cách độc nhất

- capacity (n) ability: khả năng
- authority (n) quyền lực

TEST 2 - READING PASSAGE 3 - AN IDEAL CITY

Leonardo da Vinci's ideal city was centuries ahead of its time

The word 'genius' is **universally associated** with the name of Leonardo da Vinci. A true Renaissance man, he **embodied** scientific spirit, artistic talent and humanist **sensibilities**. Five hundred years have passed since Leonardo died in his home at Chateau du Clos Luce, outside Tours, France. Yet **far from** fading into **insignificance**, his thinking has carried down the centuries and still surprises today.

- universally (adv) phổ biến, toàn thể
- embodied (v) represent: là hiện thân của
- sensibilities (n) feelings: cảm xúc
- far from (phr) not
- fade into insignificance (phr) seem unimportant: có vẻ không quan trọng

The Renaissance marked the transition from the 15th century to modernity and took place after the spread of the **plague** in the 14th century, which caused a global **crisis** resulting in some 200 million deaths across Europe and Asia. Today, the world is on the **cusp** of a climate crisis, which is predicted to cause widespread **displacement**, extinctions and death, if left **unaddressed**. Then, as now, **radical** solutions were called for to **revolutionise** the way people lived and **safeguard** humanity against **catastrophe**.

- plague (n) bệnh dịch hạch
- crisis (n) cuộc khủng hoảng
- cusp (n) điểm chuẩn bị có sự thay đổi
- displacement (n) sự dịch chuyển chỗ ở (do tình thế bắt buộc)
- unaddressed (adj) không được giải quyết
- radical (adj) lớn, quan trọng
- revolutionise (v) cách mạng hóa
- safeguard (v) protect: bảo vệ
- catastrophe (n) disaster: thảm họa

Around 1486 – after a **pestilence** that killed half the population in Milan, Italy – Leonardo turned his thoughts to urban planning problems. Following a typical Renaissance trend, he began to work on an 'ideal city' project, which – due to its **excessive** costs – would remain **unfulfilled**. Yet given that **unsustainable** urban models are a key cause of global climate change today, it's only natural to wonder how Leonardo might have changed the shape of modern cities.

- pestilence (n) plague, epidemic: bệnh dịch
- excessive (adj) quá mức
- unfulfilled (adj) chưa hoàn thành
- unsustainable (adj) không bền vững

Although the Renaissance is **renowned** as an era of **incredible** progress in art and architecture, it is rarely noted that the 15th century also marked the birth of urbanism as a true academic **discipline**. The **rigour** and method behind the conscious **conception** of a city had been largely missing in Western thought until the moment when **prominent** Renaissance men pushed forward large-scale urban projects in Italy, such as the **reconfiguration** of the town of Pienza and the **expansion** of the city of Ferrara. These works surely **inspired** Leonardo's decision to rethink the design of **medieval** cities, with their **winding** and overcrowded streets and with houses piled against one another.

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- renowned (adj) famous, well-known: nổi tiếng
- incredible (adj) unbelievable: khó tin
- discipline (n) an area of knowledge or teaching: môn học
- rigour (n) sự chặt chẽ, sự khắt khe
- conception (n) quan niệm, nhận thức

- prominent (adj) well-known and important: nổi bật
- reconfiguration (n) sự tái cấu trúc
- expansion (n) sự mở rộng
- inspire (v) truyền cảm hứng
- medieval (adj) thuộc thời trung cổ
- winding (adj) uốn khúc, quanh co

It is not easy to identify a coordinated vision of Leonardo's ideal city because of his disordered way of working with notes and sketches. But from the largest collection of Leonardo's papers ever assembled, a series of innovative thoughts can be reconstructed regarding the foundation of a new city along the Ticino River, which runs from Switzerland into Italy and is 248 kilometres long. He designed the city for the easy transport of goods and clean urban spaces, and he wanted a comfortable and spacious city, with well-ordered streets and architecture. He recommended 'high, strong walls', with 'towers and battlements of all necessary and pleasant beauty'.

- identify (v) recognize: xác định
- coordinated (adj) extremely organised: vô cùng có tổ chức
- disordered (adj) untidy, disorganised: lộn xộn
- sketch (n) bức phác họa

- assemble (v) gather together: lắp ráp, tập hợp
- innovative (adj) mới, đổi mới
- regarding (pre) about: về
- foundation (n) nền, móng
- spacious (adj) rộng
- battlement (n) tường có lỗ châu mai

His plans for a modern and 'rational' city were consistent with Renaissance ideals. But, in keeping with his personality, Leonardo included several innovations in his urban design. Leonardo wanted the city to be built on several levels, linked with vertical outdoor staircases. This design can be seen in some of today's high-rise buildings but was unconventional at the time. Indeed, this idea of taking full advantage of the interior spaces wasn't implemented until the 1920s and 1930s, with the birth of the Modernist movement.

- consistent (adj) khớp, phù hợp
- vertical (adj) thẳng đứng
- unconventional (adj) khác thường

- interior (adj) bên trong
- implement (v) áp dụng, thực hiện
- movement (n) change, development

While in the upper layers of the city, people could walk undisturbed between elegant palaces and streets, the lower layer was the place for services, trade, transport and industry. But the true originality of Leonardo's vision was its fusion of architecture and engineering. Leonardo designed extensive hydraulic plants to create artificial canals throughout the city. The canals, regulated by clocks and basins, were supposed to make it easier for boats to navigate inland. Leonardo also thought that the width of the streets ought to match the average height of the adjacent houses: a rule still followed in many contemporary cities across Italy, to allow access to sun and reduce the risk of damage from earthquakes.

- undisturbed (adj) không bị làm phiền
- elegant (adj) thanh lịch, tao nhã
- originality (n) sự độc đáo
- fusion (n) combination: sự kết hợp

- hydraulic (adj) thuộc nước, thủy lực
- plant (n) factory: nhà máy
- artificial (adj) man-made: nhân tạo
- regulate (v) control: điều chỉnh, kiểm soát

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- basin (n) chỗ trũng, bồn
- navigate (v) xác định phương hướng

- inland (adv) ở nội địa
- contemporary (adj) modern: hiện đại

Although some of these **features** existed in Roman cities, before Leonardo's drawings there had never been a multi-level, **compact** modern city which was **thoroughly** technically **conceived**. Indeed, it wasn't until the 19th century that some of his ideas were applied. For example, the **subdivision** of the city by function- with services and **infrastructures** located in the lower levels and wide and **well-ventilated boulevards** and walkways above for residents – is an idea that can be found in Georges-Eugene Haussmann's **renovation** of Paris under Emperor Napoleon III between 1853 and 1870.

- feature (n) đặc điểm
- compact (adj) gọn
- thoroughly (adv) một cách kỹ lưỡng
- conceive (v) imagine, think: tưởng tượng, nghĩ

- subdivision (n) sự chia nhỏ
- infrastructure (n) cơ sở hạ tầng
- well-ventilated (adj) được thông gió tốt
- boulevard (n) avenue: đại lộ, đường lớn
- renovation (n) refurbishment: sự tân trang

Today, Leonardo's ideas are not simply **valid**, they actually suggest a way forward for **urban planning**. Many scholars think that the compact city, built upwards instead of outwards, **integrated** with nature (especially water systems), with efficient transport infrastructure, could help modern cities become more **efficient** and **sustainable**. This is yet another reason why Leonardo was **aligned** so closely with modern urban planning and centuries ahead of his time.

- valid (adj) hợp lý, có căn cứ
- urban planning (n) quy hoạch đô thị
- integrate (v) hợp nhất, kết hợp
- efficient (adj) có hiệu suất, hiệu quả

- sustainable (adj) bền vững
- aligned (adj) the same as, similar: giống, tương tự

TEST 3 - READING PASSAGE 1 - MATERIALS TO TAKE US BEYOND CONCRETE

Concrete is everywhere, but it's bad for the planet, generating large amounts of carbon dioxide – alternatives are being developed

A

Concrete is the second most used **substance** in the global economy, after water – and one of the world's biggest single sources of **greenhouse gas emissions**. The chemical process by which cement, the key ingredient of concrete, is created results in large quantities of carbon dioxide. The UN estimates that there will be 9.8 billion people living on the planet by mid-century. They will need somewhere to live. If concrete is the only answer to the **construction** of new cities, then carbon emissions will **soar**, **aggravating** global warming. And so scientists have started **innovating** with other materials, in a **scramble** for **alternatives** to a **universal commodity** that has **underpinned** our modern life for many years.

- | | |
|--|--|
| - concrete (n) bê tông | - aggravate (v) exacerbate: làm tệ hơn |
| - substance (n) chất | - innovate (v) đổi mới |
| - emission (n) sự thải ra, khí thải ra | - scramble (n) sự tranh giành |
| - greenhouse gas (n) khí gây hiệu ứng nhà kính | - alternative (n) sự thay thế |
| - construction (n) sự xây dựng | - universal (adj) chung, phổ thông |
| - soar (v) rise, increase quickly: tăng vút | - commodity (n) goods: hàng hóa |
| | - underpin (v) làm nền |

B

The problem with replacing concrete is that it is so very good at what it does. Chris Cheeseman, an engineering professor at Imperial College London, says the key thing to consider is the **extent** to which concrete is used around the world, and is likely to continue to be used. 'Concrete is not a high-carbon product. Cement is high carbon, but concrete is not. But it is the **scale** on which it is used that makes it high carbon. The **sheer** scale of **manufacture** is so huge, that is the issue.'

- | | |
|-----------------------|---|
| - extent (n) mức độ | - scale (n) mức độ, phạm vi |
| - sheer (adj) rất lớn | - manufacture (n) production: sự sản xuất |

C

Not only are the ingredients of concrete **relatively** cheap and found in **abundance** in most places around the globe, the stuff itself has **marvellous properties**: Portland cement, the **vital component** of concrete, is **mouldable** and **pourable**, but quickly sets **hard**. Cheeseman also notes another advantage: concrete and steel have similar **thermal expansion** properties, so steel can be used to **reinforce** concrete, making it far stronger and more flexible as a building material than it could be on its own. According to Cheeseman, all these factors together make concrete hard to **beat**. 'Concrete is amazing stuff. Making anything with similar properties is going to be very difficult.'

- | | |
|--|--|
| - relatively (adv) quite, fairly: khá, tương đối | - marvellous (adj) wonderful: tuyệt vời |
| - abundance (n) sự dồi dào | - property (n) quality: đặc điểm, đặc tính |

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- vital (adj) crucial: rất quan trọng
- component (n) constituent: thành phần
- mouldable (adj) có thể đúc, nặn
- pourable (adj) có thể đổ (chất lỏng)
- hard (adj) solid: cứng
- thermal (adj) thuộc nhiệt
- expansion (adj) sự mở rộng
- reinforce (v) strengthen, fortify: củng cố
- beat (v) defeat: đánh bại

D

A possible alternative to concrete is wood. Making buildings from wood may seem like a rather **medieval** idea, but climate change is **driving** architects to turn to treated timber as a possible resource. Recent years have seen the **emergence** of tall buildings constructed almost entirely from timber. Vancouver, Vienna and Brumunddal in Norway are all home to constructed tall, wooden buildings.

- medieval (adj) thuộc thời Trung cổ
- drive (v) cause: làm cho, thúc đẩy
- emergence (n) sự nổi lên

E

Using wood to construct buildings, however, is not **straightforward**. Wood **expands** as it **absorbs moisture** from the air and is **susceptible** to **pests**, not to mention fire. But treating wood and combining it with other materials can improve its properties. **Cross-laminated** timber is **engineered** wood. An **adhesive** is used to stick layers of **solid-sawn** timber together, **crosswise**, to form building blocks. This material is light but has the strength of concrete and steel. Construction experts say that wooden buildings can be constructed at a greater speed than ones of concrete and steel and the process, it seems, is quieter.

- straightforward (adj) simple: đơn giản
- expand (v) giãn nở
- absorb (v) hấp thụ
- moisture (n) hơi ẩm
- susceptible (adj) vulnerable, prone: dễ bị tác động
- pest (n) vật gây hại
- Cross-laminated timber (n) gỗ ép chéo
- engineer (v) thiết kế, xây dựng
- adhesive (n) glue: chất dính
- solid-sawn timber (n) gỗ nguyên thanh
- crosswise (adv) chéo, chéo chữ thập

F

Stora Enso is Europe's biggest **supplier** of cross-laminated timber, and its **vice-president** Markus Mannstrom reports that the company is seeing increasing demand globally for building in wood, with climate change **concerns** the **key driver**. Finland, with its large forests, where Stora Enso is based, has been leading the way, but the company is seeing a rise in demand for its timber products across the world, including in Asia. Of course, using timber in a building also locks away the carbon that it absorbed as it grew. But even **treated** wood has its limitations and only when **a wider range of** construction projects has been proven in practice will it be possible to see wood as a real alternative to concrete in constructing tall buildings.

- supplier (n) nhà cung cấp
- vice president (n) phó chủ tịch, phó tổng thống
- concern (n) lo ngại
- key driver (n) yếu tố thúc đẩy chính
- treated (adj) đã được xử lý
- a wide range of sth: một loạt

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G

Fly ash and slag from iron ore are possible alternatives to cement in a concrete mix. Fly ash, a byproduct of coal-burning power plants, can be incorporated into concrete mixes to make up as much as 15 to 30% of the cement, without harming the strength or durability of the resulting mix. Iron-ore slag, a byproduct of the iron-ore smelting process, can be used in a similar way. Their incorporation into concrete mixes has the potential to reduce greenhouse gas emissions.

But Anna Surgenor, of the UK's Green Building Council, notes that although these waste products can save carbon in the concrete mix, their use is not always straightforward. 'It's possible to replace the cement content in concrete with waste products to lower the overall carbon impact. But there are several calculations that need to be considered across the entire life cycle of the building- these include factoring in where these materials are being shipped from. If they are transported over long distances, using fossil fuels, the use of alternative materials might not make sense from an overall carbon reduction perspective.'

- | | |
|--------------------------------------|---|
| - ash (n) tro | - smelt (v) luyện nấu chảy |
| - slag (n) xỉ, vảy (sắt) | - content (n) hàm lượng |
| - ore (n) quặng | - factor in (phr v) tính cả, bao gồm cả |
| - byproduct (n) sản phẩm phụ | - fossil fuel (n) nhiên liệu hóa thạch |
| - coal (n) than đá | - make sense: hợp lý |
| - power plant (n) nhà máy năng lượng | - reduction (n) sự làm giảm |
| - incorporate (v) merge: hợp nhất | - perspective (n) view: góc nhìn |
| - durability (n) tính bền | |

H

While these technologies are all promising ideas, they are either unproven or based on materials that are not abundant. In their overview of innovation in the concrete industry, Felix Preston and Johanna Lehne of the UK's Royal Institute of International Affairs reached the conclusion that, 'Some novel cements have been discussed for more than a decade within the research community, without breaking through. At present, these alternatives are rarely as cost-effective as conventional cement, and they face raw-material shortages and resistance from customers.'

- | | |
|--|---|
| - promising (adj) hứa hẹn | - conventional (adj) thông thường, truyền thống |
| - unproven (adj) chưa được chứng minh | - raw material (n) nguyên nhiên thô |
| - abundant (adj) plentiful: dồi dào | - resistance (n) opposition, objection: sự phản đối |
| - innovation (n) sự đổi mới | |
| - novel (adj) new: mới | |
| - cost-effective (adj) hiệu quả về mặt chi phí | |

TEST 3 - READING PASSAGE 2 - THE STEAM CAR

The successes and failures of the Doble brothers and their steam cars

A

When **primitive automobiles** first began to appear in the 1800s, their engines were based on steam power. Steam had already enjoyed a long and successful career in the railways, so it was only natural that the technology evolved into a **miniaturized** version which was separate from the trains. But these early cars **inherited** steam's weaknesses along with its strengths. The boilers had to be lit by hand, and they required about twenty minutes to build up pressure before they could be driven. Furthermore, their water **reservoirs** only lasted for about thirty miles before needing **replenishment**. Despite such **shortcomings**, these newly designed **self-propelled** carriages offered quick transportation, and by the early 1900s it was not uncommon to see such machines **shuttling** wealthy citizens around town.

- primitive (adj) primeval: thuộc nguyên thủy
- automobile (n) car: xe hơi
- miniaturized (adj) được mô hình hóa
- inherit (v) thừa hưởng, thừa kế
- reservoir (n) bể chứa
- replenishment (n) sự làm đầy lại
- shortcoming (n) defect, weakness: sự thiếu sót, khuyết điểm
- self-propelled (adj) tự động, tự hành
- shuttle (v) vận chuyển (khoảng cách gần)

B

But the **glory** days of steam cars were few. A new technology called **the Internal Combustion Engine** soon appeared, which offered the ability to drive down the road just moments after starting up. At first, these noisy **gasoline** cars were unpopular because they were more **complicated** to operate and they had difficult **hand-crank starters**, which were known to break arms when the engines **backfired**. But in 1912 General Motors introduced the electric starter, and over the following few years steam power was gradually **phased out**.

- glory (n) huy hoàng
- Internal Combustion Engine: động cơ đốt trong
- gasoline (n) gas: xăng
- complicated (adj) phức tạp
- hand-crank starter (n) tay quay động cơ (để khởi động)
- backfire (v) nổ sớm
- phase out (phr v) gradually stop: ngưng, dừng (từ từ)

C

Even as the market was declining, four brothers made one last effort to **rekindle** the technology. Between 1906 and 1909, while still attending high school, Abner Doble and his three brothers built their first steam car in their parents' **basement**. It **comprised** parts taken from a **wrecked** early steam car but **reconfigured** to drive an engine of their own design. Though it did not run well, the Doble brothers went on to build a second and third **prototype** in the following years. Though the Doble boys' third prototype, nicknamed the Model B, still lacked the convenience of an internal combustion engine, it drew the attention of automobile trade magazines due to its **numerous** improvements over previous steam cars. The Model B proved to be **superior** to gasoline automobiles in many ways. Its high-pressure

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steam drove the engine pistons in virtual silence, in contrast to clattering gas engines which emitted the aroma of burned hydrocarbons. Perhaps most impressively, the Model B was amazingly swift. It could accelerate from zero to sixty miles per hour in just fifteen seconds, a feat described as 'remarkable acceleration' by Automobile magazine in 1914.

- rekindle (v) reawaken: đốt lại, thắp lại
- basement (n) tầng hầm
- comprise (v) bao gồm
- wrecked (adj) badly damaged: bị hỏng, bị hư hại
- reconfigure (v) định hình lại
- prototype (n) nguyên mẫu
- numerous (adj) many: nhiều
- superior (adj) tốt hơn, cao cấp hơn
- emit (v) thải ra, tỏa ra
- aroma (n) fragrance: hương thơm
- swift (adj) quick, speedy, rapid: nhanh
- accelerate (v) speed up: tăng tốc
- feat (n) achievement: thành tựu, chiến công

D

The following year Abner Doble drove the Model B from Massachusetts to Detroit in order to seek investment in his automobile design, which he used to open the General Engineering Company. He and his brothers immediately began working on the Model C, which was intended to expand upon the innovations of the Model B. The brothers added features such as a key-based ignition in the cabin, eliminating the need for the operator to manually ignite the boiler. With these enhancements, the Dobles' new car company promised a steam vehicle which would provide all of the convenience of a gasoline car, but with much greater speed, much simpler driving controls, and a virtually silent power plant. By the following April, the General Engineering Company had received 5,390 deposits for Doble Detroit, which were scheduled for delivery in early 1918.

- seek (v) tìm kiếm
- innovation (n) sự đổi mới
- feature (n) quality: đặc điểm
- ignition (n) bộ phận đánh lửa (trong máy)
- ignite (v) đốt cháy
- eliminate (v) get rid of: loại bỏ
- virtually (adv) almost, practically: gần như
- power plant (n) nhà máy năng lượng
- deposit (n) tiền đặt cọc

E

Later that year Abner Doble delivered unhappy news to those eagerly awaiting the delivery of their modern new cars. Those buyers who received the handful of completed cars complained that the vehicles were sluggish and erratic, sometimes going in reverse when they should go forward. The new engine design, though innovative, was still plagued with serious glitches.

- eagerly (adv) một cách háo hức
- sluggish (adj) chậm chạp
- erratic (adj) irregular: thất thường
- in reverse (phr) ngược lại
- innovative (adj) đổi mới
- plague (v) gây tai hại cho
- glitch (n) small fault: sự cố nhỏ

F

The brothers made one final attempt to produce a viable steam automobile. In early 1924, the Doble brothers shipped a Model E to New York City to be road-tested by the Automobile

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Club of America. After sitting overnight in **freezing** temperatures, the car was pushed out into the road and left to sit for over an hour in the **frosty** morning air. At the turn of the key, the boiler lit and reached its operating **pressure** inside of forty seconds. As they drove the test vehicle further, they found that its **evenly** distributed weight lent it surprisingly good handling, even though it was so heavy. As the new Doble steamer was further developed and tested, its maximum speed was pushed to over a hundred miles per hour, and it achieved about fifteen miles per gallon of kerosene with **negligible emissions**.

- | | |
|--|--|
| - attempt (n) nỗ lực | - pressure (n) áp suất |
| - viable (adj) workable: hoạt động được, có hiệu quả | - evenly (adv) đều |
| - freezing (adj) lạnh buốt, đóng băng | - negligible (adj) insignificant: không đáng kể, nhỏ |
| - frosty (adj) băng giá, vô cùng lạnh | - emission (n) sự thải, khí thải |

G

Sadly, the Doble's brilliant steam car never was a financial success. Priced at around \$18,000 in 1924, it was popular only among the very **wealthy**. Plus, it is said that no two Model Es were quite the same, because Abner Doble **tinkered endlessly** with the design. By the time the company **folded** in 1931, fewer than fifty of the amazing Model E steam cars had been produced. For his whole career, until his death in 1961, Abner Doble remained **adamant** that steam-powered automobiles were at least equal to gasoline cars, if not superior. Given the evidence, he may have been right. Many of the Model E Doble which have survived are still in good working condition, some having been driven over half a million miles with only normal **maintenance**. Astonishingly, an **unmodified** Doble Model E runs clean enough to pass the emissions laws in California today, and they are pretty strict. It is true that the technology poses some difficult problems, but you cannot help but wonder how **efficient** a steam car might be with the benefit of modern materials and computers. Under the current pressure to improve **automotive** performance and reduce emissions, it is not unthinkable that the steam car may rise again.

- | | |
|---|---|
| - the wealthy (n) the rich: những người giàu có | - adamant (adj) kiên định |
| - tinker (+with) (v) điều chỉnh, sửa | - maintenance (n) sự bảo trì |
| - endlessly (adv) không ngừng | - unmodified (adj) không sửa đổi |
| - fold (v) close: đóng cửa | - efficient (adj) có hiệu suất, có hiệu quả |
| | - automotive (adj) thuộc ô tô |

TEST 3 - READING PASSAGE 3 - THE CASE FOR MIXED-ABILITY CLASSES

Picture this scene. It's an English literature lesson in a UK school, and the teacher has just read an **extract** from Shakespeare's Romeo and Juliet with a class of 15-year-olds. He's given some of the students copies of No Fear Shakespeare, a kid-friendly translation of the **original**. For three students, even these **literacy** demands are beyond them. Another girl simply can't focus and he gives her pens and paper to draw with. The teacher can ask the No Fear group to **identify** the key characters and maybe provide a **tentative plot** summary. He can ask most of the class about character development, and five of them might be able to support their **statements** with **textual** evidence. Now two curious students are wondering whether Shakespeare **advocates** living a life of **moderation** or one of passionate engagement.

- extract (n) đoạn trích
- original (n) nguyên bản
- literacy (n) sự biết đọc, biết viết
- identify (v) xác định, nhận ra
- tentative (adj) thử, tạm thời
- plot (n) cốt truyện
- statement (n) lời tuyên bố, lời khẳng định
- textual (adj) thuộc văn bản
- advocate (v) ủng hộ
- moderation (n) sự tiết chế, sự điều độ

As a teacher myself, I'd think my lesson would be going rather well if the discussion went as described above. But wouldn't this kind of class work better if there weren't such a huge gap between the top and the bottom? If we put all the kids who needed literacy support into one class, and all the students who want to discuss the **virtue** of moderation into another?

- virtue (n) lợi ích, ưu điểm

The practice of 'streaming', or 'tracking', involves separating students into classes depending on their **diagnosed** levels of **attainment**. At a **macro** level, it requires the establishment of academically **selective** schools for the brightest students, and **comprehensive** schools for the rest. Within schools, it means selecting students into a 'stream' of general ability, or 'sets' of subject-specific ability. The practice is **intuitively appealing** to almost every **stakeholder**.

- stream (v) phân nhóm (theo trình độ)
- diagnose (v) chuẩn đoán
- attainment (n) achievement: sự đạt được
- macro (n) to, lớn, vĩ mô
- selective (adj) có chọn lọc
- comprehensive (adj) toàn diện
- intuitively (adv) qua trực giác
- appealing (adj) hấp dẫn
- stakeholder (n) nhà đầu tư

I have heard the mixed-ability model attacked by way of **analogy**: a group hike. The fittest in the group take the lead and set a **brisk** pace, only to have to stop and wait every 20 minutes. This is **frustrating**, and their enthusiasm **wanes**. Meanwhile, the slowest ones are not only embarrassed but physically **struggling** to keep up. What's worse, they never get a long enough break. They honestly just want to quit. Hiking, they feel, is not for them.

- analogy (n) sự tương đồng
- brisk (adj) quick: nhanh nhẹn
- frustrating (adj) làm bực tức
- wane (v) gradually weaken: yếu dần
- struggle (v) gặp khó khăn, đấu tranh

Mixed-ability classes bore students, frustrate parents and bum out teachers. The brightest ones will never **summit** Mount Qomolangma, and the **stragglers** won't enjoy the lovely **stroll**

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in the park they are perhaps more suited to. Individuals suffer at the demands of the **collective**, **mediocrity prevails**. So: is learning like hiking?

- | | |
|--------------------------------|--|
| - summit (v) lên lên đỉnh | - collective (n) tập thể |
| - straggler (n) người chậm hơn | - mediocrity (n) sự xoàng, sự thường |
| - stroll (n) walk: cuộc đi bộ | - prevail (v) thịnh hành, xảy ra nhiều |

The current **pedagogical paradigm** is **arguably** that of constructivism, which emerged out of the work of psychologist Lev Vygotsky. In the 1930s, Vygotsky emphasised the importance of targeting a student's specific 'zone of proximal development' (ZPD). This is the gap between what they can achieve only with support – teachers, textbooks, worked examples, parents and so on – and what they can achieve independently. The purpose of teaching is to provide and then gradually remove this 'scaffolding' until they are **autonomous**. If we accept this model, it follows that streaming students with similar ZPDs would be an **efficient** and effective solution. And **that** forcing everyone on the same hike – **regardless of aptitude** – would be **madness**.

- | | |
|---|---|
| - pedagogical (adj) sư phạm | - force (v) compel: ép |
| - paradigm (n) mẫu | - regardless of = irrespective of: bất chấp, bất kể |
| - arguably (adv) possibly: có khả năng | - aptitude (n) natural ability: năng khiếu |
| - autonomous (adj) independent: tự lập | - madness (n) sự ngu ngốc |
| - efficient (adj) có hiệu suất, có hiệu quả | |

Despite all this, there is limited **empirical** evidence to suggest that streaming results in better **outcomes** for students. Professor John Hattie, director of the Melbourne Education Research Institute, notes that 'tracking has **minimal** effects on learning outcomes'. What is more, streaming appears to **significantly** – and negatively – affect those students assigned to the lowest sets. These students tend to have much higher **representation** of low **socioeconomic** class. Less significant is the small benefit for those lucky clever students in the higher sets. The overall result is that the smart stay smart and the dumb get dumber, further **entrenching** the social **divide**.

- | | |
|---|---|
| - empirical (adj) dựa trên khoa học, kinh nghiệm thực tế | - representation (n) sự thể hiện, sự đại diện |
| - outcome (n) result: kết quả | - socioeconomic (adj) thuộc kinh tế xã hội |
| - minimal (adj) ít, nhỏ | - entrench (v) establish: hình thành |
| - significantly (adv) considerably, substantially: một cách đáng kể | - divide (n) difference, separation: sự khác biệt, sự chia rẽ |

In the latest update of Hattie's **influential** meta-analysis of factors influencing student achievement, one of the most significant factors is the teachers' **estimate** of achievement. Streaming students by diagnosed achievement automatically limits what the teacher feels the student is **capable** of. Meanwhile, in a mixed environment, teachers' estimates need to be more **diverse** and flexible.

- | | |
|--|---------------------------------|
| - influential (adj) có nhiều ảnh hưởng | - capable (adj) có thể |
| - estimate (n) sự ước lượng | - diverse (adj) varied: đa dạng |

While streaming might seem to help teachers effectively target a student's ZPD, it can **underestimate** the importance of peer-to-peer learning. A crucial aspect of constructivist theory is the role of the MKO – 'more knowledgeable other' – in knowledge construction.

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While teachers are traditionally the MKOs in classrooms, the value of knowledgeable student peers must not go **unrecognised** either.

- underestimate (v) underrate, belittle: đánh giá thấp
- unrecognised (adj) không được công nhận

I find it amazing to watch students get over an idea to their **peers** in ways that I would never think of. They operate with different language tools and different social tools from teachers and, having just learnt it themselves, they **possess** similar **cognitive** structures to their struggling classmates. There is also something exciting about passing on skills and knowledge that you yourself have just mastered – a certain pride and **zeal**, a certain freshness to the interaction between 'teacher' and 'learner' that is often lost by the expert for whom the steps are obvious and the joy of discovery forgotten.

- peer (n) bạn cùng lứa
- possess (v) own: sở hữu
- cognitive (adj) thuộc nhận thức
- zeal (n) eagerness, enthusiasm: sự hăng hái, sự nhiệt tình

Having a variety of different abilities in a **collaborative** learning environment provides valuable resources for helping students meet their learning needs, not to mention improving their communication and social skills. And today, more than ever, we need the many to **flourish** – not suffer at the expense of a few bright stars. Once a year, I go on a hike with my class, a mixed bunch of students. It is challenging. The fittest students realise they need to encourage the **reluctant**. There are **lookouts** who report back, and extra items to carry for others. We make it – together.

- collaborative (adj) cooperative: cộng tác
- flourish (v) thành công, thịnh vượng
- reluctant (adj) miễn cưỡng
- lookout (n) người quan sát

TEST 4 - READING PASSAGE 1 - GREEN ROOFS

A

Rooftops covered with grass, vegetable gardens and lush foliage are now a common sight in many cities around the world. More and more private companies and city authorities are investing in green roofs, drawn to their wide-ranging benefits. Among the benefits are saving on energy costs, mitigating the risk of floods, making habitats for urban wildlife, tackling air pollution and even growing food. These increasingly radical urban designs can help cities adapt to the monumental problems they face, such as access to resources and a lack of green space due to development. But the involvement of city authorities, businesses and other institutions is crucial to ensuring their success – as is research investigating different options to suit the variety of rooftop spaces found in cities. The UK is relatively new to developing green roofs, and local governments and institutions are playing a major role in spreading the practice. London is home to much of the UK's green roof market, mainly due to forward-thinking policies such as the London Plan, which has paved the way to more than doubling the area of green roofs in the capital.

- lush (adj) sum sê, tươi tốt
- foliage (n) leaves: lá
- authorities (n) người có thẩm quyền
- mitigate (v) alleviate: làm dịu, làm giảm nhẹ
- tackle (v) deal with, address: xử lý, giải quyết
- radical (adj) new, different: mới
- monumental (adj) very big: lớn, quan trọng
- institution (n) large organisation: cơ quan, tổ chức
- crucial (adj) very important: rất quan trọng
- relatively (adv) fairly, quite: khá, tương đối
- forward-thinking (adj) tiến bộ

B

Ongoing research is showcasing how green roofs in cities can integrate with 'living walls': environmentally friendly walls which are partially or completely covered with greenery, including a growing medium, such as soil or water. Research also indicates that green roofs can be integrated with drainage systems on the ground, such as street trees, so that the water is managed better and the built environment is made more sustainable. There is also evidence to demonstrate the social value of green roofs. Doctors are increasingly prescribing time spent gardening outdoors for patients dealing with anxiety and depression. And research has found that access to even the most basic green spaces can provide a better quality of life for dementia sufferers and help people avoid obesity.

- ongoing (adj) đang diễn ra
- showcase (v) show: chỉ ra
- integrate (v) hợp nhất
- partially (adv) partly: một phần
- greenery (n) vegetation: cây cỏ, cây xanh
- medium (n) phương tiện, phương pháp
- drainage system (n) hệ thống thoát nước
- sustainable (adj) bền vững
- demonstrate (v) chứng minh
- prescribe (v) kê đơn
- anxiety (n) worry: sự lo lắng
- depression (n) trầm cảm
- dementia (n) chứng mất trí
- obesity (n) bệnh béo phì

C

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In North America, green roofs have become **mainstream**, with a wide array of **expansive**, **accessible** and food-producing roofs installed in buildings. Again, city leaders and authorities have helped push the **movement** forward – only recently, San Francisco, USA, created a policy requiring new buildings to have green roofs. Toronto, Canada, has policies dating from the 1990s, encouraging the development of urban farms on rooftops. These countries also benefit from having newer buildings than in many parts of the world, which makes it easier to install green roofs. Being able to keep enough water at roof height and **distribute** it right across the rooftop is crucial to maintaining the plants on any green roof – especially on ‘**edible** roofs’ where fruit and vegetables are farmed. And it’s much easier to do this in newer buildings, which can **typically** hold greater weight, than to **retro-fit** old ones. Having a stronger roof also makes it easier to grow a greater variety of plants, since the soil can be deeper.

- | | |
|--|--------------------------------|
| - mainstream (adj) xu hướng | - distribute (v) phân phối |
| - expansive (adj) rộng, lớn | - edible (adj) có thể ăn được |
| - accessible (adj) có thể tiếp cận | - typically (adv) thông thường |
| - movement (n) change, development: sự thay đổi, sự phát triển | - retrofit (v) trang bị thêm |

D

For green roofs to become the norm for new developments, there needs to be support from public authorities and private **investors**. Those responsible for maintaining buildings may have to **acquire** new skills, such as landscaping, and in some cases, volunteers may be needed to help out. Other **considerations** include installing drainage paths, meeting health and safety requirements and perhaps allowing access for **the public**, as well as planning **restrictions** and **disruption** from regular activities in and around the buildings during **installation**. To **convince** investors and developers that installing green roofs is **worthwhile**, economic arguments are still the most important. The term ‘natural capital’ has been developed to explain the economic value of nature; for example, **measuring** the money saved by installing natural solutions to protect against flood damage, adapt to climate change or help people lead healthier and happier lives.

- | | |
|---|--------------------------------------|
| - investor (n) nhà đầu tư | - disruption (n) sự phá vỡ |
| - acquire (v) obtain: có được, học được | - installation (n) sự lắp đặt |
| - consideration (n) mối quan tâm | - convince (v) persuade: thuyết phục |
| - the public (n) công chúng | - worthwhile (adj) đáng công, đáng |
| - restriction (n) limitation: giới hạn | - measure (v) đo |

E

As the **expertise** about green roofs grows, official standards have been developed to ensure that they are designed, **constructed** and maintained **properly**, and function well. Improvements in the science and technology **underpinning** green roof development have also led to new **variations** in the **concept**. For example, ‘blue roofs’ enable buildings to hold water over longer periods of time, rather than **draining** it away quickly – crucial in times of heavier rainfall. There are also **combinations** of green roofs with **solar panels**, and ‘brown roofs’ which are wilder in nature and **maximise biodiversity**. If the trend continues, it could create new jobs and a more **vibrant** and sustainable local food economy – alongside many other benefits. There are still **barriers** to overcome, but the evidence so far indicates that green roofs have the **potential** to transform cities and help them function **sustainably** long

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into the future. The success stories need to be studied and **replicated** elsewhere, to make green, blue, brown and food-producing roofs the norm in cities around the world.

- expertise (n) sự tinh thông
- construct (v) build: xây dựng
- properly (adv) một cách phù hợp, đúng
- underpin (v) support: làm nền tảng
- variation (n) sự khác nhau, biến thể
- concept (n) khái niệm
- drain (v) làm rút nước
- combination (n) sự kết hợp
- solar panel (n) tấm pin năng lượng mặt trời
- maximise (v) tối đa hóa
- biodiversity (n) đa dạng sinh học
- sustainably (adv) một cách bền vững
- replicate (v) copy: sao chép

TEST 4 - READING PASSAGE 2 - THE GROWTH MINDSET

Over the past century, a powerful idea has taken root in the educational landscape. The **concept** of intelligence as something **innate** has been **supplanted** by the idea that intelligence is not fixed, and that, with the right training, we can be the authors of our own **cognitive capabilities**. Psychologist Alfred Binet, the developer of the first intelligence tests, was one of many 19th-century scientists who held that earlier view and sought to **quantify** cognitive ability. Then, in the early 20th century, **progressive thinkers revolted** against the **notion** that **inherent** ability is **destiny**. Instead, educators such as John Dewey argued that every child's intelligence could be developed, given the right environment.

- concept (n) khái niệm
- innate (adj) inborn: bẩm sinh
- supplant (v) replace: thay thế, hất cẳng
- cognitive (adj) thuộc nhận thức
- capability (n) ability: khả năng
- quantify (v) định lượng
- progressive (adj) tiến bộ
- thinker (n) nhà tư tưởng
- revolt (v) rebel: phản đối
- notion (n) idea, opinion: ý niệm, quan niệm
- inherent (adj) vốn có
- destiny (n) định mệnh

'Growth mindset theory' is a **relatively** new – and extremely popular – version of this idea. In many schools today you will see **hallways** covered in **motivational** posters and hear speeches on the **mindset** of great sporting heroes who simply believed their way to the top. A major focus of the growth mindset in schools is **coaxing** students away from seeing failure as an **indication** of their ability, and towards seeing it as a chance to improve that ability. As educationalist Jeff Howard noted several decades ago: 'Smart is not something that you just are, smart is something that you can get.'

- relatively (adv) fairly, quite: tương đối, khá
- hallway (n) sảnh
- motivational (adj) truyền động lực
- mindset (n) way of thinking: tư duy
- coax (v) persuade: thuyết phục, dỗ ngọt
- indication (n) sự ám chỉ

The idea of the growth mindset is based on the work of psychologist Carol Dweck in California in the 1990s. In one key experiment, Dweck divided a group of 10- to 12-year-olds into two groups. All were told that they had achieved a high score on a test but the first group were **praised** for their intelligence in achieving this, while the others were praised for their effort. The second group – those who had been **instilled** with a 'growth mindset' – were **subsequently** far more likely to put effort into future tasks. **Meanwhile**, the former took on only those tasks that would not risk their sense of worth. This group had **inferred** that success or failure is due to innate ability, and this 'fixed mindset' had led them to fear of failure and lack of effort. Praising ability actually made the students perform worse, while praising effort **emphasised** that change was possible.

- praise (v) extol: tán dương
- instill (v) infuse: truyền (ý tưởng, tự tin...)
- subsequently (adv) afterwards: sau đó
- meanwhile (adv) trong khi đó
- the former: cái thứ hai trong hai cái
- infer (v) assume: cho rằng
- emphasis (v) nhấn mạnh

One of the greatest **impediments** to successfully **implementing** a growth mindset, however, is the education system itself: in many parts of the world, the school climate is **obsessed** with performance in the form of **constant** testing, **analysing** and ranking of students – a key

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characteristic of the fixed mindset. Nor is it unusual for schools to create a certain cognitive **dissonance**, when they **applaud** the benefits of a growth mindset but then hand out fixed target grades in lessons based on performance.

- impediment (n) trở ngại
- implement (v) áp dụng, thực hiện
- obsessed (adj) ám ảnh
- constant (adj) liên tục
- analyse (v) phân tích
- characteristic (n) đặc điểm
- dissonance (n) disagreement: sự bất đồng
- applaud (v) acclaim, clap: tán dương, vỗ tay

Aside from the **implementation** problem, the **original** growth mindset research has also received **harsh** criticism. The **statistician** Andrew Gelman claims that 'their research designs have enough degrees of freedom that they could take their data to support just about any theory at all'. Professor of Psychology Timothy Bates, who has been trying to **replicate** Dweck's work, is finding that the results are repeatedly **null**. He notes that: 'People with a growth mindset don't **cope** any better with failure ... Kids with the growth mindset aren't getting better grades, either before or after our **intervention** study.'

- implementation (n) sự áp dụng, sự thực hiện
- original (adj) initial: ban đầu
- harsh (adj) khắc nghiệt
- statistician (n) nhà thống kê
- replicate (v) copy
- null (adj) invalid: vô hiệu, không có hiệu lực
- cope (v) đối phó, đương đầu
- intervention (n) sự can thiệp

Much of this criticism is not lost on Dweck, and she deserves great **credit** for responding to it and adapting her work **accordingly**. In fact, she argues that her work has been misunderstood and **misapplied** in a range of ways. She has also expressed concerns that her theories are being **misappropriated** in schools by being **conflated** with the **self-esteem** movement: 'For me the growth mindset is a tool for learning and improvement. It's not just a **vehicle** for making children feel good.'

- credit (n) praise: sự tán dương
- accordingly (adv) sao cho phù hợp với hoàn cảnh
- misapply (v) dùng sai, áp dụng sai
- misappropriate (v) biến thủ, lạm dụng
- conflate (v) combine: kết hợp thành một
- self-esteem (n) lòng tự trọng
- vehicle (n) phương tiện

But there is another factor at work here. The failure to **translate** the growth mindset into the classroom might **reflect** a **misunderstanding** of the nature of teaching and learning itself. Growth mindset supporters David Yeager and Gregory Walton claim that **interventions** should be **delivered** in a **subtle** way to **maximise** their **effectiveness**. They say that if **adolescents perceive** a teacher's intervention as **conveying** that they are in need of help, this could **undo** its intended effects.

- translate (v) dịch, chuyển sang
- reflect (v) phản ánh
- misunderstanding (n) sự hiểu nhầm, sự hiểu sai
- deliver (v) truyền đạt, bày tỏ
- subtle (adj) tinh tế, tế nhị
- maximise (v) tối đa hóa
- effectiveness (n) hiệu quả
- adolescent (n) thanh niên (12-18)
- perceive (v) understand, think of: hiểu, nhận thức

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- convey (v) communicate, express: truyền đạt
- undo (v) loại bỏ (tác động xấu)

A lot of what **drives** students is their innate beliefs and how they perceive themselves. There is a strong **correlation** between **self-perception** and achievement, but there is evidence to suggest that the actual effect of achievement on self-perception is stronger than the other way round. To stand up in a classroom and successfully deliver a good speech is a **genuine** achievement, and that is likely to be more powerfully motivating than **vague** notions of 'motivation' itself.

- drive (v) thúc đẩy
- correlation (n) connection: sự tương quan
- self-perception (n) sự tự nhận thức
- genuine (adj) authentic: thật
- vague (adj) unclear, ambiguous: không rõ ràng

Recent evidence would suggest that growth mindset interventions are not the **elixir** of student learning that its **proponents** claim it to be. The growth mindset appears to be a **viable construct** in the lab, which, when **administered** in the classroom via targeted interventions, doesn't seem to work. It is hard to **dispute** that having faith in the capacity to change is a good **attribute** for students. **Paradoxically**, however, that **aspiration** is not well served by direct interventions that try to instill it.

- elixir (n) thuốc tiên
- proponent (n) advocate: người ủng hộ
- viable (adj) workable: có hiệu quả
- construct (n) idea: ý tưởng, tình huống tưởng tượng
- administer (v) apply: áp dụng
- dispute (v) phủ nhận
- attribute (n) characteristic: đặc điểm
- paradoxically (adv) một cách ngược đời
- aspiration (n) sự khát khao

Motivational posters and talks are often a waste of time, and might well give students a **deluded** notion of what success actually means. Teaching **concrete** skills such as how to write an effective introduction to an essay then praising students' effort in getting there is probably a far better way of improving confidence than telling them how **unique** they are, or indeed how **capable** they are of changing their own brains. Perhaps growth mindset works best as a **philosophy** and not an intervention.

- delude (v) lừa dối, đánh lừa
- concrete skills (n) hard skills: kỹ năng cứng
- philosophy (n) triết lý, triết học
- unique (adj) độc nhất, đặc biệt
- capable (adj) có khả năng

READING PASSAGE 3

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TEST 4 - READING PASSAGE 3 - ALFRED WEGENER: SCIENCE, EXPLORATION AND THE THEORY OF CONTINENTAL DRIFT

by Mott T Greene

Introduction

This is a book about the life and scientific work of Alfred Wegener, whose reputation today rests with his theory of continental displacements, better known as 'continental drift'. Wegener proposed this theory in 1912 and developed it extensively for nearly 20 years. His book on the subject, The Origin of Continents and Oceans, went through four editions and was the focus of an international controversy in his lifetime and for some years after his death.

- reputation (n) danh tiếng
- displacement (n) sự đổi chỗ, sự dời chỗ
- drift (n) sự trôi dạt
- propose (v) đề xuất
- extensively (adv) rộng rãi
- origin (n) nguồn gốc
- controversy (n) sự tranh cãi

Wegener's basic idea was that many mysteries about the Earth's history could be solved if one supposed that the continents moved laterally, rather than supposing that they remained fixed in place. Wegener showed in great detail how such continental movements were plausible and how they worked, using evidence from a large number of sciences including geology, geophysics, paleontology, and climatology. Wegener's idea – that the continents move – is at the heart of the theory that guides Earth sciences today: namely plate tectonics. Plate tectonics is in many respects quite different from Wegener's proposal, in the same way that modern evolutionary theory is very different from the ideas Charles Darwin proposed in the 1850s about biological evolution. Yet plate tectonics is a descendant of Alfred Wegener's theory of continental drift, in quite the same way that modern evolutionary theory is a descendant of Darwin's theory of natural selection.

- mystery (n) điều huyền bí
- continent (n) lục địa
- laterally (adv) theo hướng ngang, hướng bên
- plausible (adj) reasonable: hợp lý
- geology (n) địa chất học
- geophysics (n) vật lý địa cầu
- paleontology (n) hóa thạch học
- climatology (n) khí hậu học
- plate tectonics (n) kiến tạo mảng
- respect (n) way: cách
- proposal (n) suggestion: đề xuất
- evolutionary (adj) tiến hóa
- evolution (n) sự tiến hóa
- descendant (n) hậu duệ, cái tiếp nối
- natural selection (n) sự chọn lọc tự nhiên

When I started writing about Wegener's life and work, one of the most intriguing things about him for me was that, although he came up with a theory on continental drift, he was not a geologist. He trained as an astronomer and pursued a career in atmospheric physics. When he proposed the theory of continental displacements in 1912, he was a lecturer in physics and astronomy at the University of Marburg, in southern Germany. However, he was not an 'unknown'. In 1906 he had set a world record (with his brother Kurt) for time aloft in a hot-air balloon: 52 hours. Between 1906 and 1908 he had taken part in a highly publicized and extremely dangerous expedition to the coast of northeast Greenland. He had also made a name for himself amongst a small circle of meteorologists and atmospheric physicists in Germany as the author of a textbook, Thermodynamics of the Atmosphere (1911), and of a number of interesting scientific papers.

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- intriguing (adj) very interesting: rất thú vị, hấp dẫn
- geologist (n) nhà địa chất
- astronomer (n) nhà thiên văn học
- pursue (v) theo đuổi
- atmospheric (adj) thuộc khí quyển
- astronomy (n) thiên văn học
- world record (n) kỷ lục thế giới
- aloft (adv) cao, ở trên cao
- publicize (v) công khai
- expedition (n) cuộc thám hiểm
- meteorologist (n) nhà khí tượng học

As important as Wegener's work on continental drift has turned out to be, it was largely a **sideline** to his interest in atmospheric physics, geophysics, and **paleoclimatology***, and thus I have been at great pains to put Wegener's work on continental drift in the larger **context** of his other scientific work, and in the even larger context of atmospheric sciences in his lifetime. This is a 'continental drift book' only to the extent that Wegener was interested in that topic and later became famous for it. My **treatment** of his other scientific work is no less detailed, though I certainly have **devoted** more attention to the **reception** of his ideas on continental displacement, as they were much more **controversial** than his other work.

- sideline (n) việc làm phụ
- paleoclimatology (n) cổ khí hậu học
- context (n) situation, setting: hoàn cảnh
- treatment (n) sự xử lý
- devote (v) dedicate: dành
- reception (n) sự tiếp nhận
- controversial (adj) contentious: gây tranh cãi

Readers interested in the **specific** detail of Wegener's career will see that he often stopped pursuing a given line of **investigation** (sometimes **for years on end**), only to pick it up later. I have tried to provide **guideposts** to his **rapidly shifting** interests by characterizing different phases of his life as careers in different sciences, which is **reflected** in the titles of the chapters. Thus, the index should be a **sufficient** guide for those interested in a particular **aspect** of Wegener's life but perhaps not all of it. My own feeling, however, is that the parts do not make as much sense on their own as do all of his activities taken together. In this respect I **urge** readers to try to experience Wegener's life as he lived it, with all the **interruptions**, changes of mind, and renewed efforts this **entailed**.

- specific (adj) cụ thể
- investigation (n) sự nghiên cứu, sự khảo sát
- for years on end: trong rất nhiều năm
- guidepost (n) cột chỉ đường, sự hướng dẫn
- rapidly (adv) quickly: nhanh chóng
- shifting (adj) always changing: luôn thay đổi
- reflect (v) phản ánh
- sufficient (adj) enough, adequate: đủ
- aspect (n) khía cạnh
- urge (v) thúc, giục
- interruption (n) sự ngắt quãng, sự gián đoạn
- entail (v) involve: bao gồm

Wegener left behind a few published works but, as was standard practice, these reported the results of his work – not the journey he took to reach that point. Only a few hundred of the many thousands of letters he wrote and received in his lifetime have **survived** and he didn't keep notebooks or **diaries** that **recorded** his life and activities. He was not active (with a few **exceptions**) in scientific societies, and did not seek to find influence or **advance** his ideas through professional contacts and **politics**, spending most of his time at home in his study reading and writing, or in the field collecting **observations**.

- survive (v) sống sót
- diary (n) nhật ký

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- record (v) ghi lại
- exception (n) sự ngoại lệ
- advance (v) develop: phát triển
- politics (n) chính trị
- observation (n) sự quan sát, sự theo dõi

Some famous scientists, such as Newton, Darwin, and Einstein, left mountains of written material behind, hundreds of notebooks and letters numbering in the tens of thousands. Others, like Michael Faraday, left extensive **journals** of their thoughts and **speculations**, **parallel** to their scientific notebooks. The more such material a scientist leaves behind, the better chance a **biographer** has of forming an **accurate** picture of how a scientist's ideas took shape and **evolved**.

- journal (n) tạp chí, nhật ký
- speculation (n) guess: sự dự đoán
- parallel (adj) song song
- biographer (n) người viết tiểu sử
- accurate (adj) precise, correct: chính xác
- evolve (v) tiến hóa, phát triển

I am **firmly** of the opinion that most of us, Wegener included, are not in any real sense the authors of our own lives. We plan, think, and act, often with **apparent** freedom, but most of the time our lives 'happen to us', and we only **retrospectively** turn this **happenstance** into a **coherent narrative** of **fulfilled intentions**. This book, therefore, is a story both of the life and scientific work that Alfred Wegener planned and intended and of the life and scientific work that actually 'happened to him'. These are, as I think you will soon see, not always the same thing.

- firmly (adv) vững chắc, chắc chắn
- apparent (adj) có vẻ như, rõ ràng
- retrospectively (adv) nhìn về quá khứ
- happenstance (n) tình huống ngẫu nhiên
- coherent (adj) lucid: mạch lạc
- narrative (n) bài tường thuật
- fulfilled (adj) thỏa mãn, mãn nguyện
- intention (n) ý định, mục đích