

PROVA DE PROFICIÊNCIA INGLÊS

Texto 1

The importance of handwriting is becoming better understood¹

September 14, 2023.

1 Two and a half millennia ago, Socrates complained that writing would harm
2 students. With a way to store ideas permanently and externally, they would no
3 longer need to memorise. It is tempting to dismiss him as an old man complaining
4 about change. Socrates did not have a stack of peer-reviewed science to make
5 his case about the usefulness of learning concepts by heart.

6 A line of research shows the benefits of an “innovation” that predates
7 computers: handwriting. Studies have found that writing on paper can improve
8 everything from recalling a random series of words to imparting a better
9 conceptual grasp of complicated ideas.

10 For learning material by rote, from the shapes of letters to the quirks of
11 English spelling, the benefits of using a pen or pencil lie in how the motor and
12 sensory memory of putting words on paper reinforces that material. The
13 arrangement of squiggles on a page feeds into visual memory: people might
14 remember a word they wrote down in French class as being at the bottom-left on
15 a page, *par exemple*.

16 One of the best-demonstrated advantages of writing by hand seems to be
17 in superior note-taking. In a study from 2014 by Pam Mueller and Danny
18 Oppenheimer, students typing wrote down almost twice as many words and more
19 passages verbatim from lectures, suggesting they were not understanding so
20 much as rapidly copying the material.

21 Handwriting—which takes longer for nearly all university-level students—
22 forces note-takers to synthesise ideas into their own words. This aids conceptual
23 understanding at the moment of writing. But those taking notes by hand also
24 perform better on tests when students are later able to study from their notes.
25 The effect even persisted when the students who typed were explicitly instructed
26 to rephrase the material in their own words. The instruction was “completely
27 ineffective” at reducing verbatim note-taking, the researchers note: they did not
28 understand the material so much as parrot it.

29 Virginia Berninger, emeritus professor of psychology at the University of
30 Washington, is a longtime advocate of handwriting. But she is not a purist; she
31 says there are research-tested benefits for “manuscript” print-style writing, for
32 cursive (which allows greater speed) but also for typing (which is good practice
33 for composing passages). Since students spend more time on devices as they
34 age, she argues for occasional “tuning up” of handwriting in later school years.

¹ From <https://www.economist.com/culture/2023/09/14/the-importance-of-handwriting-is-becoming-better-understood>. Retrieved on November 9, 2023.

Socrates may or may not have had a point about the downsides of writing. But no one would remember, much less care, if his student Plato had not noted it down for the benefit of posterity.

1. De acordo com o texto,

- a) estudos mostram que a escrita à mão é uma inovação e que o uso de computadores pode ser predatório no processo de aprendizagem.
- b) uma pesquisa observou que estudantes fizeram o dobro de anotações em aula escrevendo à mão em relação àqueles que utilizaram o computador para a mesma tarefa.
- c) a razão da importância da escrita à mão está na atividade motora e sensorial que, quando estimulada, desenvolve ainda mais nossa capacidade de escrever.
- d) estudantes que tomam nota digitando têm mais dificuldade de parafrasear o material que lhes é apresentado do que aqueles que fazem anotações à mão.

2. Identifique a palavra que pode substituir o termo *quirks* (linha 10) sem causar prejuízo ao sentido do trecho.

- a) habit
- b) idiosyncrasy
- c) twist
- d) vagary

3. O texto menciona o filósofo grego Sócrates e traz um comentário bem humorado sobre uma de suas crenças, trazendo-a para a contemporaneidade. Explique a relação entre a crença do filósofo e a observação feita no texto. **Responda em português.**

TEXTO 2

Seeing the unseen: How butterflies can help scientists detect cancer²

November 3, 2023.

1 There are many creatures on our planet with more advanced senses than
2 humans. Turtles can sense Earth's magnetic field. Mantis shrimp can detect
3 polarized light. Elephants can hear much lower frequencies than humans can.
4 Butterflies can perceive a broader range of colors, including ultraviolet (UV) light.
5 Inspired by the enhanced visual system of the *Papilio xuthus* butterfly, a
6 team of researchers have developed an imaging sensor capable of "seeing" into
7 the UV range inaccessible to human eyes. The design of the sensor uses stacked
8 photodiodes and perovskite nanocrystals (PNCs) capable of imaging different
9 wavelengths in the UV range. Using the spectral signatures of biomedical
10 markers, such as amino acids, this new imaging technology is even capable of
11 differentiating between cancer cells and normal cells with 99% confidence.

² From <https://www.sciencedaily.com/releases/2023/11/231103170637.htm>. Retrived on November 7, 2023.

1 This new research, led by University of Illinois Urbana-Champaign
2 electrical and computer engineering professor Viktor Gruev and bioengineering
3 professor Shuming Nie, was recently published in the journal *Science Advances*.

4 "We've taken inspiration from the visual system of butterflies, who are able
5 to perceive multiple regions in the UV spectrum, and designed a camera that
6 replicates that functionality," Gruev says. "We did this by using novel perovskite
7 nanocrystals, combined with silicon imaging technology, and this new camera
8 technology can detect multiple UV regions."

9 UV light is electromagnetic radiation with wavelengths shorter than **that** of
10 visible light (but longer than x-rays). We are most familiar with UV radiation from
11 the sun and the dangers it poses to human health. UV light is categorized into
12 three different regions -- UVA, UVB and UVC -- based on different wavelength
13 ranges. Because humans cannot see UV light, it is challenging to capture UV
14 information, especially discerning the small differences between each region.
15 Butterflies, however, can see these small variations in the UV spectrum. Gruev
16 notes, "UV light is incredibly difficult to capture, it just gets absorbed by
17 everything, and butterflies have managed to do it extremely well."

18 "This new imaging technology is enabling us to differentiate cancerous
19 versus healthy cells and is opening up new and exciting applications beyond just
20 health," Nie says. There are many other species besides butterflies capable of
21 seeing in the UV, and having a way to detect that light will provide interesting
22 opportunities for biologists to learn more about these species, such as their
23 hunting and mating habits. Bringing the sensor underwater can help bring a
24 greater understanding of that environment as well. While a lot of UV is absorbed
25 by water, there is still enough that makes it through to have an impact and there
26 are many animals underwater that also see and use UV light.

4. A pesquisa apresentada no texto,

- a) conclui que borboletas são capazes de diferenciar células cancerígenas de células saudáveis.
- b) explica que os raios UV são facilmente absorvidos.
- c) fez uso do sensor desenvolvido também na água.
- d) mostra como as borboletas têm habilidade superiores a animais como tartarugas e elefantes.

5. Segundo o texto,

- a) a câmera desenvolvida pelos cientistas imita o sistema visual humano e reproduz a habilidade das borboletas.
- b) os comprimentos de onda da luz UV são mais longos do que aqueles da luz visível.
- c) há muitas outras espécies de borboletas além da *Papilio xuthus* capazes de ver a luz UV.

d) os raios UV são absorvidos pela água, e ainda causam impacto nesse ambiente.

6. A que palavras ou segmentos se refere o pronome **that** (linha 20)?

- a) UV light
- b) electromagnetic radiation
- c) wavelengths
- d) visible light

TEXTO 3

AI chatbot ChatGPT can't create convincing scientific papers... yet³

June 9, 2023.

1 The artificial intelligence (AI) chatbot ChatGPT may be a decent mimic of
2 human workers in several fields, but scientific research is not one of **them**,
3 according to a new study that used a computer program to spot fake studies
4 generated by the chatbot. But the AI is still capable of fooling some humans with
5 its science writing, previous research shows.

6 In the new study, published June 7 in the journal Cell Reports Physical
7 Science, researchers created a new computer learning program to tell the
8 difference between real scientific papers and fake examples written by ChatGPT.
9 The scientists trained the program to identify key differences between 64 real
10 studies published in the journal Science and 128 papers created by ChatGPT
11 using the same 64 papers as a prompt.

12 The team then tested how well their model could differentiate between a
13 different subset of real and ChatGPT-generated papers, which included 60 real
14 papers from the journal Science and 120 AI-generated counterfeits. The program
15 flagged the AI-written papers more than 99% of the time and could correctly tell
16 the difference between human-written and chatbot-written paragraphs 92% of the
17 time.

18 ChatGPT-generated papers differed from human text in four key ways:
19 paragraph complexity, sentence-level diversity in length, punctuation marks and
20 "popular words." For example, human authors write longer and more complex
21 paragraphs, while the AI papers used punctuation that is not found in real papers,
22 such as exclamation marks. The researchers' program also spotted lots of glaring
23 factual errors in the AI papers.

24 "One of the biggest problems is that it [ChatGPT] assembles text from
25 many sources and there isn't any kind of accuracy check," study lead
26 author Heather Desaire, an analytical chemist at the University of Kansas, said

³ From <https://www.livescience.com/technology/artificial-intelligence/ai-chatbot-chatgpt-cant-create-convincing-scientific-papers-yet>. Retrieved on November 7, 2023.

1 in the statement. As a result, reading through ChatGPT-generated writing can be
2 like "playing a game of two truths and a lie," she added.
3 Creating computer programs to differentiate between real and AI-
4 generated papers is important because previous studies have hinted that humans
5 may not be as good at spotting the differences.
6 The researchers of the new study say they are pleased that their program
7 is effective at weeding out fake papers but warn it is only a proof of concept. Much
8 more wide-scale studies are needed to create robust models that are even more
9 reliable and can be trained to specific scientific disciplines to maintain the integrity
10 of the scientific method, they wrote **(themselves)** in their paper.

7. Discorra sobre a metodologia e os resultados da pesquisa apresentada no texto. **Responda em português.**

8. *The researchers of the new study say they are pleased that their program is effective at weeding out fake papers but warn it is only a proof of concept. Much more wide-scale studies are needed to create robust models that are even more reliable and can be trained to specific scientific disciplines to maintain the integrity of the scientific method, they wrote **(themselves)** in their paper.* (linhas 32 a 36).

O pronome destacado (linha 36) produz um sentido bastante significativo no contexto em que está inserido. Explique o uso do pronome entre parênteses. **Responda em português.**

9. De acordo com o texto, os artigos escritos por humanos e a escrita gerada por IA se diferenciam

- a) na simplicidade da pontuação.
- b) na quantidade de frases.
- c) na composição dos parágrafos.
- d) no uso de palavras complexas.

10. A que palavras ou segmentos se refere o pronome **them** (linha 02)?

- a) The artificial intelligence (AI)
- b) chatbot ChatGPT
- c) decent mimic of human workers in several fields
- d) scientific research