**3. Choosing the best invention**

**Before you start**

**Read 3 quotes about inventions.**

**How far do you agree with the following statements? Comment on.**

“The greatest single achievement of nature to date was surely the invention of the molecule DNA.” ― Lewis Thomas

“Gutenberg's invention of printing is the greatest event-the mother of revolution” — Victor Hugo

“The Internet is this whole new world that allows everyone to communicate and exchange information and be a perfect marketplace and just accelerate everybody’s lives. So, for me, the Internet was the greatest invention of mankind so far.” — Kim Dotcom

**So, I’m agree with all 3 quotes and it’s hard to mark the most important. They’re all from different scientific fields. For example, the invention of DNA was revolution for medicine, biology and so on, then again, printing is the revolution i.e., in education and other fields. Finally, the Internet change almost all scientific and social fields, but I can’t say that this is the most important. Without the discovery of medicine or electricity, we simply would not have reached the Internet. Therefore, each discovery is important in its own way.**

**Ex. 1 Study the following words and their translations**

|  |  |  |
| --- | --- | --- |
| Word | Transcription | Translation |
| pottery | /ˈpɒtəri/ | керамика |
| to devise | /tu dɪˈvaɪz/ | разработать |
| to rely on | /tu rɪˈlaɪ ɒn/ | полагаться на |
| curvature | /ˈkɜːvətʃə(r)/ | кривизна |
| lense | /lenz/ | линза |
| inhabitant | /ɪnˈhæbɪtənt/ | житель |
| scrutiny | /ˈskruːtəni/ | проверка |
| to reveal | /tu /rɪˈviːl/ | раскрыть |
| at odds | /ət ɒdz/ | в разногласиях |
| infatuated | /ɪnˈfætʃueɪtɪd/ | увлеченный |
| magnification | /ˌmæɡnɪfɪˈkeɪʃn/ | увеличение |
| to denote | /tu dɪˈnəʊt/ | обозначать |
| in a nutshell | /ɪn ə ˈnʌtʃel/ | в двух словах |
| accidental | /ˌæksɪˈdentl/ | случайный |

**Ex. 2 Read the text and title its parts**

1. The difference between invention and dicovery

Generally speaking, an *invention* is a new unique product, method, composition or process that solves a technical problem. It may be an improvement upon a machine or product or a new process for creating an object or a result. In a nutshell, the invention is something that did not prevail before and is acknowledged as the outcome of some unique intellect. An invention that achieves an exceptional function or result may be a radical breakthrough. This is different from a *discovery*, which is something that already existed but had not been found. The term discovery denotes the act of detecting or uncovering something for the very first time, which is already there in the world, but was not recognized previously as relevant. It is the scrutiny of new events, actions, phenomena or reasoning. The discovery relies on ideas, collaborations or even former discoveries. Both inventions and discoveries can be accidental or well planned.

(b) Explanation by examples

Invention and discovery often go hand-in-hand, where discovery leads to invention and invention can lead to discovery.

Consider, for example, the telescope and the mountains of the moon. The telescope is an invention that was created in 1608 when Hans Lipperhey, a Dutch eyeglass maker, combined convex and concave glasses at either end of a tube. It was only with the invention of the telescope that humans (Galileo Galilei to be precise) were able to look far enough into the sky to see the mountains of the moon. Galileo didn’t invent these mountains, he discovered them - with the help of an invention.

Another significant example is an invention of microscope. The father of microscopy, Anton van Leeuwenhoek of Holland, started as an apprentice in a dry goods store where magnifying glasses were used to count the threads in cloth. He taught himself new methods for grinding and polishing tiny lenses of great curvature which gave magnifications up to 270 diameters, the finest known at that time. These led to the building of his microscopes and the biological discoveries for which he is famous. He was the first to see and describe bacteria, yeast plants, the teeming life in a drop of water, and the circulation of blood corpuscles in capillaries. During a long life, he used his lenses to make pioneer studies on an extraordinary variety of things, both living and non-living and reported his findings in over a hundred letters to the Royal Society of England and the French Academy.

(c) Two-sided relation

Just as inventions can lead to discoveries, discoveries can sometimes also lead to inventions. For example, Benjamin Franklin’s discovery of the electrical effects of lightning led him to invent the lightning rod around 1752. This invention is still in use today and has made  
buildings much safer places during thunderstorms.

The discovery of radio waves resulted in the invention of the radio. When the concept of electromagnetic waves was first proposed around 1864, it was met with great skepticism. As a result, the idea languished for a long time. This is understandable since the foundations of the theory were complex and the conceptual ideas were at odds with physical thinking. It took several decades for a handful of dedicated persons — infatuated with the mysteries of electricity and magnetism — to finally put the theory on a solid footing. Maxwell’s theory of the electromagnetic field had a momentous effect on science, but theories seldom spring from the minds of their creators fully completed. As so often happens, the next generation of scientists has to refine and codify it — a process that can take years. So it was with Maxwell’s theory. This gave an impetus to the development of this field of science and later led to the invention of a radio-receiver - a technology that we still use today.

(d) The most part of invention is the past

From the beginning of time, humans everywhere have been inventing. In fact, most of what is around you now was invented by someone in the past. We have grown so used to these things, however, that we often don’t think of them as inventions.

Think about the alphabet that we are using to communicate right now. The ink and paper that these words are written on. The clothes you are wearing. The chair you are sitting on. All of these are inventions and there is a person, a human mind, behind each of them.  
 Many inventions were devised thousands of years ago so it can be difficult to know their exact origins. Sometimes scientists discover a model of an early invention and from this model they can accurately tell us how old it is and where it came from. However, there is always the possibility that in the future other scientists will discover an even older model of the same invention in a different part of the world. In fact, we are forever discovering the history of ancient inventions.

An example of this is the invention of pottery. For many years archeologists believed that pottery was first invented in the Near East (around modern Iran) where they had found pots dating back to 9,000 BC. In the 1960s, however, older pots from 10,000 BC were found on Honshu Island, Japan. There is always a possibility that in the future archeologists will find even older pots somewhere else.

(e) Difficulties with determining the inventor

Sometimes archeologists can only find pictures or written references of an ancient invention. Though they are evidentiary materials that the invention existed, texts and pictures can make it difficult to determine when, where and by whom the invention was created.

This is the case of the compass. Scholars have found a clear description of a *sinan* (navigational device) in a Chinese text dating back more than two thousand years. While no actual models of this invention have been found to date, the description in this ancient text leads us to believe that this ancient form of compass was invented as early as 2400 years ago in China, and it took more than 1000 years for it to be introduced to the West (via Arab traders) in the 13th Century AD.

When scientists are very lucky, they find texts that not only mention past inventions but also describe them in detail and even reveal the name of the inventor and the approximate date of the invention. In these cases we have concrete proof of when, where and by whom the invention was created and we can give proper credit to the inventor.

This is how we know, for example, about the Greco-Egyptian engineer Heron of Alexandria who created countless machines in the late first century AD. Also known as mekanicos (machine man), Heron was famous in his time for his numerous inventions, especially his automatic machines that included a steam engine, a coin-operated slot machine and automatic doors.

Sometimes, different ancient civilizations independently invented very similar items. For example, almost every ancient civilization invented mirrors. Ancient mirrors made of polished volcanic glass (obsidian) have been found in Turkey and Mesoamerica, while polished bronze or copper mirrors were made by the inhabitants of ancient Egypt, Mesopotamia, China,  
Greece, Rome, and the Indus valley. In modern times, patents help us to determine when, where and by whom an invention was invented.

**Ex.3 Answer the following questions:**

1. What is the difference between discovery and invention?

the invention is something that did not prevail before and is acknowledged as the outcome of some unique intellect. D*iscovery*, which is something that already existed but had not been found.

1. What inventions have led to discoveries?

Telescope led to discovery of moons mountains, microscope led to catching and describing bacteria, yeast plants, the teeming life in a drop of water, and the circulation of blood corpuscles in capillaries

1. What discoveries have led to inventions? Give your own examples.

The discovery of the electrical effects of lightning led to invent the lightning rod as well as discovery of radio waves resulted in the invention of the radio

1. Do scientists always find real evidence of the inventions of ancient times?

No, sometimes scientists find only a model, schema or draw of invention and make decisions based on these finds.

1. What is a mekanicos?

Mekanicos are pretty similar to robots or mechanisms.

1. Who invented mekanicos?

Meckanicos was invented by Greco-Egyptian engineer Heron of Alexandria

1. Аbout what inventions did you learn from the text?

New thing for me was sinan.

1. The names of which inventors can be accurately attributed to the invention?

In case, when scientists find text with not only mention past inventions but also describe them in detail and even reveal the name of the inventor and the approximate date of the invention. If so we have concrete proof of when, where and by whom the invention was created and we can give proper credit to the inventor.

1. Is it always possible to say with certainty when an invention was created?

No, because some proofs may be not found yet

1. How in our time can we determine when, where and by whom an invention was created?

We can determine this with research, archeological digs and analyzing available proofs. Also in case of modern invention when documentation and patent system was stable, we can check patent.

**Ex.4 Define the following statements as true or false.**

1. Only with the invention of the telescope that humans were able to look far enough into the sky to see the mountains of the moon. T
2. Benjamin Franklin’s discovery has not changed to the present day. F
3. Heron was famous in his time for his numerous inventions, especially his automatic machines. T
4. In modern times, patents cannot help us to determine when, where and by whom an invention was invented. F
5. Texts and pictures can make it clear to determine when, where and by whom the invention was created. F/not always
6. Scientists have found that the Compass was invented in China during the Song dynasty and was used to indicate the direction of movement in the deserts. F, they just suppose
7. Maxwell's developments in radio waves eventually led to the invention of radio. T
8. The invention of the mirror is attributed by historians to the Egyptians. F
9. Pottery was first invented in the Near East. F
10. Ancient mirrors were made of obsidian. T

**Ex.5 Give Russian equivalents for:**

the approximate date of the invention – приблизительная дата изобретения

this invention is still in use today – это изобретение до сих пор используется

convex and concave glasses – выпуклые и вогнутые стекла

the teeming life in a drop of water – активная жизнь в капле воды

a handful of dedicated persons – небольшая группа преданных людей

exact origins – точное происхождение

no actual models of this invention have been found to date – к настоящему времени не найдено ни одной реальной модели изобретения

the idea languished for a long time – идея вынашивалась долгое время

the electrical effects of lightning led – электрические свойства молнии привели

discovering the history of ancient inventions – открытие истории древних изобретений

the circulation of blood corpuscles in capillaries – циркуляция кровяных телец в капиллярах

to count the threads in cloth – считать нити в ткани

to look far enough into the sky to see the mountains of the moon – смотреть настолько далеко, чтобы увидеть горы на луне

the future archeologists will find even older pots somewhere else – будущие археологи найдут более древние горшки в другом месте

to finally put the theory on a solid footing – окончательно потвердить теорию

to find pictures or written references of an ancient invention – найти рисунки или записки о древнем изобретении

independently invent very similar items – параллельное изобретение похожих предметов (из контекста)

theories seldom spring from the minds of their creators fully completed – теории редко основываются полностью завершенными

refine and codify a theory – уточнять и систематизировать теорию

the outcome of some unique intellect – результат работы уникального интеллекта

**Ex.6 Match the left and the right parts of the following equations.**

|  |  |
| --- | --- |
| 1. Many inventions were devised thousands of years ago so d | 1. … something that did not prevail before and is acknowledged as the outcome of some unique intellect. |
| 1. The term discovery denotes the act of detecting or uncovering something for the very first time a | 1. … from this model they can accurately tell us how old it is and where it came from |
| 1. In a nutshell, the invention is f | 1. … had a momentous effect on science. |
| 1. Sometimes scientists discover a model of an early invention and b | 1. ..it can be difficult to know their exact origins. |
| 1. Just as inventions can lead to discoveries, h | 1. …independently invented very similar items. |
| 1. Both inventions and discoveries g | 1. …which is already there in the world, but was not recognized previously as relevant. |
| 1. Sometimes, different ancient civilizations e | 1. … can be accidental or well planned. |
| 1. Maxwell’s theory of the electromagnetic field c | 1. …discoveries can sometimes also lead to inventions. |

**Ex.7 Translate into English.**

1. В наше время патенты помогают нам определить, когда, где и кем было изобретено изобретение.

Today patents help us to determine when, where and by whom an invention was invented.

1. Иногда ученые обнаруживают модель раннего изобретения, и из этой модели они могут точно рассказать нам, сколько ей лет и откуда она взялась.

Sometimes scientists discover a model of an early invention and from this model they can accurately tell us how old it is and where it came from.

1. Фактически, большая часть того, что вокруг вас сейчас, была изобретена кем-то в прошлом.

In fact, most of what is around you now was invented by someone in the past.

1. Шотландский физик Джеймс Клерк Максвелл в 1865 году с помощью математических выкладок впервые открыл существование электромагнитного поля и радиоволн.

Electromagnetic field and radio waves were discovered in 1865 by Scotland’s physicist J K Maxwell which used mathematical calculations.

1. Открытия и изобретения могут казаться похожими из-за того, что открывается что-то новое, однако это два разных слова и они имеют разные значения.

Inventions and discoveries may seem similar due to something new is discovering, but these 2 words are different and have unequal definitions

1. Не менее замечательным было изобретение светового микроскопа - прибора, который позволяет человеческому глазу с помощью линзы или комбинации линз наблюдать увеличенные изображения крошечных объектов.

The invention of microscope was nevertheless brilliant. Microscope is a device which allows human eye to observe tiny objects because of lens or lenses combination.

1. В научном сообществе открытием называется наблюдение новых явлений, действий или событий, которые могут помочь объяснить знания, полученные с помощью предыдущих научных доказательств.

In the science community term “discovery” means observation of the phenomena, actions or events, which may help explain knowledge obtained with previous scientific research.

1. Изобретение - это использование объектов, идей или теорий, которые уже существуют, чтобы создать новый объект, идеи или теории, которые еще не существуют.

The invention is using objects, ideas or theories, which already exist, to create new object, idea or theory, which not exists yet.

1. Компас использовался для навигации на протяжении многих веков.

The compass has been used for navigation during many centuries.

1. Согласно археологическим данным, керамика впервые появилась в Восточной Азии.

According to archeological information, the ceramics first appeared in East Asia.

**Before you start**

What are the latest scientific inventions or achievements do you know?

So I want to give example as Anchor modeling in data warehouse modeling. It’s technique suit for information which change in structure and content. Also it’s good for modern companies because it was created especially for scaling and reliability.

What problems do these scientific achievements solve?

It’s solve the problem of changing structure - you can easy change the types of relations between entities without deep modifications, also it’s just simple to change structure and making scale of your DWH due to the concept of notation and 6th normal form.

**Ex. 8 Glossary. Match the words and their translations.**

|  |  |
| --- | --- |
| 1. Invention H 2. Inspirational A 3. Breakthroughs F 4. Suspended Animation L 5. Resuscitation J 6. Decreasing C 7. Agriculture K 8. Endangered E 9. Post-mortem I 10. Probe G 11. Low-frequency observation D 12. Spokesperson M 13. Conservationist B | 1. вдохновляющий 2. защитник природы, эколог 3. убывающий 4. низкочастотное наблюдение 5. находящийся под угрозой, исчезающий 6. прорывы 7. зонд 8. изобретение 9. посмертно 10. реанимация 11. сельское хозяйство 12. анабиоз 13. представитель |

**Ex. 9 Read the text**

*The Greatest scientific breakthroughs of 2019*

The world's top scientists and researchers are always pushing to discover, prove, and create innovations in the world of science and technology. Their breakthroughs alter life on Earth and change our perception of reality. The greatest scientific discoveries are an inspiring testament to the profound capabilities of the human mind. Each year, scientists make incredible discoveries. What scientists learned in 2017 could help them make new advances in 2018, and scientific discoveries in 2018 can influence 2019 scientific advancements. In turn, the scientific achievements of 2019 will contribute to the development of science and technology in 2020. This continuous process of comprehension the world is possible owing to all scientific achievements.

This list of 2019 scientific discoveries features breakthroughs and recent informative works that span a wide range of disciplines. From learning new things about the worlds beyond our planet to unlocking possibilities within our very cells, these breakthroughs will give you hope for the future even in bleak times.

The latest in science news is inspirational for a new generation of thinkers who will continue to push the boundaries of human capability. Read on to find out the biggest discoveries of 2019 and the latest scientific advancements.

Lucy Hughes, a product design student at the University of Sussex, created a compostable compound that could replace single-use plastic in products such as bakery bags, sandwich packs, and tissue boxes. The product, the result of her final-year project, is called MarinaTex, presumably because its main ingredient is byproducts of the fishing industry. She combined chitosan from crustaceans and agar from red algae with fish skins and scales to produce an effective and stable product.

Hughes told Reuters she was trying to figure out how to "add value" to the 50 millions tons of fish waste produced globally every year. She noticed the skin and scales she found were "flexible, yet pliable, and strong," similarly to plastic we use daily.

Hughes won the international James Dyson Award for her invention; she plans to use the $41,000 reward money to improve MarinaTex and build a business plan for mass distribution.

Samuel Tisherman and his team of medics from the University of Maryland School of Medicine reported they placed one patient in suspended animation for the first time, in November. Technically speaking, the process of suspended animation is called emergency preservation and resuscitation (EPR), and the goal is to "make it possible to fix traumatic injuries" that could otherwise result in the patient's demise.

As part of an extended trial, patients who are sent to the University of Maryland Medical Center with "acute trauma" will undergo EPR, allowing emergency surgeons to operate for two hours as opposed to the five minutes usually allotted when someone is admitted facing cardiac arrest. EPR works by "replacing all of [a patient's] blood with ice-cold saline," consequently lowering their body's temperature from approximately 98 to nearly 50 degrees, decreasing brain activity. They are then disconnected from the cooling system so surgeons can operate before their heart restarts.

Tisherman's trial, approved by the FDA, compares 10 patient's who undergo emergency EPR to 10 who do not. The medical center allowed the local community the opportunity to opt out the trial in advance, as, in the event of an emergency situation, they cannot provide consent, and no alternative treatments are available. The results of the trial are expected by the end of 2020.

The Earthwatch Institute officially concluded that bees are the most important living beings on Earth at a September 2019 meeting of the Royal Geographical Society of London. Experts debated whether plankton, bats, primates, fungi, or bees deserved the honor, ultimately declaring the little yellow insects as the most invaluable creatures on our planet. Bees are responsible for pollination, and without them, Earth's agriculture would suffer. They pollinate about 70% of our crops and therefore feed 90% of the world, according to the BBC. The Apiculture Entrepreneurship Center of the Universidad Mayor, the Apiculture Corporation of Chile, and the Foundation for Agrarian Innovation also discovered that honeybees are the only species that does not carry some type of pathogen.

Unfortunately, bees are endangered. Up to 90% of bees have disappeared in recent years due to pesticides, deforestation, and a lack of flower growth. To prevent a honeybee extinction, conservationists suggest avoiding harmful pesticides, planting a bee-friendly garden, creating a bee bath, planting trees, buying honey from your local beekeeper, and more.

A research team at Yale University took it upon themselves to study the Restoration of brain circulation and cellular functions hours post-mortem in pigs. They found that "a surprising amount of cellular function was either preserved or restored" which implies our previous understanding of neurology that all cellular activity stops once oxygen is cut off is extremely limited.

Organizational thought and consciousness was not preserved and researchers were careful to avoid stimulating such activity. Still, the ethical implications of post-mortem molecular function call into question the laws in place regarding animal welfare and even protection against humans who have been declared brain-dead.

Using 32 pig heads obtained from pork processors, the team cleansed and isolated each brain before hooking up "key blood vessels to a device that pumped in a specially formulated chemical cocktail for six hours, starting about four hours after the pigs [passed]." The technology used in the study is called BrainEx.

Although awareness that the molecular restoration of brain function is possible post-mortem can be ethically complicated, it also "offers a new way to study brain diseases or injuries." Regardless, the distinction between a "living brain" and a "cellularly active brain" is essentially the same difference between "mostly dead" and "all dead," and the term "mostly dead" does not commonly provoke a positive connotation.

The second patient ever to be cleared of HIV infection signals that a cure is possible. Both patients were free of the virus that causes AIDS after a bone marrow stem cell transplant from a donor with a rare genetic mutation of the CCR5 gene. The first patient to experience this was a man from Berlin, Timothy Brown, who underwent the procedure over a decade ago. Brown stopped taking the antiretroviral drugs used to suppress HIV and has remained virus-free. The second man is an unnamed patient from London, who stopped his medication 18 months ago and has not shown any signs of the virus returning.

As bone marrow transplants aren't a scalable solution to HIV, scientists are hoping that these are the first steps to "a safe, cost-effective and easy strategy to achieve these results using gene technology or antibody techniques." Currently, a daily pill is needed to keep a person with HIV healthy and ensure a normal life span. An article published in Nature on March 5, 2019, details both how the stem cell treatment works and what the possibilities are for what comes next.

Supplied with their own air, water, and nutrients - as well as yeast and fruit fly eggs in an attempt to form their own self-sustaining biosphere - cotton and potato seeds sprouted their first buds on January 14, 2019. What was remarkable about these plants is that they're doing it on the moon, though not directly in lunar soil. This is the first time plants have germinated on the moon, another first for China's Chang'e 4 mission.

These plants are important for learning how well humans can grow food on the Moon - something that could be important as we further explore space. Learning how the Moon can be established as a jumping-off point for other planets is especially important for China, who hopes to eventually send manned missions to Mars.

After launching the Chang'e 4 in early December 2018, China soft landed their probe on the far side of the moon on January 03, 2019 at 10:26 a.m., Beijing Time, making it the first spacecraft to do so. Although the "dark" side of the moon isn't always truly dark, the far side of Earth's satellite is relatively unknown because it faces away from the planet. The inability to directly see the surface also adds to the difficulty of landing any spacecraft on it. Although the far side of the moon has been mapped before, the Chang'e 4 is the first craft to actually touch down.

Other than exploration, a probe on the far side of the moon can observe space more clearly, thanks to the moon itself blocking Earth's radio signals. As the mission spokesperson Yu Guobin explained, "this probe can fill the gap of low-frequency observation in radio astronomy and will provide important information for studying the origin of stars and nebula evolution."

So this text introduces us with scientific breakthroughs of 2019. First is MarinaTex – the new replacement of plastic consisting of byproducts of the fishing industry. The next point is the ERP or suspended animation which make it possible to fix traumatic injuries that could otherwise result in the patient's demise. It uses a technique of replacing all of patient's blood with ice-cold saline. Also, according to the text, in 2019 was officially concluded that bees are the most important living beings on Earth. Moreover, in this year scientists explore the Restoration of brain circulation and cellular functions hours post-mortem in pigs and bone marrow stem cell transplant to clear of HIV. The last point is Chinese Mission to the far side of the moon.

**Ex. 10 Give Russian equivalents for:**

wide range of disciplines – широкий список дисциплин

bleak times – мрачные времени

final-year project – выпускной проект

replacing all of a patient's blood with ice-cold saline – замена всей крови пациента ледяным физраствором

without them Earth's agriculture would suffer – сельское хозяйство пострадало бы без них

restoration of brain circulation – восстановление кровообращения мозга

bone marrow stem cell transplant – пересадка стволовых клетов костного мозга

the Moon can be established as a jumping-off – Луна может рассматриваться в качестве стартовой точки

the far side of Earth's satellite is relatively unknown because it faces away from the planet – обратная сторона спутника Земли слабо изучена потому что она обращена в сторону от нашей планеты

provoke a positive connotation – провоцирует положительный значение

in an attempt to form own self-sustaining biosphere – в попытке сформировать самостоятельную биосферу

to undergo the procedure – пройти процедуру

conservationists suggest avoiding harmful pesticides – защитники природы советуют избегать вредных пестицидов

admitted facing cardiac arrest – подтвержденный случай остановки сердца

to achieve these results using gene technology or antibody techniques – добиться результатов используя генные технологии или антитела

to send manned missions to Mars – отправлять миссии на Марс

thanks to the moon itself blocking Earth's radio signals – благодаря луне, блокирующей радиосигналы Земли

declared brain-dead – признанный неправильным

the inability to directly see the surface – невозможность видеть поверхность

a surprising amount of cellular function was either preserved or restored – удивительное количество клеточных функций было сохранено или восстановлено

lunar soil – лунный грунт

to fix traumatic injuries – устранять травмы

the molecular restoration of brain function – молекулярное восстановление функций мозга

to suppress HIV – подавлять ВИЧ

**Ex. 11 Learn the principle of writing an opinion essay and create your own on the following topic: “What do you think is the most important invention of the past 100 years?”**

An opinion essay presents the author’s point of view on a particular subject supported by reasoning and examples. The opposing viewpoint is also suggested, but it is followed by arguments that show its inconsistency.

**Tips**

1. Introduce your essay by restating the question in your own words.

2. If the essay asks you *to what extent do you agree?,* make your opinion clear throughout. You can either agree, partially agree or disagree with the statement, explaining and justifying your opinion.

3. The structure should be:

* Introduction
* The first argument
* The second argument
* The third argument (if you have one)
* Conclusion

4. Use phrases to organize and link your ideas, e.g. *Owing to …* , *One justification for …* , *The first thing to consider is …* , *A further reason …* , *In conclusion ...* .

5. If you do not have solid evidence for your ideas, use modal verbs such as *might*, *may* or *could* (e.g. *they could develop more empathy and care*) or other tentative phrases (e.g. *it does not appear to be an effective punishment*).

6. Conclude by restating your opinion and summarizing our two or three main arguments.

**Ex. 12 Debates. Discuss one of the following topics with your groupmates. Confirm your opinion with arguments. Use the “pro and contra” model of discussion.**

1. Some people think that the range of technology available to people is increasing the gap between the rich and the poor. Others think it has the opposite effect. Discuss both views and give your opinion.
2. Some people believe that modern inventions have more problems as compared to their benefits. Do you agree or disagree?
3. Modern technology is changing our world. This has advantages such as bringing people closer together through communication. It also has disadvantages such as destroying the differences between cultures. To what extent do you agree or disagree with this statement?

**Ex. 13 Search on the Internet about following inventions and then match the inventor and the invention:**

|  |  |
| --- | --- |
| Alexander Graham Bell | Dishwasher |
| Alfred Nobel | Reflecting telescope and other discoveries |
| Benjamin Franklin | Led the team which developed the atomic bomb |
| Isaac Newton | Patented the telephone, invented a dehusking machine, photophone and made other technological discoveries which future inventors carried further |
| Johannes Gutenberg | Square-bottomed paper bag |
| Julius Robert Oppenheimer | Lightning rod, bifocal glasses and many others |
| Josephine Cochrane | The first waterproof disposable diaper |
| Leonardo da Vinci | A detonator, dynamite, gelignite |
| Marion Donovan | Windshield wiper blades |
| Mary Anderson | Worked with electricity and sound improving light bulbs and telephones as well as motion picture cameras and other inventions |
| Margaret Knight | Produced designs for numerous inventions |
| Thomas Edison | Combined and improved inventions such as movable metal type and ink used these to improve printing technology |

**WATCHING THE VIDEO**

<https://www.ted.com/talks/david_peterson_why_language_is_humanity_s_greatest_invention>

Why language is humanity's greatest invention

**Part 1 0.00-7.30**

**Before you watch**

**Ex. 1** Discuss with your partner:

1. Why is it that only humans, unlike all other species of living beings living on Earth, are able to communicate through language?
2. Scientists suppose that about half of the current 7 thousand languages may disappear by the middle of the XXI century. What do you think is the reason for this?
3. English language is the most important international language. This language is the native language of 410 million people, and 700 million learn it as an additional language. What do you know about the prerequisites for the development of English as the main international language?

**Ex. 2** Translate the words and word combinations:

1. to devote
2. to unscramble
3. to hire
4. clustered in
5. to underline
6. be chalked up
7. implication
8. to abandon
9. interiority
10. implanted

**While you watch**

Tick the items David Peterson mentions in his talk and give your comments:

1. Language is the most important thing in the entire world.
2. The origin and creation of things is impossible without language. Human communication systems differ slightly from animal communication systems.
3. Language is an imperfect tool.
4. Language is the only way that we can figure out what is going on in the human mind.
5. High school students should not learn foreign languages.
6. The disappearance of one language will not affect the concept of language as a heritage of humanity.

**Part 2 7.30 – 14.22**

**Before you watch**

**Ex.1** Read the short article and comment on. Do you agree or disagree with the statement?

*“The limits of my language mean the limits of my world.”*

That quote up there was something taught by Ludwig Wittgenstein (April 26, 1889–April 29, 1951) an Austrian-born philosopher who spent most of his life in England, including teaching at Cambridge.

Since Wittgenstein’s original statement was in German (“Die Grenzen meiner Sprache bedeuten die Grenzen meiner Welt”) there are variations based on how it’s translated. For example, it could also be written as “The limits of my language stand for the limits of my world.”

The definition of “bedeuten” is “to mean” or “to signify.” It might has been less literal and, using Wittgenstein’s own ideas, we can make the translation using an English word that has more impact for English speakers: “The limits of my language define the limits of my world.”

It may seem like splitting very fine, blond hairs, but Wittgenstein dedicated his life to clarity and precision of language. (And translation requires bringing both the meaning and the intent into another language, so it’s seldom accomplished with literal translations.)

Wittgenstein also expressed the same idea from a slightly different angle, “The limits of my language are the limits of my mind. All I know is what I have words for.”

He talked about language and understanding as being inseparable, and that the language we use determines whether or not we are clearly understood. Of course, he also said the extent to which we can be understood will be limited if our audience lacks the language to follow what we say.

The ability to name things, and understand each other when doing so, is one of the key things that sets us apart from the rest of the animal kingdom.

**Ex.2** Do you know what the words **in bold** mean? Look them up if necessary.

1. Maybe language study isn't going to lead to a lot more linguistic **fluency.**
2. It's not because government **imposes** one language on a smaller group, or because an entire group of speakers is **wiped out**.
3. Languages can tell us about the depth of the human spirit just as an artistic **endeavor**.
4. Maybe if more people are studying more languages, it will lead to more linguistic **tolerance** and less linguistic imperialism.
5. Now, presenting these facts back to back, that we're losing languages on our planet and that I create brand-new languages, you might think that there's some **nonsuperficial** connection between these two.

**While you watch**

Why do the speakers say the following? Give your comments

1. Language is useful when it can be used for communication.
2. Language study isn't going to lead to a lot more linguistic fluency.
3. Maybe if more people are studying more languages, it will lead to more linguistic tolerance and less linguistic imperialism.

**References:**

1. *Ancient Pottery: Types, History, Development of Clay-Fired Vessels*. (2019). Visual-Arts-Cork.com. http://www.visual-arts-cork.com/pottery.htm
2. Bellis, M. (2018). *Meet the Inventors of the Electron Microscope*. ThoughtCo. https://www.thoughtco.com/history-of-the-microscope-1992146
3. *Difference between Discovery and Invention*. (2012, December 18). Www.differencebetween.info. https://www.differencebetween.info/difference-between-discovery-and-invention
4. *Inventors And Inventions | Many Answers*. (n.d.). Anyquestions.govt.nz. https://anyquestions.govt.nz/many\_answers/inventors-and-inventions
5. Leary, S. (2021, September 23). *The Greatest Scientific Breakthroughs Of 2019*. Ranker. https://www.ranker.com/list/scientific-breakthroughs-of-2019/sammy-leary
6. Oxford Dictionary. (2017). *Oxford learner’s dictionaries*. Oxford Learner’s Dictionaries. https://www.oxfordlearnersdictionaries.com/
7. Steber, G. R. (n.d.). *The Discovery of Radio Waves*. Nuts and Volts Magazine. https://www.nutsvolts.com/magazine/article/the-discovery-of-radio-waves
8. Surbhi S. (2016, December 15). *Difference Between Discovery and Invention (with Comparison Chart) - Key Differences*. Key Differences. https://keydifferences.com/difference-between-discovery-and-invention.html
9. World Intellectual Property Organization. (2010). *Learn from the Past, Create the Future : Inventions and Patents.* World Intellectual Property Organization (Wipo)