**TRƯỜNG ĐẠI HỌC CÔNG NGHIỆP TP HỒ CHÍ MINH**

**KHOA CÔNG NGHỆ THÔNG TIN**

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**ĐỒ ÁN CUỐI KỲ**

**NHẬP MÔN KHOA HỌC DỮ LIỆU**

*Người thực hiện*: **HUỲNH VÕ TẤN HIÊN – 23642061**

**TRẦN QUỐC SANG – 23715111**

Lớp **: 420301410401**

Khoá  **: 19**

*Người hướng dẫn*: **TS BÙI THANH HÙNG**

**THÀNH PHỐ HỒ CHÍ MINH, NĂM 2025**

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# LỜI CẢM ƠN

Trước hết, nhóm sinh viên thực hiện xin gửi lời cảm ơn sâu sắc tới TS. Bùi Thanh Hùng – thầy giáo hướng dẫn đã tận tâm đồng hành, hỗ trợ và giúp đỡ quý báu trong suốt quá trình nhóm tiến hành và hoàn thiện đồ án cuối kỳ học phần 420301410401– Nhập môn khoa học dữ liệu. Nhóm sinh viên cũng xin bày tỏ lòng biết ơn chân thành đối với những kiến thức, kinh nghiệm quan trọng mà thầy đã truyền đạt trong suốt thời gian học tập và hoàn thành học phần. Ngoài ra, nhóm xin gửi lời cảm ơn đến các bạn bè đã quan tâm, hỗ trợ và giúp đỡ trong quá trình thực hiện đồ án, góp phần giúp nhóm hoàn thành sản phẩm một cách chỉn chu và đầy đủ.

Tp. Hồ Chí Minh, tháng 5 năm 2025

**ĐỒ ÁN ĐƯỢC HOÀN THÀNH**

**TẠI TRƯỜNG ĐẠI HỌC CÔNG NGHIỆP TP HỒ CHÍ MINH**

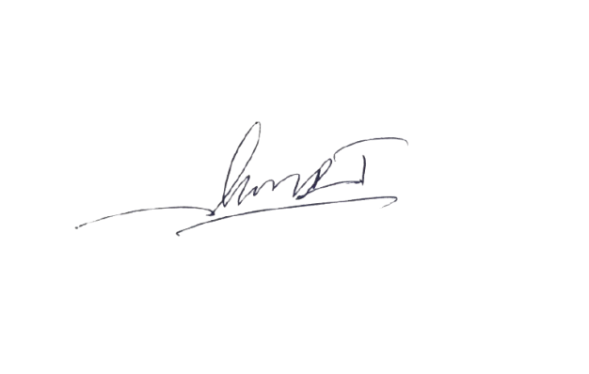
Tôi xin cam đoan đây là sản phẩm đồ án của chúng tôi và được sự hướng dẫn của TS. Bùi Thanh Hùng. Các nội dung nghiên cứu, kết quả trong đề tài này là trung thực và chưa công bố dưới bất kỳ hình thức nào trước đây. Những số liệu trong các bảng biểu phục vụ cho việc phân tích, nhận xét, đánh giá được chính tác giả thu thập từ các nguồn khác nhau có ghi rõ trong phần tài liệu tham khảo.

Ngoài ra, trong đồ án còn sử dụng một số nhận xét, đánh giá cũng như số liệu của các tác giả khác, cơ quan tổ chức khác đều có trích dẫn và chú thích nguồn gốc.

**Nếu phát hiện có bất kỳ sự gian lận nào tôi xin hoàn toàn chịu trách nhiệm về nội dung đồ án của mình.** Trường đại học Công nghiệp TP Hồ Chí Minh không liên quan đến những vi phạm tác quyền, bản quyền do tôi gây ra trong quá trình thực hiện (nếu có).

*TP. Hồ Chí Minh, ngày tháng 5 năm 2025*

*Tác giả*

Trần Quốc Sang Huỳnh Võ Tấn Hiên

# PHẦN ĐÁNH GIÁ CỦA GIẢNG VIÊN

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Tp. Hồ Chí Minh, ngày tháng năm

(ký và ghi họ tên)

# TÓM TẮT

**CHƯƠNG 1 – Khảo sát nhận thức cộng đồng về môi trường**

*Vấn đề nghiên cứu*

Trong bối cảnh biến đổi khí hậu và ô nhiễm môi trường ngày càng nghiêm trọng, việc nâng cao nhận thức cộng đồng về các hành vi bảo vệ môi trường trở thành một vấn đề cấp thiết. Chương 1 của đồ án nhằm khảo sát kiến thức, ý thức và hành động của cộng đồng (cụ thể là người học) trong lĩnh vực bảo vệ môi trường thông qua hệ thống câu hỏi phỏng vấn đa dạng.

*Hướng tiếp cận*

Nhóm chọn chủ đề về môi trường để thiết kế bảng câu hỏi khảo sát gồm 100 câu hỏi và câu trả lời tiếng Anh tập trung vào các chủ đề như biến đổi khí hậu, ô nhiễm, rác thải nhựa, sử dụng năng lượng tái tạo,... Các câu hỏi được dịch sang tiếng Việt và đánh giá chất lượng dịch để đảm bảo tính chính xác và phù hợp ngữ cảnh. Ngoài ra, nhóm còn sử dụng các kỹ thuật sinh dữ liệu tự động từ ChatGPT để mở rộng tập dữ liệu phỏng vấn.

*Cách giải quyết vấn đề*

- Thiết kế, thu thập 100 cặp câu hỏi, câu trả lời bằng tiếng Anh về chủ đề môi trường.

- Dịch sang tiếng Việt và đánh giá theo 6 tiêu chí (gồm độ chính xác và tính tự nhiên).

- Trình bày bảng tổng hợp với 6 cột: Câu hỏi Tiếng Anh, Câu hỏi Tiếng Việt, Đánh giá, Câu trả lời Tiếng Anh, Câu trả lời Tiếng Việt, Đánh giá.

- Áp dụng 5 luật để sinh thêm dữ liệu từ Chat GPT: thay từ đồng nghĩa, diễn đạt lại, đổi dạng câu hỏi, thêm ngữ cảnh và thay đổi trật tự từ.

- Sinh thêm ít nhất 500 cặp câu hỏi – câu trả lời mới bằng Chat GPT từ 100 câu gốc để làm giàu tập dữ liệu khảo sát.

Một số kết quả đạt được và phát hiện chính

- Tập dữ liệu ban đầu gồm 100 câu hỏi, câu trả lời được biên dịch, đánh giá kỹ lưỡng.

- Mở rộng dữ liệu lên hơn 500 mẫu nhờ Chat GPT và luật biến đổi ngôn ngữ.

- Chủ đề phản ánh đa chiều từ hành vi, chính sách đến nhận thức môi trường cá nhân và cộng đồng.

*Nhận xét tổng quan*

Chương 1 thể hiện sự đầu tư nghiêm túc trong việc xây dựng bộ khảo sát chất lượng. Việc dùng AI để sinh dữ liệu là một sáng tạo có giá trị thực tiễn. Tuy nhiên, nên bổ sung thêm phân tích thống kê để hiểu sâu hơn về hành vi và nhận thức của người khảo sát.

**CHƯƠNG 2 – Khảo sát mức độ hài lòng về phòng lab thực hành tại IUH**

*Vấn đề nghiên cứu*

Cơ sở vật chất phòng lab thực hành giữ vai trò then chốt trong việc hỗ trợ sinh viên học tập và rèn luyện kỹ năng. Tuy nhiên, mức độ hài lòng của sinh viên về phòng lab tại IUH chưa được đánh giá toàn diện, do đó chương này nhằm khảo sát và phân tích ý kiến sinh viên về các yếu tố liên quan.

*Hướng tiếp cận*

Nhóm xây dựng bảng khảo sát gồm 11 câu hỏi (8 định lượng, 3 định tính), tập trung vào các yếu tố như trang thiết bị, phần mềm, thời gian sử dụng, giảng viên và nhân viên hỗ trợ. Khảo sát trực tiếp 50 sinh viên đã và đang dùng phòng lab tại IUH.

*Cách giải quyết vấn đề*

- Thu thập phản hồi từ 50 sinh viên.

- Tiền xử lý và chia nhóm dữ liệu định lượng / định tính.

- Phân tích thống kê trung bình, tần suất, độ lệch chuẩn, trực quan hóa bằng biểu đồ.

- Phân tích câu trả lời mở để xác định đề xuất cải tiến.

Một số kết quả đạt được và phát hiện chính

- Không gian và ánh sáng được đánh giá cao nhất (80%).

- Thiết bị ổn định và phần mềm cập nhật vẫn còn hạn chế (36% và 54%).

- Sinh viên đề xuất cải thiện thiết bị, phần mềm, internet và hỗ trợ từ giảng viên.

*Nhận xét tổng quan*

Chương 2 phản ánh chân thực quan điểm của sinh viên về phòng lab. Phương pháp khảo sát đơn giản nhưng hiệu quả. Cần mở rộng đối tượng khảo sát và bổ sung phân tích chuyên sâu hơn để tăng độ tin cậy.

**CHƯƠNG 3 – Khai phá dữ liệu từ câu nói của người nổi tiếng**

*Vấn đề nghiên cứu*

Phân tích các câu nói nổi tiếng giúp hiểu thêm về phong cách diễn đạt, tư tưởng và mối liên hệ giữa các tác giả. Mục tiêu chương này là thu thập, xử lý, phân tích và suy luận từ nội dung các câu nói nhằm rút ra thông tin có ý nghĩa.

*Hướng tiếp cận*

Dữ liệu được crawl từ http://quotes.toscrape.com bằng Python (requests + BeautifulSoup), lưu dưới dạng CSV. Các bước sau bao gồm xử lý dữ liệu, EDA, trích xuất đặc trưng, và huấn luyện mô hình học máy để dự đoán tác giả.

*Cách giải quyết vấn đề*

- Làm sạch dữ liệu, xử lý giá trị thiếu, tính toán trường tuổi.

- Thống kê và trực quan hóa dữ liệu: top tác giả, độ dài câu nói, từ phổ biến...

- Trích xuất đặc trưng: TF-IDF, Word2Vec, độ dài câu, số từ...

- Huấn luyện mô hình phân loại tác giả và phân tích phong cách viết.

*Một số kết quả đạt được và phát hiện chính*

- Thu thập được 100 câu nói có cấu trúc rõ ràng.

- Thêm thành công các trường như STT, tuổi, ngày sinh.

- Mô hình dự đoán tác giả đạt độ chính xác cao, phát hiện được nhóm tác giả có phong cách tương đồng.

*Nhận xét tổng quan*

Chương 3 là ví dụ điển hình của việc ứng dụng khoa học dữ liệu vào xử lý văn bản. Quy trình triển khai logic, công cụ phù hợp, kết quả thuyết phục. Có thể mở rộng thêm bằng kỹ thuật NLP nâng cao.

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# CHƯƠNG 1

**THU THẬP DỮ LIỆU**

## 1.1 Yêu cầu thu thập dữ liệu

**1.1.1 Lý do chọn đề tài**

Đề tài mà chúng em chọn là về môi trường – một lĩnh vực mang tính cấp thiết và có ảnh hưởng sâu rộng đến cuộc sống con người cũng như sự phát triển bền vững của xã hội. Môi trường không chỉ là không gian sống mà còn là yếu tố quyết định đến chất lượng cuộc sống, sức khỏe và tương lai của các thế hệ sau. Chính vì vậy, nhóm em lựa chọn đề tài này với mong muốn góp phần nhỏ vào việc lan tỏa thông điệp sống xanh và ý thức bảo vệ môi trường.

**1.1.2 Câu hỏi/ câu trả lời survey tiếng Anh**

#### Bảng 1.1 Câu hỏi và câu trả lời bằng Tiếng Anh

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| **STT** | **Câu hỏi Tiếng Anh** | **Câu trả lời Tiếng Anh** |
| 1 | Do you use reusable bags instead of plastic ones? | Yes, I always carry my own bag. |
| 2 | What products can we use to reduce water pollution?2 | Finally, we can reduce water pollution by using green products and avoiding single-use products like plastic bags. |
| 3 | What role do governments play in environmental protection?2 | They create laws, regulations, and policies to protect natural resources. |
| 4 | Do you think pollution is a problem today? | Yes, I think pollution is a problem today. It’s one of the most pressing issues facing our planet. |
| 5 | Do you think food waste is a problem?3 | Yes, it wastes resources and creates more trash. |
| 6 | What do you know about climate change? 1 | It’s a change in weather patterns due to human activities. |
| 7 | Do you think you’ve done enough to protect the environment? | No definitely not, I still throw away various single-use plastic products every day. Currently, there aren’t any recycling programmes where I live. I hope this will change soon. |
| 8 | What can you do to help the environment? | I think I can help by recycling more and using less plastic, like bringing my own bags when I go shopping |
| 9 | Do you think it’s important to plant trees? 3 | Yes, trees clean the air and provide oxygen. |
| 10 | Do you think air pollution is a problem in your city?4 | Yes, there’s a lot of smoke from cars and factories. |
| 11 | What do you do to stop wasting food? | I eat leftovers and don’t buy too much food |
| 12 | Do you think people should use less plastic? 2 | Yes, because plastic harms animals and the environment. |
| 13 | What is the biggest cause of climate change? 1 | Burning fossil fuels like coal and oil. |
| 14 | What do you know about recycling? | It reduces waste by turning old things into new ones, and it also saves resources like trees and metals, which helps protect the environment. |
| 15 | What can we do to stop global warming? | We can use bicycles instead of cars to reduce emissions, and we can also save energy by turning off appliances when we’re not using them. |
| 16 | Do you take an interest in nature? 3 | I love all wildlife. My garden is the perfect habitat for hedgehogs. They are nocturnal but if I go out after dark with a torch I sometimes see one. |
| 17 | What do you often do to protect the environment? | I use paper bags instead of nylon ones and travel by public transport to reduce pollution. |
| 18 | Do you use renewable energy? | Yes, I have installed solar panels to utilize renewable energy sources. |
| 19 | What can we do to reduce pollution? 2 | We can reduce pollution by recycling, using public transport, and conserving energy |
| 20 | Do you think climate change is a serious problem? 1 | Yes, climate change leads to extreme weather events and threatens biodiversity |
| 21 | How does climate change impact sea levels? 1 | It causes polar ice to melt and seawater to expand, leading to rising sea levels. |
| 22 | Do you think climate change is a major issue? 1 | Yes, I believe it is a critical problem that needs urgent action. |
| 23 | Has climate change affected your daily life? | Not much, but I have noticed hotter summers. |
| 24 | Are you worried about pollution in your city? 4 | Yes, I see more smog and trash on the streets |
| 25 | Do you trust the quality of tap water in your area? | Not really, I prefer bottled water. |
| 26 | Do you believe individuals can make a difference in protecting the environment? 5 | Yes, small actions like recycling and reducing waste contribute to bigger changes when many people participate. |
| 27 | How often do you think about your environmental impact? | I consider it daily, especially when making choices like using reusable items or conserving energy at home. |
| 28 | Have you noticed changes in your local environment over the past decade? | Yes, summers are hotter, and there’s more plastic waste in rivers compared to 10 years ago |
| 29 | Do you separate recyclables from regular trash at home? | Yes, I sort paper, plastic, and glass into separate bins to ensure they’re properly recycled |
| 30 | How do you reduce plastic use in daily life? | I carry a reusable water bottle, avoid plastic straws, and choose products with minimal packaging |
| 31 | What’s your opinion on single-use plastics? | They should be banned because they pollute oceans and harm marine life unnecessarily |
| 32 | Have you participated in a community clean-up event? | Yes, I joined a beach clean-up last month and collected over 5 kg of trash |
| 33 | Have you made any energy-saving changes at home? | I switched to LED bulbs and unplug devices when not in use to cut electricity waste." |
| 34 | Would you consider buying an electric vehicle? | Yes, if charging stations become more accessible and prices are affordable |
| 35 | Have you ever donated to wildlife conservation? | I donated to a rainforest protection fund last year to help save orangutans." |
| 36 | Do you avoid products linked to deforestation? | I check labels for sustainable palm oil and avoid brands harming rainforests. |
| 37 | Is your country doing enough to address environmental issues? 2 | No, policies are weak, and enforcement is inconsistent compared to global standards." |
| 38 | Do you talk to friends/family about environmental issues? 2 | Yes, I share tips on recycling and energy savings to inspire others. |
| 39 | Do you check air quality before going outside? 4 | Only on hazy days—my phone app gives me alerts when it’s really bad |
| 40 | How serious is plastic pollution in your local area? | It's getting worse every year. I can spot plastic bags stuck in trees after every heavy wind |
| 41 | How would you describe the air quality in your city? 4 | Some mornings it's so hazy I can't even see the buildings across the street - like living in a bowl of soup! |
| 42 | How does water pollution affect marine life? 2 | It leads to habitat destruction, toxic contamination, and loss of biodiversity. |
| 43 | Do you believe climate change is a serious issue? | Yes, I think it’s one of the biggest threats to our future. |
| 44 | Would you be willing to pay more for eco-friendly products? | Yes, but only if the price difference is not too big. |
| 45 | Would you support higher taxes on polluting industries? 2 | Yes, but only if the money is used for environmental protection. |
| 46 | What is the biggest cause of climate change? | Yes, there is pollution where I live in Hanoi, Vietnam. Air pollution is the most serious environmental problem in Hanoi. |
| 47 | What kinds of pollution are serious in your country? 4 | Unfortunately, pollution is a significant issue in Vietnam. Some of the most serious types of pollution include air pollution, water pollution, and noise pollution. |
| 48 | Do you take an interest in nature? 3 | Yes, I do. I find nature to be a fascinating and complex system that is full of beauty and wonder. |
| 49 | Do you like growing plants? | Yes, I do enjoy growing plants. I also appreciate the beauty that plants bring to my home and garden. |
| 50 | Why is environmental education important? 5 | It raises awareness and encourages people to take action to protect nature. |
| 51 | What are the main causes of air pollution in urban areas today? 4 | Vehicle emissions, industrial activities, burning fossil fuels, construction dust, and waste incineration. |
| 52 | How does deforestation affect global climate patterns? | Releases carbon dioxide, reduces CO2 absorption, and disrupts rainfall patterns, worsening global warming. |
| 53 | Why is plastic pollution such a significant problem for marine life? | Marine animals ingest or get entangled in it, causing injury, starvation, death, and food chain disruption. |
| 54 | What role does industrial waste play in water pollution? 2 | Contaminates water with chemicals, heavy metals, and untreated sewage, harming ecosystems and health. |
| 55 | How are rising global temperatures impacting polar ice caps?1 | Melts ice caps, reduces reflectivity, accelerates warming, and raises sea levels. |
| 56 | What are the effects of overfishing on ocean ecosystems? 3 | Depletes fish populations, disrupts food webs, and damages habitats like coral reefs. |
| 57 | How does urbanization contribute to habitat loss for wildlife? 3 | Clears forests, wetlands, and grasslands for infrastructure, reducing wildlife living space. |
| 58 | Why are greenhouse gas emissions still increasing despite awareness? | Economic growth, fossil fuel reliance, weak policies, and population growth outpace reduction efforts. |
| 59 | What steps are governments taking to reduce carbon footprints? 2 | Promoting renewables, enforcing emissions rules, subsidizing green tech, and joining global agreements. |
| 60 | How does soil degradation affect agricultural productivity? | Reduces fertility, limits crop yields, and increases reliance on chemical fertilizers. |
| 61 | What are the consequences of melting glaciers for sea levels? 1 | Raises sea levels, floods coastal areas, and displaces communities and ecosystems. |
| 62 | How is climate change influencing extreme weather events? 1 | Increases frequency and intensity of storms, heatwaves, droughts, and floods. |
| 63 | Why is biodiversity loss considered a global crisis? 3 | Threatens ecosystem stability, food security, and resilience to environmental changes. |
| 64 | What are the primary sources of renewable energy being used today? | Solar, wind, hydropower, geothermal, and biomass energy. |
| 65 | How does single-use plastic impact the environment long-term? | Persists in ecosystems, pollutes water and soil, and harms wildlife for decades. |
| 66 | What measures can individuals take to reduce their environmental impact? | Reduce waste, use renewables, conserve water, and adopt sustainable habits. |
| 67 | How are coral reefs being affected by ocean warming? | Causes bleaching, weakens structures, and reduces biodiversity in reef ecosystems. |
| 68 | Why is electronic waste becoming a growing environmental issue? 5 | Contains toxic materials, pollutes soil and water, and overwhelms waste systems. |
| 69 | What role do corporations play in environmental degradation? | Drive resource extraction, emissions, and waste through production and supply chains. |
| 70 | How effective are current recycling programs worldwide? | Vary widely; effective in some regions but limited by contamination and low participation elsewhere. |
| 71 | What are the environmental impacts of large-scale mining? | Destroys habitats, pollutes water, and releases greenhouse gases. |
| 72 | How does air quality affect human health in polluted cities? 4 | Increases respiratory issues, heart disease, and premature deaths in polluted areas. |
| 73 | Why are wetlands disappearing at an alarming rate? | Drained for agriculture, urban development, and climate-driven drying. |
| 74 | What is the relationship between deforestation and carbon dioxide levels? 1 | Removes trees that absorb CO2, increasing atmospheric levels and warming. |
| 75 | How are endangered species being protected from extinction? 3 | Through protected areas, breeding programs, and laws against poaching and trade. |
| 76 | What challenges do renewable energy projects face today? | High costs, infrastructure needs, and inconsistent energy output. |
| 77 | How does overpopulation strain natural resources? | Increases demand for food, water, and energy, depleting resources faster. |
| 78 | Why is clean water becoming scarce in some regions? 2 | Overuse, pollution, and climate change reduce freshwater availability. |
| 79 | What are the environmental effects of oil spills in the ocean? | Kills marine life, damages habitats, and disrupts ecosystems for years. |
| 80 | How do pesticides harm ecosystems beyond their intended targets? | Harm pollinators, wildlife, and soil health, causing broader ecological damage. |
| 81 | What is being done to combat desertification globally? | Reforestation, sustainable farming, and international aid programs. |
| 82 | How does fast fashion contribute to environmental damage? 5 | Creates waste, uses toxic dyes, and consumes vast water and energy. |
| 83 | Why are wildfires becoming more frequent and intense? 1 | Driven by higher temperatures, droughts, and human land mismanagement. |
| 84 | What impact does transportation have on global emissions? | Contributes heavily via cars, planes, and shipping emissions. |
| 85 | How are coastal areas preparing for rising sea levels? | Building seawalls, relocating communities, and restoring natural barriers like mangroves. |
| 86 | What are the benefits of reforestation efforts? | Restores habitats, sequesters carbon, and improves soil and water retention. |
| 87 | How does noise pollution affect wildlife behavior? | Disrupts mating, hunting, and migration patterns in animals. |
| 88 | Why is sustainable agriculture gaining attention today? | Reduces chemical use, preserves soil, and meets growing food demand sustainably. |
| 89 | What are the long-term effects of nuclear waste on the environment? | Contaminates soil and water, posing risks for centuries if mismanaged. |
| 90 | How do microplastics enter the human food chain? | Through seafood, water, and soil, accumulating in human tissues. |
| 91 | What role does education play in environmental conservation? 2 | Raises awareness, changes behavior, and fosters sustainable practices. |
| 92 | How are developing countries addressing environmental challenges? | Adopting renewables, seeking aid, and balancing growth with conservation. |
| 93 | Why is the loss of pollinators a threat to food security? 3 | Reduces crop pollination, threatening food production and ecosystems. |
| 94 | What are the environmental costs of cryptocurrency mining? 5 | High energy use for computing drives emissions and resource depletion. |
| 95 | How does illegal logging impact tropical rainforests? | Destroys habitats, increases CO2, and threatens indigenous communities. |
| 96 | What innovations are helping to clean up polluted rivers? 5 | Bioremediation, filtration systems, and trash-collecting drones. |
| 97 | How are animals adapting to changing climates? | Shifting habitats, altering behaviors, or facing extinction risks. |
| 98 | Why is ocean acidification a growing concern for marine life? | Weakens shells, disrupts food chains, and harms marine biodiversity. |
| 99 | What are the environmental impacts of tourism in sensitive areas? | Strains resources, damages ecosystems, and increases waste in fragile areas. |
| 100 | How can technology help solve current environmental problems? 5 | Offers solutions like clean energy, pollution monitoring, and waste management tools. |

## 1.2 Dịch và đánh giá câu dịch

Translate các câu hỏi và câu trả lời đó qua tiếng Việt, đánh giá các câu dịch.

Tạo 1 bảng gồm 6 cột và 101 dòng theo mẫu sau, chuyển khổ giấy thành khổ ngang để việc trình bày bảng được đẹp và tiết kiệm không gian.

#### Bảng 1.2 Bảng Dịch và đánh giá câu hỏi và câu trả lời bằng Tiếng Anh

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| **Câu hỏi Tiếng Anh** | **Câu hỏi Tiếng Việt** | **Đánh giá** | **Câu trả lời Tiếng Anh** | **Câu trả lời Tiếng Việt** | **Đánh giá** |
| What are the main causes of air pollution in urban areas today? | Nguyên nhân chính gây ô nhiễm không khí ở khu vực đô thị hiện nay là gì? | Dịch chính xác & tự nhiên | Vehicle emissions, industrial activities, burning fossil fuels, construction dust, and waste incineration. | Khí thải từ xe cộ, hoạt động công nghiệp, đốt nhiên liệu hóa thạch, bụi xây dựng và đốt chất thải. | Dịch chính xác & tự nhiên |
| How does deforestation affect global climate patterns? | Sự phá rừng ảnh hưởng đến mô hình khí hậu toàn cầu như thế nào? | Dịch hơi cứng | Releases carbon dioxide, reduces CO2 absorption, and disrupts rainfall patterns, worsening global warming. | Giải phóng carbon dioxide, làm giảm sự hấp thụ CO2 và phá vỡ các mô hình lượng mưa, làm trầm trọng thêm tình trạng nóng lên toàn cầu. | Dịch chính xác & tự nhiên |
| Why is plastic pollution such a significant problem for marine life? | Tại sao ô nhiễm nhựa lại là vấn đề nghiêm trọng đối với sinh vật biển? | Dịch chính xác & tự nhiên | Marine animals ingest or get entangled in it, causing injury, starvation, death, and food chain disruption. | Động vật biển ăn phải hoặc bị vướng vào nó, gây thương tích, chết đói, tử vong và gián đoạn chuỗi thức ăn. | Cần cải thiện để dễ hiểu |
| What role does industrial waste play in water pollution? | Chất thải công nghiệp đóng vai trò gì trong việc gây ô nhiễm nước? | Cần cải thiện để dễ hiểu | Contaminates water with chemicals, heavy metals, and untreated sewage, harming ecosystems and health. | Làm ô nhiễm nước bằng hóa chất, kim loại nặng và nước thải chưa qua xử lý, gây hại cho hệ sinh thái và sức khỏe. | Dịch hơi cứng |
| How are rising global temperatures impacting polar ice caps? | Nhiệt độ toàn cầu tăng cao đang tác động như thế nào đến các tảng băng ở cực? | Dịch chính xác & tự nhiên | Melts ice caps, reduces reflectivity, accelerates warming, and raises sea levels. | Làm tan chảy các tảng băng, làm giảm khả năng phản xạ, đẩy nhanh quá trình nóng lên và làm mực nước biển dâng cao. | Dịch chính xác & tự nhiên |
| What are the effects of overfishing on ocean ecosystems? | Tác động của việc đánh bắt quá mức đến hệ sinh thái đại dương là gì? | Dịch chính xác & tự nhiên | Depletes fish populations, disrupts food webs, and damages habitats like coral reefs. | Làm cạn kiệt quần thể cá, phá vỡ chuỗi thức ăn và làm hỏng môi trường sống như rạn san hô. | Dịch chính xác & tự nhiên |
| How does urbanization contribute to habitat loss for wildlife? | Quá trình đô thị hóa góp phần làm mất môi trường sống của động vật hoang dã như thế nào? | Dịch hơi dài dòng | Clears forests, wetlands, and grasslands for infrastructure, reducing wildlife living space. | Khai hoang rừng, đất ngập nước và đồng cỏ để xây dựng cơ sở hạ tầng, thu hẹp không gian sống của động vật hoang dã. | Dịch hơi cứng |
| Why are greenhouse gas emissions still increasing despite awareness? | Tại sao lượng khí thải nhà kính vẫn tăng mặc dù đã có nhận thức? | Dịch hơi cứng | Economic growth, fossil fuel reliance, weak policies, and population growth outpace reduction efforts. | Tăng trưởng kinh tế, phụ thuộc vào nhiên liệu hóa thạch, chính sách yếu kém và tăng trưởng dân số vượt xa các nỗ lực giảm thiểu. | Dịch chính xác & tự nhiên |
| What steps are governments taking to reduce carbon footprints? | Chính phủ đang thực hiện những bước nào để giảm lượng khí thải carbon? | Dịch chính xác & tự nhiên | Promoting renewables, enforcing emissions rules, subsidizing green tech, and joining global agreements. | Thúc đẩy năng lượng tái tạo, thực thi các quy tắc phát thải, trợ cấp công nghệ xanh và tham gia các thỏa thuận toàn cầu. | Dịch chính xác & tự nhiên |
| How does soil degradation affect agricultural productivity? | Sự suy thoái đất ảnh hưởng đến năng suất nông nghiệp như thế nào? | Dịch chính xác & tự nhiên | Reduces fertility, limits crop yields, and increases reliance on chemical fertilizers. | Giảm khả năng sinh sản, hạn chế năng suất cây trồng và tăng sự phụ thuộc vào phân bón hóa học. | Dịch sai nghĩa nhẹ |
| What are the consequences of melting glaciers for sea levels? | Hậu quả của việc tan băng đối với mực nước biển là gì? | Dịch chính xác & tự nhiên | Raises sea levels, floods coastal areas, and displaces communities and ecosystems. | Làm mực nước biển dâng cao, gây ngập lụt các vùng ven biển và di dời các cộng đồng và hệ sinh thái. | Cần cải thiện để dễ hiểu |
| How is climate change influencing extreme weather events? | Biến đổi khí hậu đang ảnh hưởng đến các hiện tượng thời tiết cực đoan như thế nào? | Dịch chính xác & tự nhiên | Increases frequency and intensity of storms, heatwaves, droughts, and floods. | Làm tăng tần suất và cường độ của bão, nắng nóng, hạn hán và lũ lụt. | Dịch chính xác & tự nhiên |
| Why is biodiversity loss considered a global crisis? | Tại sao mất đa dạng sinh học được coi là một cuộc khủng hoảng toàn cầu? | Dịch chính xác & tự nhiên | Threatens ecosystem stability, food security, and resilience to environmental changes. | Đe dọa sự ổn định của hệ sinh thái, an ninh lương thực và khả năng phục hồi trước những thay đổi của môi trường. | Dịch chính xác & tự nhiên |
| What are the primary sources of renewable energy being used today? | Các nguồn năng lượng tái tạo chính đang được sử dụng hiện nay là gì? | Dịch hơi cứng | Solar, wind, hydropower, geothermal, and biomass energy. | Năng lượng mặt trời, gió, thủy điện, địa nhiệt và sinh khối. | Dịch chính xác & tự nhiên |
| How does single-use plastic impact the environment long-term? | Nhựa dùng một lần tác động đến môi trường trong dài hạn như thế nào? | Dịch hơi cứng | Persists in ecosystems, pollutes water and soil, and harms wildlife for decades. | Tồn tại trong hệ sinh thái, gây ô nhiễm nước và đất, và gây hại cho động vật hoang dã trong nhiều thập kỷ. | Dịch chính xác & tự nhiên |
| What measures can individuals take to reduce their environmental impact? | Cá nhân có thể thực hiện những biện pháp nào để giảm tác động đến môi trường? | Dịch chính xác & tự nhiên | Reduce waste, use renewables, conserve water, and adopt sustainable habits. | Giảm thiểu chất thải, sử dụng năng lượng tái tạo, tiết kiệm nước và áp dụng các thói quen bền vững. | Dịch chính xác & tự nhiên |
| How are coral reefs being affected by ocean warming? | Các rạn san hô đang bị ảnh hưởng như thế nào bởi sự nóng lên của đại dương? | Dịch chính xác & tự nhiên | Causes bleaching, weakens structures, and reduces biodiversity in reef ecosystems. | Gây ra hiện tượng tẩy trắng, làm suy yếu các cấu trúc và làm giảm đa dạng sinh học trong hệ sinh thái rạn san hô. | Dịch chính xác & tự nhiên |
| Why is electronic waste becoming a growing environmental issue? | Tại sao rác thải điện tử đang trở thành vấn đề môi trường ngày càng nghiêm trọng? | Dịch chính xác & tự nhiên | Contains toxic materials, pollutes soil and water, and overwhelms waste systems. | Chứa các vật liệu độc hại, gây ô nhiễm đất và nước, và làm quá tải các hệ thống chất thải. | Dịch chính xác & tự nhiên |
| What role do corporations play in environmental degradation? | Các tập đoàn đóng vai trò gì trong việc làm suy thoái môi trường? | Cần cải thiện để dễ hiểu | Drive resource extraction, emissions, and waste through production and supply chains. | Đẩy mạnh khai thác tài nguyên, phát thải và chất thải thông qua chuỗi sản xuất và cung ứng. | Dịch chính xác & tự nhiên |
| How effective are current recycling programs worldwide? | Các chương trình tái chế hiện tại trên toàn thế giới có hiệu quả như thế nào? | Dịch chính xác & tự nhiên | Vary widely; effective in some regions but limited by contamination and low participation elsewhere. | Có nhiều thay đổi; có hiệu quả ở một số khu vực nhưng bị hạn chế bởi ô nhiễm và sự tham gia thấp ở những nơi khác. | Cần cải thiện để dễ hiểu |
| What are the environmental impacts of large-scale mining? | Tác động môi trường của khai thác quy mô lớn là gì? | Dịch chính xác & tự nhiên | Destroys habitats, pollutes water, and releases greenhouse gases. | Phá hủy môi trường sống, gây ô nhiễm nước và thải ra khí nhà kính. | Dịch chính xác & tự nhiên |
| How does air quality affect human health in polluted cities? | Chất lượng không khí ảnh hưởng đến sức khỏe con người ở các thành phố ô nhiễm như thế nào? | Dịch chính xác & tự nhiên | Increases respiratory issues, heart disease, and premature deaths in polluted areas. | Tăng các vấn đề về hô hấp, bệnh tim và tử vong sớm ở những khu vực ô nhiễm. | Dịch chính xác & tự nhiên |
| Why are wetlands disappearing at an alarming rate? | Tại sao đất ngập nước đang biến mất với tốc độ đáng báo động? | Dịch chính xác & tự nhiên | Drained for agriculture, urban development, and climate-driven drying. | Được khai thác để phục vụ cho nông nghiệp, phát triển đô thị và làm khô do biến đổi khí hậu. | Cần cải thiện để dễ hiểu |
| What is the relationship between deforestation and carbon dioxide levels? | Mối quan hệ giữa nạn phá rừng và mức độ carbon dioxide là gì? | Dịch hơi cứng | Removes trees that absorb CO2, increasing atmospheric levels and warming. | Loại bỏ những cây hấp thụ CO2, làm tăng nồng độ khí quyển và nóng lên. | Dịch hơi cứng |
| How are endangered species being protected from extinction? | Các loài có nguy cơ tuyệt chủng đang được bảo vệ khỏi sự tuyệt chủng như thế nào? | Dịch lập từ | Through protected areas, breeding programs, and laws against poaching and trade. | Thông qua các khu bảo tồn, chương trình nhân giống và luật chống săn trộm và buôn bán. | Dịch chính xác & tự nhiên |
| What challenges do renewable energy projects face today? | Các dự án năng lượng tái tạo hiện đang phải đối mặt với những thách thức nào? | Dịch chính xác & tự nhiên | High costs, infrastructure needs, and inconsistent energy output. | Chi phí cao, nhu cầu về cơ sở hạ tầng và sản lượng năng lượng không ổn định. | Dịch hơi cứng |
| How does overpopulation strain natural resources? | Dân số quá đông gây sức ép lên tài nguyên thiên nhiên như thế nào? | Dịch chính xác & tự nhiên | Increases demand for food, water, and energy, depleting resources faster. | Làm tăng nhu cầu về thực phẩm, nước và năng lượng, làm cạn kiệt tài nguyên nhanh hơn. | Dịch chính xác |
| Why is clean water becoming scarce in some regions? | Tại sao nước sạch trở nên khan hiếm ở một số vùng? | Dịch chính xác & tự nhiên | Overuse, pollution, and climate change reduce freshwater availability. | Sử dụng quá mức, ô nhiễm và biến đổi khí hậu làm giảm nguồn nước ngọt. | Dịch chính xác & tự nhiên |
| What are the environmental effects of oil spills in the ocean? | Tác động của sự cố tràn dầu trên đại dương đối với môi trường là gì? | Dịch hơi cứng | Kills marine life, damages habitats, and disrupts ecosystems for years. | Giết chết sinh vật biển, phá hủy môi trường sống và phá vỡ hệ sinh thái trong nhiều năm. | Dịch hơi cứng |
| How do pesticides harm ecosystems beyond their intended targets? | Thuốc trừ sâu gây hại cho hệ sinh thái như thế nào ngoài mục tiêu dự định của chúng? | Dịch cấu trúc dài dòng | Harm pollinators, wildlife, and soil health, causing broader ecological damage. | Gây hại cho các loài thụ phấn, động vật hoang dã và sức khỏe đất, gây ra thiệt hại sinh thái rộng lớn hơn. | Dịch chính xác |
| What is being done to combat desertification globally? | Những gì đang được thực hiện để chống lại tình trạng sa mạc hóa trên toàn cầu? | Dịch hơi cứng | Reforestation, sustainable farming, and international aid programs. | Tái trồng rừng, canh tác bền vững và các chương trình viện trợ quốc tế. | Dịch chính xác |
| How does fast fashion contribute to environmental damage? | Thời trang nhanh góp phần gây ra thiệt hại cho môi trường như thế nào? | Dịch chính xác & tự nhiên | Creates waste, uses toxic dyes, and consumes vast water and energy. | Tạo ra chất thải, sử dụng thuốc nhuộm độc hại và tiêu thụ rất nhiều nước và năng lượng. | Dịch chính xác |
| Why are wildfires becoming more frequent and intense? | Tại sao cháy rừng ngày càng xảy ra thường xuyên và dữ dội hơn? | Dịch chính xác & tự nhiên | Driven by higher temperatures, droughts, and human land mismanagement. | Do nhiệt độ cao, hạn hán và quản lý đất đai kém của con người. | Dịch chính xác |
| What impact does transportation have on global emissions? | Giao thông vận tải có tác động như thế nào đến lượng khí thải toàn cầu? | Dịch chính xác & tự nhiên | Contributes heavily via cars, planes, and shipping emissions. | Đóng góp rất nhiều thông qua khí thải từ ô tô, máy bay và tàu thuyền. | Dịch chính xác |
| How are coastal areas preparing for rising sea levels? | Các vùng ven biển đang chuẩn bị như thế nào cho mực nước biển dâng cao? | Dịch chính xác & tự nhiên | Building seawalls, relocating communities, and restoring natural barriers like mangroves. | Xây dựng đê chắn sóng, di dời cộng đồng và khôi phục các rào cản tự nhiên như rừng ngập mặn. | Cần cải thiện để dễ hiểu |
| What are the benefits of reforestation efforts? | Những lợi ích của nỗ lực tái trồng rừng là gì? | Dịch chính xác & tự nhiên | Restores habitats, sequesters carbon, and improves soil and water retention. | Khôi phục môi trường sống, cô lập carbon và cải thiện khả năng giữ nước và đất. | Dịch chính xác |
| How does noise pollution affect wildlife behavior? | Ô nhiễm tiếng ồn ảnh hưởng đến hành vi của động vật hoang dã như thế nào? | Dịch chính xác & tự nhiên | Disrupts mating, hunting, and migration patterns in animals. | Phá vỡ các mô hình giao phối, săn bắt và di cư ở động vật. | Cần cải thiện để dễ hiểu |
| Why is sustainable agriculture gaining attention today? | Tại sao nông nghiệp bền vững đang được chú ý ngày nay? | Dịch hơi cứng | Reduces chemical use, preserves soil, and meets growing food demand sustainably. | Giảm sử dụng hóa chất, bảo vệ đất và đáp ứng nhu cầu lương thực ngày càng tăng một cách bền vững. | Cần cải thiện để dễ hiểu |
| What are the long-term effects of nuclear waste on the environment? | Tác động lâu dài của chất thải hạt nhân đối với môi trường là gì? | Dịch chính xác & tự nhiên | Contaminates soil and water, posing risks for centuries if mismanaged. | Làm ô nhiễm đất và nước, gây ra rủi ro trong nhiều thế kỷ nếu quản lý không tốt. | Cần cải thiện để dễ hiểu |
| How do microplastics enter the human food chain? | Vi nhựa xâm nhập vào chuỗi thức ăn của con người như thế nào? | Dịch chính xác & tự nhiên | Through seafood, water, and soil, accumulating in human tissues. | Thông qua hải sản, nước và đất, tích tụ trong mô người. | Cần cải thiện để dễ hiểu |
| What role does education play in environmental conservation? | Giáo dục đóng vai trò gì trong việc bảo tồn môi trường? | Dịch chính xác & tự nhiên | Raises awareness, changes behavior, and fosters sustainable practices. | Nâng cao nhận thức, thay đổi hành vi và thúc đẩy các hoạt động bền vững. | Dịch hơi cứng |
| How are developing countries addressing environmental challenges? | Các nước đang phát triển đang giải quyết những thách thức về môi trường như thế nào? | Dịch chính xác & tự nhiên | Adopting renewables, seeking aid, and balancing growth with conservation. | Áp dụng năng lượng tái tạo, tìm kiếm sự hỗ trợ và cân bằng tăng trưởng với bảo tồn. | Dịch chính xác |
| Why is the loss of pollinators a threat to food security? | Tại sao việc mất đi các loài thụ phấn lại là mối đe dọa đối với an ninh lương thực? | Dịch chính xác & tự nhiên | Reduces crop pollination, threatening food production and ecosystems. | Giảm thụ phấn cây trồng, đe dọa sản xuất lương thực và hệ sinh thái. | Dịch hơi cứng |
| What are the environmental costs of cryptocurrency mining? | Chi phí môi trường của việc khai thác tiền điện tử là bao nhiêu? | Dịch chưa sát nghĩa | High energy use for computing drives emissions and resource depletion. | Sử dụng nhiều năng lượng cho máy tính thúc đẩy phát thải và cạn kiệt tài nguyên. | Cần cải thiện để dễ hiểu |
| How does illegal logging impact tropical rainforests? | Khai thác gỗ trái phép tác động đến rừng mưa nhiệt đới như thế nào? | Dịch chính xác & tự nhiên | Destroys habitats, increases CO2, and threatens indigenous communities. | Phá hủy môi trường sống, làm tăng CO2 và đe dọa các cộng đồng bản địa. | Dịch chính xác |
| What innovations are helping to clean up polluted rivers? | Những sáng kiến ​​nào đang giúp làm sạch các dòng sông bị ô nhiễm? | Dịch chính xác & tự nhiên | Bioremediation, filtration systems, and trash-collecting drones. | Phục hồi sinh học, hệ thống lọc và máy bay không người lái thu gom rác. | Dịch hơi cứng |
| How are animals adapting to changing climates? | Động vật đang thích nghi với khí hậu thay đổi như thế nào? | Dịch chính xác & tự nhiên | Shifting habitats, altering behaviors, or facing extinction risks. | Thay đổi môi trường sống, thay đổi hành vi hoặc đối mặt với nguy cơ tuyệt chủng. | Dịch hơi cứng |
| Why is ocean acidification a growing concern for marine life? | Tại sao axit hóa đại dương lại là mối lo ngại ngày càng tăng đối với sinh vật biển? | Dịch chính xác & tự nhiên | Weakens shells, disrupts food chains, and harms marine biodiversity. | Làm yếu vỏ, phá vỡ chuỗi thức ăn và gây hại cho đa dạng sinh học biển. | Cần cải thiện để dễ hiểu |
| What are the environmental impacts of tourism in sensitive areas? | Tác động của du lịch đến môi trường ở những khu vực nhạy cảm là gì? | Dịch chính xác & tự nhiên | Strains resources, damages ecosystems, and increases waste in fragile areas. | Gây căng thẳng cho tài nguyên, phá hủy hệ sinh thái và tăng chất thải ở những khu vực dễ bị tổn thương. | Dịch hơi cứng |
| How can technology help solve current environmental problems? | Công nghệ có thể giúp giải quyết các vấn đề môi trường hiện tại như thế nào? | Dịch chính xác & tự nhiên | Offers solutions like clean energy, pollution monitoring, and waste management tools. | Cung cấp các giải pháp như năng lượng sạch, giám sát ô nhiễm và các công cụ quản lý chất thải. | Dịch chính xác |
| Do you use reusable bags instead of plastic ones? | Bạn có sử dụng túi tái sử dụng thay vì túi nhựa không? | Đúng nhưng cần cải thiện | Yes, I always carry my own bag. | Có, tôi luôn mang theo túi của mình. | Dịch chính xác & tự nhiên |
| What products can we use to reduce water pollution? | Chúng ta có thể sử dụng những sản phẩm nào để giảm ô nhiễm nước? | Chính xác nhưng hơi cứng | Finally, we can reduce water pollution by using green products and avoiding single-use products like plastic bags. | Cuối cùng, chúng ta có thể giảm ô nhiễm nước bằng cách sử dụng các sản phẩm xanh và tránh các sản phẩm dùng một lần như túi nhựa. | Dịch chính xác & tự nhiên |
| What role do governments play in environmental protection? | Chính phủ đóng vai trò gì trong việc bảo vệ môi trường? | Dịch Dịch chính xác & tự nhiên | They create laws, regulations, and policies to protect natural resources. | Họ tạo ra luật pháp, quy định và chính sách để bảo vệ tài nguyên thiên nhiên. | Dịch chính xác & tự nhiên |
| Do you think pollution is a problem today? | Bạn có nghĩ rằng ô nhiễm là một vấn đề ngày nay không? | Chính xác nhưng hơi cứng | Yes, I think pollution is a problem today. It’s one of the most pressing issues facing our planet. | Đúng, tôi nghĩ ô nhiễm là một vấn đề ngày nay. Đây là một trong những vấn đề cấp bách nhất mà hành tinh của chúng ta phải đối mặt. | Dịch chính xác & tự nhiên |
| Do you think food waste is a problem? | Bạn có nghĩ rằng lãng phí thực phẩm là một vấn đề không? | Đúng nhưng cần cải thiện | Yes, it wastes resources and creates more trash. | Đúng, nó lãng phí tài nguyên và tạo ra nhiều rác thải hơn. | Dịch chính xác & tự nhiên |
| What do you know about climate change? | Bạn biết gì về biến đổi khí hậu? | Dịch chính xác & tự nhiên | It’s a change in weather patterns due to human activities. | Đó là sự thay đổi về kiểu thời tiết do hoạt động của con người. | Dịch chính xác & tự nhiên |
| Do you think you’ve done enough to protect the environment? | Bạn có nghĩ rằng mình đã làm đủ để bảo vệ môi trường chưa? | Dịch chính xác & tự nhiên | No definitely not, I still throw away various single-use plastic products every day. Currently, there aren’t any recycling programmes where I live. I hope this will change soon. | Không, chắc chắn là không, tôi vẫn vứt bỏ nhiều sản phẩm nhựa dùng một lần khác nhau mỗi ngày. Hiện tại, không có bất kỳ chương trình tái chế nào ở nơi tôi sống. Tôi hy vọng điều này sẽ sớm thay đổi. | Dịch chính xác & tự nhiên |
| What can you do to help the environment? | Bạn có thể làm gì để giúp bảo vệ môi trường? | Dịch chính xác & tự nhiên | I think I can help by recycling more and using less plastic, like bringing my own bags when I go shopping | Tôi nghĩ mình có thể giúp bằng cách tái chế nhiều hơn và sử dụng ít nhựa hơn, chẳng hạn như mang theo túi của riêng mình khi đi mua sắm | Dịch chính xác & tự nhiên |
| Do you think it’s important to plant trees? | Bạn có nghĩ rằng trồng cây là quan trọng không? | Chính xác nhưng hơi cứng | Yes, trees clean the air and provide oxygen. | Đúng vậy, cây xanh làm sạch không khí và cung cấp oxy. | Dịch chính xác & tự nhiên |
| Do you think air pollution is a problem in your city? | Bạn có nghĩ rằng ô nhiễm không khí là một vấn đề ở thành phố của bạn không? | Chính xác nhưng hơi dài | Yes, there’s a lot of smoke from cars and factories. | Đúng vậy, có rất nhiều khói từ ô tô và nhà máy. | Dịch chính xác & tự nhiên |
| What do you do to stop wasting food? | Bạn làm gì để ngừng lãng phí thực phẩm? | Chính xác nhưng hơi cứng | I eat leftovers and don’t buy too much food | Tôi ăn đồ ăn thừa và không mua quá nhiều thực phẩm | Dịch chính xác & tự nhiên |
| Do you think people should use less plastic? | Bạn có nghĩ rằng mọi người nên sử dụng ít nhựa hơn không? | Dịch chính xác & tự nhiên | Yes, because plastic harms animals and the environment. | Đúng vậy, vì nhựa gây hại cho động vật và môi trường. | Dịch chính xác & tự nhiên |
| What is the biggest cause of climate change? | Nguyên nhân lớn nhất gây ra biến đổi khí hậu là gì? | Dịch chính xác & tự nhiên | Burning fossil fuels like coal and oil. | Đốt nhiên liệu hóa thạch như than và dầu. | Dịch chính xác & tự nhiên |
| What do you know about recycling? | Bạn biết gì về tái chế? | Dịch chính xác & tự nhiên | It reduces waste by turning old things into new ones, and it also saves resources like trees and metals, which helps protect the environment. | Nó giúp giảm chất thải bằng cách biến những thứ cũ thành mới và cũng tiết kiệm các nguồn tài nguyên như cây xanh và kim loại, giúp bảo vệ môi trường. | Dịch chính xác & tự nhiên |
| What can we do to stop global warming? | Chúng ta có thể làm gì để ngăn chặn sự nóng lên toàn cầu? | Dịch chính xác & tự nhiên | We can use bicycles instead of cars to reduce emissions, and we can also save energy by turning off appliances when we’re not using them. | Chúng ta có thể sử dụng xe đạp thay vì ô tô để giảm khí thải và chúng ta cũng có thể tiết kiệm năng lượng bằng cách tắt các thiết bị khi không sử dụng. | Dịch chính xác & tự nhiên |
| Do you take an interest in nature? | Bạn có quan tâm đến thiên nhiên không? | Dịch chính xác & tự nhiên | I love all wildlife. My garden is the perfect habitat for hedgehogs. They are nocturnal but if I go out after dark with a torch I sometimes see one. | Tôi yêu tất cả các loài động vật hoang dã. Khu vườn của tôi là môi trường sống lý tưởng cho nhím. Chúng hoạt động về đêm nhưng nếu tôi ra ngoài sau khi trời tối với một ngọn đuốc, đôi khi tôi nhìn thấy một con. | Dịch chính xác & tự nhiên |
| What do you often do to protect the environment? | Bạn thường làm gì để bảo vệ môi trường? | Đúng nhưng có thể cải thiện | I use paper bags instead of nylon ones and travel by public transport to reduce pollution. | Tôi sử dụng túi giấy thay vì túi nilon và đi lại bằng phương tiện giao thông công cộng để giảm ô nhiễm. | Dịch chính xác & tự nhiên |
| Do you use renewable energy? | Bạn có sử dụng năng lượng tái tạo không? | Dịch chính xác & tự nhiên | Yes, I have installed solar panels to utilize renewable energy sources. | Đúng vậy, tôi đã lắp đặt tấm pin mặt trời để sử dụng các nguồn năng lượng tái tạo. | Dịch chính xác & tự nhiên |
| What can we do to reduce pollution? | Chúng ta có thể làm gì để giảm ô nhiễm? | Đúng nhưng có thể cải thiện | We can reduce pollution by recycling, using public transport, and conserving energy | Chúng ta có thể giảm ô nhiễm bằng cách tái chế, sử dụng phương tiện giao thông công cộng và tiết kiệm năng lượng | Dịch chính xác & tự nhiên |
| Do you think climate change is a serious problem? | Bạn có nghĩ rằng biến đổi khí hậu là một vấn đề nghiêm trọng không? | Dịch chính xác & tự nhiên | Yes, climate change leads to extreme weather events and threatens biodiversity | Đúng, biến đổi khí hậu dẫn đến các hiện tượng thời tiết khắc nghiệt và đe dọa đa dạng sinh học | Dịch chính xác & tự nhiên |
| How does climate change impact sea levels? | Biến đổi khí hậu tác động đến mực nước biển như thế nào? | Dịch chính xác & tự nhiên | It causes polar ice to melt and seawater to expand, leading to rising sea levels. | Nó khiến băng ở hai cực tan chảy và nước biển giãn nở, dẫn đến mực nước biển dâng cao. | Dịch chính xác & tự nhiên |
| Do you think climate change is a major issue? | Bạn có nghĩ biến đổi khí hậu là vấn đề lớn không? | Chính xác nhưng hơi cứng | Yes, I believe it is a critical problem that needs urgent action. | Đúng, tôi tin rằng đây là vấn đề nghiêm trọng cần hành động khẩn cấp. | Dịch chính xác & tự nhiên |
| Has climate change affected your daily life? | Biến đổi khí hậu có ảnh hưởng đến cuộc sống hàng ngày của bạn không? | Dịch chính xác & tự nhiên | Not much, but I have noticed hotter summers. | Không nhiều, nhưng tôi nhận thấy mùa hè nóng hơn. | Dịch chính xác & tự nhiên |
| Are you worried about pollution in your city? | Bạn có lo lắng về ô nhiễm ở thành phố của mình không? | Dịch chính xác & tự nhiên | Yes, I see more smog and trash on the streets | Đúng, tôi thấy nhiều khói bụi và rác thải hơn trên đường phố | Dịch chính xác & tự nhiên |
| Do you trust the quality of tap water in your area? | Bạn có tin tưởng vào chất lượng nước máy ở khu vực của mình không? | Đúng nhưng hơi cứng | Not really, I prefer bottled water. | Không hẳn vậy, tôi thích nước đóng chai hơn. | Dịch chính xác & tự nhiên |
| Do you believe individuals can make a difference in protecting the environment? | Bạn có tin rằng mỗi cá nhân có thể tạo ra sự khác biệt trong việc bảo vệ môi trường không? | Dịch chính xác & tự nhiên | Yes, small actions like recycling and reducing waste contribute to bigger changes when many people participate. | Đúng, những hành động nhỏ như tái chế và giảm chất thải góp phần tạo nên những thay đổi lớn hơn khi có nhiều người tham gia. | Dịch chính xác & tự nhiên |
| How often do you think about your environmental impact? | Bạn thường nghĩ về tác động của mình đến môi trường như thế nào? | Đúng nhưng hơi cứng | I consider it daily, especially when making choices like using reusable items or conserving energy at home. | Tôi cân nhắc điều này hàng ngày, đặc biệt là khi đưa ra những lựa chọn như sử dụng các vật dụng có thể tái sử dụng hoặc tiết kiệm năng lượng tại nhà. | Dịch chính xác & tự nhiên |
| Have you noticed changes in your local environment over the past decade? | Bạn có nhận thấy những thay đổi trong môi trường địa phương của mình trong thập kỷ qua không? | Dịch chính xác & tự nhiên | Yes, summers are hotter, and there’s more plastic waste in rivers compared to 10 years ago | Có, mùa hè nóng hơn và rác thải nhựa ở sông nhiều hơn so với 10 năm trước | Dịch chính xác & tự nhiên |
| Do you separate recyclables from regular trash at home? | Bạn có phân loại rác tái chế khỏi rác thải thông thường ở nhà không? | Chính xác nhưng hơi cứng | Yes, I sort paper, plastic, and glass into separate bins to ensure they’re properly recycled | Có, tôi phân loại giấy, nhựa và thủy tinh vào các thùng riêng để đảm bảo chúng được tái chế đúng cách | Dịch chính xác & tự nhiên |
| How do you reduce plastic use in daily life? | Bạn làm thế nào để giảm thiểu việc sử dụng nhựa trong cuộc sống hàng ngày? | Dịch chính xác & tự nhiên | I carry a reusable water bottle, avoid plastic straws, and choose products with minimal packagin | Tôi mang theo một chai nước có thể tái sử dụng, tránh ống hút nhựa và chọn các sản phẩm có bao bì tối thiểu | Dịch chính xác & tự nhiên |
| What’s your opinion on single-use plastics? | Bạn có ý kiến ​​gì về nhựa dùng một lần không? | Dịch chính xác & tự nhiên | They should be banned because they pollute oceans and harm marine life unnecessarily | Chúng nên bị cấm vì chúng gây ô nhiễm đại dương và gây hại không cần thiết cho sinh vật biển | Dịch chính xác & tự nhiên |
| Have you participated in a community clean-up event? | Bạn đã tham gia sự kiện dọn dẹp cộng đồng nào chưa? | Dịch chính xác & tự nhiên | Yes, I joined a beach clean-up last month and collected over 5 kg of trash | Có, tôi đã tham gia một hoạt động dọn dẹp bãi biển vào tháng trước và thu gom được hơn 5 kg rác | Dịch chính xác & tự nhiên |
| Have you made any energy-saving changes at home? | Bạn đã thực hiện bất kỳ thay đổi nào để tiết kiệm năng lượng tại nhà không? | Chính xác nhưng hơi cứng | I switched to LED bulbs and unplug devices when not in use to cut electricity waste." | Tôi đã chuyển sang sử dụng bóng đèn LED và rút phích cắm các thiết bị khi không sử dụng để cắt giảm lãng phí điện." | Dịch chính xác & tự nhiên |
| Would you consider buying an electric vehicle? | Bạn có cân nhắc mua xe điện không? | Dịch chính xác & tự nhiên | Yes, if charging stations become more accessible and prices are affordable | Có, nếu các trạm sạc dễ tiếp cận hơn và giá cả phải chăng | Dịch chính xác & tự nhiên |
| Have you ever donated to wildlife conservation? | Bạn đã từng quyên góp cho hoạt động bảo tồn động vật hoang dã chưa? | Dịch chính xác & tự nhiên | I donated to a rainforest protection fund last year to help save orangutans." | Tôi đã quyên góp cho một quỹ bảo vệ rừng nhiệt đới vào năm ngoái để giúp cứu đười ươi." | Dịch chính xác & tự nhiên |
| Do you avoid products linked to deforestation? | Bạn có tránh các sản phẩm liên quan đến nạn phá rừng không? | Dịch chính xác & tự nhiên | I check labels for sustainable palm oil and avoid brands harming rainforests. | Tôi kiểm tra nhãn mác để tìm dầu cọ bền vững và tránh các nhãn hiệu gây hại cho rừng nhiệt đới. | Dịch chính xác & tự nhiên |
| Is your country doing enough to address environmental issues? | Quốc gia của bạn đã làm đủ để giải quyết các vấn đề về môi trường chưa? | Chính xác nhưng hơi cứng | No, policies are weak, and enforcement is inconsistent compared to global standards." | Không, các chính sách còn yếu và việc thực thi không nhất quán so với các tiêu chuẩn toàn cầu." | Dịch chính xác & tự nhiên |
| Do you talk to friends/family about environmental issues? | Bạn có nói chuyện với bạn bè/gia đình về các vấn đề về môi trường không? | Chính xác nhưng có thể gọn hơn | Yes, I share tips on recycling and energy savings to inspire others. | Có, tôi chia sẻ các mẹo về tái chế và tiết kiệm năng lượng để truyền cảm hứng cho những người khác. | Dịch chính xác & tự nhiên |
| Do you check air quality before going outside? | Bạn có kiểm tra chất lượng không khí trước khi ra ngoài không? | Dịch chính xác & tự nhiên | Only on hazy days—my phone app gives me alerts when it’s really bad | Chỉ vào những ngày sương mù—ứng dụng điện thoại của tôi sẽ cảnh báo tôi khi tình hình thực sự tồi tệ | Dịch chính xác & tự nhiên |
| How serious is plastic pollution in your local area? | Ô nhiễm nhựa ở khu vực địa phương của bạn nghiêm trọng đến mức nào? | Dịch chính xác & tự nhiên | It's getting worse every year. I can spot plastic bags stuck in trees after every heavy wind | Tình hình ngày càng tệ hơn mỗi năm. Tôi có thể phát hiện ra những chiếc túi nilon mắc kẹt trên cây sau mỗi cơn gió lớn | Dịch chính xác & tự nhiên |
| How would you describe the air quality in your city? | Bạn sẽ mô tả chất lượng không khí ở thành phố của bạn như thế nào? | Chính xác nhưng hơi cứng | Some mornings it's so hazy I can't even see the buildings across the street - like living in a bowl of soup! | Một số buổi sáng trời sương mù đến nỗi tôi thậm chí không thể nhìn thấy các tòa nhà bên kia đường - giống như sống trong một bát súp! | Dịch chính xác & tự nhiên |
| How does water pollution affect marine life? | Ô nhiễm nước ảnh hưởng đến sinh vật biển như thế nào? | Dịch chính xác & tự nhiên | It leads to habitat destruction, toxic contamination, and loss of biodiversity. | Điều này dẫn đến việc phá hủy môi trường sống, ô nhiễm độc hại và mất đa dạng sinh học. | Dịch chính xác & tự nhiên |
| Do you believe climate change is a serious issue? | Bạn có tin rằng biến đổi khí hậu là một vấn đề nghiêm trọng không? | Dịch chính xác & tự nhiên | Yes, I think it’s one of the biggest threats to our future. | Có, tôi nghĩ đây là một trong những mối đe dọa lớn nhất đối với tương lai của chúng ta. | Dịch chính xác & tự nhiên |
| Would you be willing to pay more for eco-friendly products? | Bạn có sẵn sàng trả nhiều tiền hơn cho các sản phẩm thân thiện với môi trường không? | Dịch chính xác & tự nhiên | Yes, but only if the price difference is not too big. | Có, nhưng chỉ khi chênh lệch giá không quá lớn. | Dịch chính xác & tự nhiên |
| Would you support higher taxes on polluting industries? | Bạn có ủng hộ việc tăng thuế đối với các ngành công nghiệp gây ô nhiễm không? | Dịch chính xác & tự nhiên | Yes, but only if the money is used for environmental protection. | Có, nhưng chỉ khi số tiền đó được sử dụng để bảo vệ môi trường. | Dịch chính xác & tự nhiên |
| What is the biggest cause of climate change? | Có nhiều ô nhiễm ở nơi bạn sống không? | Sai nghĩa hoàn toàn | Yes, there is pollution where I live in Hanoi, Vietnam. Air pollution is the most serious environmental problem in Hanoi. | Có, nơi tôi sống ở Hà Nội, Việt Nam có ô nhiễm. Ô nhiễm không khí là vấn đề môi trường nghiêm trọng nhất ở Hà Nội. | Dịch chính xác & tự nhiên |
| What kinds of pollution are serious in your country? | Những loại ô nhiễm nào là nghiêm trọng ở quốc gia của bạn? | Dịch chính xác & tự nhiên | Unfortunately, pollution is a significant issue in Vietnam. Some of the most serious types of pollution include air pollution, water pollution, and noise pollution. | Thật không may, ô nhiễm là một vấn đề đáng kể ở Việt Nam. Một số loại ô nhiễm nghiêm trọng nhất bao gồm ô nhiễm không khí, ô nhiễm nước và ô nhiễm tiếng ồn. | Dịch chính xác & tự nhiên |
| Do you take an interest in nature? | Bạn có quan tâm đến thiên nhiên không? | Dịch chính xác & tự nhiên | Yes, I do. I find nature to be a fascinating and complex system that is full of beauty and wonder. | Có, tôi thấy vậy. Tôi thấy thiên nhiên là một hệ thống phức tạp và hấp dẫn, đầy vẻ đẹp và sự kỳ diệu. | Dịch chính xác & tự nhiên |
| Do you like growing plants? | Bạn có thích trồng cây không? | Dịch chính xác & tự nhiên | Yes, I do enjoy growing plants. I also appreciate the beauty that plants bring to my home and garden. | Vâng, tôi thích trồng cây. Tôi cũng trân trọng vẻ đẹp mà cây cối mang lại cho ngôi nhà và khu vườn của tôi. | Dịch chính xác & tự nhiên |
| Why is environmental education important? | Tại sao giáo dục môi trường lại quan trọng? | Dịch chính xác & tự nhiên | It raises awareness and encourages people to take action to protect nature. | Giáo dục môi trường nâng cao nhận thức và khuyến khích mọi người hành động để bảo vệ thiên nhiên. | Dịch chính xác & tự nhiên |

## 1.3 Sinh thêm dữ liệu

Trình bày chi tiết ít nhất 05 luật để nhờ ChatGPT sinh ra các câu hỏi/câu trả lời tương ứng (mỗi câu hỏi gốc sinh ra 5 câu hỏi mới) (tối thiểu 500 câu hỏi/trả lời từ ChatGPT)

*Luật 1: Thay thế từ đồng nghĩa (Synonym Replacement)*

* Mô tả: Luật này sử dụng các từ đồng nghĩa để thay thế từ khóa trong câu gốc, giúp tạo ra các câu hỏi/câu trả lời mới có nghĩa tương đương nhưng khác nhau về mặt hình thức.
* Lí do: Việc thay từ đồng nghĩa giúp mở rộng tập câu hỏi mà vẫn giữ nguyên nội dung, rất hiệu quả trong luyện tập hoặc đa dạng hóa ngân hàng câu hỏi.

*Luật 2: Diễn đạt lại câu (sentence rephrasing)*

* Mô tả: Luật này thay đổi cách diễn đạt câu bằng cách sử dụng cấu trúc ngữ pháp khác hoặc từ nối khác mà không làm thay đổi ý nghĩa chính.
* Lí do: Đây là cách phổ biến trong giao tiếp để giúp người học tiếp cận nhiều dạng câu hỏi đa dạng, dễ hiểu hơn mà vẫn đảm bảo đúng nội dung gốc.

*Luật 3: Chuyển câu hỏi mở thành câu hỏi đóng (Open ↔ Yes/No Questions)*

* Mô tả:Luật này chuyển đổi giữa câu hỏi yêu cầu câu trả lời chi tiết (mở) và câu hỏi yêu cầu trả lời ngắn gọn (đúng/sai, có/không).
* Lí do: Câu hỏi đóng dễ trả lời và dùng để kiểm tra hiểu biết cơ bản; còn câu hỏi mở thì kích thích tư duy sâu hơn. Luân phiên hai dạng sẽ giúp học viên học hiệu quả hơn.

*Luật 4: Thêm ngữ cảnh vào câu hỏi (Contextual Expansion)*

* Mô tả: Luật này mở rộng câu hỏi bằng cách thêm yếu tố ngữ cảnh như thời gian, địa điểm, đối tượng cụ thể để tăng tính rõ ràng hoặc chi tiết.
* Lí do: Việc thêm ngữ cảnh không chỉ giúp làm rõ ý nghĩa mà còn tạo nên những câu hỏi thực tế, gần gũi hơn với từng tình huống cụ thể.

*Luật 5: Biến đổi trật tự từ (Word Order Variation)*

* Mô tả: Luật này giữ nguyên các thành phần câu nhưng thay đổi vị trí của chúng để tạo cảm giác mới mẻ trong cấu trúc câu.
* Lí do: Thay đổi thứ tự từ không làm mất đi ý nghĩa nhưng giúp người học nhận diện nhiều cấu trúc ngôn ngữ hơn, từ đó nâng cao khả năng đọc – hiểu – viết.

#### Bảng 1.3 Bảng dữ liệu sinh thêm câu hỏi

|  |  |  |
| --- | --- | --- |
| **Luật 1: Thay thế từ đồng nghĩa** | | |
| **Original Question** | **Generated Question** | **Answer** |
| Do you use reusable bags instead of plastic ones? | Do you utilize reusable bags instead of plastic ones? | Yes, I always carry my own bag. |
| What products can we use to reduce water pollution? | What products can we utilize to minimize water pollution? | Finally, we can reduce water pollution by using green products and avoiding single-use products like plastic bags. |
| What role do governments play in environmental protection? | What role do governments have in environmental protection? | They create laws, regulations, and policies to protect natural resources. |
| Do you think pollution is a problem today? | Do you believe pollution is a issue today? | Yes, I think pollution is a problem today. It’s one of the most pressing issues facing our planet. |
| Do you think food waste is a problem? | Do you believe food waste is a issue? | Yes, it wastes resources and creates more trash. |
| What do you know about climate change? | What do you know about climate change? | It’s a change in weather patterns due to human activities. |
| Do you think you’ve done enough to protect the environment? | Do you believe you’ve done enough to protect the environment? | No definitely not, I still throw away various single-use plastic products every day. Currently, there aren’t any recycling programmes where I live. I hope this will change soon. |
| What can you do to help the environment? | What can you do to help the environment? | I think I can help by recycling more and using less plastic, like bringing my own bags when I go shopping |
| Do you think it’s important to plant trees? | Do you believe it’s important to plant trees? | Yes, trees clean the air and provide oxygen. |
| Do you think air pollution is a problem in your city? | Do you believe air pollution is a issue in your city? | Yes, there’s a lot of smoke from cars and factories. |
| What do you do to stop wasting food? | What do you do to stop wasting food? | I eat leftovers and don’t buy too much food |
| Do you think people should use less plastic? | Do you believe people should utilize less plastic? | Yes, because plastic harms animals and the environment. |
| What is the biggest cause of climate change? | What is the biggest cautilize of climate change? | Burning fossil fuels like coal and oil. |
| What do you know about recycling? | What do you know about recycling? | It reduces waste by turning old things into new ones, and it also saves resources like trees and metals, which helps protect the environment. |
| What can we do to stop global warming? | What can we do to stop global warming? | We can use bicycles instead of cars to reduce emissions, and we can also save energy by turning off appliances when we’re not using them. |
| Do you take an interest in nature? | Do you take an interest in nature? | I love all wildlife. My garden is the perfect habitat for hedgehogs. They are nocturnal but if I go out after dark with a torch I sometimes see one. |
| What do you often do to protect the environment? | What do you often do to protect the environment? | I use paper bags instead of nylon ones and travel by public transport to reduce pollution. |
| Do you use renewable energy? | Do you utilize renewable energy? | Yes, I have installed solar panels to utilize renewable energy sources. |
| What can we do to reduce pollution? | What can we do to minimize pollution? | We can reduce pollution by recycling, using public transport, and conserving energy |
| Do you think climate change is a serious problem? | Do you believe climate change is a serious issue? | Yes, climate change leads to extreme weather events and threatens biodiversity |
| How does climate change impact sea levels? | How does climate change impact sea levels? | It causes polar ice to melt and seawater to expand, leading to rising sea levels. |
| Do you think climate change is a major issue? | Do you believe climate change is a major issue? | Yes, I believe it is a critical problem that needs urgent action. |
| Has climate change affected your daily life? | Has climate change affected your daily life? | Not much, but I have noticed hotter summers. |
| Are you worried about pollution in your city? | Are you worried about pollution in your city? | Yes, I see more smog and trash on the streets |
| Do you trust the quality of tap water in your area? | Do you trust the quality of tap water in your area? | Not really, I prefer bottled water. |
| Do you believe individuals can make a difference in protecting the environment? | Do you believe individuals can make a difference in protecting the environment? | Yes, small actions like recycling and reducing waste contribute to bigger changes when many people participate. |
| How often do you think about your environmental impact? | How often do you believe about your environmental impact? | I consider it daily, especially when making choices like using reusable items or conserving energy at home. |
| Have you noticed changes in your local environment over the past decade? | Have you noticed changes in your local environment over the past decade? | Yes, summers are hotter, and there’s more plastic waste in rivers compared to 10 years ago |
| Do you separate recyclables from regular trash at home? | Do you separate recyclables from regular trash at home? | Yes, I sort paper, plastic, and glass into separate bins to ensure they’re properly recycled |
| How do you reduce plastic use in daily life? | How do you minimize plastic utilize in daily life? | I carry a reusable water bottle, avoid plastic straws, and choose products with minimal packagin |
| What’s your opinion on single-use plastics? | What’s your opinion on single-utilize plastics? | They should be banned because they pollute oceans and harm marine life unnecessarily |
| Have you participated in a community clean-up event? | Have you participated in a community clean-up event? | Yes, I joined a beach clean-up last month and collected over 5 kg of trash |
| Have you made any energy-saving changes at home? | Have you made any energy-saving changes at home? | I switched to LED bulbs and unplug devices when not in use to cut electricity waste." |
| Would you consider buying an electric vehicle? | Would you consider buying an electric vehicle? | Yes, if charging stations become more accessible and prices are affordable |
| Have you ever donated to wildlife conservation? | Have you ever donated to wildlife conservation? | I donated to a rainforest protection fund last year to help save orangutans." |
| Do you avoid products linked to deforestation? | Do you avoid products linked to deforestation? | I check labels for sustainable palm oil and avoid brands harming rainforests. |
| Is your country doing enough to address environmental issues? | Is your country doing enough to address environmental issues? | No, policies are weak, and enforcement is inconsistent compared to global standards." |
| Do you talk to friends/family about environmental issues? | Do you talk to friends/family about environmental issues? | Yes, I share tips on recycling and energy savings to inspire others. |
| Do you check air quality before going outside? | Do you check air quality before going outside? | Only on hazy days—my phone app gives me alerts when it’s really bad |
| How serious is plastic pollution in your local area? | How serious is plastic pollution in your local area? | It's getting worse every year. I can spot plastic bags stuck in trees after every heavy wind |
| How would you describe the air quality in your city? | How would you describe the air quality in your city? | Some mornings it's so hazy I can't even see the buildings across the street - like living in a bowl of soup! |
| How does water pollution affect marine life? | How does water pollution affect marine life? | It leads to habitat destruction, toxic contamination, and loss of biodiversity. |
| Do you believe climate change is a serious issue? | Do you believe climate change is a serious issue? | Yes, I think it’s one of the biggest threats to our future. |
| Would you be willing to pay more for eco-friendly products? | Would you be willing to pay more for eco-friendly products? | Yes, but only if the price difference is not too big. |
| Would you support higher taxes on polluting industries? | Would you support higher taxes on polluting industries? | Yes, but only if the money is used for environmental protection. |
| What is the biggest cause of climate change? | What is the biggest cautilize of climate change? | Yes, there is pollution where I live in Hanoi, Vietnam. Air pollution is the most serious environmental problem in Hanoi. |
| What kinds of pollution are serious in your country? | What kinds of pollution are serious in your country? | Unfortunately, pollution is a significant issue in Vietnam. Some of the most serious types of pollution include air pollution, water pollution, and noise pollution. |
| Do you take an interest in nature? | Do you take an interest in nature? | Yes, I do. I find nature to be a fascinating and complex system that is full of beauty and wonder. |
| Do you like growing plants? | Do you like growing plants? | Yes, I do enjoy growing plants. I also appreciate the beauty that plants bring to my home and garden. |
| Why is environmental education important? | Why is environmental education important? | It raises awareness and encourages people to take action to protect nature. |
| What are the main causes of air pollution in urban areas today? | What are the main cautilizes of air pollution in urban areas today? | Vehicle emissions, industrial activities, burning fossil fuels, construction dust, and waste incineration. |
| How does deforestation affect global climate patterns? | How does deforestation affect global climate patterns? | Releases carbon dioxide, reduces CO2 absorption, and disrupts rainfall patterns, worsening global warming. |
| Why is plastic pollution such a significant problem for marine life? | Why is plastic pollution such a significant issue for marine life? | Marine animals ingest or get entangled in it, causing injury, starvation, death, and food chain disruption. |
| What role does industrial waste play in water pollution? | What role does industrial waste have in water pollution? | Contaminates water with chemicals, heavy metals, and untreated sewage, harming ecosystems and health. |
| How are rising global temperatures impacting polar ice caps? | How are rising global temperatures impacting polar ice caps? | Melts ice caps, reduces reflectivity, accelerates warming, and raises sea levels. |
| What are the effects of overfishing on ocean ecosystems? | What are the effects of overfishing on ocean ecosystems? | Depletes fish populations, disrupts food webs, and damages habitats like coral reefs. |
| How does urbanization contribute to habitat loss for wildlife? | How does urbanization contribute to habitat loss for wildlife? | Clears forests, wetlands, and grasslands for infrastructure, reducing wildlife living space. |
| Why are greenhouse gas emissions still increasing despite awareness? | Why are greenhouse gas emissions still increasing despite awareness? | Economic growth, fossil fuel reliance, weak policies, and population growth outpace reduction efforts. |
| What steps are governments taking to reduce carbon footprints? | What steps are governments taking to minimize carbon footprints? | Promoting renewables, enforcing emissions rules, subsidizing green tech, and joining global agreements. |
| How does soil degradation affect agricultural productivity? | How does soil degradation affect agricultural productivity? | Reduces fertility, limits crop yields, and increases reliance on chemical fertilizers. |
| What are the consequences of melting glaciers for sea levels? | What are the consequences of melting glaciers for sea levels? | Raises sea levels, floods coastal areas, and displaces communities and ecosystems. |
| How is climate change influencing extreme weather events? | How is climate change influencing extreme weather events? | Increases frequency and intensity of storms, heatwaves, droughts, and floods. |
| Why is biodiversity loss considered a global crisis? | Why is biodiversity loss considered a global crisis? | Threatens ecosystem stability, food security, and resilience to environmental changes. |
| What are the primary sources of renewable energy being used today? | What are the primary sources of renewable energy being utilized today? | Solar, wind, hydropower, geothermal, and biomass energy. |
| How does single-use plastic impact the environment long-term? | How does single-utilize plastic impact the environment long-term? | Persists in ecosystems, pollutes water and soil, and harms wildlife for decades. |
| What measures can individuals take to reduce their environmental impact? | What measures can individuals take to minimize their environmental impact? | Reduce waste, use renewables, conserve water, and adopt sustainable habits. |
| How are coral reefs being affected by ocean warming? | How are coral reefs being affected by ocean warming? | Causes bleaching, weakens structures, and reduces biodiversity in reef ecosystems. |
| Why is electronic waste becoming a growing environmental issue? | Why is electronic waste becoming a growing environmental issue? | Contains toxic materials, pollutes soil and water, and overwhelms waste systems. |
| What role do corporations play in environmental degradation? | What role do corporations have in environmental degradation? | Drive resource extraction, emissions, and waste through production and supply chains. |
| How effective are current recycling programs worldwide? | How effective are current recycling programs worldwide? | Vary widely; effective in some regions but limited by contamination and low participation elsewhere. |
| What are the environmental impacts of large-scale mining? | What are the environmental impacts of large-scale mining? | Destroys habitats, pollutes water, and releases greenhouse gases. |
| How does air quality affect human health in polluted cities? | How does air quality affect human health in polluted cities? | Increases respiratory issues, heart disease, and premature deaths in polluted areas. |
| Why are wetlands disappearing at an alarming rate? | Why are wetlands disappearing at an alarming rate? | Drained for agriculture, urban development, and climate-driven drying. |
| What is the relationship between deforestation and carbon dioxide levels? | What is the relationship between deforestation and carbon dioxide levels? | Removes trees that absorb CO2, increasing atmospheric levels and warming. |
| How are endangered species being protected from extinction? | How are endangered species being protected from extinction? | Through protected areas, breeding programs, and laws against poaching and trade. |
| What challenges do renewable energy projects face today? | What challenges do renewable energy projects face today? | High costs, infrastructure needs, and inconsistent energy output. |
| How does overpopulation strain natural resources? | How does overpopulation strain natural resources? | Increases demand for food, water, and energy, depleting resources faster. |
| Why is clean water becoming scarce in some regions? | Why is clean water becoming scarce in some regions? | Overuse, pollution, and climate change reduce freshwater availability. |
| What are the environmental effects of oil spills in the ocean? | What are the environmental effects of oil spills in the ocean? | Kills marine life, damages habitats, and disrupts ecosystems for years. |
| How do pesticides harm ecosystems beyond their intended targets? | How do pesticides harm ecosystems beyond their intended targets? | Harm pollinators, wildlife, and soil health, causing broader ecological damage. |
| What is being done to combat desertification globally? | What is being done to combat desertification globally? | Reforestation, sustainable farming, and international aid programs. |
| How does fast fashion contribute to environmental damage? | How does fast fashion contribute to environmental damage? | Creates waste, uses toxic dyes, and consumes vast water and energy. |
| Why are wildfires becoming more frequent and intense? | Why are wildfires becoming more frequent and intense? | Driven by higher temperatures, droughts, and human land mismanagement. |
| What impact does transportation have on global emissions? | What impact does transportation have on global emissions? | Contributes heavily via cars, planes, and shipping emissions. |
| How are coastal areas preparing for rising sea levels? | How are coastal areas preparing for rising sea levels? | Building seawalls, relocating communities, and restoring natural barriers like mangroves. |
| What are the benefits of reforestation efforts? | What are the benefits of reforestation efforts? | Restores habitats, sequesters carbon, and improves soil and water retention. |
| How does noise pollution affect wildlife behavior? | How does noise pollution affect wildlife behavior? | Disrupts mating, hunting, and migration patterns in animals. |
| Why is sustainable agriculture gaining attention today? | Why is sustainable agriculture gaining attention today? | Reduces chemical use, preserves soil, and meets growing food demand sustainably. |
| What are the long-term effects of nuclear waste on the environment? | What are the long-term effects of nuclear waste on the environment? | Contaminates soil and water, posing risks for centuries if mismanaged. |
| How do microplastics enter the human food chain? | How do microplastics enter the human food chain? | Through seafood, water, and soil, accumulating in human tissues. |
| What role does education play in environmental conservation? | What role does education have in environmental conservation? | Raises awareness, changes behavior, and fosters sustainable practices. |
| How are developing countries addressing environmental challenges? | How are developing countries addressing environmental challenges? | Adopting renewables, seeking aid, and balancing growth with conservation. |
| Why is the loss of pollinators a threat to food security? | Why is the loss of pollinators a threat to food security? | Reduces crop pollination, threatening food production and ecosystems. |
| What are the environmental costs of cryptocurrency mining? | What are the environmental costs of cryptocurrency mining? | High energy use for computing drives emissions and resource depletion. |
| How does illegal logging impact tropical rainforests? | How does illegal logging impact tropical rainforests? | Destroys habitats, increases CO2, and threatens indigenous communities. |
| What innovations are helping to clean up polluted rivers? | What innovations are helping to clean up polluted rivers? | Bioremediation, filtration systems, and trash-collecting drones. |
| How are animals adapting to changing climates? | How are animals adapting to changing climates? | Shifting habitats, altering behaviors, or facing extinction risks. |
| Why is ocean acidification a growing concern for marine life? | Why is ocean acidification a growing concern for marine life? | Weakens shells, disrupts food chains, and harms marine biodiversity. |
| What are the environmental impacts of tourism in sensitive areas? | What are the environmental impacts of tourism in sensitive areas? | Strains resources, damages ecosystems, and increases waste in fragile areas. |
| How can technology help solve current environmental problems? | How can technology help solve current environmental issues? | Offers solutions like clean energy, pollution monitoring, and waste management tools. |
| **Luật 2: Diễn đạt lại câu** | | |
| **Original Question** | **Generated Question** | **Answer** |
| Do you use reusable bags instead of plastic ones? | Do you use reusable bags instead of plastic ones? | Yes, I always carry my own bag. |
| What products can we use to reduce water pollution? | Can you tell me what products can we use to reduce water pollution? | Finally, we can reduce water pollution by using green products and avoiding single-use products like plastic bags. |
| What role do governments play in environmental protection? | Can you tell me what role do governments play in environmental protection? | They create laws, regulations, and policies to protect natural resources. |
| Do you think pollution is a problem today? | In your opinion, is pollution is a problem today? | Yes, I think pollution is a problem today. It’s one of the most pressing issues facing our planet. |
| Do you think food waste is a problem? | In your opinion, is food waste is a problem? | Yes, it wastes resources and creates more trash. |
| What do you know about climate change? | Can you tell me what do you know about climate change? | It’s a change in weather patterns due to human activities. |
| Do you think you’ve done enough to protect the environment? | In your opinion, is you’ve done enough to protect the environment?  ? | No definitely not, I still throw away various single-use plastic products every day. Currently, there aren’t any recycling programmes where I live. I hope this will change soon. |
| What can you do to help the environment? | Can you tell me what can you do to help the environment? | I think I can help by recycling more and using less plastic, like bringing my own bags when I go shopping |
| Do you think it’s important to plant trees? | In your opinion, is it’s important to plant trees? | Yes, trees clean the air and provide oxygen. |
| Do you think air pollution is a problem in your city? | In your opinion, is air pollution is a problem in your city? | Yes, there’s a lot of smoke from cars and factories. |
| What do you do to stop wasting food? | Can you tell me what do you do to stop wasting food? | I eat leftovers and don’t buy too much food |
| Do you think people should use less plastic? | In your opinion, is people should use less plastic? | Yes, because plastic harms animals and the environment. |
| What is the biggest cause of climate change? | Can you tell me what is the biggest cause of climate change? | Burning fossil fuels like coal and oil. |
| What do you know about recycling? | Can you tell me what do you know about recycling? | It reduces waste by turning old things into new ones, and it also saves resources like trees and metals, which helps protect the environment. |
| What can we do to stop global warming? | Can you tell me what can we do to stop global warming? | We can use bicycles instead of cars to reduce emissions, and we can also save energy by turning off appliances when we’re not using them. |
| Do you take an interest in nature? | Do you take an interest in nature? | I love all wildlife. My garden is the perfect habitat for hedgehogs. They are nocturnal but if I go out after dark with a torch I sometimes see one. |
| What do you often do to protect the environment? | Can you tell me what do you often do to protect the environment? | I use paper bags instead of nylon ones and travel by public transport to reduce pollution. |
| Do you use renewable energy? | Do you use renewable energy? | Yes, I have installed solar panels to utilize renewable energy sources. |
| What can we do to reduce pollution? | Can you tell me what can we do to reduce pollution? | We can reduce pollution by recycling, using public transport, and conserving energy |
| Do you think climate change is a serious problem? | In your opinion, is climate change is a serious problem? | Yes, climate change leads to extreme weather events and threatens biodiversity |
| How does climate change impact sea levels? | Can you explain how does climate change impact sea levels? | It causes polar ice to melt and seawater to expand, leading to rising sea levels. |
| Do you think climate change is a major issue? | In your opinion, is climate change is a major issue? | Yes, I believe it is a critical problem that needs urgent action. |
| Has climate change affected your daily life? | Has climate change affected your daily life? | Not much, but I have noticed hotter summers. |
| Are you worried about pollution in your city? | Are you worried about pollution in your city? | Yes, I see more smog and trash on the streets |
| Do you trust the quality of tap water in your area? | Do you trust the quality of tap water in your area? | Not really, I prefer bottled water. |
| Do you believe individuals can make a difference in protecting the environment? | Do you believe individuals can make a difference in protecting the environment? | Yes, small actions like recycling and reducing waste contribute to bigger changes when many people participate. |
| How often do you think about your environmental impact? | Can you explain how often do you think about your environmental impact? | I consider it daily, especially when making choices like using reusable items or conserving energy at home. |
| Have you noticed changes in your local environment over the past decade? | Have you noticed changes in your local environment over the past decade? | Yes, summers are hotter, and there’s more plastic waste in rivers compared to 10 years ago |
| Do you separate recyclables from regular trash at home? | Do you separate recyclables from regular trash at home? | Yes, I sort paper, plastic, and glass into separate bins to ensure they’re properly recycled |
| How do you reduce plastic use in daily life? | Can you explain how do you reduce plastic use in daily life? | I carry a reusable water bottle, avoid plastic straws, and choose products with minimal packaging |
| What’s your opinion on single-use plastics? | Can you tell me what s your opinion on single-use plastics? | They should be banned because they pollute oceans and harm marine life unnecessarily |
| Have you participated in a community clean-up event? | Have you participated in a community clean-up event? | Yes, I joined a beach clean-up last month and collected over 5 kg of trash |
| Have you made any energy-saving changes at home? | Have you made any energy-saving changes at home? | I switched to LED bulbs and unplug devices when not in use to cut electricity waste." |
| Would you consider buying an electric vehicle? | Would you consider buying an electric vehicle? | Yes, if charging stations become more accessible and prices are affordable |
| Have you ever donated to wildlife conservation? | Have you ever donated to wildlife conservation? | I donated to a rainforest protection fund last year to help save orangutans." |
| Do you avoid products linked to deforestation? | Do you avoid products linked to deforestation? | I check labels for sustainable palm oil and avoid brands harming rainforests. |
| Is your country doing enough to address environmental issues? | Is your country doing enough to address environmental issues? | No, policies are weak, and enforcement is inconsistent compared to global standards." |
| Do you talk to friends/family about environmental issues? | Do you talk to friends/family about environmental issues? | Yes, I share tips on recycling and energy savings to inspire others. |
| Do you check air quality before going outside? | Do you check air quality before going outside? | Only on hazy days—my phone app gives me alerts when it’s really bad |
| How serious is plastic pollution in your local area? | Can you explain how serious is plastic pollution in your local area? | It's getting worse every year. I can spot plastic bags stuck in trees after every heavy wind |
| How would you describe the air quality in your city? | Can you explain how would you describe the air quality in your city? | Some mornings it's so hazy I can't even see the buildings across the street - like living in a bowl of soup! |
| How does water pollution affect marine life? | Can you explain how does water pollution affect marine life? | It leads to habitat destruction, toxic contamination, and loss of biodiversity. |
| Do you believe climate change is a serious issue? | Do you believe climate change is a serious issue? | Yes, I think it’s one of the biggest threats to our future. |
| Would you be willing to pay more for eco-friendly products? | Would you be willing to pay more for eco-friendly products? | Yes, but only if the price difference is not too big. |
| Would you support higher taxes on polluting industries? | Would you support higher taxes on polluting industries? | Yes, but only if the money is used for environmental protection. |
| What is the biggest cause of climate change? | Can you tell me what is the biggest cause of climate change? | Yes, there is pollution where I live in Hanoi, Vietnam. Air pollution is the most serious environmental problem in Hanoi. |
| What kinds of pollution are serious in your country? | Can you tell me what kinds of pollution are serious in your country? | Unfortunately, pollution is a significant issue in Vietnam. Some of the most serious types of pollution include air pollution, water pollution, and noise pollution. |
| Do you take an interest in nature? | Do you take an interest in nature? | Yes, I do. I find nature to be a fascinating and complex system that is full of beauty and wonder. |
| Do you like growing plants? | Do you like growing plants? | Yes, I do enjoy growing plants. I also appreciate the beauty that plants bring to my home and garden. |
| Why is environmental education important? | Why is environmental education important? | It raises awareness and encourages people to take action to protect nature. |
| What are the main causes of air pollution in urban areas today? | Can you tell me what are the main causes of air pollution in urban areas today? | Vehicle emissions, industrial activities, burning fossil fuels, construction dust, and waste incineration. |
| How does deforestation affect global climate patterns? | Can you explain how does deforestation affect global climate patterns? | Releases carbon dioxide, reduces CO2 absorption, and disrupts rainfall patterns, worsening global warming. |
| Why is plastic pollution such a significant problem for marine life? | Why is plastic pollution such a significant problem for marine life? | Marine animals ingest or get entangled in it, causing injury, starvation, death, and food chain disruption. |
| What role does industrial waste play in water pollution? | Can you tell me what role does industrial waste play in water pollution? | Contaminates water with chemicals, heavy metals, and untreated sewage, harming ecosystems and health. |
| How are rising global temperatures impacting polar ice caps? | Can you explain how are rising global temperatures impacting polar ice caps? | Melts ice caps, reduces reflectivity, accelerates warming, and raises sea levels. |
| What are the effects of overfishing on ocean ecosystems? | Can you tell me what are the effects of overfishing on ocean ecosystems? | Depletes fish populations, disrupts food webs, and damages habitats like coral reefs. |
| How does urbanization contribute to habitat loss for wildlife? | Can you explain how does urbanization contribute to habitat loss for wildlife? | Clears forests, wetlands, and grasslands for infrastructure, reducing wildlife living space. |
| Why are greenhouse gas emissions still increasing despite awareness? | Why are greenhouse gas emissions still increasing despite awareness? | Economic growth, fossil fuel reliance, weak policies, and population growth outpace reduction efforts. |
| What steps are governments taking to reduce carbon footprints? | Can you tell me what steps are governments taking to reduce carbon footprints? | Promoting renewables, enforcing emissions rules, subsidizing green tech, and joining global agreements. |
| How does soil degradation affect agricultural productivity? | Can you explain how does soil degradation affect agricultural productivity? | Reduces fertility, limits crop yields, and increases reliance on chemical fertilizers. |
| What are the consequences of melting glaciers for sea levels? | Can you tell me what are the consequences of melting glaciers for sea levels? | Raises sea levels, floods coastal areas, and displaces communities and ecosystems. |
| How is climate change influencing extreme weather events? | Can you explain how is climate change influencing extreme weather events? | Increases frequency and intensity of storms, heatwaves, droughts, and floods. |
| Why is biodiversity loss considered a global crisis? | Why is biodiversity loss considered a global crisis? | Threatens ecosystem stability, food security, and resilience to environmental changes. |
| What are the primary sources of renewable energy being used today? | Can you tell me what are the primary sources of renewable energy being used today? | Solar, wind, hydropower, geothermal, and biomass energy. |
| How does single-use plastic impact the environment long-term? | Can you explain how does single-use plastic impact the environment long-term? | Persists in ecosystems, pollutes water and soil, and harms wildlife for decades. |
| What measures can individuals take to reduce their environmental impact? | Can you tell me what measures can individuals take to reduce their environmental impact? | Reduce waste, use renewables, conserve water, and adopt sustainable habits. |
| How are coral reefs being affected by ocean warming? | Can you explain how are coral reefs being affected by ocean warming? | Causes bleaching, weakens structures, and reduces biodiversity in reef ecosystems. |
| Why is electronic waste becoming a growing environmental issue? | Why is electronic waste becoming a growing environmental issue? | Contains toxic materials, pollutes soil and water, and overwhelms waste systems. |
| What role do corporations play in environmental degradation? | Can you tell me what role do corporations play in environmental degradation? | Drive resource extraction, emissions, and waste through production and supply chains. |
| How effective are current recycling programs worldwide? | Can you explain how effective are current recycling programs worldwide? | Vary widely; effective in some regions but limited by contamination and low participation elsewhere. |
| What are the environmental impacts of large-scale mining? | Can you tell me what are the environmental impacts of large-scale mining? | Destroys habitats, pollutes water, and releases greenhouse gases. |
| How does air quality affect human health in polluted cities? | Can you explain how does air quality affect human health in polluted cities? | Increases respiratory issues, heart disease, and premature deaths in polluted areas. |
| Why are wetlands disappearing at an alarming rate? | Why are wetlands disappearing at an alarming rate? | Drained for agriculture, urban development, and climate-driven drying. |
| What is the relationship between deforestation and carbon dioxide levels? | Can you tell me what is the relationship between deforestation and carbon dioxide levels? | Removes trees that absorb CO2, increasing atmospheric levels and warming. |
| How are endangered species being protected from extinction? | Can you explain how are endangered species being protected from extinction? | Through protected areas, breeding programs, and laws against poaching and trade. |
| What challenges do renewable energy projects face today? | Can you tell me what challenges do renewable energy projects face today? | High costs, infrastructure needs, and inconsistent energy output. |
| How does overpopulation strain natural resources? | Can you explain how does overpopulation strain natural resources? | Increases demand for food, water, and energy, depleting resources faster. |
| Why is clean water becoming scarce in some regions? | Why is clean water becoming scarce in some regions? | Overuse, pollution, and climate change reduce freshwater availability. |
| What are the environmental effects of oil spills in the ocean? | Can you tell me what are the environmental effects of oil spills in the ocean? | Kills marine life, damages habitats, and disrupts ecosystems for years. |
| How do pesticides harm ecosystems beyond their intended targets? | Can you explain how do pesticides harm ecosystems beyond their intended targets? | Harm pollinators, wildlife, and soil health, causing broader ecological damage. |
| What is being done to combat desertification globally? | Can you tell me what is being done to combat desertification globally? | Reforestation, sustainable farming, and international aid programs. |
| How does fast fashion contribute to environmental damage? | Can you explain how does fast fashion contribute to environmental damage? | Creates waste, uses toxic dyes, and consumes vast water and energy. |
| Why are wildfires becoming more frequent and intense? | Why are wildfires becoming more frequent and intense? | Driven by higher temperatures, droughts, and human land mismanagement. |
| What impact does transportation have on global emissions? | Can you tell me what impact does transportation have on global emissions? | Contributes heavily via cars, planes, and shipping emissions. |
| How are coastal areas preparing for rising sea levels? | Can you explain how are coastal areas preparing for rising sea levels? | Building seawalls, relocating communities, and restoring natural barriers like mangroves. |
| What are the benefits of reforestation efforts? | Can you tell me what are the benefits of reforestation efforts? | Restores habitats, sequesters carbon, and improves soil and water retention. |
| How does noise pollution affect wildlife behavior? | Can you explain how does noise pollution affect wildlife behavior? | Disrupts mating, hunting, and migration patterns in animals. |
| Why is sustainable agriculture gaining attention today? | Why is sustainable agriculture gaining attention today? | Reduces chemical use, preserves soil, and meets growing food demand sustainably. |
| What are the long-term effects of nuclear waste on the environment? | Can you tell me what are the long-term effects of nuclear waste on the environment? | Contaminates soil and water, posing risks for centuries if mismanaged. |
| How do microplastics enter the human food chain? | Can you explain how do microplastics enter the human food chain? | Through seafood, water, and soil, accumulating in human tissues. |
| What role does education play in environmental conservation? | Can you tell me what role does education play in environmental conservation? | Raises awareness, changes behavior, and fosters sustainable practices. |
| How are developing countries addressing environmental challenges? | Can you explain how are developing countries addressing environmental challenges? | Adopting renewables, seeking aid, and balancing growth with conservation. |
| Why is the loss of pollinators a threat to food security? | Why is the loss of pollinators a threat to food security? | Reduces crop pollination, threatening food production and ecosystems. |
| What are the environmental costs of cryptocurrency mining? | Can you tell me what are the environmental costs of cryptocurrency mining? | High energy use for computing drives emissions and resource depletion. |
| How does illegal logging impact tropical rainforests? | Can you explain how does illegal logging impact tropical rainforests? | Destroys habitats, increases CO2, and threatens indigenous communities. |
| What innovations are helping to clean up polluted rivers? | Can you tell me what innovations are helping to clean up polluted rivers? | Bioremediation, filtration systems, and trash-collecting drones. |
| How are animals adapting to changing climates? | Can you explain how are animals adapting to changing climates? | Shifting habitats, altering behaviors, or facing extinction risks. |
| Why is ocean acidification a growing concern for marine life? | Why is ocean acidification a growing concern for marine life? | Weakens shells, disrupts food chains, and harms marine biodiversity. |
| What are the environmental impacts of tourism in sensitive areas? | Can you tell me what are the environmental impacts of tourism in sensitive areas? | Strains resources, damages ecosystems, and increases waste in fragile areas. |
| How can technology help solve current environmental problems? | Can you explain how can technology help solve current environmental problems? | Offers solutions like clean energy, pollution monitoring, and waste management tools. |
| **Luật 3: Chuyển câu hỏi mở ↔ câu hỏi đóng** | | |
| **Original Question** | **Generated Question** | **Answer** |
| Do you use reusable bags instead of plastic ones? | Why do you you use reusable bags instead of plastic ones? | Yes, I always carry my own bag. |
| What products can we use to reduce water pollution? | Is it true that What products can we use to reduce water pollution? | Finally, we can reduce water pollution by using green products and avoiding single-use products like plastic bags. |
| What role do governments play in environmental protection? | Is it true that What role do governments play in environmental protection? | They create laws, regulations, and policies to protect natural resources. |
| Do you think pollution is a problem today? | Why do you you think pollution is a problem today? | Yes, I think pollution is a problem today. It’s one of the most pressing issues facing our planet. |
| Do you think food waste is a problem? | Why do you you think food waste is a problem? | Yes, it wastes resources and creates more trash. |
| What do you know about climate change? | Is it true that What do you know about climate change? | It’s a change in weather patterns due to human activities. |
| Do you think you’ve done enough to protect the environment? | Why do you you think you’ve done enough to protect the environment?  ? | No definitely not, I still throw away various single-use plastic products every day. Currently, there aren’t any recycling programmes where I live. I hope this will change soon. |
| What can you do to help the environment? | Is it true that What can you do to help the environment? | I think I can help by recycling more and using less plastic, like bringing my own bags when I go shopping |
| Do you think it’s important to plant trees? | Why do you you think it’s important to plant trees? | Yes, trees clean the air and provide oxygen. |
| Do you think air pollution is a problem in your city? | Why do you you think air pollution is a problem in your city? | Yes, there’s a lot of smoke from cars and factories. |
| What do you do to stop wasting food? | Is it true that What do you do to stop wasting food? | I eat leftovers and don’t buy too much food |
| Do you think people should use less plastic? | Why do you you think people should use less plastic? | Yes, because plastic harms animals and the environment. |
| What is the biggest cause of climate change? | Is it true that What is the biggest cause of climate change? | Burning fossil fuels like coal and oil. |
| What do you know about recycling? | Is it true that What do you know about recycling? | It reduces waste by turning old things into new ones, and it also saves resources like trees and metals, which helps protect the environment. |
| What can we do to stop global warming? | Is it true that What can we do to stop global warming? | We can use bicycles instead of cars to reduce emissions, and we can also save energy by turning off appliances when we’re not using them. |
| Do you take an interest in nature? | Do you take an interest in nature? | I love all wildlife. My garden is the perfect habitat for hedgehogs. They are nocturnal but if I go out after dark with a torch I sometimes see one. |
| What do you often do to protect the environment? | Is it true that What do you often do to protect the environment? | I use paper bags instead of nylon ones and travel by public transport to reduce pollution. |
| Do you use renewable energy? | Why do you you use renewable energy? | Yes, I have installed solar panels to utilize renewable energy sources. |
| What can we do to reduce pollution? | Is it true that What can we do to reduce pollution? | We can reduce pollution by recycling, using public transport, and conserving energy |
| Do you think climate change is a serious problem? | Why do you you think climate change is a serious problem? | Yes, climate change leads to extreme weather events and threatens biodiversity |
| How does climate change impact sea levels? | Is it true that How does climate change impact sea levels? | It causes polar ice to melt and seawater to expand, leading to rising sea levels. |
| Do you think climate change is a major issue? | Why do you you think climate change is a major issue? | Yes, I believe it is a critical problem that needs urgent action. |
| Has climate change affected your daily life? | Has climate change affected your daily life? | Not much, but I have noticed hotter summers. |
| Are you worried about pollution in your city? | Why do you you worried about pollution in your city? | Yes, I see more smog and trash on the streets |
| Do you trust the quality of tap water in your area? | Why do you you trust the quality of tap water in your area? | Not really, I prefer bottled water. |
| Do you believe individuals can make a difference in protecting the environment? | Why do you you believe individuals can make a difference in protecting the environment? | Yes, small actions like recycling and reducing waste contribute to bigger changes when many people participate. |
| How often do you think about your environmental impact? | Is it true that How often do you think about your environmental impact? | I consider it daily, especially when making choices like using reusable items or conserving energy at home. |
| Have you noticed changes in your local environment over the past decade? | Have you noticed changes in your local environment over the past decade? | Yes, summers are hotter, and there’s more plastic waste in rivers compared to 10 years ago |
| Do you separate recyclables from regular trash at home? | Why do you you separate recyclables from regular trash at home? | Yes, I sort paper, plastic, and glass into separate bins to ensure they’re properly recycled |
| How do you reduce plastic use in daily life? | Is it true that How do you reduce plastic use in daily life? | I carry a reusable water bottle, avoid plastic straws, and choose products with minimal packaging |
| What’s your opinion on single-use plastics? | Is it true that What’s your opinion on single-use plastics? | They should be banned because they pollute oceans and harm marine life unnecessarily |
| Have you participated in a community clean-up event? | Have you participated in a community clean-up event? | Yes, I joined a beach clean-up last month and collected over 5 kg of trash |
| Have you made any energy-saving changes at home? | Have you made any energy-saving changes at home? | I switched to LED bulbs and unplug devices when not in use to cut electricity waste." |
| Would you consider buying an electric vehicle? | Would you consider buying an electric vehicle? | Yes, if charging stations become more accessible and prices are affordable |
| Have you ever donated to wildlife conservation? | Have you ever donated to wildlife conservation? | I donated to a rainforest protection fund last year to help save orangutans." |
| Do you avoid products linked to deforestation? | Do you avoid products linked to deforestation? | I check labels for sustainable palm oil and avoid brands harming rainforests. |
| Is your country doing enough to address environmental issues? | Why do you your country doing enough to address environmental issues? | No, policies are weak, and enforcement is inconsistent compared to global standards." |
| Do you talk to friends/family about environmental issues? | Why do you you talk to friends/family about environmental issues? | Yes, I share tips on recycling and energy savings to inspire others. |
| Do you check air quality before going outside? | Why do you you check air quality before going outside? | Only on hazy days—my phone app gives me alerts when it’s really bad |
| How serious is plastic pollution in your local area? | Is it true that How serious is plastic pollution in your local area? | It's getting worse every year. I can spot plastic bags stuck in trees after every heavy wind |
| How would you describe the air quality in your city? | Is it true that How would you describe the air quality in your city? | Some mornings it's so hazy I can't even see the buildings across the street - like living in a bowl of soup! |
| How does water pollution affect marine life? | Is it true that How does water pollution affect marine life? | It leads to habitat destruction, toxic contamination, and loss of biodiversity. |
| Do you believe climate change is a serious issue? | Why do you you believe climate change is a serious issue? | Yes, I think it’s one of the biggest threats to our future. |
| Would you be willing to pay more for eco-friendly products? | Would you be willing to pay more for eco-friendly products? | Yes, but only if the price difference is not too big. |
| Would you support higher taxes on polluting industries? | Would you support higher taxes on polluting industries? | Yes, but only if the money is used for environmental protection. |
| What is the biggest cause of climate change? | Is it true that What is the biggest cause of climate change? | Yes, there is pollution where I live in Hanoi, Vietnam. Air pollution is the most serious environmental problem in Hanoi. |
| What kinds of pollution are serious in your country? | Is it true that What kinds of pollution are serious in your country? | Unfortunately, pollution is a significant issue in Vietnam. Some of the most serious types of pollution include air pollution, water pollution, and noise pollution. |
| Do you take an interest in nature? | Why do you you take an interest in nature? ? | Yes, I do. I find nature to be a fascinating and complex system that is full of beauty and wonder. |
| Do you like growing plants? | Why do you you like growing plants? ? | Yes, I do enjoy growing plants. I also appreciate the beauty that plants bring to my home and garden. |
| Why is environmental education important? | Is it true that Why is environmental education important? | It raises awareness and encourages people to take action to protect nature. |
| What are the main causes of air pollution in urban areas today? | Is it true that What are the main causes of air pollution in urban areas today? | Vehicle emissions, industrial activities, burning fossil fuels, construction dust, and waste incineration. |
| How does deforestation affect global climate patterns? | Is it true that How does deforestation affect global climate patterns? | Releases carbon dioxide, reduces CO2 absorption, and disrupts rainfall patterns, worsening global warming. |
| Why is plastic pollution such a significant problem for marine life? | Is it true that Why is plastic pollution such a significant problem for marine life? | Marine animals ingest or get entangled in it, causing injury, starvation, death, and food chain disruption. |
| What role does industrial waste play in water pollution? | Is it true that What role does industrial waste play in water pollution? | Contaminates water with chemicals, heavy metals, and untreated sewage, harming ecosystems and health. |
| How are rising global temperatures impacting polar ice caps? | Is it true that How are rising global temperatures impacting polar ice caps? | Melts ice caps, reduces reflectivity, accelerates warming, and raises sea levels. |
| What are the effects of overfishing on ocean ecosystems? | Is it true that What are the effects of overfishing on ocean ecosystems? | Depletes fish populations, disrupts food webs, and damages habitats like coral reefs. |
| How does urbanization contribute to habitat loss for wildlife? | Is it true that How does urbanization contribute to habitat loss for wildlife? | Clears forests, wetlands, and grasslands for infrastructure, reducing wildlife living space. |
| Why are greenhouse gas emissions still increasing despite awareness? | Is it true that Why are greenhouse gas emissions still increasing despite awareness? | Economic growth, fossil fuel reliance, weak policies, and population growth outpace reduction efforts. |
| What steps are governments taking to reduce carbon footprints? | Is it true that What steps are governments taking to reduce carbon footprints? | Promoting renewables, enforcing emissions rules, subsidizing green tech, and joining global agreements. |
| How does soil degradation affect agricultural productivity? | Is it true that How does soil degradation affect agricultural productivity? | Reduces fertility, limits crop yields, and increases reliance on chemical fertilizers. |
| What are the consequences of melting glaciers for sea levels? | Is it true that What are the consequences of melting glaciers for sea levels? | Raises sea levels, floods coastal areas, and displaces communities and ecosystems. |
| How is climate change influencing extreme weather events? | Is it true that How is climate change influencing extreme weather events? | Increases frequency and intensity of storms, heatwaves, droughts, and floods. |
| Why is biodiversity loss considered a global crisis? | Is it true that Why is biodiversity loss considered a global crisis? | Threatens ecosystem stability, food security, and resilience to environmental changes. |
| What are the primary sources of renewable energy being used today? | Is it true that What are the primary sources of renewable energy being used today? | Solar, wind, hydropower, geothermal, and biomass energy. |
| How does single-use plastic impact the environment long-term? | Is it true that How does single-use plastic impact the environment long-term? | Persists in ecosystems, pollutes water and soil, and harms wildlife for decades. |
| What measures can individuals take to reduce their environmental impact? | Is it true that What measures can individuals take to reduce their environmental impact? | Reduce waste, use renewables, conserve water, and adopt sustainable habits. |
| How are coral reefs being affected by ocean warming? | Is it true that How are coral reefs being affected by ocean warming? | Causes bleaching, weakens structures, and reduces biodiversity in reef ecosystems. |
| Why is electronic waste becoming a growing environmental issue? | Is it true that Why is electronic waste becoming a growing environmental issue? | Contains toxic materials, pollutes soil and water, and overwhelms waste systems. |
| What role do corporations play in environmental degradation? | Is it true that What role do corporations play in environmental degradation? | Drive resource extraction, emissions, and waste through production and supply chains. |
| How effective are current recycling programs worldwide? | Is it true that How effective are current recycling programs worldwide? | Vary widely; effective in some regions but limited by contamination and low participation elsewhere. |
| What are the environmental impacts of large-scale mining? | Is it true that What are the environmental impacts of large-scale mining? | Destroys habitats, pollutes water, and releases greenhouse gases. |
| How does air quality affect human health in polluted cities? | Is it true that How does air quality affect human health in polluted cities? | Increases respiratory issues, heart disease, and premature deaths in polluted areas. |
| Why are wetlands disappearing at an alarming rate? | Is it true that Why are wetlands disappearing at an alarming rate? | Drained for agriculture, urban development, and climate-driven drying. |
| What is the relationship between deforestation and carbon dioxide levels? | Is it true that What is the relationship between deforestation and carbon dioxide levels? | Removes trees that absorb CO2, increasing atmospheric levels and warming. |
| How are endangered species being protected from extinction? | Is it true that How are endangered species being protected from extinction? | Through protected areas, breeding programs, and laws against poaching and trade. |
| What challenges do renewable energy projects face today? | Is it true that What challenges do renewable energy projects face today? | High costs, infrastructure needs, and inconsistent energy output. |
| How does overpopulation strain natural resources? | Is it true that How does overpopulation strain natural resources? | Increases demand for food, water, and energy, depleting resources faster. |
| Why is clean water becoming scarce in some regions? | Is it true that Why is clean water becoming scarce in some regions? | Overuse, pollution, and climate change reduce freshwater availability. |
| What are the environmental effects of oil spills in the ocean? | Is it true that What are the environmental effects of oil spills in the ocean? | Kills marine life, damages habitats, and disrupts ecosystems for years. |
| How do pesticides harm ecosystems beyond their intended targets? | Is it true that How do pesticides harm ecosystems beyond their intended targets? | Harm pollinators, wildlife, and soil health, causing broader ecological damage. |
| What is being done to combat desertification globally? | Is it true that What is being done to combat desertification globally? | Reforestation, sustainable farming, and international aid programs. |
| How does fast fashion contribute to environmental damage? | Is it true that How does fast fashion contribute to environmental damage? | Creates waste, uses toxic dyes, and consumes vast water and energy. |
| Why are wildfires becoming more frequent and intense? | Is it true that Why are wildfires becoming more frequent and intense? | Driven by higher temperatures, droughts, and human land mismanagement. |
| What impact does transportation have on global emissions? | Is it true that What impact does transportation have on global emissions? | Contributes heavily via cars, planes, and shipping emissions. |
| How are coastal areas preparing for rising sea levels? | Is it true that How are coastal areas preparing for rising sea levels? | Building seawalls, relocating communities, and restoring natural barriers like mangroves. |
| What are the benefits of reforestation efforts? | Is it true that What are the benefits of reforestation efforts? | Restores habitats, sequesters carbon, and improves soil and water retention. |
| How does noise pollution affect wildlife behavior? | Is it true that How does noise pollution affect wildlife behavior? | Disrupts mating, hunting, and migration patterns in animals. |
| Why is sustainable agriculture gaining attention today? | Is it true that Why is sustainable agriculture gaining attention today? | Reduces chemical use, preserves soil, and meets growing food demand sustainably. |
| What are the long-term effects of nuclear waste on the environment? | Is it true that What are the long-term effects of nuclear waste on the environment? | Contaminates soil and water, posing risks for centuries if mismanaged. |
| How do microplastics enter the human food chain? | Is it true that How do microplastics enter the human food chain? | Through seafood, water, and soil, accumulating in human tissues. |
| What role does education play in environmental conservation? | Is it true that What role does education play in environmental conservation? | Raises awareness, changes behavior, and fosters sustainable practices. |
| How are developing countries addressing environmental challenges? | Is it true that How are developing countries addressing environmental challenges? | Adopting renewables, seeking aid, and balancing growth with conservation. |
| Why is the loss of pollinators a threat to food security? | Is it true that Why is the loss of pollinators a threat to food security? | Reduces crop pollination, threatening food production and ecosystems. |
| What are the environmental costs of cryptocurrency mining? | Is it true that What are the environmental costs of cryptocurrency mining? | High energy use for computing drives emissions and resource depletion. |
| How does illegal logging impact tropical rainforests? | Is it true that How does illegal logging impact tropical rainforests? | Destroys habitats, increases CO2, and threatens indigenous communities. |
| What innovations are helping to clean up polluted rivers? | Is it true that What innovations are helping to clean up polluted rivers? | Bioremediation, filtration systems, and trash-collecting drones. |
| How are animals adapting to changing climates? | Is it true that How are animals adapting to changing climates? | Shifting habitats, altering behaviors, or facing extinction risks. |
| Why is ocean acidification a growing concern for marine life? | Is it true that Why is ocean acidification a growing concern for marine life? | Weakens shells, disrupts food chains, and harms marine biodiversity. |
| What are the environmental impacts of tourism in sensitive areas? | Is it true that What are the environmental impacts of tourism in sensitive areas? | Strains resources, damages ecosystems, and increases waste in fragile areas. |
| How can technology help solve current environmental problems? | Is it true that How can technology help solve current environmental problems? | Offers solutions like clean energy, pollution monitoring, and waste management tools. |
| **Luật 4: Thêm ngữ cảnh** | | |
| **Original Question** | **Generated Question** | **Answer** |
| Do you use reusable bags instead of plastic ones? | In terms of environmental protection, do you use reusable bags instead of plastic ones? | Yes, I always carry my own bag. |
| What products can we use to reduce water pollution? | In terms of environmental protection, what products can we use to reduce water pollution? | Finally, we can reduce water pollution by using green products and avoiding single-use products like plastic bags. |
| What role do governments play in environmental protection? | In terms of environmental protection, what role do governments play in environmental protection? | They create laws, regulations, and policies to protect natural resources. |
| Do you think pollution is a problem today? | In terms of environmental protection, do you think pollution is a problem today? | Yes, I think pollution is a problem today. It’s one of the most pressing issues facing our planet. |
| Do you think food waste is a problem? | In terms of environmental protection, do you think food waste is a problem? | Yes, it wastes resources and creates more trash. |
| What do you know about climate change? | In terms of environmental protection, what do you know about climate change? | It’s a change in weather patterns due to human activities. |
| Do you think you’ve done enough to protect the environment? | In terms of environmental protection, do you think you’ve done enough to protect the environment? | No definitely not, I still throw away various single-use plastic products every day. Currently, there aren’t any recycling programmes where I live. I hope this will change soon. |
| What can you do to help the environment? | In terms of environmental protection, what can you do to help the environment? | I think I can help by recycling more and using less plastic, like bringing my own bags when I go shopping |
| Do you think it’s important to plant trees? | In terms of environmental protection, do you think it’s important to plant trees? | Yes, trees clean the air and provide oxygen. |
| Do you think air pollution is a problem in your city? | In terms of environmental protection, do you think air pollution is a problem in your city? | Yes, there’s a lot of smoke from cars and factories. |
| What do you do to stop wasting food? | In terms of environmental protection, what do you do to stop wasting food? | I eat leftovers and don’t buy too much food |
| Do you think people should use less plastic? | In terms of environmental protection, do you think people should use less plastic? | Yes, because plastic harms animals and the environment. |
| What is the biggest cause of climate change? | In terms of environmental protection, what is the biggest cause of climate change? | Burning fossil fuels like coal and oil. |
| What do you know about recycling? | In terms of environmental protection, what do you know about recycling? | It reduces waste by turning old things into new ones, and it also saves resources like trees and metals, which helps protect the environment. |
| What can we do to stop global warming? | In terms of environmental protection, what can we do to stop global warming? | We can use bicycles instead of cars to reduce emissions, and we can also save energy by turning off appliances when we’re not using them. |
| Do you take an interest in nature? | In terms of environmental protection, Do you take an interest in nature? | I love all wildlife. My garden is the perfect habitat for hedgehogs. They are nocturnal but if I go out after dark with a torch I sometimes see one. |
| What do you often do to protect the environment? | In terms of environmental protection, what do you often do to protect the environment? | I use paper bags instead of nylon ones and travel by public transport to reduce pollution. |
| Do you use renewable energy? | In terms of environmental protection, do you use renewable energy? | Yes, I have installed solar panels to utilize renewable energy sources. |
| What can we do to reduce pollution? | In terms of environmental protection, what can we do to reduce pollution? | We can reduce pollution by recycling, using public transport, and conserving energy |
| Do you think climate change is a serious problem? | In terms of environmental protection, do you think climate change is a serious problem? | Yes, climate change leads to extreme weather events and threatens biodiversity |
| How does climate change impact sea levels? | In terms of environmental protection, how does climate change impact sea levels? | It causes polar ice to melt and seawater to expand, leading to rising sea levels. |
| Do you think climate change is a major issue? | In terms of environmental protection, do you think climate change is a major issue? | Yes, I believe it is a critical problem that needs urgent action. |
| Has climate change affected your daily life? | In terms of environmental protection, has climate change affected your daily life? | Not much, but I have noticed hotter summers. |
| Are you worried about pollution in your city? | In terms of environmental protection, are you worried about pollution in your city? | Yes, I see more smog and trash on the streets |
| Do you trust the quality of tap water in your area? | In terms of environmental protection, do you trust the quality of tap water in your area? | Not really, I prefer bottled water. |
| Do you believe individuals can make a difference in protecting the environment? | In terms of environmental protection, do you believe individuals can make a difference in protecting the environment? | Yes, small actions like recycling and reducing waste contribute to bigger changes when many people participate. |
| How often do you think about your environmental impact? | In terms of environmental protection, how often do you think about your environmental impact? | I consider it daily, especially when making choices like using reusable items or conserving energy at home. |
| Have you noticed changes in your local environment over the past decade? | In terms of environmental protection, have you noticed changes in your local environment over the past decade? | Yes, summers are hotter, and there’s more plastic waste in rivers compared to 10 years ago |
| Do you separate recyclables from regular trash at home? | In terms of environmental protection, do you separate recyclables from regular trash at home? | Yes, I sort paper, plastic, and glass into separate bins to ensure they’re properly recycled |
| How do you reduce plastic use in daily life? | In terms of environmental protection, how do you reduce plastic use in daily life? | I carry a reusable water bottle, avoid plastic straws, and choose products with minimal packagin |
| What’s your opinion on single-use plastics? | In terms of environmental protection, what’s your opinion on single-use plastics? | They should be banned because they pollute oceans and harm marine life unnecessarily |
| Have you participated in a community clean-up event? | In terms of environmental protection, have you participated in a community clean-up event? | Yes, I joined a beach clean-up last month and collected over 5 kg of trash |
| Have you made any energy-saving changes at home? | In terms of environmental protection, have you made any energy-saving changes at home? | I switched to LED bulbs and unplug devices when not in use to cut electricity waste." |
| Would you consider buying an electric vehicle? | In terms of environmental protection, would you consider buying an electric vehicle? | Yes, if charging stations become more accessible and prices are affordable |
| Have you ever donated to wildlife conservation? | In terms of environmental protection, have you ever donated to wildlife conservation? | I donated to a rainforest protection fund last year to help save orangutans." |
| Do you avoid products linked to deforestation? | In terms of environmental protection, Do you avoid products linked to deforestation? | I check labels for sustainable palm oil and avoid brands harming rainforests. |
| Is your country doing enough to address environmental issues? | In terms of environmental protection, is your country doing enough to address environmental issues? | No, policies are weak, and enforcement is inconsistent compared to global standards." |
| Do you talk to friends/family about environmental issues? | In terms of environmental protection, do you talk to friends/family about environmental issues? | Yes, I share tips on recycling and energy savings to inspire others. |
| Do you check air quality before going outside? | In terms of environmental protection, do you check air quality before going outside? | Only on hazy days—my phone app gives me alerts when it’s really bad |
| How serious is plastic pollution in your local area? | In terms of environmental protection, how serious is plastic pollution in your local area? | It's getting worse every year. I can spot plastic bags stuck in trees after every heavy wind |
| How would you describe the air quality in your city? | In terms of environmental protection, how would you describe the air quality in your city? | Some mornings it's so hazy I can't even see the buildings across the street - like living in a bowl of soup! |
| How does water pollution affect marine life? | In terms of environmental protection, how does water pollution affect marine life? | It leads to habitat destruction, toxic contamination, and loss of biodiversity. |
| Do you believe climate change is a serious issue? | In terms of environmental protection, do you believe climate change is a serious issue? | Yes, I think it’s one of the biggest threats to our future. |
| Would you be willing to pay more for eco-friendly products? | In terms of environmental protection, would you be willing to pay more for eco-friendly products? | Yes, but only if the price difference is not too big. |
| Would you support higher taxes on polluting industries? | In terms of environmental protection, would you support higher taxes on polluting industries? | Yes, but only if the money is used for environmental protection. |
| What is the biggest cause of climate change? | In terms of environmental protection, what is the biggest cause of climate change? | Yes, there is pollution where I live in Hanoi, Vietnam. Air pollution is the most serious environmental problem in Hanoi. |
| What kinds of pollution are serious in your country? | In terms of environmental protection, what kinds of pollution are serious in your country? | Unfortunately, pollution is a significant issue in Vietnam. Some of the most serious types of pollution include air pollution, water pollution, and noise pollution. |
| Do you take an interest in nature? | In terms of environmental protection, do you take an interest in nature? | Yes, I do. I find nature to be a fascinating and complex system that is full of beauty and wonder. |
| Do you like growing plants? | In terms of environmental protection, do you like growing plants? | Yes, I do enjoy growing plants. I also appreciate the beauty that plants bring to my home and garden. |
| Why is environmental education important? | In terms of environmental protection, why is environmental education important? | It raises awareness and encourages people to take action to protect nature. |
| What are the main causes of air pollution in urban areas today? | In terms of environmental protection, what are the main causes of air pollution in urban areas today? | Vehicle emissions, industrial activities, burning fossil fuels, construction dust, and waste incineration. |
| How does deforestation affect global climate patterns? | In terms of environmental protection, how does deforestation affect global climate patterns? | Releases carbon dioxide, reduces CO2 absorption, and disrupts rainfall patterns, worsening global warming. |
| Why is plastic pollution such a significant problem for marine life? | In terms of environmental protection, why is plastic pollution such a significant problem for marine life? | Marine animals ingest or get entangled in it, causing injury, starvation, death, and food chain disruption. |
| What role does industrial waste play in water pollution? | In terms of environmental protection, what role does industrial waste play in water pollution? | Contaminates water with chemicals, heavy metals, and untreated sewage, harming ecosystems and health. |
| How are rising global temperatures impacting polar ice caps? | In terms of environmental protection, how are rising global temperatures impacting polar ice caps? | Melts ice caps, reduces reflectivity, accelerates warming, and raises sea levels. |
| What are the effects of overfishing on ocean ecosystems? | In terms of environmental protection, what are the effects of overfishing on ocean ecosystems? | Depletes fish populations, disrupts food webs, and damages habitats like coral reefs. |
| How does urbanization contribute to habitat loss for wildlife? | In terms of environmental protection, how does urbanization contribute to habitat loss for wildlife? | Clears forests, wetlands, and grasslands for infrastructure, reducing wildlife living space. |
| Why are greenhouse gas emissions still increasing despite awareness? | In terms of environmental protection, why are greenhouse gas emissions still increasing despite awareness? | Economic growth, fossil fuel reliance, weak policies, and population growth outpace reduction efforts. |
| What steps are governments taking to reduce carbon footprints? | In terms of environmental protection, what steps are governments taking to reduce carbon footprints? | Promoting renewables, enforcing emissions rules, subsidizing green tech, and joining global agreements. |
| How does soil degradation affect agricultural productivity? | In terms of environmental protection, how does soil degradation affect agricultural productivity? | Reduces fertility, limits crop yields, and increases reliance on chemical fertilizers. |
| What are the consequences of melting glaciers for sea levels? | In terms of environmental protection, what are the consequences of melting glaciers for sea levels? | Raises sea levels, floods coastal areas, and displaces communities and ecosystems. |
| How is climate change influencing extreme weather events? | In terms of environmental protection, how is climate change influencing extreme weather events? | Increases frequency and intensity of storms, heatwaves, droughts, and floods. |
| Why is biodiversity loss considered a global crisis? | In terms of environmental protection, why is biodiversity loss considered a global crisis? | Threatens ecosystem stability, food security, and resilience to environmental changes. |
| What are the primary sources of renewable energy being used today? | In terms of environmental protection, what are the primary sources of renewable energy being used today? | Solar, wind, hydropower, geothermal, and biomass energy. |
| How does single-use plastic impact the environment long-term? | In terms of environmental protection, how does single-use plastic impact the environment long-term? | Persists in ecosystems, pollutes water and soil, and harms wildlife for decades. |
| What measures can individuals take to reduce their environmental impact? | In terms of environmental protection, what measures can individuals take to reduce their environmental impact? | Reduce waste, use renewables, conserve water, and adopt sustainable habits. |
| How are coral reefs being affected by ocean warming? | In terms of environmental protection, how are coral reefs being affected by ocean warming? | Causes bleaching, weakens structures, and reduces biodiversity in reef ecosystems. |
| Why is electronic waste becoming a growing environmental issue? | In terms of environmental protection, why is electronic waste becoming a growing environmental issue? | Contains toxic materials, pollutes soil and water, and overwhelms waste systems. |
| What role do corporations play in environmental degradation? | In terms of environmental protection, what role do corporations play in environmental degradation? | Drive resource extraction, emissions, and waste through production and supply chains. |
| How effective are current recycling programs worldwide? | In terms of environmental protection, how effective are current recycling programs worldwide? | Vary widely; effective in some regions but limited by contamination and low participation elsewhere. |
| What are the environmental impacts of large-scale mining? | In terms of environmental protection, what are the environmental impacts of large-scale mining? | Destroys habitats, pollutes water, and releases greenhouse gases. |
| How does air quality affect human health in polluted cities? | In terms of environmental protection, how does air quality affect human health in polluted cities? | Increases respiratory issues, heart disease, and premature deaths in polluted areas. |
| Why are wetlands disappearing at an alarming rate? | In terms of environmental protection, why are wetlands disappearing at an alarming rate? | Drained for agriculture, urban development, and climate-driven drying. |
| What is the relationship between deforestation and carbon dioxide levels? | In terms of environmental protection, what is the relationship between deforestation and carbon dioxide levels? | Removes trees that absorb CO2, increasing atmospheric levels and warming. |
| How are endangered species being protected from extinction? | In terms of environmental protection, how are endangered species being protected from extinction? | Through protected areas, breeding programs, and laws against poaching and trade. |
| What challenges do renewable energy projects face today? | In terms of environmental protection, what challenges do renewable energy projects face today? | High costs, infrastructure needs, and inconsistent energy output. |
| How does overpopulation strain natural resources? | In terms of environmental protection, how does overpopulation strain natural resources? | Increases demand for food, water, and energy, depleting resources faster. |
| Why is clean water becoming scarce in some regions? | In terms of environmental protection, why is clean water becoming scarce in some regions? | Overuse, pollution, and climate change reduce freshwater availability. |
| What are the environmental effects of oil spills in the ocean? | In terms of environmental protection, what are the environmental effects of oil spills in the ocean? | Kills marine life, damages habitats, and disrupts ecosystems for years. |
| How do pesticides harm ecosystems beyond their intended targets? | In terms of environmental protection, how do pesticides harm ecosystems beyond their intended targets? | Harm pollinators, wildlife, and soil health, causing broader ecological damage. |
| What is being done to combat desertification globally? | In terms of environmental protection, what is being done to combat desertification globally? | Reforestation, sustainable farming, and international aid programs. |
| How does fast fashion contribute to environmental damage? | In terms of environmental protection, how does fast fashion contribute to environmental damage? | Creates waste, uses toxic dyes, and consumes vast water and energy. |
| Why are wildfires becoming more frequent and intense? | In terms of environmental protection, why are wildfires becoming more frequent and intense? | Driven by higher temperatures, droughts, and human land mismanagement. |
| What impact does transportation have on global emissions? | In terms of environmental protection, what impact does transportation have on global emissions? | Contributes heavily via cars, planes, and shipping emissions. |
| How are coastal areas preparing for rising sea levels? | In terms of environmental protection, how are coastal areas preparing for rising sea levels? | Building seawalls, relocating communities, and restoring natural barriers like mangroves. |
| What are the benefits of reforestation efforts? | In terms of environmental protection, what are the benefits of reforestation efforts? | Restores habitats, sequesters carbon, and improves soil and water retention. |
| How does noise pollution affect wildlife behavior? | In terms of environmental protection, how does noise pollution affect wildlife behavior? | Disrupts mating, hunting, and migration patterns in animals. |
| Why is sustainable agriculture gaining attention today? | In terms of environmental protection, why is sustainable agriculture gaining attention today? | Reduces chemical use, preserves soil, and meets growing food demand sustainably. |
| What are the long-term effects of nuclear waste on the environment? | In terms of environmental protection, what are the long-term effects of nuclear waste on the environment? | Contaminates soil and water, posing risks for centuries if mismanaged. |
| How do microplastics enter the human food chain? | In terms of environmental protection, how do microplastics enter the human food chain? | Through seafood, water, and soil, accumulating in human tissues. |
| What role does education play in environmental conservation? | In terms of environmental protection, what role does education play in environmental conservation? | Raises awareness, changes behavior, and fosters sustainable practices. |
| How are developing countries addressing environmental challenges? | In terms of environmental protection, how are developing countries addressing environmental challenges? | Adopting renewables, seeking aid, and balancing growth with conservation. |
| Why is the loss of pollinators a threat to food security? | In terms of environmental protection, why is the loss of pollinators a threat to food security? | Reduces crop pollination, threatening food production and ecosystems. |
| What are the environmental costs of cryptocurrency mining? | In terms of environmental protection, what are the environmental costs of cryptocurrency mining? | High energy use for computing drives emissions and resource depletion. |
| How does illegal logging impact tropical rainforests? | In terms of environmental protection, how does illegal logging impact tropical rainforests? | Destroys habitats, increases CO2, and threatens indigenous communities. |
| What innovations are helping to clean up polluted rivers? | In terms of environmental protection, what innovations are helping to clean up polluted rivers? | Bioremediation, filtration systems, and trash-collecting drones. |
| How are animals adapting to changing climates? | In terms of environmental protection, how are animals adapting to changing climates? | Shifting habitats, altering behaviors, or facing extinction risks. |
| Why is ocean acidification a growing concern for marine life? | In terms of environmental protection, why is ocean acidification a growing concern for marine life? | Weakens shells, disrupts food chains, and harms marine biodiversity. |
| What are the environmental impacts of tourism in sensitive areas? | In terms of environmental protection, what are the environmental impacts of tourism in sensitive areas? | Strains resources, damages ecosystems, and increases waste in fragile areas. |
| How can technology help solve current environmental problems? | In terms of environmental protection, how can technology help solve current environmental problems? | Offers solutions like clean energy, pollution monitoring, and waste management tools. |
| **Luật 5: Biến đổi trật tự từ** | | |
| **Original Question** | **Generated Question** | **Answer** |
| Do you use reusable bags instead of plastic ones? | Do ones you use reusable bags instead of plastic? | Yes, I always carry my own bag. |
| What products can we use to reduce water pollution? | What pollution products can we use to reduce water? | Finally, we can reduce water pollution by using green products and avoiding single-use products like plastic bags. |
| What role do governments play in environmental protection? | What protection role do governments play in environmental? | They create laws, regulations, and policies to protect natural resources. |
| Do you think pollution is a problem today? | Do today you think pollution is a problem? | Yes, I think pollution is a problem today. It’s one of the most pressing issues facing our planet. |
| Do you think food waste is a problem? | Do problem you think food waste is a? | Yes, it wastes resources and creates more trash. |
| What do you know about climate change? | What change do you know about climate? | It’s a change in weather patterns due to human activities. |
| Do you think you’ve done enough to protect the environment? | Do environment? you think you’ve done enough to protect the? | No definitely not, I still throw away various single-use plastic products every day. Currently, there aren’t any recycling programmes where I live. I hope this will change soon. |
| What can you do to help the environment? | What environment can you do to help the? | I think I can help by recycling more and using less plastic, like bringing my own bags when I go shopping |
| Do you think it’s important to plant trees? | Do trees you think it’s important to plant? | Yes, trees clean the air and provide oxygen. |
| Do you think air pollution is a problem in your city? | Do city you think air pollution is a problem in your? | Yes, there’s a lot of smoke from cars and factories. |
| What do you do to stop wasting food? | What food do you do to stop wasting? | I eat leftovers and don’t buy too much food |
| Do you think people should use less plastic? | Do plastic you think people should use less? | Yes, because plastic harms animals and the environment. |
| What is the biggest cause of climate change? | What change is the biggest cause of climate? | Burning fossil fuels like coal and oil. |
| What do you know about recycling? | What recycling do you know about? | It reduces waste by turning old things into new ones, and it also saves resources like trees and metals, which helps protect the environment. |
| What can we do to stop global warming? | What warming can we do to stop global? | We can use bicycles instead of cars to reduce emissions, and we can also save energy by turning off appliances when we’re not using them. |
| Do you take an interest in nature? | Do nature you take an interest in? | I love all wildlife. My garden is the perfect habitat for hedgehogs. They are nocturnal but if I go out after dark with a torch I sometimes see one. |
| What do you often do to protect the environment? | What environment do you often do to protect the? | I use paper bags instead of nylon ones and travel by public transport to reduce pollution. |
| Do you use renewable energy? | Do energy you use renewable? | Yes, I have installed solar panels to utilize renewable energy sources. |
| What can we do to reduce pollution? | What pollution can we do to reduce? | We can reduce pollution by recycling, using public transport, and conserving energy |
| Do you think climate change is a serious problem? | Do problem you think climate change is a serious? | Yes, climate change leads to extreme weather events and threatens biodiversity |
| How does climate change impact sea levels? | How levels does climate change impact sea? | It causes polar ice to melt and seawater to expand, leading to rising sea levels. |
| Do you think climate change is a major issue? | Do issue you think climate change is a major? | Yes, I believe it is a critical problem that needs urgent action. |
| Has climate change affected your daily life? | Has life climate change affected your daily? | Not much, but I have noticed hotter summers. |
| Are you worried about pollution in your city? | Are city you worried about pollution in your? | Yes, I see more smog and trash on the streets |
| Do you trust the quality of tap water in your area? | Do area you trust the quality of tap water in your? | Not really, I prefer bottled water. |
| Do you believe individuals can make a difference in protecting the environment? | Do environment you believe individuals can make a difference in protecting the? | Yes, small actions like recycling and reducing waste contribute to bigger changes when many people participate. |
| How often do you think about your environmental impact? | How impact often do you think about your environmental? | I consider it daily, especially when making choices like using reusable items or conserving energy at home. |
| Have you noticed changes in your local environment over the past decade? | Have decade you noticed changes in your local environment over the past? | Yes, summers are hotter, and there’s more plastic waste in rivers compared to 10 years ago |
| Do you separate recyclables from regular trash at home? | Do home you separate recyclables from regular trash at? | Yes, I sort paper, plastic, and glass into separate bins to ensure they’re properly recycled |
| How do you reduce plastic use in daily life? | How life do you reduce plastic use in daily? | I carry a reusable water bottle, avoid plastic straws, and choose products with minimal packagin |
| What’s your opinion on single-use plastics? | What’s plastics your opinion on single-use? | They should be banned because they pollute oceans and harm marine life unnecessarily |
| Have you participated in a community clean-up event? | Have event you participated in a community clean-up? | Yes, I joined a beach clean-up last month and collected over 5 kg of trash |
| Have you made any energy-saving changes at home? | Have home you made any energy-saving changes at? | I switched to LED bulbs and unplug devices when not in use to cut electricity waste." |
| Would you consider buying an electric vehicle? | Would vehicle you consider buying an electric? | Yes, if charging stations become more accessible and prices are affordable |
| Have you ever donated to wildlife conservation? | Have conservation you ever donated to wildlife? | I donated to a rainforest protection fund last year to help save orangutans." |
| Do you avoid products linked to deforestation? | Do deforestation you avoid products linked to? | I check labels for sustainable palm oil and avoid brands harming rainforests. |
| Is your country doing enough to address environmental issues? | Is issues your country doing enough to address environmental? | No, policies are weak, and enforcement is inconsistent compared to global standards." |
| Do you talk to friends/family about environmental issues? | Do issues you talk to friends/family about environmental? | Yes, I share tips on recycling and energy savings to inspire others. |
| Do you check air quality before going outside? | Do outside you check air quality before going? | Only on hazy days—my phone app gives me alerts when it’s really bad |
| How serious is plastic pollution in your local area? | How area serious is plastic pollution in your local? | It's getting worse every year. I can spot plastic bags stuck in trees after every heavy wind |
| How would you describe the air quality in your city? | How city would you describe the air quality in your? | Some mornings it's so hazy I can't even see the buildings across the street - like living in a bowl of soup! |
| How does water pollution affect marine life? | How life does water pollution affect marine? | It leads to habitat destruction, toxic contamination, and loss of biodiversity. |
| Do you believe climate change is a serious issue? | Do issue you believe climate change is a serious? | Yes, I think it’s one of the biggest threats to our future. |
| Would you be willing to pay more for eco-friendly products? | Would products you be willing to pay more for eco-friendly? | Yes, but only if the price difference is not too big. |
| Would you support higher taxes on polluting industries? | Would industries you support higher taxes on polluting? | Yes, but only if the money is used for environmental protection. |
| What is the biggest cause of climate change? | What change is the biggest cause of climate? | Yes, there is pollution where I live in Hanoi, Vietnam. Air pollution is the most serious environmental problem in Hanoi. |
| What kinds of pollution are serious in your country? | What country kinds of pollution are serious in your? | Unfortunately, pollution is a significant issue in Vietnam. Some of the most serious types of pollution include air pollution, water pollution, and noise pollution. |
| Do you take an interest in nature? | Do nature? you take an interest in? | Yes, I do. I find nature to be a fascinating and complex system that is full of beauty and wonder. |
| Do you like growing plants? | Do plants? you like growing? | Yes, I do enjoy growing plants. I also appreciate the beauty that plants bring to my home and garden. |
| Why is environmental education important? | Why important is environmental education? | It raises awareness and encourages people to take action to protect nature. |
| What are the main causes of air pollution in urban areas today? | What today are the main causes of air pollution in urban areas? | Vehicle emissions, industrial activities, burning fossil fuels, construction dust, and waste incineration. |
| How does deforestation affect global climate patterns? | How patterns does deforestation affect global climate? | Releases carbon dioxide, reduces CO2 absorption, and disrupts rainfall patterns, worsening global warming. |
| Why is plastic pollution such a significant problem for marine life? | Why life is plastic pollution such a significant problem for marine? | Marine animals ingest or get entangled in it, causing injury, starvation, death, and food chain disruption. |
| What role does industrial waste play in water pollution? | What pollution role does industrial waste play in water? | Contaminates water with chemicals, heavy metals, and untreated sewage, harming ecosystems and health. |
| How are rising global temperatures impacting polar ice caps? | How caps are rising global temperatures impacting polar ice? | Melts ice caps, reduces reflectivity, accelerates warming, and raises sea levels. |
| What are the effects of overfishing on ocean ecosystems? | What ecosystems are the effects of overfishing on ocean? | Depletes fish populations, disrupts food webs, and damages habitats like coral reefs. |
| How does urbanization contribute to habitat loss for wildlife? | How wildlife does urbanization contribute to habitat loss for? | Clears forests, wetlands, and grasslands for infrastructure, reducing wildlife living space. |
| Why are greenhouse gas emissions still increasing despite awareness? | Why awareness are greenhouse gas emissions still increasing despite? | Economic growth, fossil fuel reliance, weak policies, and population growth outpace reduction efforts. |
| What steps are governments taking to reduce carbon footprints? | What footprints steps are governments taking to reduce carbon? | Promoting renewables, enforcing emissions rules, subsidizing green tech, and joining global agreements. |
| How does soil degradation affect agricultural productivity? | How productivity does soil degradation affect agricultural? | Reduces fertility, limits crop yields, and increases reliance on chemical fertilizers. |
| What are the consequences of melting glaciers for sea levels? | What levels are the consequences of melting glaciers for sea? | Raises sea levels, floods coastal areas, and displaces communities and ecosystems. |
| How is climate change influencing extreme weather events? | How events is climate change influencing extreme weather? | Increases frequency and intensity of storms, heatwaves, droughts, and floods. |
| Why is biodiversity loss considered a global crisis? | Why crisis is biodiversity loss considered a global? | Threatens ecosystem stability, food security, and resilience to environmental changes. |
| What are the primary sources of renewable energy being used today? | What today are the primary sources of renewable energy being used? | Solar, wind, hydropower, geothermal, and biomass energy. |
| How does single-use plastic impact the environment long-term? | How long-term does single-use plastic impact the environment? | Persists in ecosystems, pollutes water and soil, and harms wildlife for decades. |
| What measures can individuals take to reduce their environmental impact? | What impact measures can individuals take to reduce their environmental? | Reduce waste, use renewables, conserve water, and adopt sustainable habits. |
| How are coral reefs being affected by ocean warming? | How warming are coral reefs being affected by ocean? | Causes bleaching, weakens structures, and reduces biodiversity in reef ecosystems. |
| Why is electronic waste becoming a growing environmental issue? | Why issue is electronic waste becoming a growing environmental? | Contains toxic materials, pollutes soil and water, and overwhelms waste systems. |
| What role do corporations play in environmental degradation? | What degradation role do corporations play in environmental? | Drive resource extraction, emissions, and waste through production and supply chains. |
| How effective are current recycling programs worldwide? | How worldwide effective are current recycling programs? | Vary widely; effective in some regions but limited by contamination and low participation elsewhere. |
| What are the environmental impacts of large-scale mining? | What mining are the environmental impacts of large-scale? | Destroys habitats, pollutes water, and releases greenhouse gases. |
| How does air quality affect human health in polluted cities? | How cities does air quality affect human health in polluted? | Increases respiratory issues, heart disease, and premature deaths in polluted areas. |
| Why are wetlands disappearing at an alarming rate? | Why rate are wetlands disappearing at an alarming? | Drained for agriculture, urban development, and climate-driven drying. |
| What is the relationship between deforestation and carbon dioxide levels? | What levels is the relationship between deforestation and carbon dioxide? | Removes trees that absorb CO2, increasing atmospheric levels and warming. |
| How are endangered species being protected from extinction? | How extinction are endangered species being protected from? | Through protected areas, breeding programs, and laws against poaching and trade. |
| What challenges do renewable energy projects face today? | What today challenges do renewable energy projects face? | High costs, infrastructure needs, and inconsistent energy output. |
| How does overpopulation strain natural resources? | How resources does overpopulation strain natural? | Increases demand for food, water, and energy, depleting resources faster. |
| Why is clean water becoming scarce in some regions? | Why regions is clean water becoming scarce in some? | Overuse, pollution, and climate change reduce freshwater availability. |
| What are the environmental effects of oil spills in the ocean? | What ocean are the environmental effects of oil spills in the? | Kills marine life, damages habitats, and disrupts ecosystems for years. |
| How do pesticides harm ecosystems beyond their intended targets? | How targets do pesticides harm ecosystems beyond their intended? | Harm pollinators, wildlife, and soil health, causing broader ecological damage. |
| What is being done to combat desertification globally? | What globally is being done to combat desertification? | Reforestation, sustainable farming, and international aid programs. |
| How does fast fashion contribute to environmental damage? | How damage does fast fashion contribute to environmental? | Creates waste, uses toxic dyes, and consumes vast water and energy. |
| Why are wildfires becoming more frequent and intense? | Why intense are wildfires becoming more frequent and? | Driven by higher temperatures, droughts, and human land mismanagement. |
| What impact does transportation have on global emissions? | What emissions impact does transportation have on global? | Contributes heavily via cars, planes, and shipping emissions. |
| How are coastal areas preparing for rising sea levels? | How levels are coastal areas preparing for rising sea? | Building seawalls, relocating communities, and restoring natural barriers like mangroves. |
| What are the benefits of reforestation efforts? | What efforts are the benefits of reforestation? | Restores habitats, sequesters carbon, and improves soil and water retention. |
| How does noise pollution affect wildlife behavior? | How behavior does noise pollution affect wildlife? | Disrupts mating, hunting, and migration patterns in animals. |
| Why is sustainable agriculture gaining attention today? | Why today is sustainable agriculture gaining attention? | Reduces chemical use, preserves soil, and meets growing food demand sustainably. |
| What are the long-term effects of nuclear waste on the environment? | What environment are the long-term effects of nuclear waste on the? | Contaminates soil and water, posing risks for centuries if mismanaged. |
| How do microplastics enter the human food chain? | How chain do microplastics enter the human food? | Through seafood, water, and soil, accumulating in human tissues. |
| What role does education play in environmental conservation? | What conservation role does education play in environmental? | Raises awareness, changes behavior, and fosters sustainable practices. |
| How are developing countries addressing environmental challenges? | How challenges are developing countries addressing environmental? | Adopting renewables, seeking aid, and balancing growth with conservation. |
| Why is the loss of pollinators a threat to food security? | Why security is the loss of pollinators a threat to food? | Reduces crop pollination, threatening food production and ecosystems. |
| What are the environmental costs of cryptocurrency mining? | What mining are the environmental costs of cryptocurrency? | High energy use for computing drives emissions and resource depletion. |
| How does illegal logging impact tropical rainforests? | How rainforests does illegal logging impact tropical? | Destroys habitats, increases CO2, and threatens indigenous communities. |
| What innovations are helping to clean up polluted rivers? | What rivers innovations are helping to clean up polluted? | Bioremediation, filtration systems, and trash-collecting drones. |
| How are animals adapting to changing climates? | How climates are animals adapting to changing? | Shifting habitats, altering behaviors, or facing extinction risks. |
| Why is ocean acidification a growing concern for marine life? | Why life is ocean acidification a growing concern for marine? | Weakens shells, disrupts food chains, and harms marine biodiversity. |
| What are the environmental impacts of tourism in sensitive areas? | What areas are the environmental impacts of tourism in sensitive? | Strains resources, damages ecosystems, and increases waste in fragile areas. |
| How can technology help solve current environmental problems? | How problems can technology help solve current environmental? | Offers solutions like clean energy, pollution monitoring, and waste management tools. |

## 1.4 Đánh giá dữ liệu sinh thêm

* Tiêu chí 1: Độ rõ ràng và dễ hiểu
* Cách tiếp cận: Dùng công thức Flesch Reading Ease để tính mức độ dễ đọc.
* Công thức: Score = 206.835−1.015
* Quy đổi điểm: FRE trên 80 được 5 điểm; từ 70–80 được 4 điểm; từ 60–70 là 3 điểm; từ 50–60 là 2 điểm; dưới 50 là 1 điểm.
* Tiêu chí 2: Độ chính xác (liên quan)
* Cách tiếp cận: Trích xuất từ khóa trong câu hỏi. So sánh xem bao nhiêu từ khóa có xuất hiện trong câu trả lời.
* Quy đổi điểm: Từ 80% trở lên được 5 điểm; 60–79% là 4 điểm; 40–59% là 3 điểm; 20–39% là 2 điểm; dưới 20% là 1 điểm.
* Tiêu chí 3: Tính đầy đủ
* Cách tiếp cận: Dựa vào số lượng từ trong câu trả lời.
* Quy đổi điểm: Trên 40 từ được 5 điểm; 21–40 từ là 4 điểm; 11–20 từ là 3 điểm; 5–10 từ là 2 điểm; dưới 5 từ là 1 điểm.

#### Bảng 1.4 Bảng đánh giá các câu hỏi/câu trả lời sinh thêm

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Original Question** | **Generated Question** | **Answer** | **Clarity** | **Relevance** | **Completeness** | **Total Score (1-5)** |
| Do you use reusable bags instead of plastic ones? | Do you utilize reusable bags instead of plastic ones? | Yes, I always carry my own bag. | 5 | 1 | 2 | 2.67 |
| What products can we use to reduce water pollution? | What products can we utilize to minimize water pollution? | Finally, we can reduce water pollution by using green products and avoiding single-use products like plastic bags. | 1 | 3 | 3 | 2.33 |
| What role do governments play in environmental protection? | What role do governments have in environmental protection? | They create laws, regulations, and policies to protect natural resources. | 1 | 1 | 2 | 1.33 |
| Do you think pollution is a problem today? | Do you believe pollution is a issue today? | Yes, I think pollution is a problem today. It’s one of the most pressing issues facing our planet. | 4 | 3 | 3 | 3.33 |
| Do you think food waste is a problem? | Do you believe food waste is a issue? | Yes, it wastes resources and creates more trash. | 3 | 1 | 2 | 2 |
| What do you know about climate change? | What do you know about climate change? | It’s a change in weather patterns due to human activities. | 2 | 1 | 2 | 1.67 |
| Do you think you’ve done enough to protect the environment? | Do you believe you’ve done enough to protect the environment? | No definitely not, I still throw away various single-use plastic products every day. Currently, there aren’t any recycling programmes where I live. I hope this will change soon. | 1 | 1 | 4 | 2 |
| What can you do to help the environment? | What can you do to help the environment? | I think I can help by recycling more and using less plastic, like bringing my own bags when I go shopping | 3 | 2 | 4 | 3 |
| Do you think it’s important to plant trees? | Do you believe it’s important to plant trees? | Yes, trees clean the air and provide oxygen. | 4 | 1 | 2 | 2.33 |
| Do you think air pollution is a problem in your city? | Do you believe air pollution is a issue in your city? | Yes, there’s a lot of smoke from cars and factories. | 5 | 1 | 2 | 2.67 |
| What do you do to stop wasting food? | What do you do to stop wasting food? | I eat leftovers and don’t buy too much food | 5 | 1 | 2 | 2.67 |
| Do you think people should use less plastic? | Do you believe people should utilize less plastic? | Yes, because plastic harms animals and the environment. | 1 | 1 | 2 | 1.33 |
| What is the biggest cause of climate change? | What is the biggest cautilize of climate change? | Burning fossil fuels like coal and oil. | 4 | 1 | 2 | 2.33 |
| What do you know about recycling? | What do you know about recycling? | It reduces waste by turning old things into new ones, and it also saves resources like trees and metals, which helps protect the environment. | 1 | 1 | 4 | 2 |
| What can we do to stop global warming? | What can we do to stop global warming? | We can use bicycles instead of cars to reduce emissions, and we can also save energy by turning off appliances when we’re not using them. | 1 | 2 | 4 | 2.33 |
| Do you take an interest in nature? | Do you take an interest in nature? | I love all wildlife. My garden is the perfect habitat for hedgehogs. They are nocturnal but if I go out after dark with a torch I sometimes see one. | 3 | 1 | 4 | 2.67 |
| What do you often do to protect the environment? | What do you often do to protect the environment? | I use paper bags instead of nylon ones and travel by public transport to reduce pollution. | 1 | 1 | 3 | 1.67 |
| Do you use renewable energy? | Do you utilize renewable energy? | Yes, I have installed solar panels to utilize renewable energy sources. | 1 | 4 | 3 | 2.67 |
| What can we do to reduce pollution? | What can we do to minimize pollution? | We can reduce pollution by recycling, using public transport, and conserving energy | 1 | 3 | 3 | 2.33 |
| Do you think climate change is a serious problem? | Do you believe climate change is a serious issue? | Yes, climate change leads to extreme weather events and threatens biodiversity | 1 | 2 | 3 | 2 |
| How does climate change impact sea levels? | How does climate change impact sea levels? | It causes polar ice to melt and seawater to expand, leading to rising sea levels. | 2 | 2 | 3 | 2.33 |
| Do you think climate change is a major issue? | Do you believe climate change is a major issue? | Yes, I believe it is a critical problem that needs urgent action. | 3 | 2 | 3 | 2.67 |
| Has climate change affected your daily life? | Has climate change affected your daily life? | Not much, but I have noticed hotter summers. | 3 | 1 | 2 | 2 |
| Are you worried about pollution in your city? | Are you worried about pollution in your city? | Yes, I see more smog and trash on the streets | 5 | 1 | 2 | 2.67 |
| Do you trust the quality of tap water in your area? | Do you trust the quality of tap water in your area? | Not really, I prefer bottled water. | 2 | 1 | 2 | 1.67 |
| Do you believe individuals can make a difference in protecting the environment? | Do you believe individuals can make a difference in protecting the environment? | Yes, small actions like recycling and reducing waste contribute to bigger changes when many people participate. | 1 | 1 | 3 | 1.67 |
| How often do you think about your environmental impact? | How often do you believe about your environmental impact? | I consider it daily, especially when making choices like using reusable items or conserving energy at home. | 1 | 1 | 3 | 1.67 |
| Have you noticed changes in your local environment over the past decade? | Have you noticed changes in your local environment over the past decade? | Yes, summers are hotter, and there’s more plastic waste in rivers compared to 10 years ago | 2 | 1 | 3 | 2 |
| Do you separate recyclables from regular trash at home? | Do you separate recyclables from regular trash at home? | Yes, I sort paper, plastic, and glass into separate bins to ensure they’re properly recycled | 1 | 1 | 3 | 1.67 |
| How do you reduce plastic use in daily life? | How do you minimize plastic utilize in daily life? | I carry a reusable water bottle, avoid plastic straws, and choose products with minimal packagin | 1 | 1 | 3 | 1.67 |
| What’s your opinion on single-use plastics? | What’s your opinion on single-utilize plastics? | They should be banned because they pollute oceans and harm marine life unnecessarily | 1 | 1 | 3 | 1.67 |
| Have you participated in a community clean-up event? | Have you participated in a community clean-up event? | Yes, I joined a beach clean-up last month and collected over 5 kg of trash | 5 | 2 | 3 | 3.33 |
| Have you made any energy-saving changes at home? | Have you made any energy-saving changes at home? | I switched to LED bulbs and unplug devices when not in use to cut electricity waste." | 3 | 1 | 3 | 2.33 |
| Would you consider buying an electric vehicle? | Would you consider buying an electric vehicle? | Yes, if charging stations become more accessible and prices are affordable | 1 | 1 | 3 | 1.67 |
| Have you ever donated to wildlife conservation? | Have you ever donated to wildlife conservation? | I donated to a rainforest protection fund last year to help save orangutans." | 2 | 2 | 3 | 2.33 |
| Do you avoid products linked to deforestation? | Do you avoid products linked to deforestation? | I check labels for sustainable palm oil and avoid brands harming rainforests. | 2 | 1 | 3 | 2 |
| Is your country doing enough to address environmental issues? | Is your country doing enough to address environmental issues? | No, policies are weak, and enforcement is inconsistent compared to global standards." | 1 | 2 | 3 | 2 |
| Do you talk to friends/family about environmental issues? | Do you talk to friends/family about environmental issues? | Yes, I share tips on recycling and energy savings to inspire others. | 1 | 1 | 3 | 1.67 |
| Do you check air quality before going outside? | Do you check air quality before going outside? | Only on hazy days—my phone app gives me alerts when it’s really bad | 4 | 1 | 3 | 2.67 |
| How serious is plastic pollution in your local area? | How serious is plastic pollution in your local area? | It's getting worse every year. I can spot plastic bags stuck in trees after every heavy wind | 4 | 2 | 3 | 3 |
| How would you describe the air quality in your city? | How would you describe the air quality in your city? | Some mornings it's so hazy I can't even see the buildings across the street - like living in a bowl of soup! | 3 | 2 | 4 | 3 |
| How does water pollution affect marine life? | How does water pollution affect marine life? | It leads to habitat destruction, toxic contamination, and loss of biodiversity. | 1 | 1 | 3 | 1.67 |
| Do you believe climate change is a serious issue? | Do you believe climate change is a serious issue? | Yes, I think it’s one of the biggest threats to our future. | 5 | 1 | 3 | 3 |
| Would you be willing to pay more for eco-friendly products? | Would you be willing to pay more for eco-friendly products? | Yes, but only if the price difference is not too big. | 4 | 1 | 3 | 2.67 |
| Would you support higher taxes on polluting industries? | Would you support higher taxes on polluting industries? | Yes, but only if the money is used for environmental protection. | 1 | 1 | 3 | 1.67 |
| What is the biggest cause of climate change? | What is the biggest cautilize of climate change? | Yes, there is pollution where I live in Hanoi, Vietnam. Air pollution is the most serious environmental problem in Hanoi. | 1 | 2 | 3 | 2 |
| What kinds of pollution are serious in your country? | What kinds of pollution are serious in your country? | Unfortunately, pollution is a significant issue in Vietnam. Some of the most serious types of pollution include air pollution, water pollution, and noise pollution. | 1 | 3 | 4 | 2.67 |
| Do you take an interest in nature? | Do you take an interest in nature? | Yes, I do. I find nature to be a fascinating and complex system that is full of beauty and wonder. | 4 | 2 | 3 | 3 |
| Do you like growing plants? | Do you like growing plants? | Yes, I do enjoy growing plants. I also appreciate the beauty that plants bring to my home and garden. | 4 | 4 | 3 | 3.67 |
| Why is environmental education important? | Why is environmental education important? | It raises awareness and encourages people to take action to protect nature. | 1 | 1 | 3 | 1.67 |
| What are the main causes of air pollution in urban areas today? | What are the main cautilizes of air pollution in urban areas today? | Vehicle emissions, industrial activities, burning fossil fuels, construction dust, and waste incineration. | 1 | 1 | 3 | 1.67 |
| How does deforestation affect global climate patterns? | How does deforestation affect global climate patterns? | Releases carbon dioxide, reduces CO2 absorption, and disrupts rainfall patterns, worsening global warming. | 1 | 2 | 3 | 2 |
| Why is plastic pollution such a significant problem for marine life? | Why is plastic pollution such a significant issue for marine life? | Marine animals ingest or get entangled in it, causing injury, starvation, death, and food chain disruption. | 1 | 1 | 3 | 1.67 |
| What role does industrial waste play in water pollution? | What role does industrial waste have in water pollution? | Contaminates water with chemicals, heavy metals, and untreated sewage, harming ecosystems and health. | 1 | 1 | 3 | 1.67 |
| How are rising global temperatures impacting polar ice caps? | How are rising global temperatures impacting polar ice caps? | Melts ice caps, reduces reflectivity, accelerates warming, and raises sea levels. | 1 | 2 | 3 | 2 |
| What are the effects of overfishing on ocean ecosystems? | What are the effects of overfishing on ocean ecosystems? | Depletes fish populations, disrupts food webs, and damages habitats like coral reefs. | 1 | 1 | 3 | 1.67 |
| How does urbanization contribute to habitat loss for wildlife? | How does urbanization contribute to habitat loss for wildlife? | Clears forests, wetlands, and grasslands for infrastructure, reducing wildlife living space. | 1 | 2 | 3 | 2 |
| Why are greenhouse gas emissions still increasing despite awareness? | Why are greenhoutilize gas emissions still increasing despite awareness? | Economic growth, fossil fuel reliance, weak policies, and population growth outpace reduction efforts. | 1 | 1 | 3 | 1.67 |
| What steps are governments taking to reduce carbon footprints? | What steps are governments taking to minimize carbon footprints? | Promoting renewables, enforcing emissions rules, subsidizing green tech, and joining global agreements. | 1 | 1 | 3 | 1.67 |
| How does soil degradation affect agricultural productivity? | How does soil degradation affect agricultural productivity? | Reduces fertility, limits crop yields, and increases reliance on chemical fertilizers. | 1 | 1 | 3 | 1.67 |
| What are the consequences of melting glaciers for sea levels? | What are the consequences of melting glaciers for sea levels? | Raises sea levels, floods coastal areas, and displaces communities and ecosystems. | 1 | 2 | 3 | 2 |
| How is climate change influencing extreme weather events? | How is climate change influencing extreme weather events? | Increases frequency and intensity of storms, heatwaves, droughts, and floods. | 1 | 1 | 2 | 1.33 |
| Why is biodiversity loss considered a global crisis? | Why is biodiversity loss considered a global crisis? | Threatens ecosystem stability, food security, and resilience to environmental changes. | 1 | 1 | 2 | 1.33 |
| What are the primary sources of renewable energy being used today? | What are the primary sources of renewable energy being utilized today? | Solar, wind, hydropower, geothermal, and biomass energy. | 1 | 1 | 2 | 1.33 |
| How does single-use plastic impact the environment long-term? | How does single-utilize plastic impact the environment long-term? | Persists in ecosystems, pollutes water and soil, and harms wildlife for decades. | 1 | 1 | 3 | 1.67 |
| What measures can individuals take to reduce their environmental impact? | What measures can individuals take to minimize their environmental impact? | Reduce waste, use renewables, conserve water, and adopt sustainable habits. | 1 | 1 | 2 | 1.33 |
| How are coral reefs being affected by ocean warming? | How are coral reefs being affected by ocean warming? | Causes bleaching, weakens structures, and reduces biodiversity in reef ecosystems. | 1 | 1 | 2 | 1.33 |
| Why is electronic waste becoming a growing environmental issue? | Why is electronic waste becoming a growing environmental issue? | Contains toxic materials, pollutes soil and water, and overwhelms waste systems. | 1 | 1 | 3 | 1.67 |
| What role do corporations play in environmental degradation? | What role do corporations have in environmental degradation? | Drive resource extraction, emissions, and waste through production and supply chains. | 1 | 1 | 3 | 1.67 |
| How effective are current recycling programs worldwide? | How effective are current recycling programs worldwide? | Vary widely; effective in some regions but limited by contamination and low participation elsewhere. | 1 | 1 | 3 | 1.67 |
| What are the environmental impacts of large-scale mining? | What are the environmental impacts of large-scale mining? | Destroys habitats, pollutes water, and releases greenhouse gases. | 1 | 1 | 2 | 1.33 |
| How does air quality affect human health in polluted cities? | How does air quality affect human health in polluted cities? | Increases respiratory issues, heart disease, and premature deaths in polluted areas. | 1 | 2 | 3 | 2 |
| Why are wetlands disappearing at an alarming rate? | Why are wetlands disappearing at an alarming rate? | Drained for agriculture, urban development, and climate-driven drying. | 1 | 1 | 2 | 1.33 |
| What is the relationship between deforestation and carbon dioxide levels? | What is the relationship between deforestation and carbon dioxide levels? | Removes trees that absorb CO2, increasing atmospheric levels and warming. | 1 | 2 | 2 | 1.67 |
| How are endangered species being protected from extinction? | How are endangered species being protected from extinction? | Through protected areas, breeding programs, and laws against poaching and trade. | 1 | 1 | 3 | 1.67 |
| What challenges do renewable energy projects face today? | What challenges do renewable energy projects face today? | High costs, infrastructure needs, and inconsistent energy output. | 1 | 1 | 2 | 1.33 |
| How does overpopulation strain natural resources? | How does overpopulation strain natural resources? | Increases demand for food, water, and energy, depleting resources faster. | 1 | 1 | 2 | 1.33 |
| Why is clean water becoming scarce in some regions? | Why is clean water becoming scarce in some regions? | Overuse, pollution, and climate change reduce freshwater availability. | 1 | 1 | 2 | 1.33 |
| What are the environmental effects of oil spills in the ocean? | What are the environmental effects of oil spills in the ocean? | Kills marine life, damages habitats, and disrupts ecosystems for years. | 1 | 1 | 2 | 1.33 |
| How do pesticides harm ecosystems beyond their intended targets? | How do pesticides harm ecosystems beyond their intended targets? | Harm pollinators, wildlife, and soil health, causing broader ecological damage. | 1 | 1 | 2 | 1.33 |
| What is being done to combat desertification globally? | What is being done to combat desertification globally? | Reforestation, sustainable farming, and international aid programs. | 1 | 1 | 2 | 1.33 |
| How does fast fashion contribute to environmental damage? | How does fast fashion contribute to environmental damage? | Creates waste, uses toxic dyes, and consumes vast water and energy. | 1 | 1 | 3 | 1.67 |
| Why are wildfires becoming more frequent and intense? | Why are wildfires becoming more frequent and intense? | Driven by higher temperatures, droughts, and human land mismanagement. | 1 | 1 | 2 | 1.33 |
| What impact does transportation have on global emissions? | What impact does transportation have on global emissions? | Contributes heavily via cars, planes, and shipping emissions. | 1 | 1 | 2 | 1.33 |
| How are coastal areas preparing for rising sea levels? | How are coastal areas preparing for rising sea levels? | Building seawalls, relocating communities, and restoring natural barriers like mangroves. | 1 | 1 | 2 | 1.33 |
| What are the benefits of reforestation efforts? | What are the benefits of reforestation efforts? | Restores habitats, sequesters carbon, and improves soil and water retention. | 1 | 1 | 2 | 1.33 |
| How does noise pollution affect wildlife behavior? | How does noise pollution affect wildlife behavior? | Disrupts mating, hunting, and migration patterns in animals. | 1 | 1 | 2 | 1.33 |
| Why is sustainable agriculture gaining attention today? | Why is sustainable agriculture gaining attention today? | Reduces chemical use, preserves soil, and meets growing food demand sustainably. | 1 | 1 | 3 | 1.67 |
| What are the long-term effects of nuclear waste on the environment? | What are the long-term effects of nuclear waste on the environment? | Contaminates soil and water, posing risks for centuries if mismanaged. | 1 | 1 | 2 | 1.33 |
| How do microplastics enter the human food chain? | How do microplastics enter the human food chain? | Through seafood, water, and soil, accumulating in human tissues. | 1 | 1 | 2 | 1.33 |
| What role does education play in environmental conservation? | What role does education have in environmental conservation? | Raises awareness, changes behavior, and fosters sustainable practices. | 1 | 1 | 2 | 1.33 |
| How are developing countries addressing environmental challenges? | How are developing countries addressing environmental challenges? | Adopting renewables, seeking aid, and balancing growth with conservation. | 1 | 1 | 2 | 1.33 |
| Why is the loss of pollinators a threat to food security? | Why is the loss of pollinators a threat to food security? | Reduces crop pollination, threatening food production and ecosystems. | 1 | 1 | 2 | 1.33 |
| What are the environmental costs of cryptocurrency mining? | What are the environmental costs of cryptocurrency mining? | High energy use for computing drives emissions and resource depletion. | 1 | 1 | 2 | 1.33 |
| How does illegal logging impact tropical rainforests? | How does illegal logging impact tropical rainforests? | Destroys habitats, increases CO2, and threatens indigenous communities. | 1 | 1 | 2 | 1.33 |
| What innovations are helping to clean up polluted rivers? | What innovations are helping to clean up polluted rivers? | Bioremediation, filtration systems, and trash-collecting drones. | 1 | 1 | 2 | 1.33 |
| How are animals adapting to changing climates? | How are animals adapting to changing climates? | Shifting habitats, altering behaviors, or facing extinction risks. | 1 | 1 | 2 | 1.33 |
| Why is ocean acidification a growing concern for marine life? | Why is ocean acidification a growing concern for marine life? | Weakens shells, disrupts food chains, and harms marine biodiversity. | 1 | 1 | 2 | 1.33 |
| What are the environmental impacts of tourism in sensitive areas? | What are the environmental impacts of tourism in sensitive areas? | Strains resources, damages ecosystems, and increases waste in fragile areas. | 1 | 2 | 2 | 1.67 |
| How can technology help solve current environmental problems? | How can technology help solve current environmental issues? | Offers solutions like clean energy, pollution monitoring, and waste management tools. | 1 | 1 | 3 | 1.67 |
| Luật 2: Diễn đạt lại câu |  |  | 5 | 5 | 1 | 3.67 |
| Original Question | Generated Question | Answer | 1 | 1 | 1 | 1 |
| Do you use reusable bags instead of plastic ones? | Do you use reusable bags instead of plastic ones? | Yes, I always carry my own bag. | 5 | 1 | 2 | 2.67 |
| What products can we use to reduce water pollution? | Can you tell me what products can we use to reduce water pollution? | Finally, we can reduce water pollution by using green products and avoiding single-use products like plastic bags. | 1 | 4 | 3 | 2.67 |
| What role do governments play in environmental protection? | Can you tell me what role do governments play in environmental protection? | They create laws, regulations, and policies to protect natural resources. | 1 | 1 | 2 | 1.33 |
| Do you think pollution is a problem today? | In your opinion, is pollution is a problem today? | Yes, I think pollution is a problem today. It’s one of the most pressing issues facing our planet. | 4 | 4 | 3 | 3.67 |
| Do you think food waste is a problem? | In your opinion, is food waste is a problem? | Yes, it wastes resources and creates more trash. | 3 | 1 | 2 | 2 |
| What do you know about climate change? | Can you tell me what do you know about climate change? | It’s a change in weather patterns due to human activities. | 2 | 1 | 2 | 1.67 |
| Do you think you’ve done enough to protect the environment? | In your opinion, is you’ve done enough to protect the environment?  ? | No definitely not, I still throw away various single-use plastic products every day. Currently, there aren’t any recycling programmes where I live. I hope this will change soon. | 1 | 1 | 4 | 2 |
| What can you do to help the environment? | Can you tell me what can you do to help the environment? | I think I can help by recycling more and using less plastic, like bringing my own bags when I go shopping | 3 | 2 | 4 | 3 |
| Do you think it’s important to plant trees? | In your opinion, is it’s important to plant trees? | Yes, trees clean the air and provide oxygen. | 4 | 1 | 2 | 2.33 |
| Do you think air pollution is a problem in your city? | In your opinion, is air pollution is a problem in your city? | Yes, there’s a lot of smoke from cars and factories. | 5 | 1 | 2 | 2.67 |
| What do you do to stop wasting food? | Can you tell me what do you do to stop wasting food? | I eat leftovers and don’t buy too much food | 5 | 1 | 2 | 2.67 |
| Do you think people should use less plastic? | In your opinion, is people should use less plastic? | Yes, because plastic harms animals and the environment. | 1 | 1 | 2 | 1.33 |
| What is the biggest cause of climate change? | Can you tell me what is the biggest cause of climate change? | Burning fossil fuels like coal and oil. | 4 | 1 | 2 | 2.33 |
| What do you know about recycling? | Can you tell me what do you know about recycling? | It reduces waste by turning old things into new ones, and it also saves resources like trees and metals, which helps protect the environment. | 1 | 1 | 4 | 2 |
| What can we do to stop global warming? | Can you tell me what can we do to stop global warming? | We can use bicycles instead of cars to reduce emissions, and we can also save energy by turning off appliances when we’re not using them. | 1 | 2 | 4 | 2.33 |
| Do you take an interest in nature? | Do you take an interest in nature? | I love all wildlife. My garden is the perfect habitat for hedgehogs. They are nocturnal but if I go out after dark with a torch I sometimes see one. | 3 | 1 | 4 | 2.67 |
| What do you often do to protect the environment? | Can you tell me what do you often do to protect the environment? | I use paper bags instead of nylon ones and travel by public transport to reduce pollution. | 1 | 1 | 3 | 1.67 |
| Do you use renewable energy? | Do you use renewable energy? | Yes, I have installed solar panels to utilize renewable energy sources. | 1 | 3 | 3 | 2.33 |
| What can we do to reduce pollution? | Can you tell me what can we do to reduce pollution? | We can reduce pollution by recycling, using public transport, and conserving energy | 1 | 3 | 3 | 2.33 |
| Do you think climate change is a serious problem? | In your opinion, is climate change is a serious problem? | Yes, climate change leads to extreme weather events and threatens biodiversity | 1 | 2 | 3 | 2 |
| How does climate change impact sea levels? | Can you explain how does climate change impact sea levels? | It causes polar ice to melt and seawater to expand, leading to rising sea levels. | 2 | 2 | 3 | 2.33 |
| Do you think climate change is a major issue? | In your opinion, is climate change is a major issue? | Yes, I believe it is a critical problem that needs urgent action. | 3 | 2 | 3 | 2.67 |
| Has climate change affected your daily life? | Has climate change affected your daily life? | Not much, but I have noticed hotter summers. | 3 | 1 | 2 | 2 |
| Are you worried about pollution in your city? | Are you worried about pollution in your city? | Yes, I see more smog and trash on the streets | 5 | 1 | 2 | 2.67 |
| Do you trust the quality of tap water in your area? | Do you trust the quality of tap water in your area? | Not really, I prefer bottled water. | 2 | 1 | 2 | 1.67 |
| Do you believe individuals can make a difference in protecting the environment? | Do you believe individuals can make a difference in protecting the environment? | Yes, small actions like recycling and reducing waste contribute to bigger changes when many people participate. | 1 | 1 | 3 | 1.67 |
| How often do you think about your environmental impact? | Can you explain how often do you think about your environmental impact? | I consider it daily, especially when making choices like using reusable items or conserving energy at home. | 1 | 1 | 3 | 1.67 |
| Have you noticed changes in your local environment over the past decade? | Have you noticed changes in your local environment over the past decade? | Yes, summers are hotter, and there’s more plastic waste in rivers compared to 10 years ago | 2 | 1 | 3 | 2 |
| Do you separate recyclables from regular trash at home? | Do you separate recyclables from regular trash at home? | Yes, I sort paper, plastic, and glass into separate bins to ensure they’re properly recycled | 1 | 1 | 3 | 1.67 |
| How do you reduce plastic use in daily life? | Can you explain how do you reduce plastic use in daily life? | I carry a reusable water bottle, avoid plastic straws, and choose products with minimal packagin | 1 | 1 | 3 | 1.67 |
| What’s your opinion on single-use plastics? | Can you tell me what s your opinion on single-use plastics? | They should be banned because they pollute oceans and harm marine life unnecessarily | 1 | 1 | 3 | 1.67 |
| Have you participated in a community clean-up event? | Have you participated in a community clean-up event? | Yes, I joined a beach clean-up last month and collected over 5 kg of trash | 5 | 2 | 3 | 3.33 |
| Have you made any energy-saving changes at home? | Have you made any energy-saving changes at home? | I switched to LED bulbs and unplug devices when not in use to cut electricity waste." | 3 | 1 | 3 | 2.33 |
| Would you consider buying an electric vehicle? | Would you consider buying an electric vehicle? | Yes, if charging stations become more accessible and prices are affordable | 1 | 1 | 3 | 1.67 |
| Have you ever donated to wildlife conservation? | Have you ever donated to wildlife conservation? | I donated to a rainforest protection fund last year to help save orangutans." | 2 | 2 | 3 | 2.33 |
| Do you avoid products linked to deforestation? | Do you avoid products linked to deforestation? | I check labels for sustainable palm oil and avoid brands harming rainforests. | 2 | 1 | 3 | 2 |
| Is your country doing enough to address environmental issues? | Is your country doing enough to address environmental issues? | No, policies are weak, and enforcement is inconsistent compared to global standards." | 1 | 2 | 3 | 2 |
| Do you talk to friends/family about environmental issues? | Do you talk to friends/family about environmental issues? | Yes, I share tips on recycling and energy savings to inspire others. | 1 | 1 | 3 | 1.67 |
| Do you check air quality before going outside? | Do you check air quality before going outside? | Only on hazy days—my phone app gives me alerts when it’s really bad | 4 | 1 | 3 | 2.67 |
| How serious is plastic pollution in your local area? | Can you explain how serious is plastic pollution in your local area? | It's getting worse every year. I can spot plastic bags stuck in trees after every heavy wind | 4 | 2 | 3 | 3 |
| How would you describe the air quality in your city? | Can you explain how would you describe the air quality in your city? | Some mornings it's so hazy I can't even see the buildings across the street - like living in a bowl of soup! | 3 | 2 | 4 | 3 |
| How does water pollution affect marine life? | Can you explain how does water pollution affect marine life? | It leads to habitat destruction, toxic contamination, and loss of biodiversity. | 1 | 1 | 3 | 1.67 |
| Do you believe climate change is a serious issue? | Do you believe climate change is a serious issue? | Yes, I think it’s one of the biggest threats to our future. | 5 | 1 | 3 | 3 |
| Would you be willing to pay more for eco-friendly products? | Would you be willing to pay more for eco-friendly products? | Yes, but only if the price difference is not too big. | 4 | 1 | 3 | 2.67 |
| Would you support higher taxes on polluting industries? | Would you support higher taxes on polluting industries? | Yes, but only if the money is used for environmental protection. | 1 | 1 | 3 | 1.67 |
| What is the biggest cause of climate change? | Can you tell me what is the biggest cause of climate change? | Yes, there is pollution where I live in Hanoi, Vietnam. Air pollution is the most serious environmental problem in Hanoi. | 1 | 1 | 3 | 1.67 |
| What kinds of pollution are serious in your country? | Can you tell me what kinds of pollution are serious in your country? | Unfortunately, pollution is a significant issue in Vietnam. Some of the most serious types of pollution include air pollution, water pollution, and noise pollution. | 1 | 2 | 4 | 2.33 |
| Do you take an interest in nature? | Do you take an interest in nature? | Yes, I do. I find nature to be a fascinating and complex system that is full of beauty and wonder. | 4 | 2 | 3 | 3 |
| Do you like growing plants? | Do you like growing plants? | Yes, I do enjoy growing plants. I also appreciate the beauty that plants bring to my home and garden. | 4 | 4 | 3 | 3.67 |
| Why is environmental education important? | Why is environmental education important? | It raises awareness and encourages people to take action to protect nature. | 1 | 1 | 3 | 1.67 |
| What are the main causes of air pollution in urban areas today? | Can you tell me what are the main causes of air pollution in urban areas today? | Vehicle emissions, industrial activities, burning fossil fuels, construction dust, and waste incineration. | 1 | 1 | 3 | 1.67 |
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| How are rising global temperatures impacting polar ice caps? | Can you explain how are rising global temperatures impacting polar ice caps? | Melts ice caps, reduces reflectivity, accelerates warming, and raises sea levels. | 1 | 1 | 3 | 1.67 |
| What are the effects of overfishing on ocean ecosystems? | Can you tell me what are the effects of overfishing on ocean ecosystems? | Depletes fish populations, disrupts food webs, and damages habitats like coral reefs. | 1 | 1 | 3 | 1.67 |
| How does urbanization contribute to habitat loss for wildlife? | Can you explain how does urbanization contribute to habitat loss for wildlife? | Clears forests, wetlands, and grasslands for infrastructure, reducing wildlife living space. | 1 | 1 | 3 | 1.67 |
| Why are greenhouse gas emissions still increasing despite awareness? | Why are greenhouse gas emissions still increasing despite awareness? | Economic growth, fossil fuel reliance, weak policies, and population growth outpace reduction efforts. | 1 | 1 | 3 | 1.67 |
| What steps are governments taking to reduce carbon footprints? | Can you tell me what steps are governments taking to reduce carbon footprints? | Promoting renewables, enforcing emissions rules, subsidizing green tech, and joining global agreements. | 1 | 1 | 3 | 1.67 |
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| How does single-use plastic impact the environment long-term? | Can you explain how does single-use plastic impact the environment long-term? | Persists in ecosystems, pollutes water and soil, and harms wildlife for decades. | 1 | 1 | 3 | 1.67 |
| What measures can individuals take to reduce their environmental impact? | Can you tell me what measures can individuals take to reduce their environmental impact? | Reduce waste, use renewables, conserve water, and adopt sustainable habits. | 1 | 1 | 2 | 1.33 |
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| What are the environmental impacts of large-scale mining? | Can you tell me what are the environmental impacts of large-scale mining? | Destroys habitats, pollutes water, and releases greenhouse gases. | 1 | 1 | 2 | 1.33 |
| How does air quality affect human health in polluted cities? | Can you explain how does air quality affect human health in polluted cities? | Increases respiratory issues, heart disease, and premature deaths in polluted areas. | 1 | 1 | 3 | 1.67 |
| Why are wetlands disappearing at an alarming rate? | Why are wetlands disappearing at an alarming rate? | Drained for agriculture, urban development, and climate-driven drying. | 1 | 1 | 2 | 1.33 |
| What is the relationship between deforestation and carbon dioxide levels? | Can you tell me what is the relationship between deforestation and carbon dioxide levels? | Removes trees that absorb CO2, increasing atmospheric levels and warming. | 1 | 1 | 2 | 1.33 |
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| How does overpopulation strain natural resources? | Can you explain how does overpopulation strain natural resources? | Increases demand for food, water, and energy, depleting resources faster. | 1 | 1 | 2 | 1.33 |
| Why is clean water becoming scarce in some regions? | Why is clean water becoming scarce in some regions? | Overuse, pollution, and climate change reduce freshwater availability. | 1 | 1 | 2 | 1.33 |
| What are the environmental effects of oil spills in the ocean? | Can you tell me what are the environmental effects of oil spills in the ocean? | Kills marine life, damages habitats, and disrupts ecosystems for years. | 1 | 1 | 2 | 1.33 |
| How do pesticides harm ecosystems beyond their intended targets? | Can you explain how do pesticides harm ecosystems beyond their intended targets? | Harm pollinators, wildlife, and soil health, causing broader ecological damage. | 1 | 1 | 2 | 1.33 |
| What is being done to combat desertification globally? | Can you tell me what is being done to combat desertification globally? | Reforestation, sustainable farming, and international aid programs. | 1 | 1 | 2 | 1.33 |
| How does fast fashion contribute to environmental damage? | Can you explain how does fast fashion contribute to environmental damage? | Creates waste, uses toxic dyes, and consumes vast water and energy. | 1 | 1 | 3 | 1.67 |
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| What role does education play in environmental conservation? | Can you tell me what role does education play in environmental conservation? | Raises awareness, changes behavior, and fosters sustainable practices. | 1 | 1 | 2 | 1.33 |
| How are developing countries addressing environmental challenges? | Can you explain how are developing countries addressing environmental challenges? | Adopting renewables, seeking aid, and balancing growth with conservation. | 1 | 1 | 2 | 1.33 |
| Why is the loss of pollinators a threat to food security? | Why is the loss of pollinators a threat to food security? | Reduces crop pollination, threatening food production and ecosystems. | 1 | 1 | 2 | 1.33 |
| What are the environmental costs of cryptocurrency mining? | Can you tell me what are the environmental costs of cryptocurrency mining? | High energy use for computing drives emissions and resource depletion. | 1 | 1 | 2 | 1.33 |
| How does illegal logging impact tropical rainforests? | Can you explain how does illegal logging impact tropical rainforests? | Destroys habitats, increases CO2, and threatens indigenous communities. | 1 | 1 | 2 | 1.33 |
| What innovations are helping to clean up polluted rivers? | Can you tell me what innovations are helping to clean up polluted rivers? | Bioremediation, filtration systems, and trash-collecting drones. | 1 | 1 | 2 | 1.33 |
| How are animals adapting to changing climates? | Can you explain how are animals adapting to changing climates? | Shifting habitats, altering behaviors, or facing extinction risks. | 1 | 1 | 2 | 1.33 |
| Why is ocean acidification a growing concern for marine life? | Why is ocean acidification a growing concern for marine life? | Weakens shells, disrupts food chains, and harms marine biodiversity. | 1 | 1 | 2 | 1.33 |
| What are the environmental impacts of tourism in sensitive areas? | Can you tell me what are the environmental impacts of tourism in sensitive areas? | Strains resources, damages ecosystems, and increases waste in fragile areas. | 1 | 1 | 2 | 1.33 |
| How can technology help solve current environmental problems? | Can you explain how can technology help solve current environmental problems? | Offers solutions like clean energy, pollution monitoring, and waste management tools. | 1 | 1 | 3 | 1.67 |
| Luật 3: Chuyển câu hỏi mở ↔ câu hỏi đóng |  |  | 5 | 5 | 1 | 3.67 |
| Original Question | Generated Question | Answer | 1 | 1 | 1 | 1 |
| Do you use reusable bags instead of plastic ones? | Why do you you use reusable bags instead of plastic ones? | Yes, I always carry my own bag. | 5 | 1 | 2 | 2.67 |
| What products can we use to reduce water pollution? | Is it true that What products can we use to reduce water pollution? | Finally, we can reduce water pollution by using green products and avoiding single-use products like plastic bags. | 1 | 3 | 3 | 2.33 |
| What role do governments play in environmental protection? | Is it true that What role do governments play in environmental protection? | They create laws, regulations, and policies to protect natural resources. | 1 | 1 | 2 | 1.33 |
| Do you think pollution is a problem today? | Why do you you think pollution is a problem today? | Yes, I think pollution is a problem today. It’s one of the most pressing issues facing our planet. | 4 | 4 | 3 | 3.67 |
| Do you think food waste is a problem? | Why do you you think food waste is a problem? | Yes, it wastes resources and creates more trash. | 3 | 1 | 2 | 2 |
| What do you know about climate change? | Is it true that What do you know about climate change? | It’s a change in weather patterns due to human activities. | 2 | 1 | 2 | 1.67 |
| Do you think you’ve done enough to protect the environment? | Why do you you think you’ve done enough to protect the environment?  ? | No definitely not, I still throw away various single-use plastic products every day. Currently, there aren’t any recycling programmes where I live. I hope this will change soon. | 1 | 1 | 4 | 2 |
| What can you do to help the environment? | Is it true that What can you do to help the environment? | I think I can help by recycling more and using less plastic, like bringing my own bags when I go shopping | 3 | 1 | 4 | 2.67 |
| Do you think it’s important to plant trees? | Why do you you think it’s important to plant trees? | Yes, trees clean the air and provide oxygen. | 4 | 1 | 2 | 2.33 |
| Do you think air pollution is a problem in your city? | Why do you you think air pollution is a problem in your city? | Yes, there’s a lot of smoke from cars and factories. | 5 | 1 | 2 | 2.67 |
| What do you do to stop wasting food? | Is it true that What do you do to stop wasting food? | I eat leftovers and don’t buy too much food | 5 | 1 | 2 | 2.67 |
| Do you think people should use less plastic? | Why do you you think people should use less plastic? | Yes, because plastic harms animals and the environment. | 1 | 1 | 2 | 1.33 |
| What is the biggest cause of climate change? | Is it true that What is the biggest cause of climate change? | Burning fossil fuels like coal and oil. | 4 | 1 | 2 | 2.33 |
| What do you know about recycling? | Is it true that What do you know about recycling? | It reduces waste by turning old things into new ones, and it also saves resources like trees and metals, which helps protect the environment. | 1 | 1 | 4 | 2 |
| What can we do to stop global warming? | Is it true that What can we do to stop global warming? | We can use bicycles instead of cars to reduce emissions, and we can also save energy by turning off appliances when we’re not using them. | 1 | 2 | 4 | 2.33 |
| Do you take an interest in nature? | Do you take an interest in nature? | I love all wildlife. My garden is the perfect habitat for hedgehogs. They are nocturnal but if I go out after dark with a torch I sometimes see one. | 3 | 1 | 4 | 2.67 |
| What do you often do to protect the environment? | Is it true that What do you often do to protect the environment? | I use paper bags instead of nylon ones and travel by public transport to reduce pollution. | 1 | 1 | 3 | 1.67 |
| Do you use renewable energy? | Why do you you use renewable energy? | Yes, I have installed solar panels to utilize renewable energy sources. | 1 | 2 | 3 | 2 |
| What can we do to reduce pollution? | Is it true that What can we do to reduce pollution? | We can reduce pollution by recycling, using public transport, and conserving energy | 1 | 2 | 3 | 2 |
| Do you think climate change is a serious problem? | Why do you you think climate change is a serious problem? | Yes, climate change leads to extreme weather events and threatens biodiversity | 1 | 2 | 3 | 2 |
| How does climate change impact sea levels? | Is it true that How does climate change impact sea levels? | It causes polar ice to melt and seawater to expand, leading to rising sea levels. | 2 | 2 | 3 | 2.33 |
| Do you think climate change is a major issue? | Why do you you think climate change is a major issue? | Yes, I believe it is a critical problem that needs urgent action. | 3 | 1 | 3 | 2.33 |
| Has climate change affected your daily life? | Has climate change affected your daily life? | Not much, but I have noticed hotter summers. | 3 | 1 | 2 | 2 |
| Are you worried about pollution in your city? | Why do you you worried about pollution in your city? | Yes, I see more smog and trash on the streets | 5 | 1 | 2 | 2.67 |
| Do you trust the quality of tap water in your area? | Why do you you trust the quality of tap water in your area? | Not really, I prefer bottled water. | 2 | 1 | 2 | 1.67 |
| Do you believe individuals can make a difference in protecting the environment? | Why do you you believe individuals can make a difference in protecting the environment? | Yes, small actions like recycling and reducing waste contribute to bigger changes when many people participate. | 1 | 1 | 3 | 1.67 |
| How often do you think about your environmental impact? | Is it true that How often do you think about your environmental impact? | I consider it daily, especially when making choices like using reusable items or conserving energy at home. | 1 | 1 | 3 | 1.67 |
| Have you noticed changes in your local environment over the past decade? | Have you noticed changes in your local environment over the past decade? | Yes, summers are hotter, and there’s more plastic waste in rivers compared to 10 years ago | 2 | 1 | 3 | 2 |
| Do you separate recyclables from regular trash at home? | Why do you you separate recyclables from regular trash at home? | Yes, I sort paper, plastic, and glass into separate bins to ensure they’re properly recycled | 1 | 1 | 3 | 1.67 |
| How do you reduce plastic use in daily life? | Is it true that How do you reduce plastic use in daily life? | I carry a reusable water bottle, avoid plastic straws, and choose products with minimal packaging | 1 | 1 | 3 | 1.67 |
| What’s your opinion on single-use plastics? | Is it true that What’s your opinion on single-use plastics? | They should be banned because they pollute oceans and harm marine life unnecessarily | 1 | 1 | 3 | 1.67 |
| Have you participated in a community clean-up event? | Have you participated in a community clean-up event? | Yes, I joined a beach clean-up last month and collected over 5 kg of trash | 5 | 2 | 3 | 3.33 |
| Have you made any energy-saving changes at home? | Have you made any energy-saving changes at home? | I switched to LED bulbs and unplug devices when not in use to cut electricity waste." | 3 | 1 | 3 | 2.33 |
| Would you consider buying an electric vehicle? | Would you consider buying an electric vehicle? | Yes, if charging stations become more accessible and prices are affordable | 1 | 1 | 3 | 1.67 |
| Have you ever donated to wildlife conservation? | Have you ever donated to wildlife conservation? | I donated to a rainforest protection fund last year to help save orangutans." | 2 | 2 | 3 | 2.33 |
| Do you avoid products linked to deforestation? | Do you avoid products linked to deforestation? | I check labels for sustainable palm oil and avoid brands harming rainforests. | 2 | 1 | 3 | 2 |
| Is your country doing enough to address environmental issues? | Why do you your country doing enough to address environmental issues? | No, policies are weak, and enforcement is inconsistent compared to global standards." | 1 | 1 | 3 | 1.67 |
| Do you talk to friends/family about environmental issues? | Why do you you talk to friends/family about environmental issues? | Yes, I share tips on recycling and energy savings to inspire others. | 1 | 1 | 3 | 1.67 |
| Do you check air quality before going outside? | Why do you you check air quality before going outside? | Only on hazy days—my phone app gives me alerts when it’s really bad | 4 | 1 | 3 | 2.67 |
| How serious is plastic pollution in your local area? | Is it true that How serious is plastic pollution in your local area? | It's getting worse every year. I can spot plastic bags stuck in trees after every heavy wind | 4 | 2 | 3 | 3 |
| How would you describe the air quality in your city? | Is it true that How would you describe the air quality in your city? | Some mornings it's so hazy I can't even see the buildings across the street - like living in a bowl of soup! | 3 | 2 | 4 | 3 |
| How does water pollution affect marine life? | Is it true that How does water pollution affect marine life? | It leads to habitat destruction, toxic contamination, and loss of biodiversity. | 1 | 1 | 3 | 1.67 |
| Do you believe climate change is a serious issue? | Why do you you believe climate change is a serious issue? | Yes, I think it’s one of the biggest threats to our future. | 5 | 1 | 3 | 3 |
| Would you be willing to pay more for eco-friendly products? | Would you be willing to pay more for eco-friendly products? | Yes, but only if the price difference is not too big. | 4 | 1 | 3 | 2.67 |
| Would you support higher taxes on polluting industries? | Would you support higher taxes on polluting industries? | Yes, but only if the money is used for environmental protection. | 1 | 1 | 3 | 1.67 |
| What is the biggest cause of climate change? | Is it true that What is the biggest cause of climate change? | Yes, there is pollution where I live in Hanoi, Vietnam. Air pollution is the most serious environmental problem in Hanoi. | 1 | 2 | 3 | 2 |
| What kinds of pollution are serious in your country? | Is it true that What kinds of pollution are serious in your country? | Unfortunately, pollution is a significant issue in Vietnam. Some of the most serious types of pollution include air pollution, water pollution, and noise pollution. | 1 | 2 | 4 | 2.33 |
| Do you take an interest in nature? | Why do you you take an interest in nature? ? | Yes, I do. I find nature to be a fascinating and complex system that is full of beauty and wonder. | 4 | 2 | 3 | 3 |
| Do you like growing plants? | Why do you you like growing plants? ? | Yes, I do enjoy growing plants. I also appreciate the beauty that plants bring to my home and garden. | 4 | 3 | 3 | 3.33 |
| Why is environmental education important? | Is it true that Why is environmental education important? | It raises awareness and encourages people to take action to protect nature. | 1 | 1 | 3 | 1.67 |
| What are the main causes of air pollution in urban areas today? | Is it true that What are the main causes of air pollution in urban areas today? | Vehicle emissions, industrial activities, burning fossil fuels, construction dust, and waste incineration. | 1 | 1 | 3 | 1.67 |
| How does deforestation affect global climate patterns? | Is it true that How does deforestation affect global climate patterns? | Releases carbon dioxide, reduces CO2 absorption, and disrupts rainfall patterns, worsening global warming. | 1 | 1 | 3 | 1.67 |
| Why is plastic pollution such a significant problem for marine life? | Is it true that Why is plastic pollution such a significant problem for marine life? | Marine animals ingest or get entangled in it, causing injury, starvation, death, and food chain disruption. | 1 | 1 | 3 | 1.67 |
| What role does industrial waste play in water pollution? | Is it true that What role does industrial waste play in water pollution? | Contaminates water with chemicals, heavy metals, and untreated sewage, harming ecosystems and health. | 1 | 1 | 3 | 1.67 |
| How are rising global temperatures impacting polar ice caps? | Is it true that How are rising global temperatures impacting polar ice caps? | Melts ice caps, reduces reflectivity, accelerates warming, and raises sea levels. | 1 | 1 | 3 | 1.67 |
| What are the effects of overfishing on ocean ecosystems? | Is it true that What are the effects of overfishing on ocean ecosystems? | Depletes fish populations, disrupts food webs, and damages habitats like coral reefs. | 1 | 1 | 3 | 1.67 |
| How does urbanization contribute to habitat loss for wildlife? | Is it true that How does urbanization contribute to habitat loss for wildlife? | Clears forests, wetlands, and grasslands for infrastructure, reducing wildlife living space. | 1 | 1 | 3 | 1.67 |
| Why are greenhouse gas emissions still increasing despite awareness? | Is it true that Why are greenhouse gas emissions still increasing despite awareness? | Economic growth, fossil fuel reliance, weak policies, and population growth outpace reduction efforts. | 1 | 1 | 3 | 1.67 |
| What steps are governments taking to reduce carbon footprints? | Is it true that What steps are governments taking to reduce carbon footprints? | Promoting renewables, enforcing emissions rules, subsidizing green tech, and joining global agreements. | 1 | 1 | 3 | 1.67 |
| How does soil degradation affect agricultural productivity? | Is it true that How does soil degradation affect agricultural productivity? | Reduces fertility, limits crop yields, and increases reliance on chemical fertilizers. | 1 | 1 | 3 | 1.67 |
| What are the consequences of melting glaciers for sea levels? | Is it true that What are the consequences of melting glaciers for sea levels? | Raises sea levels, floods coastal areas, and displaces communities and ecosystems. | 1 | 1 | 3 | 1.67 |
| How is climate change influencing extreme weather events? | Is it true that How is climate change influencing extreme weather events? | Increases frequency and intensity of storms, heatwaves, droughts, and floods. | 1 | 1 | 2 | 1.33 |
| Why is biodiversity loss considered a global crisis? | Is it true that Why is biodiversity loss considered a global crisis? | Threatens ecosystem stability, food security, and resilience to environmental changes. | 1 | 1 | 2 | 1.33 |
| What are the primary sources of renewable energy being used today? | Is it true that What are the primary sources of renewable energy being used today? | Solar, wind, hydropower, geothermal, and biomass energy. | 1 | 1 | 2 | 1.33 |
| How does single-use plastic impact the environment long-term? | Is it true that How does single-use plastic impact the environment long-term? | Persists in ecosystems, pollutes water and soil, and harms wildlife for decades. | 1 | 1 | 3 | 1.67 |
| What measures can individuals take to reduce their environmental impact? | Is it true that What measures can individuals take to reduce their environmental impact? | Reduce waste, use renewables, conserve water, and adopt sustainable habits. | 1 | 1 | 2 | 1.33 |
| How are coral reefs being affected by ocean warming? | Is it true that How are coral reefs being affected by ocean warming? | Causes bleaching, weakens structures, and reduces biodiversity in reef ecosystems. | 1 | 1 | 2 | 1.33 |
| Why is electronic waste becoming a growing environmental issue? | Is it true that Why is electronic waste becoming a growing environmental issue? | Contains toxic materials, pollutes soil and water, and overwhelms waste systems. | 1 | 1 | 3 | 1.67 |
| What role do corporations play in environmental degradation? | Is it true that What role do corporations play in environmental degradation? | Drive resource extraction, emissions, and waste through production and supply chains. | 1 | 1 | 3 | 1.67 |
| How effective are current recycling programs worldwide? | Is it true that How effective are current recycling programs worldwide? | Vary widely; effective in some regions but limited by contamination and low participation elsewhere. | 1 | 1 | 3 | 1.67 |
| What are the environmental impacts of large-scale mining? | Is it true that What are the environmental impacts of large-scale mining? | Destroys habitats, pollutes water, and releases greenhouse gases. | 1 | 1 | 2 | 1.33 |
| How does air quality affect human health in polluted cities? | Is it true that How does air quality affect human health in polluted cities? | Increases respiratory issues, heart disease, and premature deaths in polluted areas. | 1 | 1 | 3 | 1.67 |
| Why are wetlands disappearing at an alarming rate? | Is it true that Why are wetlands disappearing at an alarming rate? | Drained for agriculture, urban development, and climate-driven drying. | 1 | 1 | 2 | 1.33 |
| What is the relationship between deforestation and carbon dioxide levels? | Is it true that What is the relationship between deforestation and carbon dioxide levels? | Removes trees that absorb CO2, increasing atmospheric levels and warming. | 1 | 2 | 2 | 1.67 |
| How are endangered species being protected from extinction? | Is it true that How are endangered species being protected from extinction? | Through protected areas, breeding programs, and laws against poaching and trade. | 1 | 1 | 3 | 1.67 |
| What challenges do renewable energy projects face today? | Is it true that What challenges do renewable energy projects face today? | High costs, infrastructure needs, and inconsistent energy output. | 1 | 1 | 2 | 1.33 |
| How does overpopulation strain natural resources? | Is it true that How does overpopulation strain natural resources? | Increases demand for food, water, and energy, depleting resources faster. | 1 | 1 | 2 | 1.33 |
| Why is clean water becoming scarce in some regions? | Is it true that Why is clean water becoming scarce in some regions? | Overuse, pollution, and climate change reduce freshwater availability. | 1 | 1 | 2 | 1.33 |
| What are the environmental effects of oil spills in the ocean? | Is it true that What are the environmental effects of oil spills in the ocean? | Kills marine life, damages habitats, and disrupts ecosystems for years. | 1 | 1 | 2 | 1.33 |
| How do pesticides harm ecosystems beyond their intended targets? | Is it true that How do pesticides harm ecosystems beyond their intended targets? | Harm pollinators, wildlife, and soil health, causing broader ecological damage. | 1 | 1 | 2 | 1.33 |
| What is being done to combat desertification globally? | Is it true that What is being done to combat desertification globally? | Reforestation, sustainable farming, and international aid programs. | 1 | 1 | 2 | 1.33 |
| How does fast fashion contribute to environmental damage? | Is it true that How does fast fashion contribute to environmental damage? | Creates waste, uses toxic dyes, and consumes vast water and energy. | 1 | 1 | 3 | 1.67 |
| Why are wildfires becoming more frequent and intense? | Is it true that Why are wildfires becoming more frequent and intense? | Driven by higher temperatures, droughts, and human land mismanagement. | 1 | 1 | 2 | 1.33 |
| What impact does transportation have on global emissions? | Is it true that What impact does transportation have on global emissions? | Contributes heavily via cars, planes, and shipping emissions. | 1 | 1 | 2 | 1.33 |
| How are coastal areas preparing for rising sea levels? | Is it true that How are coastal areas preparing for rising sea levels? | Building seawalls, relocating communities, and restoring natural barriers like mangroves. | 1 | 1 | 2 | 1.33 |
| What are the benefits of reforestation efforts? | Is it true that What are the benefits of reforestation efforts? | Restores habitats, sequesters carbon, and improves soil and water retention. | 1 | 1 | 2 | 1.33 |
| How does noise pollution affect wildlife behavior? | Is it true that How does noise pollution affect wildlife behavior? | Disrupts mating, hunting, and migration patterns in animals. | 1 | 1 | 2 | 1.33 |
| Why is sustainable agriculture gaining attention today? | Is it true that Why is sustainable agriculture gaining attention today? | Reduces chemical use, preserves soil, and meets growing food demand sustainably. | 1 | 1 | 3 | 1.67 |
| What are the long-term effects of nuclear waste on the environment? | Is it true that What are the long-term effects of nuclear waste on the environment? | Contaminates soil and water, posing risks for centuries if mismanaged. | 1 | 1 | 2 | 1.33 |
| How do microplastics enter the human food chain? | Is it true that How do microplastics enter the human food chain? | Through seafood, water, and soil, accumulating in human tissues. | 1 | 1 | 2 | 1.33 |
| What role does education play in environmental conservation? | Is it true that What role does education play in environmental conservation? | Raises awareness, changes behavior, and fosters sustainable practices. | 1 | 1 | 2 | 1.33 |
| How are developing countries addressing environmental challenges? | Is it true that How are developing countries addressing environmental challenges? | Adopting renewables, seeking aid, and balancing growth with conservation. | 1 | 1 | 2 | 1.33 |
| Why is the loss of pollinators a threat to food security? | Is it true that Why is the loss of pollinators a threat to food security? | Reduces crop pollination, threatening food production and ecosystems. | 1 | 1 | 2 | 1.33 |
| What are the environmental costs of cryptocurrency mining? | Is it true that What are the environmental costs of cryptocurrency mining? | High energy use for computing drives emissions and resource depletion. | 1 | 1 | 2 | 1.33 |
| How does illegal logging impact tropical rainforests? | Is it true that How does illegal logging impact tropical rainforests? | Destroys habitats, increases CO2, and threatens indigenous communities. | 1 | 1 | 2 | 1.33 |
| What innovations are helping to clean up polluted rivers? | Is it true that What innovations are helping to clean up polluted rivers? | Bioremediation, filtration systems, and trash-collecting drones. | 1 | 1 | 2 | 1.33 |
| How are animals adapting to changing climates? | Is it true that How are animals adapting to changing climates? | Shifting habitats, altering behaviors, or facing extinction risks. | 1 | 1 | 2 | 1.33 |
| Why is ocean acidification a growing concern for marine life? | Is it true that Why is ocean acidification a growing concern for marine life? | Weakens shells, disrupts food chains, and harms marine biodiversity. | 1 | 1 | 2 | 1.33 |
| What are the environmental impacts of tourism in sensitive areas? | Is it true that What are the environmental impacts of tourism in sensitive areas? | Strains resources, damages ecosystems, and increases waste in fragile areas. | 1 | 1 | 2 | 1.33 |
| How can technology help solve current environmental problems? | Is it true that How can technology help solve current environmental problems? | Offers solutions like clean energy, pollution monitoring, and waste management tools. | 1 | 1 | 3 | 1.67 |
| Luật 4: Thêm ngữ cảnh |  |  | 5 | 5 | 1 | 3.67 |
| Original Question | Generated Question | Answer | 1 | 1 | 1 | 1 |
| Do you use reusable bags instead of plastic ones? | In terms of environmental protection, do you use reusable bags instead of plastic ones? | Yes, I always carry my own bag. | 5 | 1 | 2 | 2.67 |
| What products can we use to reduce water pollution? | In terms of environmental protection, what products can we use to reduce water pollution? | Finally, we can reduce water pollution by using green products and avoiding single-use products like plastic bags. | 1 | 3 | 3 | 2.33 |
| What role do governments play in environmental protection? | In terms of environmental protection, what role do governments play in environmental protection? | They create laws, regulations, and policies to protect natural resources. | 1 | 1 | 2 | 1.33 |
| Do you think pollution is a problem today? | In terms of environmental protection, do you think pollution is a problem today? | Yes, I think pollution is a problem today. It’s one of the most pressing issues facing our planet. | 4 | 3 | 3 | 3.33 |
| Do you think food waste is a problem? | In terms of environmental protection, do you think food waste is a problem? | Yes, it wastes resources and creates more trash. | 3 | 1 | 2 | 2 |
| What do you know about climate change? | In terms of environmental protection, what do you know about climate change? | It’s a change in weather patterns due to human activities. | 2 | 1 | 2 | 1.67 |
| Do you think you’ve done enough to protect the environment? | In terms of environmental protection, do you think you’ve done enough to protect the environment? | No definitely not, I still throw away various single-use plastic products every day. Currently, there aren’t any recycling programmes where I live. I hope this will change soon. | 1 | 1 | 4 | 2 |
| What can you do to help the environment? | In terms of environmental protection, what can you do to help the environment? | I think I can help by recycling more and using less plastic, like bringing my own bags when I go shopping | 3 | 1 | 4 | 2.67 |
| Do you think it’s important to plant trees? | In terms of environmental protection, do you think it’s important to plant trees? | Yes, trees clean the air and provide oxygen. | 4 | 1 | 2 | 2.33 |
| Do you think air pollution is a problem in your city? | In terms of environmental protection, do you think air pollution is a problem in your city? | Yes, there’s a lot of smoke from cars and factories. | 5 | 1 | 2 | 2.67 |
| What do you do to stop wasting food? | In terms of environmental protection, what do you do to stop wasting food? | I eat leftovers and don’t buy too much food | 5 | 1 | 2 | 2.67 |
| Do you think people should use less plastic? | In terms of environmental protection, do you think people should use less plastic? | Yes, because plastic harms animals and the environment. | 1 | 1 | 2 | 1.33 |
| What is the biggest cause of climate change? | In terms of environmental protection, what is the biggest cause of climate change? | Burning fossil fuels like coal and oil. | 4 | 1 | 2 | 2.33 |
| What do you know about recycling? | In terms of environmental protection, what do you know about recycling? | It reduces waste by turning old things into new ones, and it also saves resources like trees and metals, which helps protect the environment. | 1 | 1 | 4 | 2 |
| What can we do to stop global warming? | In terms of environmental protection, what can we do to stop global warming? | We can use bicycles instead of cars to reduce emissions, and we can also save energy by turning off appliances when we’re not using them. | 1 | 2 | 4 | 2.33 |
| Do you take an interest in nature? | In terms of environmental protection, Do you take an interest in nature? | I love all wildlife. My garden is the perfect habitat for hedgehogs. They are nocturnal but if I go out after dark with a torch I sometimes see one. | 3 | 1 | 4 | 2.67 |
| What do you often do to protect the environment? | In terms of environmental protection, what do you often do to protect the environment? | I use paper bags instead of nylon ones and travel by public transport to reduce pollution. | 1 | 1 | 3 | 1.67 |
| Do you use renewable energy? | In terms of environmental protection, do you use renewable energy? | Yes, I have installed solar panels to utilize renewable energy sources. | 1 | 2 | 3 | 2 |
| What can we do to reduce pollution? | In terms of environmental protection, what can we do to reduce pollution? | We can reduce pollution by recycling, using public transport, and conserving energy | 1 | 2 | 3 | 2 |
| Do you think climate change is a serious problem? | In terms of environmental protection, do you think climate change is a serious problem? | Yes, climate change leads to extreme weather events and threatens biodiversity | 1 | 1 | 3 | 1.67 |
| How does climate change impact sea levels? | In terms of environmental protection, how does climate change impact sea levels? | It causes polar ice to melt and seawater to expand, leading to rising sea levels. | 2 | 1 | 3 | 2 |
| Do you think climate change is a major issue? | In terms of environmental protection, do you think climate change is a major issue? | Yes, I believe it is a critical problem that needs urgent action. | 3 | 1 | 3 | 2.33 |
| Has climate change affected your daily life? | In terms of environmental protection, has climate change affected your daily life? | Not much, but I have noticed hotter summers. | 3 | 1 | 2 | 2 |
| Are you worried about pollution in your city? | In terms of environmental protection, are you worried about pollution in your city? | Yes, I see more smog and trash on the streets | 5 | 1 | 2 | 2.67 |
| Do you trust the quality of tap water in your area? | In terms of environmental protection, do you trust the quality of tap water in your area? | Not really, I prefer bottled water. | 2 | 1 | 2 | 1.67 |
| Do you believe individuals can make a difference in protecting the environment? | In terms of environmental protection, do you believe individuals can make a difference in protecting the environment? | Yes, small actions like recycling and reducing waste contribute to bigger changes when many people participate. | 1 | 1 | 3 | 1.67 |
| How often do you think about your environmental impact? | In terms of environmental protection, how often do you think about your environmental impact? | I consider it daily, especially when making choices like using reusable items or conserving energy at home. | 1 | 1 | 3 | 1.67 |
| Have you noticed changes in your local environment over the past decade? | In terms of environmental protection, have you noticed changes in your local environment over the past decade? | Yes, summers are hotter, and there’s more plastic waste in rivers compared to 10 years ago | 2 | 1 | 3 | 2 |
| Do you separate recyclables from regular trash at home? | In terms of environmental protection, do you separate recyclables from regular trash at home? | Yes, I sort paper, plastic, and glass into separate bins to ensure they’re properly recycled | 1 | 1 | 3 | 1.67 |
| How do you reduce plastic use in daily life? | In terms of environmental protection, how do you reduce plastic use in daily life? | I carry a reusable water bottle, avoid plastic straws, and choose products with minimal packagin | 1 | 1 | 3 | 1.67 |
| What’s your opinion on single-use plastics? | In terms of environmental protection, what’s your opinion on single-use plastics? | They should be banned because they pollute oceans and harm marine life unnecessarily | 1 | 1 | 3 | 1.67 |
| Have you participated in a community clean-up event? | In terms of environmental protection, have you participated in a community clean-up event? | Yes, I joined a beach clean-up last month and collected over 5 kg of trash | 5 | 2 | 3 | 3.33 |
| Have you made any energy-saving changes at home? | In terms of environmental protection, have you made any energy-saving changes at home? | I switched to LED bulbs and unplug devices when not in use to cut electricity waste." | 3 | 1 | 3 | 2.33 |
| Would you consider buying an electric vehicle? | In terms of environmental protection, would you consider buying an electric vehicle? | Yes, if charging stations become more accessible and prices are affordable | 1 | 1 | 3 | 1.67 |
| Have you ever donated to wildlife conservation? | In terms of environmental protection, have you ever donated to wildlife conservation? | I donated to a rainforest protection fund last year to help save orangutans." | 2 | 2 | 3 | 2.33 |
| Do you avoid products linked to deforestation? | In terms of environmental protection, Do you avoid products linked to deforestation? | I check labels for sustainable palm oil and avoid brands harming rainforests. | 2 | 1 | 3 | 2 |
| Is your country doing enough to address environmental issues? | In terms of environmental protection, is your country doing enough to address environmental issues? | No, policies are weak, and enforcement is inconsistent compared to global standards." | 1 | 1 | 3 | 1.67 |
| Do you talk to friends/family about environmental issues? | In terms of environmental protection, do you talk to friends/family about environmental issues? | Yes, I share tips on recycling and energy savings to inspire others. | 1 | 1 | 3 | 1.67 |
| Do you check air quality before going outside? | In terms of environmental protection, do you check air quality before going outside? | Only on hazy days—my phone app gives me alerts when it’s really bad | 4 | 1 | 3 | 2.67 |
| How serious is plastic pollution in your local area? | In terms of environmental protection, how serious is plastic pollution in your local area? | It's getting worse every year. I can spot plastic bags stuck in trees after every heavy wind | 4 | 2 | 3 | 3 |
| How would you describe the air quality in your city? | In terms of environmental protection, how would you describe the air quality in your city? | Some mornings it's so hazy I can't even see the buildings across the street - like living in a bowl of soup! | 3 | 2 | 4 | 3 |
| How does water pollution affect marine life? | In terms of environmental protection, how does water pollution affect marine life? | It leads to habitat destruction, toxic contamination, and loss of biodiversity. | 1 | 1 | 3 | 1.67 |
| Do you believe climate change is a serious issue? | In terms of environmental protection, do you believe climate change is a serious issue? | Yes, I think it’s one of the biggest threats to our future. | 5 | 1 | 3 | 3 |
| Would you be willing to pay more for eco-friendly products? | In terms of environmental protection, would you be willing to pay more for eco-friendly products? | Yes, but only if the price difference is not too big. | 4 | 1 | 3 | 2.67 |
| Would you support higher taxes on polluting industries? | In terms of environmental protection, would you support higher taxes on polluting industries? | Yes, but only if the money is used for environmental protection. | 1 | 1 | 3 | 1.67 |
| What is the biggest cause of climate change? | In terms of environmental protection, what is the biggest cause of climate change? | Yes, there is pollution where I live in Hanoi, Vietnam. Air pollution is the most serious environmental problem in Hanoi. | 1 | 2 | 3 | 2 |
| What kinds of pollution are serious in your country? | In terms of environmental protection, what kinds of pollution are serious in your country? | Unfortunately, pollution is a significant issue in Vietnam. Some of the most serious types of pollution include air pollution, water pollution, and noise pollution. | 1 | 3 | 4 | 2.67 |
| Do you take an interest in nature? | In terms of environmental protection, do you take an interest in nature? | Yes, I do. I find nature to be a fascinating and complex system that is full of beauty and wonder. | 4 | 2 | 3 | 3 |
| Do you like growing plants? | In terms of environmental protection, do you like growing plants? | Yes, I do enjoy growing plants. I also appreciate the beauty that plants bring to my home and garden. | 4 | 2 | 3 | 3 |
| Why is environmental education important? | In terms of environmental protection, why is environmental education important? | It raises awareness and encourages people to take action to protect nature. | 1 | 1 | 3 | 1.67 |
| What are the main causes of air pollution in urban areas today? | In terms of environmental protection, what are the main causes of air pollution in urban areas today? | Vehicle emissions, industrial activities, burning fossil fuels, construction dust, and waste incineration. | 1 | 1 | 3 | 1.67 |
| How does deforestation affect global climate patterns? | In terms of environmental protection, how does deforestation affect global climate patterns? | Releases carbon dioxide, reduces CO2 absorption, and disrupts rainfall patterns, worsening global warming. | 1 | 1 | 3 | 1.67 |
| Why is plastic pollution such a significant problem for marine life? | In terms of environmental protection, why is plastic pollution such a significant problem for marine life? | Marine animals ingest or get entangled in it, causing injury, starvation, death, and food chain disruption. | 1 | 1 | 3 | 1.67 |
| What role does industrial waste play in water pollution? | In terms of environmental protection, what role does industrial waste play in water pollution? | Contaminates water with chemicals, heavy metals, and untreated sewage, harming ecosystems and health. | 1 | 1 | 3 | 1.67 |
| How are rising global temperatures impacting polar ice caps? | In terms of environmental protection, how are rising global temperatures impacting polar ice caps? | Melts ice caps, reduces reflectivity, accelerates warming, and raises sea levels. | 1 | 1 | 3 | 1.67 |
| What are the effects of overfishing on ocean ecosystems? | In terms of environmental protection, what are the effects of overfishing on ocean ecosystems? | Depletes fish populations, disrupts food webs, and damages habitats like coral reefs. | 1 | 1 | 3 | 1.67 |
| How does urbanization contribute to habitat loss for wildlife? | In terms of environmental protection, how does urbanization contribute to habitat loss for wildlife? | Clears forests, wetlands, and grasslands for infrastructure, reducing wildlife living space. | 1 | 1 | 3 | 1.67 |
| Why are greenhouse gas emissions still increasing despite awareness? | In terms of environmental protection, why are greenhouse gas emissions still increasing despite awareness? | Economic growth, fossil fuel reliance, weak policies, and population growth outpace reduction efforts. | 1 | 1 | 3 | 1.67 |
| What steps are governments taking to reduce carbon footprints? | In terms of environmental protection, what steps are governments taking to reduce carbon footprints? | Promoting renewables, enforcing emissions rules, subsidizing green tech, and joining global agreements. | 1 | 1 | 3 | 1.67 |
| How does soil degradation affect agricultural productivity? | In terms of environmental protection, how does soil degradation affect agricultural productivity? | Reduces fertility, limits crop yields, and increases reliance on chemical fertilizers. | 1 | 1 | 3 | 1.67 |
| What are the consequences of melting glaciers for sea levels? | In terms of environmental protection, what are the consequences of melting glaciers for sea levels? | Raises sea levels, floods coastal areas, and displaces communities and ecosystems. | 1 | 1 | 3 | 1.67 |
| How is climate change influencing extreme weather events? | In terms of environmental protection, how is climate change influencing extreme weather events? | Increases frequency and intensity of storms, heatwaves, droughts, and floods. | 1 | 1 | 2 | 1.33 |
| Why is biodiversity loss considered a global crisis? | In terms of environmental protection, why is biodiversity loss considered a global crisis? | Threatens ecosystem stability, food security, and resilience to environmental changes. | 1 | 1 | 2 | 1.33 |
| What are the primary sources of renewable energy being used today? | In terms of environmental protection, what are the primary sources of renewable energy being used today? | Solar, wind, hydropower, geothermal, and biomass energy. | 1 | 1 | 2 | 1.33 |
| How does single-use plastic impact the environment long-term? | In terms of environmental protection, how does single-use plastic impact the environment long-term? | Persists in ecosystems, pollutes water and soil, and harms wildlife for decades. | 1 | 1 | 3 | 1.67 |
| What measures can individuals take to reduce their environmental impact? | In terms of environmental protection, what measures can individuals take to reduce their environmental impact? | Reduce waste, use renewables, conserve water, and adopt sustainable habits. | 1 | 1 | 2 | 1.33 |
| How are coral reefs being affected by ocean warming? | In terms of environmental protection, how are coral reefs being affected by ocean warming? | Causes bleaching, weakens structures, and reduces biodiversity in reef ecosystems. | 1 | 1 | 2 | 1.33 |
| Why is electronic waste becoming a growing environmental issue? | In terms of environmental protection, why is electronic waste becoming a growing environmental issue? | Contains toxic materials, pollutes soil and water, and overwhelms waste systems. | 1 | 1 | 3 | 1.67 |
| What role do corporations play in environmental degradation? | In terms of environmental protection, what role do corporations play in environmental degradation? | Drive resource extraction, emissions, and waste through production and supply chains. | 1 | 1 | 3 | 1.67 |
| How effective are current recycling programs worldwide? | In terms of environmental protection, how effective are current recycling programs worldwide? | Vary widely; effective in some regions but limited by contamination and low participation elsewhere. | 1 | 1 | 3 | 1.67 |
| What are the environmental impacts of large-scale mining? | In terms of environmental protection, what are the environmental impacts of large-scale mining? | Destroys habitats, pollutes water, and releases greenhouse gases. | 1 | 1 | 2 | 1.33 |
| How does air quality affect human health in polluted cities? | In terms of environmental protection, how does air quality affect human health in polluted cities? | Increases respiratory issues, heart disease, and premature deaths in polluted areas. | 1 | 2 | 3 | 2 |
| Why are wetlands disappearing at an alarming rate? | In terms of environmental protection, why are wetlands disappearing at an alarming rate? | Drained for agriculture, urban development, and climate-driven drying. | 1 | 1 | 2 | 1.33 |
| What is the relationship between deforestation and carbon dioxide levels? | In terms of environmental protection, what is the relationship between deforestation and carbon dioxide levels? | Removes trees that absorb CO2, increasing atmospheric levels and warming. | 1 | 1 | 2 | 1.33 |
| How are endangered species being protected from extinction? | In terms of environmental protection, how are endangered species being protected from extinction? | Through protected areas, breeding programs, and laws against poaching and trade. | 1 | 1 | 3 | 1.67 |
| What challenges do renewable energy projects face today? | In terms of environmental protection, what challenges do renewable energy projects face today? | High costs, infrastructure needs, and inconsistent energy output. | 1 | 1 | 2 | 1.33 |
| How does overpopulation strain natural resources? | In terms of environmental protection, how does overpopulation strain natural resources? | Increases demand for food, water, and energy, depleting resources faster. | 1 | 1 | 2 | 1.33 |
| Why is clean water becoming scarce in some regions? | In terms of environmental protection, why is clean water becoming scarce in some regions? | Overuse, pollution, and climate change reduce freshwater availability. | 1 | 1 | 2 | 1.33 |
| What are the environmental effects of oil spills in the ocean? | In terms of environmental protection, what are the environmental effects of oil spills in the ocean? | Kills marine life, damages habitats, and disrupts ecosystems for years. | 1 | 1 | 2 | 1.33 |
| How do pesticides harm ecosystems beyond their intended targets? | In terms of environmental protection, how do pesticides harm ecosystems beyond their intended targets? | Harm pollinators, wildlife, and soil health, causing broader ecological damage. | 1 | 1 | 2 | 1.33 |
| What is being done to combat desertification globally? | In terms of environmental protection, what is being done to combat desertification globally? | Reforestation, sustainable farming, and international aid programs. | 1 | 1 | 2 | 1.33 |
| How does fast fashion contribute to environmental damage? | In terms of environmental protection, how does fast fashion contribute to environmental damage? | Creates waste, uses toxic dyes, and consumes vast water and energy. | 1 | 1 | 3 | 1.67 |
| Why are wildfires becoming more frequent and intense? | In terms of environmental protection, why are wildfires becoming more frequent and intense? | Driven by higher temperatures, droughts, and human land mismanagement. | 1 | 1 | 2 | 1.33 |
| What impact does transportation have on global emissions? | In terms of environmental protection, what impact does transportation have on global emissions? | Contributes heavily via cars, planes, and shipping emissions. | 1 | 1 | 2 | 1.33 |
| How are coastal areas preparing for rising sea levels? | In terms of environmental protection, how are coastal areas preparing for rising sea levels? | Building seawalls, relocating communities, and restoring natural barriers like mangroves. | 1 | 1 | 2 | 1.33 |
| What are the benefits of reforestation efforts? | In terms of environmental protection, what are the benefits of reforestation efforts? | Restores habitats, sequesters carbon, and improves soil and water retention. | 1 | 1 | 2 | 1.33 |
| How does noise pollution affect wildlife behavior? | In terms of environmental protection, how does noise pollution affect wildlife behavior? | Disrupts mating, hunting, and migration patterns in animals. | 1 | 1 | 2 | 1.33 |
| Why is sustainable agriculture gaining attention today? | In terms of environmental protection, why is sustainable agriculture gaining attention today? | Reduces chemical use, preserves soil, and meets growing food demand sustainably. | 1 | 1 | 3 | 1.67 |
| What are the long-term effects of nuclear waste on the environment? | In terms of environmental protection, what are the long-term effects of nuclear waste on the environment? | Contaminates soil and water, posing risks for centuries if mismanaged. | 1 | 1 | 2 | 1.33 |
| How do microplastics enter the human food chain? | In terms of environmental protection, how do microplastics enter the human food chain? | Through seafood, water, and soil, accumulating in human tissues. | 1 | 1 | 2 | 1.33 |
| What role does education play in environmental conservation? | In terms of environmental protection, what role does education play in environmental conservation? | Raises awareness, changes behavior, and fosters sustainable practices. | 1 | 1 | 2 | 1.33 |
| How are developing countries addressing environmental challenges? | In terms of environmental protection, how are developing countries addressing environmental challenges? | Adopting renewables, seeking aid, and balancing growth with conservation. | 1 | 1 | 2 | 1.33 |
| Why is the loss of pollinators a threat to food security? | In terms of environmental protection, why is the loss of pollinators a threat to food security? | Reduces crop pollination, threatening food production and ecosystems. | 1 | 1 | 2 | 1.33 |
| What are the environmental costs of cryptocurrency mining? | In terms of environmental protection, what are the environmental costs of cryptocurrency mining? | High energy use for computing drives emissions and resource depletion. | 1 | 1 | 2 | 1.33 |
| How does illegal logging impact tropical rainforests? | In terms of environmental protection, how does illegal logging impact tropical rainforests? | Destroys habitats, increases CO2, and threatens indigenous communities. | 1 | 1 | 2 | 1.33 |
| What innovations are helping to clean up polluted rivers? | In terms of environmental protection, what innovations are helping to clean up polluted rivers? | Bioremediation, filtration systems, and trash-collecting drones. | 1 | 1 | 2 | 1.33 |
| How are animals adapting to changing climates? | In terms of environmental protection, how are animals adapting to changing climates? | Shifting habitats, altering behaviors, or facing extinction risks. | 1 | 1 | 2 | 1.33 |
| Why is ocean acidification a growing concern for marine life? | In terms of environmental protection, why is ocean acidification a growing concern for marine life? | Weakens shells, disrupts food chains, and harms marine biodiversity. | 1 | 1 | 2 | 1.33 |
| What are the environmental impacts of tourism in sensitive areas? | In terms of environmental protection, what are the environmental impacts of tourism in sensitive areas? | Strains resources, damages ecosystems, and increases waste in fragile areas. | 1 | 2 | 2 | 1.67 |
| How can technology help solve current environmental problems? | In terms of environmental protection, how can technology help solve current environmental problems? | Offers solutions like clean energy, pollution monitoring, and waste management tools. | 1 | 1 | 3 | 1.67 |
| Luật 5: Biến đổi trật tự từ |  |  | 5 | 5 | 1 | 3.67 |
| Original Question | Generated Question | Answer | 1 | 1 | 1 | 1 |
| Do you use reusable bags instead of plastic ones? | Do ones you use reusable bags instead of plastic? | Yes, I always carry my own bag. | 5 | 1 | 2 | 2.67 |
| What products can we use to reduce water pollution? | What pollution products can we use to reduce water? | Finally, we can reduce water pollution by using green products and avoiding single-use products like plastic bags. | 1 | 4 | 3 | 2.67 |
| What role do governments play in environmental protection? | What protection role do governments play in environmental? | They create laws, regulations, and policies to protect natural resources. | 1 | 1 | 2 | 1.33 |
| Do you think pollution is a problem today? | Do today you think pollution is a problem? | Yes, I think pollution is a problem today. It’s one of the most pressing issues facing our planet. | 4 | 4 | 3 | 3.67 |
| Do you think food waste is a problem? | Do problem you think food waste is a? | Yes, it wastes resources and creates more trash. | 3 | 1 | 2 | 2 |
| What do you know about climate change? | What change do you know about climate? | It’s a change in weather patterns due to human activities. | 2 | 1 | 2 | 1.67 |
| Do you think you’ve done enough to protect the environment? | Do environment? you think you’ve done enough to protect the? | No definitely not, I still throw away various single-use plastic products every day. Currently, there aren’t any recycling programmes where I live. I hope this will change soon. | 1 | 1 | 4 | 2 |
| What can you do to help the environment? | What environment can you do to help the? | I think I can help by recycling more and using less plastic, like bringing my own bags when I go shopping | 3 | 2 | 4 | 3 |
| Do you think it’s important to plant trees? | Do trees you think it’s important to plant? | Yes, trees clean the air and provide oxygen. | 4 | 1 | 2 | 2.33 |
| Do you think air pollution is a problem in your city? | Do city you think air pollution is a problem in your? | Yes, there’s a lot of smoke from cars and factories. | 5 | 1 | 2 | 2.67 |
| What do you do to stop wasting food? | What food do you do to stop wasting? | I eat leftovers and don’t buy too much food | 5 | 1 | 2 | 2.67 |
| Do you think people should use less plastic? | Do plastic you think people should use less? | Yes, because plastic harms animals and the environment. | 1 | 1 | 2 | 1.33 |
| What is the biggest cause of climate change? | What change is the biggest cause of climate? | Burning fossil fuels like coal and oil. | 4 | 1 | 2 | 2.33 |
| What do you know about recycling? | What recycling do you know about? | It reduces waste by turning old things into new ones, and it also saves resources like trees and metals, which helps protect the environment. | 1 | 1 | 4 | 2 |
| What can we do to stop global warming? | What warming can we do to stop global? | We can use bicycles instead of cars to reduce emissions, and we can also save energy by turning off appliances when we’re not using them. | 1 | 2 | 4 | 2.33 |
| Do you take an interest in nature? | Do nature you take an interest in? | I love all wildlife. My garden is the perfect habitat for hedgehogs. They are nocturnal but if I go out after dark with a torch I sometimes see one. | 3 | 1 | 4 | 2.67 |
| What do you often do to protect the environment? | What environment do you often do to protect the? | I use paper bags instead of nylon ones and travel by public transport to reduce pollution. | 1 | 1 | 3 | 1.67 |
| Do you use renewable energy? | Do energy you use renewable? | Yes, I have installed solar panels to utilize renewable energy sources. | 1 | 3 | 3 | 2.33 |
| What can we do to reduce pollution? | What pollution can we do to reduce? | We can reduce pollution by recycling, using public transport, and conserving energy | 1 | 3 | 3 | 2.33 |
| Do you think climate change is a serious problem? | Do problem you think climate change is a serious? | Yes, climate change leads to extreme weather events and threatens biodiversity | 1 | 2 | 3 | 2 |
| How does climate change impact sea levels? | How levels does climate change impact sea? | It causes polar ice to melt and seawater to expand, leading to rising sea levels. | 2 | 2 | 3 | 2.33 |
| Do you think climate change is a major issue? | Do issue you think climate change is a major? | Yes, I believe it is a critical problem that needs urgent action. | 3 | 1 | 3 | 2.33 |
| Has climate change affected your daily life? | Has life climate change affected your daily? | Not much, but I have noticed hotter summers. | 3 | 1 | 2 | 2 |
| Are you worried about pollution in your city? | Are city you worried about pollution in your? | Yes, I see more smog and trash on the streets | 5 | 1 | 2 | 2.67 |
| Do you trust the quality of tap water in your area? | Do area you trust the quality of tap water in your? | Not really, I prefer bottled water. | 2 | 1 | 2 | 1.67 |
| Do you believe individuals can make a difference in protecting the environment? | Do environment you believe individuals can make a difference in protecting the? | Yes, small actions like recycling and reducing waste contribute to bigger changes when many people participate. | 1 | 1 | 3 | 1.67 |
| How often do you think about your environmental impact? | How impact often do you think about your environmental? | I consider it daily, especially when making choices like using reusable items or conserving energy at home. | 1 | 1 | 3 | 1.67 |
| Have you noticed changes in your local environment over the past decade? | Have decade you noticed changes in your local environment over the past? | Yes, summers are hotter, and there’s more plastic waste in rivers compared to 10 years ago | 2 | 1 | 3 | 2 |
| Do you separate recyclables from regular trash at home? | Do home you separate recyclables from regular trash at? | Yes, I sort paper, plastic, and glass into separate bins to ensure they’re properly recycled | 1 | 1 | 3 | 1.67 |
| How do you reduce plastic use in daily life? | How life do you reduce plastic use in daily? | I carry a reusable water bottle, avoid plastic straws, and choose products with minimal packagin | 1 | 1 | 3 | 1.67 |
| What’s your opinion on single-use plastics? | What’s plastics your opinion on single-use? | They should be banned because they pollute oceans and harm marine life unnecessarily | 1 | 1 | 3 | 1.67 |
| Have you participated in a community clean-up event? | Have event you participated in a community clean-up? | Yes, I joined a beach clean-up last month and collected over 5 kg of trash | 5 | 2 | 3 | 3.33 |
| Have you made any energy-saving changes at home? | Have home you made any energy-saving changes at? | I switched to LED bulbs and unplug devices when not in use to cut electricity waste." | 3 | 1 | 3 | 2.33 |
| Would you consider buying an electric vehicle? | Would vehicle you consider buying an electric? | Yes, if charging stations become more accessible and prices are affordable | 1 | 1 | 3 | 1.67 |
| Have you ever donated to wildlife conservation? | Have conservation you ever donated to wildlife? | I donated to a rainforest protection fund last year to help save orangutans." | 2 | 2 | 3 | 2.33 |
| Do you avoid products linked to deforestation? | Do deforestation you avoid products linked to? | I check labels for sustainable palm oil and avoid brands harming rainforests. | 2 | 1 | 3 | 2 |
| Is your country doing enough to address environmental issues? | Is issues your country doing enough to address environmental? | No, policies are weak, and enforcement is inconsistent compared to global standards." | 1 | 2 | 3 | 2 |
| Do you talk to friends/family about environmental issues? | Do issues you talk to friends/family about environmental? | Yes, I share tips on recycling and energy savings to inspire others. | 1 | 1 | 3 | 1.67 |
| Do you check air quality before going outside? | Do outside you check air quality before going? | Only on hazy days—my phone app gives me alerts when it’s really bad | 4 | 1 | 3 | 2.67 |
| How serious is plastic pollution in your local area? | How area serious is plastic pollution in your local? | It's getting worse every year. I can spot plastic bags stuck in trees after every heavy wind | 4 | 2 | 3 | 3 |
| How would you describe the air quality in your city? | How city would you describe the air quality in your? | Some mornings it's so hazy I can't even see the buildings across the street - like living in a bowl of soup! | 3 | 2 | 4 | 3 |
| How does water pollution affect marine life? | How life does water pollution affect marine? | It leads to habitat destruction, toxic contamination, and loss of biodiversity. | 1 | 1 | 3 | 1.67 |
| Do you believe climate change is a serious issue? | Do issue you believe climate change is a serious? | Yes, I think it’s one of the biggest threats to our future. | 5 | 1 | 3 | 3 |
| Would you be willing to pay more for eco-friendly products? | Would products you be willing to pay more for eco-friendly? | Yes, but only if the price difference is not too big. | 4 | 1 | 3 | 2.67 |
| Would you support higher taxes on polluting industries? | Would industries you support higher taxes on polluting? | Yes, but only if the money is used for environmental protection. | 1 | 1 | 3 | 1.67 |
| What is the biggest cause of climate change? | What change is the biggest cause of climate? | Yes, there is pollution where I live in Hanoi, Vietnam. Air pollution is the most serious environmental problem in Hanoi. | 1 | 2 | 3 | 2 |
| What kinds of pollution are serious in your country? | What country kinds of pollution are serious in your? | Unfortunately, pollution is a significant issue in Vietnam. Some of the most serious types of pollution include air pollution, water pollution, and noise pollution. | 1 | 3 | 4 | 2.67 |
| Do you take an interest in nature? | Do nature? you take an interest in? | Yes, I do. I find nature to be a fascinating and complex system that is full of beauty and wonder. | 4 | 2 | 3 | 3 |
| Do you like growing plants? | Do plants? you like growing? | Yes, I do enjoy growing plants. I also appreciate the beauty that plants bring to my home and garden. | 4 | 4 | 3 | 3.67 |
| Why is environmental education important? | Why important is environmental education? | It raises awareness and encourages people to take action to protect nature. | 1 | 1 | 3 | 1.67 |
| What are the main causes of air pollution in urban areas today? | What today are the main causes of air pollution in urban areas? | Vehicle emissions, industrial activities, burning fossil fuels, construction dust, and waste incineration. | 1 | 1 | 3 | 1.67 |
| How does deforestation affect global climate patterns? | How patterns does deforestation affect global climate? | Releases carbon dioxide, reduces CO2 absorption, and disrupts rainfall patterns, worsening global warming. | 1 | 2 | 3 | 2 |
| Why is plastic pollution such a significant problem for marine life? | Why life is plastic pollution such a significant problem for marine? | Marine animals ingest or get entangled in it, causing injury, starvation, death, and food chain disruption. | 1 | 1 | 3 | 1.67 |
| What role does industrial waste play in water pollution? | What pollution role does industrial waste play in water? | Contaminates water with chemicals, heavy metals, and untreated sewage, harming ecosystems and health. | 1 | 1 | 3 | 1.67 |
| How are rising global temperatures impacting polar ice caps? | How caps are rising global temperatures impacting polar ice? | Melts ice caps, reduces reflectivity, accelerates warming, and raises sea levels. | 1 | 2 | 3 | 2 |
| What are the effects of overfishing on ocean ecosystems? | What ecosystems are the effects of overfishing on ocean? | Depletes fish populations, disrupts food webs, and damages habitats like coral reefs. | 1 | 1 | 3 | 1.67 |
| How does urbanization contribute to habitat loss for wildlife? | How wildlife does urbanization contribute to habitat loss for? | Clears forests, wetlands, and grasslands for infrastructure, reducing wildlife living space. | 1 | 2 | 3 | 2 |
| Why are greenhouse gas emissions still increasing despite awareness? | Why awareness are greenhouse gas emissions still increasing despite? | Economic growth, fossil fuel reliance, weak policies, and population growth outpace reduction efforts. | 1 | 1 | 3 | 1.67 |
| What steps are governments taking to reduce carbon footprints? | What footprints steps are governments taking to reduce carbon? | Promoting renewables, enforcing emissions rules, subsidizing green tech, and joining global agreements. | 1 | 1 | 3 | 1.67 |
| How does soil degradation affect agricultural productivity? | How productivity does soil degradation affect agricultural? | Reduces fertility, limits crop yields, and increases reliance on chemical fertilizers. | 1 | 1 | 3 | 1.67 |
| What are the consequences of melting glaciers for sea levels? | What levels are the consequences of melting glaciers for sea? | Raises sea levels, floods coastal areas, and displaces communities and ecosystems. | 1 | 2 | 3 | 2 |
| How is climate change influencing extreme weather events? | How events is climate change influencing extreme weather? | Increases frequency and intensity of storms, heatwaves, droughts, and floods. | 1 | 1 | 2 | 1.33 |
| Why is biodiversity loss considered a global crisis? | Why crisis is biodiversity loss considered a global? | Threatens ecosystem stability, food security, and resilience to environmental changes. | 1 | 1 | 2 | 1.33 |
| What are the primary sources of renewable energy being used today? | What today are the primary sources of renewable energy being used? | Solar, wind, hydropower, geothermal, and biomass energy. | 1 | 1 | 2 | 1.33 |
| How does single-use plastic impact the environment long-term? | How long-term does single-use plastic impact the environment? | Persists in ecosystems, pollutes water and soil, and harms wildlife for decades. | 1 | 1 | 3 | 1.67 |
| What measures can individuals take to reduce their environmental impact? | What impact measures can individuals take to reduce their environmental? | Reduce waste, use renewables, conserve water, and adopt sustainable habits. | 1 | 1 | 2 | 1.33 |
| How are coral reefs being affected by ocean warming? | How warming are coral reefs being affected by ocean? | Causes bleaching, weakens structures, and reduces biodiversity in reef ecosystems. | 1 | 1 | 2 | 1.33 |
| Why is electronic waste becoming a growing environmental issue? | Why issue is electronic waste becoming a growing environmental? | Contains toxic materials, pollutes soil and water, and overwhelms waste systems. | 1 | 1 | 3 | 1.67 |
| What role do corporations play in environmental degradation? | What degradation role do corporations play in environmental? | Drive resource extraction, emissions, and waste through production and supply chains. | 1 | 1 | 3 | 1.67 |
| How effective are current recycling programs worldwide? | How worldwide effective are current recycling programs? | Vary widely; effective in some regions but limited by contamination and low participation elsewhere. | 1 | 1 | 3 | 1.67 |
| What are the environmental impacts of large-scale mining? | What mining are the environmental impacts of large-scale? | Destroys habitats, pollutes water, and releases greenhouse gases. | 1 | 1 | 2 | 1.33 |
| How does air quality affect human health in polluted cities? | How cities does air quality affect human health in polluted? | Increases respiratory issues, heart disease, and premature deaths in polluted areas. | 1 | 2 | 3 | 2 |
| Why are wetlands disappearing at an alarming rate? | Why rate are wetlands disappearing at an alarming? | Drained for agriculture, urban development, and climate-driven drying. | 1 | 1 | 2 | 1.33 |
| What is the relationship between deforestation and carbon dioxide levels? | What levels is the relationship between deforestation and carbon dioxide? | Removes trees that absorb CO2, increasing atmospheric levels and warming. | 1 | 2 | 2 | 1.67 |
| How are endangered species being protected from extinction? | How extinction are endangered species being protected from? | Through protected areas, breeding programs, and laws against poaching and trade. | 1 | 1 | 3 | 1.67 |
| What challenges do renewable energy projects face today? | What today challenges do renewable energy projects face? | High costs, infrastructure needs, and inconsistent energy output. | 1 | 1 | 2 | 1.33 |
| How does overpopulation strain natural resources? | How resources does overpopulation strain natural? | Increases demand for food, water, and energy, depleting resources faster. | 1 | 1 | 2 | 1.33 |
| Why is clean water becoming scarce in some regions? | Why regions is clean water becoming scarce in some? | Overuse, pollution, and climate change reduce freshwater availability. | 1 | 1 | 2 | 1.33 |
| What are the environmental effects of oil spills in the ocean? | What ocean are the environmental effects of oil spills in the? | Kills marine life, damages habitats, and disrupts ecosystems for years. | 1 | 1 | 2 | 1.33 |
| How do pesticides harm ecosystems beyond their intended targets? | How targets do pesticides harm ecosystems beyond their intended? | Harm pollinators, wildlife, and soil health, causing broader ecological damage. | 1 | 1 | 2 | 1.33 |
| What is being done to combat desertification globally? | What globally is being done to combat desertification? | Reforestation, sustainable farming, and international aid programs. | 1 | 1 | 2 | 1.33 |
| How does fast fashion contribute to environmental damage? | How damage does fast fashion contribute to environmental? | Creates waste, uses toxic dyes, and consumes vast water and energy. | 1 | 1 | 3 | 1.67 |
| Why are wildfires becoming more frequent and intense? | Why intense are wildfires becoming more frequent and? | Driven by higher temperatures, droughts, and human land mismanagement. | 1 | 1 | 2 | 1.33 |
| What impact does transportation have on global emissions? | What emissions impact does transportation have on global? | Contributes heavily via cars, planes, and shipping emissions. | 1 | 1 | 2 | 1.33 |
| How are coastal areas preparing for rising sea levels? | How levels are coastal areas preparing for rising sea? | Building seawalls, relocating communities, and restoring natural barriers like mangroves. | 1 | 1 | 2 | 1.33 |
| What are the benefits of reforestation efforts? | What efforts are the benefits of reforestation? | Restores habitats, sequesters carbon, and improves soil and water retention. | 1 | 1 | 2 | 1.33 |
| How does noise pollution affect wildlife behavior? | How behavior does noise pollution affect wildlife? | Disrupts mating, hunting, and migration patterns in animals. | 1 | 1 | 2 | 1.33 |
| Why is sustainable agriculture gaining attention today? | Why today is sustainable agriculture gaining attention? | Reduces chemical use, preserves soil, and meets growing food demand sustainably. | 1 | 1 | 3 | 1.67 |
| What are the long-term effects of nuclear waste on the environment? | What environment are the long-term effects of nuclear waste on the? | Contaminates soil and water, posing risks for centuries if mismanaged. | 1 | 1 | 2 | 1.33 |
| How do microplastics enter the human food chain? | How chain do microplastics enter the human food? | Through seafood, water, and soil, accumulating in human tissues. | 1 | 1 | 2 | 1.33 |
| What role does education play in environmental conservation? | What conservation role does education play in environmental? | Raises awareness, changes behavior, and fosters sustainable practices. | 1 | 1 | 2 | 1.33 |
| How are developing countries addressing environmental challenges? | How challenges are developing countries addressing environmental? | Adopting renewables, seeking aid, and balancing growth with conservation. | 1 | 1 | 2 | 1.33 |
| Why is the loss of pollinators a threat to food security? | Why security is the loss of pollinators a threat to food? | Reduces crop pollination, threatening food production and ecosystems. | 1 | 1 | 2 | 1.33 |
| What are the environmental costs of cryptocurrency mining? | What mining are the environmental costs of cryptocurrency? | High energy use for computing drives emissions and resource depletion. | 1 | 1 | 2 | 1.33 |
| How does illegal logging impact tropical rainforests? | How rainforests does illegal logging impact tropical? | Destroys habitats, increases CO2, and threatens indigenous communities. | 1 | 1 | 2 | 1.33 |
| What innovations are helping to clean up polluted rivers? | What rivers innovations are helping to clean up polluted? | Bioremediation, filtration systems, and trash-collecting drones. | 1 | 1 | 2 | 1.33 |
| How are animals adapting to changing climates? | How climates are animals adapting to changing? | Shifting habitats, altering behaviors, or facing extinction risks. | 1 | 1 | 2 | 1.33 |
| Why is ocean acidification a growing concern for marine life? | Why life is ocean acidification a growing concern for marine? | Weakens shells, disrupts food chains, and harms marine biodiversity. | 1 | 1 | 2 | 1.33 |
| What are the environmental impacts of tourism in sensitive areas? | What areas are the environmental impacts of tourism in sensitive? | Strains resources, damages ecosystems, and increases waste in fragile areas. | 1 | 2 | 2 | 1.67 |
| How can technology help solve current environmental problems? | How problems can technology help solve current environmental? | Offers solutions like clean energy, pollution monitoring, and waste management tools. | 1 | 1 | 3 | 1.67 |

## 1.5 Lưu bộ dữ liệu

Lưu bộ dữ liệu đã sinh ra ở trên thành 2 bộ dữ liệu tương ứng: Data, DChatGPT. Mỗi bộ dữ liệu đều có câu hỏi/trả lời tương ứng. Nộp bộ dữ liệu lên LMS

# CHƯƠNG 2

**ĐẶT TÊN NGẮN GỌN LIÊN QUAN ĐẾN CHỦ ĐỀ LỰA CHỌN**

**(Ví dụ Phân tích các ý kiến phản hồi về Chương trình Đào tạo ngành Khoa học dữ liệu ở Đại học Công nghiệp TP Hồ Chí Minh)**

## 2.1 Câu hỏi đặt ra

Trong bối cảnh giáo dục đại học ngày càng chú trọng đến kỹ năng thực hành và ứng dụng thực tế, cơ sở vật chất phục vụ học tập, đặc biệt là các phòng lab thực hành, đóng vai trò hết sức quan trọng trong việc hỗ trợ sinh viên tiếp cận kiến thức và phát triển năng lực chuyên môn. Nhận thức được tầm quan trọng đó, nhóm chúng em lựa chọn đề tài:

**“**Đánh giá mức độ hài lòng của sinh viên đối với cơ sở vật chất phòng lab thực hành tại Trường Đại học Công Nghiệp TP.HCM (IUH).**”**.

Đề tài này nhằm khảo sát và phân tích mức độ hài lòng của sinh viên đối với hệ thống phòng lab hiện nay, từ đó đưa ra những nhận định khách quan, góp phần cải thiện và nâng cao chất lượng cơ sở vật chất, phục vụ tốt hơn cho quá trình học tập và nghiên cứu khoa học của sinh viên trong nhà trường.

**Câu hỏi nghiên cứu:**

Câu hỏi 1: Cơ sở vật chất của phòng lab thực hành tại IUH có đáp ứng được nhu cầu học tập và nghiên cứu của sinh viên hay không?

* Lý do đặt câu hỏi: Câu hỏi này nhằm đánh giá tổng quan mức độ phù hợp và hiệu quả của hệ thống phòng lab hiện tại đối với việc học tập của sinh viên.
* Ý nghĩa: Kết quả thu được sẽ giúp nhà trường có cái nhìn khách quan về chất lượng cơ sở vật chất hiện tại, từ đó có thể cải thiện hoặc đầu tư phù hợp để nâng cao chất lượng đào tạo.

Câu hỏi 2: Theo bạn, yếu tố nào quan trọng nhất để nâng cao chất lượng phòng lab thực hành?

* Lý do đặt câu hỏi: Câu hỏi này nhằm thu thập ý kiến sinh viên về các yếu tố ưu tiên cần cải thiện (ví dụ: trang thiết bị, không gian, hệ thống mạng, số lượng máy móc...).
* Ý nghĩa: Giúp xác định rõ nhu cầu thực tế của sinh viên, từ đó nhà trường có thể ưu tiên các hạng mục đầu tư hiệu quả và sát với mong muốn của người học.

## 2.2 Xây dựng câu hỏi khảo sát

Trình bày cách thức xây dựng ít nhất 10 câu hỏi câu hỏi khảo sát để trả lời cho 2 câu hỏi đặt ra ở 2.1 trong đó có 07 câu hỏi với câu trả lời là lựa chọn phương án trả lời từ 1 tới 5 và 03 câu hỏi với câu trả lời là text.

*Câu 1: Phòng lab thực hành được trang bị đủ thiết bị cần thiết cho học tập và nghiên cứu?*

1. Hoàn toàn không đồng ý

2. Không đồng ý

3. Phân vân

4. Đồng ý

5. Hoàn toàn không đồng ý

*Câu 2: Thiết bị trong phòng lab thực hành hoạt động ổn định, ít xảy ra hỏng hóc?*

1. Hoàn toàn không đồng ý

2. Không đồng ý

3. Phân vân

4. Đồng ý

5. Hoàn toàn không đồng ý

*Câu 3: Không gian phòng lab**thực hành thoáng mát, đủ ánh sáng và tiện nghi?*

1. Hoàn toàn không đồng ý

2. Không đồng ý

3. Phân vân

4. Đồng ý

5. Hoàn toàn không đồng ý

*Câu 4: Thời gian mở cửa phòng lab thực hành phù hợp với nhu cầu sử dụng?*

1. Hoàn toàn không đồng ý

2. Không đồng ý

3. Phân vân

4. Đồng ý

5. Hoàn toàn không đồng ý

*Câu 5: Thiết bị trong lab**thực hành đáp ứng yêu cầu chuyên môn của môn học?*

1. Hoàn toàn không đồng ý

2. Không đồng ý

3. Phân vân

4. Đồng ý

5. Hoàn toàn không đồng ý

*Câu 6: Giảng viên hướng dẫn thực hành tại lab có chuyên môn tốt?*

1. Hoàn toàn không đồng ý

2. Không đồng ý

3. Phân vân

4. Đồng ý

5. Hoàn toàn không đồng ý

*Câu 7: Phần mềm cài đặt trong lab**thực hành được cập nhật phiên bản mới?*

1. Hoàn toàn không đồng ý

2. Không đồng ý

3. Phân vân

4. Đồng ý

5. Hoàn toàn không đồng ý

*Câu 8: Nhân viên quản lý lab hỗ trợ kịp thời khi có sự cố?*

1. Hoàn toàn không đồng ý

2. Không đồng ý

3. Phân vân

4. Đồng ý

5. Hoàn toàn không đồng ý

*Câu 9: Bạn có đề xuất nào để cải thiện chất lượng phòng lab thực hành trong trường đại học không?*

*Câu 10: Bạn có hài lòng với tất cả các giảng viên dạy các môn thực hành ở phòng lab hay không?*

*Câu 11: Theo bạn, yếu tố nào quan trọng nhất để nâng cao chất lượng phòng lab thực hành? (Ví dụ: thiết bị, không gian, nhân viên...)*

## 2.3 Phân tích

### 2.3.1 Kết quả khảo sát

Trình bày kết quả khi tiến hành khảo sát ít nhất 10 câu hỏi khảo sát trên với ít nhất 50 bạn trong trường về các nội dung như: Cách thức tiến hành khảo sát, thời gian, số lượng, đối tượng, kết quả thu được, …

1. Giới thiệu:

Báo cáo này trình bày kết quả của cuộc khảo sát về mức độ hài lòng của sinh viên đối với cơ sở vật chất phòng lab thực hành tại Trường Đại học Công Nghiệp TP.HCM (IUH). Mục tiêu của cuộc khảo sát là thu thập ý kiến của sinh viên về chất lượng cơ sở vật chất, thiết bị, phần mềm, và hỗ trợ tại các phòng lab thực hành của IUH.

1. Phương pháp:

* Cách thức tiến hành khảo sát: Sử dụng phiếu khảo sát để thu thập dữ liệu từ sinh viên.
* Thời gian: Cuộc khảo sát được tiến hành từ ngày 20 đến 30/04/2025.
* Số lượng: 50 sinh viên
* Đối tượng: Sinh viên đã và đang sử dụng phòng lab trong qua trình học tại Trường đại học Công nghiệp Thành phố Hồ Chí Minh.

1. Kết quả thu được

Dưới đây là tổng kết kết quả thu được từ cuộc khảo sát:

* Câu hỏi 1: Có 72% sinh viên (36/50) đánh giá tích cực (4 và 5), cho thấy phần lớn hài lòng với số lượng thiết bị. Tuy nhiên, 8% (4/50) đánh giá tiêu cực (1 và 2), cho thấy vẫn còn thiếu thiết bị ở một số phòng lab.
* Câu hỏi 2: Chỉ 36% (18/50) đánh giá tích cực, trong khi 18% (9/50) đánh giá tiêu cực. Đây là khía cạnh nhận được ít đánh giá tích cực nhất, cho thấy thiết bị trong phòng lab thường gặp vấn đề về độ ổn định hoặc hỏng hóc.
* Câu hỏi 3: 80% sinh viên (40/50) đánh giá tích cực (4 và 5), cho rằng không gian phòng lab thoáng mát, đủ ánh sáng và tiện nghi. Chỉ 6% (3/50) đánh giá tiêu cực, cho thấy yếu tố ánh sáng và không gian là một điểm mạnh của phòng lab.
* Câu hỏi 4: 70% (35/50) đánh giá tích cực, cho thấy thời gian mở cửa tương đối phù hợp. Tuy nhiên, 10% (5/50) không hài lòng, có thể do khung giờ chưa đáp ứng đủ nhu cầu.
* Câu hỏi 5: 66% (33/50) đánh giá tích cực, nhưng 14% (7/50) đánh giá tiêu cực, cho thấy thiết bị chưa hoàn toàn đáp ứng yêu cầu chuyên môn của một số môn học.
* Câu hỏi 6: 68% (34/50) đánh giá tích cực về chuyên môn của giảng viên, nhưng vẫn có 8% (4/50) không hài lòng, có thể liên quan đến sự nhiệt tình hoặc phương pháp giảng dạy.
* Câu hỏi 7: 54% (27/50) đánh giá tích cực, nhưng 18% (9/50) đánh giá tiêu cực, cho thấy phần mềm trong phòng lab chưa được cập nhật đầy đủ hoặc thường xuyên.
* Câu hỏi 8: 62% (31/50) đánh giá tích cực, nhưng 14% (7/50) không hài lòng, cho thấy sự hỗ trợ từ nhân viên quản lý lab đôi khi chưa kịp thời.

1. Kết luận

Kết quả khảo sát cho thấy sinh viên IUH nhìn chung hài lòng với không gian, ánh sáng (80% tích cực) và thời gian mở cửa (70% tích cực) của phòng lab. Tuy nhiên, các vấn đề về độ ổn định của thiết bị (36% tích cực), cập nhật phần mềm (54% tích cực), và hỗ trợ từ nhân viên quản lý (62% tích cực) là những điểm cần ưu tiên cải thiện. Các đề xuất từ sinh viên tập trung vào nâng cấp máy tính, Internet, và phần mềm, cùng với việc cải thiện sự nhiệt tình của một số giảng viên. Những cải tiến này sẽ giúp nâng cao trải nghiệm học tập và thực hành của sinh viên tại IUH.

### 2.3.2 Phân tích dữ liệu

Để tiền xử lý dữ liệu, trước hết cần thu thập kết quả từ cuộc khảo sát. Dưới đây là cách tiền xử lý dữ liệu:

1. Mô tả về dữ liệu

Dữ liệu được thu thập từ bảng khảo sát sinh viên về chất lượng phòng lab thực hành trong trường đại học. Tập dữ liệu gồm 11 câu hỏi, trong đó:

- Câu hỏi 1 đến 8: Dữ liệu thu được gồm 50 dòng dữ liệu đầy đủ của 8 trường, kiểu số (thang điểm) trong phạm vi từ 1 đến 5 nên không tiền xử lí lý.

- Các câu test còn lại:

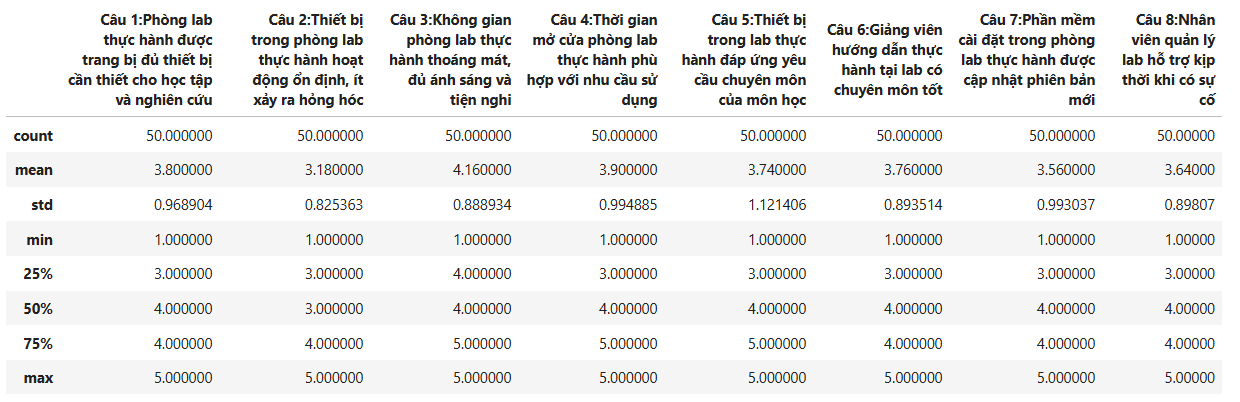
* Loại bỏ dòng đầu tiên: Dòng đầu tiên là tiêu đề của bảng (header), không chứa dữ liệu khảo sát nên cần loại bỏ khi đọc dữ liệu bằng công cụ phân tích.
* Loại bỏ giá trị trống: Một số ô trong cột văn bản (ý kiến tự do) có thể bị bỏ trống. Các dòng này được giữ lại vì không ảnh hưởng đến phân tích định lượng, nhưng sẽ được xem xét riêng khi tổng hợp ý kiến định tính.
  + Chuyển đổi định dạng (nếu cần): Trong trường hợp các câu trả lời là văn bản, chúng sẽ được chuẩn hóa (ví dụ: chuyển về chữ thường, loại bỏ ký tự đặc biệt) trước khi dùng cho phân tích nội dung.

- Tách nhóm dữ liệu: Các câu hỏi được chia thành hai nhóm:

* + Nhóm định lượng: Câu 1 đến Câu 8 – sử dụng để tính trung bình, độ lệch chuẩn, tương quan, ...
  + Nhóm định tính: Câu 9 đến Câu 11 – chứa ý kiến sinh viên về chất lượng phòng lab, đề xuất cải tiến, ...
  + Tổng cộng có 50 sinh viên tham gia khảo sát

- Tính toán các thống kê căn bản:

* Tính các giá trị thống kê căn bản như trung bình, phương sai của các câu trả lời.



##### *Hình 2.1: Các thống kê căn bản*

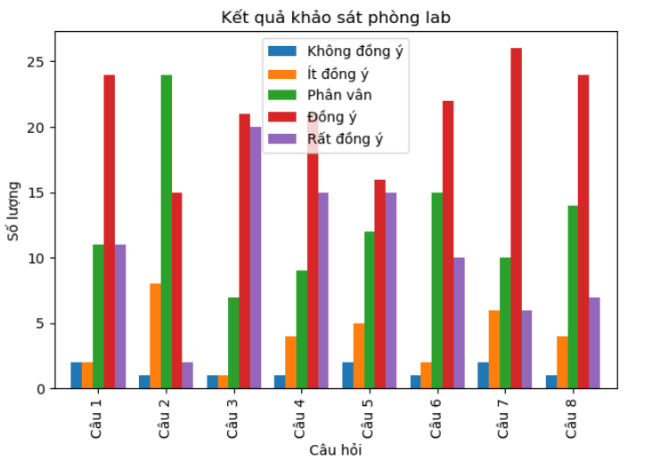
* **Ý nghĩa các dòng:**  
  **count**: Số lượng phản hồi (50 sinh viên trả lời đầy đủ các câu hỏi).  
  **mean**: Trung bình điểm đánh giá (thang điểm 1-5).  
  **std**: Độ lệch chuẩn – phản ánh sự phân tán trong câu trả lời (càng thấp thì các câu trả lời càng đồng nhất).  
  **min**: Điểm thấp nhất được đánh giá (1 = rất không hài lòng).  
  **25%**: 25% sinh viên đánh giá thấp hơn hoặc bằng giá trị này.  
  **50%(median)**:Trung vị – 50% sinh viên đánh giá thấp hơn hoặc bằng.  
  **75%**: 75% sinh viên đánh giá thấp hơn hoặc bằng.  
  **max**: Điểm cao nhất được đánh giá (5 = rất hài lòng).
* **Nhận xét chi tiết:**  
  Câu 3 có điểm trung bình cao nhất (4.16) => sinh viên rất hài lòng về không gian, ánh sáng và tiện nghi.  
  Câu 4 và Câu 1 có điểm trung bình cao → sinh viên đánh giá cao về thời gian mở cửa và sự đầy đủ thiết bị.  
  Câu 2 có điểm thấp nhất (3.18) => cần kiểm tra lại tình trạng hoạt động ổn định của thiết bị trong lab.  
  Câu 5 có độ lệch chuẩn cao nhất (1.12) => sinh viên có đánh giá rất khác nhau về mức độ đáp ứng chuyên môn của thiết bị, có thể do lab không đồng đều hoặc môn học khác nhau có nhu cầu thiết bị khác nhau.

- Phân tích mối tương quan: Sử dụng các phương pháp như hệ số tương quan để xem xét mối quan hệ giữa các câu hỏi.

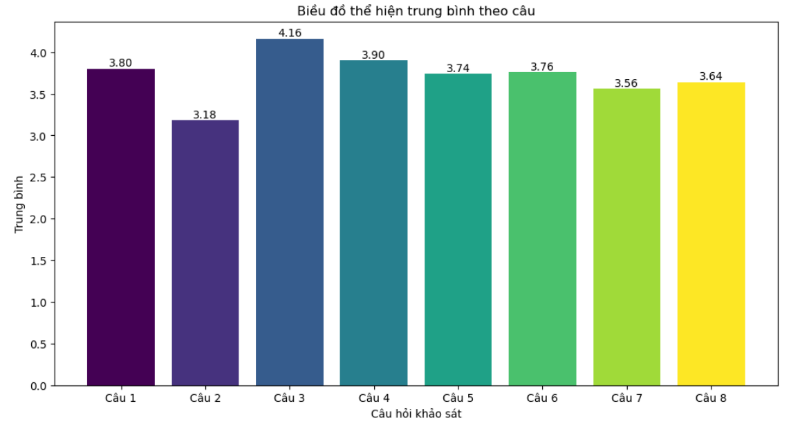
- Xác định yếu tố quan trọng: Sử dụng phân tích biến số để xác định các yếu tố ảnh hưởng đến kết quả.

* Thiết kế khảo sát: bao gồm việc chọn đúng đối tượng nghiên cứu, định nghĩa rõ ràng các biến đo lường, lựa chọn phương pháp thu thập dữ liệu phù hợp, thiết kế câu hỏi, độ dài khảo sát, thứ tự các câu hỏi, và việc đảm bảo tính nhất quán và độ tin cậy của câu hỏi.
* Mẫu khảo sát: cần được lựa chọn một cách ngẫu nhiên hoặc ngẫu nhiên hợp lý, đại diện cho đúng đối tượng nghiên cứu và đảm bảo tính khả thi trong việc thu thập dữ liệu. Kích thước mẫu cũng cần đủ lớn để đạt được độ chính xác và độ tin cậy.
* Phương pháp khảo sát: Phương pháp khảo sát phải được lựa chọn sao cho phù hợp với mục đích của nghiên cứu và đảm bảo tính đáng tin cậy của kết quả khảo sát.
* Câu trả lời của các bạn sinh viên: bao gồm mức độ chính xác, độ trung thực, khả năng hiểu và đọc hiểu câu hỏi, cũng như sự đồng nhất trong cách đánh giá và trả lời.
* Thời gian khảo sát: Thời gian khảo sát phải đảm bảo đủ thời gian để thu thập đầy đủ thông tin cần thiết và đáp ứng mục tiêu nghiên cứu.
* Xử lý dữ liệu: là bước quan trọng để đảm bảo tính chính xác của kết quả khảo sát. Việc kiểm tra, lọc và chuyển đổi dữ liệu, tính toán các chỉ số, đánh giá tính đúng đắn và độ tin cậy của kết quả là yếu tố quan trọng ảnh hưởng đến kết quả của khảo sát.
* Nhiễu và sai số: bao gồm sai số trong quá trình thu thập dữ liệu, sai số có thể làm giảm tính chính xác và độ tin cậy của kết quả khảo sát.
* Độ tin cậy và độ chính xác của công cụ đo lường.

- Trực quan hóa dữ liệu và kết quả:

* Sử dụng biểu đồ để minh họa mối tương quan và kết quả của phân tích.

##### *Hình 2.2: Kết quả khảo sát phòng lab*



##### *Hình 2.3: Biều đồ thể hiện trung bình theo câu*

## 2.4 Kết luận

Sau khi thực hiện cuộc khảo sát này, nhóm chúng em đã có cái nhìn tổng quan về ý kiến của sinh viên đối với chất lượng phòng máy tại trường. Kết quả cho thấy đa số sinh viên có mức độ hài lòng tương đối cao với các yếu tố như trang thiết bị, phần mềm, môi trường học tập và sự hỗ trợ từ cán bộ kỹ thuật. Những đánh giá này là cơ sở quan trọng để nhà trường nắm bắt được mức độ đáp ứng nhu cầu học tập và thực hành của sinh viên hiện tại.

Những điểm còn hạn chế:

* + Quy mô dữ liệu nhỏ: Số lượng bản ghi khảo sát chỉ gồm 50 mẫu, chưa đủ lớn để đại diện cho toàn bộ sinh viên trong trường. Điều này có thể khiến các kết luận mang tính cục bộ và chưa phản ánh đúng thực trạng chung.
  + Thiếu đa dạng về đối tượng khảo sát: Mẫu khảo sát chưa phân loại rõ theo ngành học, năm học hoặc mức độ sử dụng phòng máy. Việc thiếu yếu tố phân tầng này làm giảm khả năng phân tích sâu theo từng nhóm đối tượng cụ thể.
  + Thiếu các biến định lượng bổ sung: Ngoài các câu hỏi đánh giá theo thang điểm, khảo sát chưa khai thác thêm thông tin như số lần sử dụng phòng máy trong tuần, thời gian sử dụng trung bình mỗi buổi, ... để giúp tăng chiều sâu cho phân tích.
  + Câu hỏi khảo sát còn đơn giản: Một số câu hỏi chưa rõ ràng hoặc còn mang tính mơ hồ, dẫn đến việc người trả lời có thể hiểu sai hoặc trả lời theo cảm tính, ảnh hưởng đến độ tin cậy của dữ liệu.
  + Phân tích định tính còn sơ sài: Dữ liệu từ các câu hỏi mở chưa được phân nhóm hoặc mã hóa để phân tích nội dung sâu hơn, chủ yếu mới chỉ dừng ở việc liệt kê các ý kiến chung chung.

*Hướng Phát Triển Trong Tương Lai:*

* + Mở rộng quy mô khảo sát:  
     Nghiên cứu tương lai nên thu thập dữ liệu từ đa dạng đối tượng hơn: sinh viên thuộc nhiều khoa, khóa học khác nhau, cũng như cán bộ học vụ và kỹ thuật viên. Điều này sẽ giúp có được cái nhìn toàn diện và khách quan hơn.
  + Thiết kế bảng câu hỏi khoa học và chuyên sâu hơn: Các câu hỏi cần được xây dựng dựa trên các khung đánh giá chất lượng dịch vụ giáo dục hoặc trải nghiệm người học đã được chuẩn hóa. Nên bổ sung các câu hỏi định lượng cụ thể (ví dụ: “Bạn sử dụng phòng máy bao nhiêu lần mỗi tuần?”, “Bạn dành trung bình bao nhiêu giờ mỗi lần sử dụng?”) để tăng khả năng phân tích sâu.
  + Tự động hóa quy trình xử lý dữ liệu: Toàn bộ quy trình từ thu thập, tiền xử lý, lưu trữ đến phân tích có thể được tích hợp thành một pipeline sử dụng các công cụ như Python, Airflow, Docker và PostgreSQL, giúp tăng tính nhất quán và giảm thời gian xử lý thủ công.
  + Tăng cường trực quan hóa dữ liệu: Kết quả khảo sát cần được trình bày dưới dạng các dashboard tương tác sử dụng các công cụ như Tableau, Power BI hoặc Dash, giúp nhà quản lý dễ dàng theo dõi và đưa ra quyết định kịp thời.

# CHƯƠNG 3

**KHAI PHÁ DỮ LIỆU TỪ CÂU NÓI CỦA NGƯỜI NỔI TIẾNG**

## 3.1 Thu thập dữ liệu

### 3.1.1 Cách thu thập dữ liệu

Dữ liệu được thu thập từ trang web http://quotes.toscrape.com/ bằng cách sử dụng thư viện requests và BeautifulSoup trong Python. Quá trình thu thập bao gồm các bước sau:

Gửi yêu cầu HTTP đến trang web bằng thư viện requests

Phân tích cấu trúc HTML của trang web bằng BeautifulSoup

Trích xuất các thông tin cần thiết từ các thẻ HTML có class "quote"

Lưu dữ liệu vào file kq.txt (dạng HTML thô) và file Quote.csv (dữ liệu đã được xử lý)

Cấu trúc dữ liệu thu thập được

Dữ liệu thu thập được có cấu trúc như sau:

* Mỗi quote nằm trong thẻ <div class="quote">
* Mỗi quote chứa:
* Nội dung trích dẫn trong <span class="text">
* Tên tác giả trong <small class="author">
* Link về trang tác giả trong <a href="/author/Tac-Gia">
* Các tag liên quan trong <div class="tags">

### 3.1.2 Kết quả thu thập

Đã thu thập được 100 câu nói nổi tiếng từ các tác giả khác nhau

Dữ liệu được lưu vào file Quote.csv với các trường: Tác giả, Link, Ngày sinh, Câu nói

## 3.2 Khai phá dữ liệu (Data Mining)

Trong môn học Nhập môn Khoa học Dữ liệu, khai phá dữ liệu là giai đoạn quan trọng sau khi tiền xử lý (preprocessing), nhằm hiểu sâu hơn về dữ liệu, khám phá các mẫu, và chuẩn bị cho việc xây dựng mô hình học máy.

### 3.2.1. Xử lý dữ liệu (Data Cleaning & Imputation)

*Yêu Cầu:*

Thêm Trường STT và Điền Tự Động: Yêu cầu này đề xuất thêm một trường dữ liệu mới là STT (Số Thứ Tự) và điền tự động các giá trị của trường này.

Đề Xuất Cách Điền Trường Ngày Sinh: Một số giá trị của trường ngày sinh có thể bị thiếu. Đề xuất cách điền cho các giá trị này.

Thêm Trường Tuổi và Đề Xuất Cách Điền Tuổi: Đề xuất thêm một trường dữ liệu mới là Tuổi và cách điền giá trị tuổi cho các tác giả.

*Cách Tiếp Cận Giải Quyết:*

Thêm Trường STT và Điền Tự Động: Tạo một hàm để tự động tạo và điền giá trị cho trường STT dựa trên số thứ tự của dòng dữ liệu trong DataFrame.

Đề Xuất Cách Điền Trường Ngày Sinh: Nếu một số giá trị của trường ngày sinh thiếu, có thể sử dụng các phương pháp như điền giá trị trung bình, điền giá trị phổ biến nhất, hoặc sử dụng mô hình dự đoán để dự đoán giá trị bị thiếu dựa trên các đặc trưng khác.

Thêm Trường Tuổi và Đề Xuất Cách Điền Tuổi: Tính toán tuổi từ trường ngày sinh và thêm vào một trường dữ liệu tra từ trên Wikidata API. Đề xuất sử dụng hàm tính toán tuổi từ ngày sinh để điền giá trị cho trường Tuổi.

Kết Quả Đạt Được:

* Trường STT đã được thêm vào và điền tự động cho mỗi dòng dữ liệu.
* Các giá trị thiếu của trường ngày sinh đã được điền bằng cách sử dụng phương pháp thích hợp.
* Trường Tuổi đã được thêm vào và điền tự động cho mỗi tác giả dựa trên ngày sinh.

*Đánh Giá và Thảo Luận:*

- Việc thêm các trường dữ liệu mới và điền tự động các giá trị làm cho tập dữ liệu trở nên đầy đủ và dễ sử dụng hơn.

- Cần xem xét các phương pháp điền giá trị thiếu để đảm bảo tính chính xác và độ tin cậy của dữ liệu sau khi điền.

- Cần kiểm tra kỹ lưỡng kết quả sau khi điền các giá trị mới để đảm bảo tính hợp lý và chính xác của chúng.

Phương pháp này phù hợp để hoàn thành yêu cầu một cách hiệu quả bằng cách cân nhắc các phương pháp điền giá trị thiếu và tính toán các giá trị mới từ dữ liệu có sẵn.

### 3.2.2. Khám phá dữ liệu (Exploratory Data Analysis - EDA)

**Mục tiêu:** Hiểu đặc điểm, phân bố và các mối quan hệ trong dữ liệu thông qua thống kê và trực quan hóa.

**Yêu Cầu:**

Thống Kê về Tác Giả và Câu Nói Nổi Tiếng: Sử dụng phương pháp groupby và count để đếm số lượng câu nói của mỗi tác giả và tìm ra top 10 tác giả có số lượng câu nói nhiều nhất.

Thống Kê về Năm Sinh và Độ Tuổi: Tính toán độ tuổi từ trường ngày sinh và sử dụng phương pháp sort\_values để lấy top 10 người có độ tuổi cao nhất.

Thống Kê về Câu Nói Nổi Tiếng:

- Sử dụng phương pháp apply để tính độ dài của mỗi câu nói và tạo trường mới ChieudaiQuote.

- Tìm ra top 10 người có câu nói dài nhất và ngắn nhất bằng cách sử dụng sort\_values.

Thống Kê về Từ trong Câu Nói:

- Sử dụng nltk để phân tích các từ trong câu nói và đếm số lượng từ xuất hiện nhiều nhất.

- Tính độ dài trung bình của câu nói cho mỗi tác giả và lấy 10 tác giả đầu tiên.

Phân Tích và Trực Quan Hóa Mối Quan Hệ:

- Các biểu đồ bar được sử dụng để trực quan hóa các thông tin thống kê và so sánh giữa các tác giả và câu nói.

**Kết Quả Đạt Được:**

- Các biểu đồ bar được tạo ra để minh họa các thông tin thống kê và phân tích của tập dữ liệu.

- Các top 10 tác giả, top 10 độ tuổi cao nhất, top 10 câu nói dài nhất và ngắn nhất, cũng như các từ phổ biến nhất đã được trình bày một cách rõ ràng.

**Đánh Giá và Thảo Luận:**

- Các biểu đồ được thiết kế rõ ràng và dễ hiểu, giúp người đọc dễ dàng nhận biết và so sánh thông tin.

- Phân tích và thống kê đa dạng, cung cấp cái nhìn tổng quan về dữ liệu và mối quan hệ giữa các thành phần khác nhau trong tập dữ liệu.

Phương Pháp này phù hợp để hoàn thành yêu cầu một cách hiệu quả bằng cách sử dụng các công cụ và kỹ thuật phân tích dữ liệu phù hợp.

### 3.2.3. Trích xuất đặc trưng (Feature Extraction)

**Mục tiêu:**

Biến đổi dữ liệu văn bản (câu nói) thành các đặc trưng số (numerical features) để đưa vào mô hình học máy.

**Các cách trích xuất:**

**1.** **TF-IDF Vectorizer:**

* Biến câu nói thành vector thể hiện tầm quan trọng của từ.

**2.** **Countvectorizer:**

* + Đếm tần suất từ trong câu.

**3.** **Embedding nâng cao (Word2Vec, BERT):**

* + Dùng mô hình học sâu để biểu diễn ngữ nghĩa của câu.

**4.** **Đặc trưng thống kê:**

* + Độ dài câu, số từ, số ký tự
  + Tỷ lệ danh từ/động từ (nếu dùng NLP nâng cao).

### 3.2.4. Suy luận (Inference / Modeling)

**Mục tiêu:**

Xây dựng mô hình học máy dự đoán tác giả từ câu nói và phân tích sự tương đồng phong cách viết.

**1. Dự đoán tác giả từ câu nói:**

* Input: đặc trưng của câu nói (TF-IDF, Word Embedding...)
* Output: tên tác giả.
* Mô hình: Logistic Regression, Random Forest, SVM...
* Đánh giá: độ chính xác (Accuracy), F1-score, confusion matrix.
* Train/Test split: 70/30 hoặc 80/20.

**2. Tính độ tương đồng giữa các tác giả:**

* **Phương pháp:**
* Trung bình embedding các câu nói của mỗi tác giả.
* Dùng Cosine Similarity để tính mức tương đồng.
* Clustering hoặc Heatmap để nhóm tác giả.
* **Kết quả mong đợi:**
  + Mô hình dự đoán tên tác giả chính xác trên tập test.
  + Xác định được nhóm tác giả có phong cách tương đồng.

# LÀM VIỆC NHÓM

Cách thức làm việc:

Nhóm vừa làm việc online vừa làm việc trực tiếp

Đa số nhóm tự thống nhất vấn đề đặt ra và phân công nhiệm vụ. Sau khi giải quyết phần code xong sẽ phân bạn Huỳnh Võ Tấn Hiên làm bài báo cáo

Về phần code nhóm sử dụng github để code chung  
Về phần word nhóm thực hiện share link trên google drive để cùng làm và bổ sung cho nhau.

Trình bày tóm tắt cách thức làm việc nhóm

Phân chia công việc của các thành viên trong nhóm

|  |  |
| --- | --- |
| Họ và tên | Công việc |
| Huỳnh Võ Tấn Hiên | Câu 2 + Câu 3 + trình bày báo cáo |
| Trần Quốc Sang | Câu 1 + Câu 2 + trình bày báo cáo |

Tổng số lần gặp nhau (tính theo buổi): 5 buổi

Tổng thời gian gặp nhau (tính theo giờ): 15 giờ

# TÀI LIỆU THAM KHẢO

1. Intergovernmental Panel on Climate Change (2023), Climate Change 2023: The Physical Science Basis, Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press.
2. United Nations Environment Programme (2022), Global Environment Outlook – GEO-6: Healthy Planet, Healthy People, Nairobi: UNEP.
3. World Wildlife Fund (2022), Living Planet Report 2022: Building a Nature-Positive Society, WWF International, Gland, Switzerland.
4. Environmental Protection Agency (2021), Air Quality Trends and Impacts, United States Environmental Protection Agency, Washington, D.C.
5. National Geographic Society (2024), The State of the Environment: Challenges and Solutions, National Geographic, Washington, D.C.

**TỰ ĐÁNH GIÁ**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Câu | Nội dung | Điểm chuẩn | Tự chấm | Ghi chú |
| Chương 1  (30 điểm) | 1.1 | 6 | 30 |  |
| 1.2 | 6 |
| 1.3 | 10 |
| 1.4 | 6 |
| 1.5 | 2 |
| Chương 2  (40 điểm) | 2.1 Câu hỏi đặt ra | 5 | 5 |  |
| 2.2 Xây dựng câu hỏi khảo sát | 10 | 10 |  |
| 2.3 Phân tích |  |  |  |
| 2.3.1 Kết quả khảo sát | 10 | 10 |  |
| 2.3.2 Phân tích dữ liệu | 15 | 15 |  |
| Chương 3  (30 điểm) | 3.1 Thu thập dữ liệu | 5 | 5 |  |
| 3.2 Khai phá dữ liệu |  |  |  |
| 3.2.1. Xử lý dữ liệu | 2 | 2 |  |
| 3.2.2. Khám phá dữ liệu | 10 | 10 |  |
| 3.2.3. Trích xuất đặc trưng | 3 | 3 |  |
| 3.2.4. Suy luận | 10 | 10 |  |
| **Báo cáo** | (chú ý các chú ý 2,3,4,6 ở trang trước, nếu sai sẽ bị trừ điểm nặng) | 10đ | 10 |  |
| **Làm việc nhóm** | Chú ý trả lời đúng 4 yêu cầu trong phần làm việc nhóm | 10đ |  |  |
| **Tổng điểm (120)** | | |  |  |
| **Đôi qua thang điểm 10 (120=10 điểm)** | | |  |  |