



2017 年最新 PTE 口语机经-Retell Lecture

Retell Lecture

1. Coffee Industry

The lecture is about the changes that have taken place in coffee production. The production of coffee has increased from 30 billion to 60 billion since last 10 years. The huge demand of Europe and America has made Vietnam the second biggest producer which has greatly affected Columbia's production. However, there is a crease in the output of America and Europe. People's drinking habit is also undergoing changes.

2. Galaxy 太空图

This lecture talked about the darkness between galaxies.

A picture from NASA was provided to further explain the darkness. This Hubble picture is copyright free and can be found on newspapers, magazines and in the Internet. According to the lecturer, gaps between galaxies are not dark. The reason why we cannot see it is because the expansion of the universe cause lights to be shifted to lower frequencies, so our eyes are not able to detect the infrared light. To conclude, the darkness between galaxies still remains mysterious to us.

3. Education expenditure in European countries 欧洲国家的教育支出

The lecture talks about the expenditure on education among different European countries. University funding is related to GDP and UK is the bottom country.

Italy and France is close to that of UK.

Denmark and Finland spent much more money on public and private schools. OCED on tertiary education costs compare with GDP, with gram UK has a lower investment, Denmark and Finland has double their investment.

4. Community service workers 社工

The lecture talks about community Service Worker

It is important to provide training for field service workers. Contagious diseases, such as HIV is

difficult to control. Training is essential for workers to understand the precaution knowle dge.

Some large hospitals and organizations provide consultation and this can prevent the spread of Disease. Indian has quarterly meetings. However, large workshop and seminars are not necessary in some cities.

This lecture gives information about the community health worker in India. According to the lecture, the speaker mentioned that community health workers need advices and trainings, especially for HIV and other diseases. Training given by professional organizations a

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nd professors can effectively help workers to know the scope of services and prevent the spread of disease. Moreover, Indian has quarterly meetings to follow up related matters. However, in the end, the speaker said that large workshops and seminars are not necessarily, and large consultations are not suitable in some cities.

5. Low child birth rate

This lecture talks about low child birth rate.

More and more western countries women under 30 years old do not want to give birth to babies.

There is a decreasing birth rate and two adults only gave birth to average one child.

It affects the development of both man and women in western countries and it relates several factors such as unemployment rate.

Western women didn't want to have children, the lowest birth rate in human history.

6. Animal survives and reproduces 青蛙实验

This course is about general condition that how animals can survive and reproduce, how they maintain their body under water, tolerate different temperature, seasons and how they use their inhabit, daily activities and behaviors.

The researchers use frog as an example and put it into the water and boil the water. The result of the experiment indicates that the frog can adjust their body temperature according to the change of the water temperature in order to survive itself.

7. Brain Development

The lecture talks about the brain development.

To begin with, the speaker says that people will have language ability and cognitive ability as brain develops.

After that, he mentions that different period of brain development has different influence on people. For example, in short time, such as 3 months, the brain will develop low level ability.

For several years, the brain develops cognitive skills.

More importantly, some defects in brain development may have negative effects on people's future life.

At the end, the speaker emphasizes that childhood development has great impact on adult brain in terms of sensory pathway, language and higher cognitive function.

To conclude, further studies on human brain are necessary.

8. Recent research on distant monitor technology 有图



The lecture talks about a new kind of remote distant monitoring technology called underwater Antares detectors. These detectors can be used to observe the environment change and water temperature change.

More importantly, these detectors are installed under water to monitor fish's reaction to the feeding. By putting a camera into the cage and then put into the water, people can observe the fish's reaction to feed so that it can help people to observe fish reactions without being physically there. This makes it possible for people to change their feeding strategy quickly when fish do not react to the feeding. The technology can also identify the water quality.

9. Thermodynamics 热力学

The lecture talks about thermodynamic theory and kinetic theory which are major development of physics. To begin with, the speaker points out that thermodynamics are about [heat](#) and [temperature](#) transmission and their relation to energy and work.

After that, he mentions that the laws of thermodynamic which describe how quantities behave under various circumstances are constant and statistical.

More importantly, the laws of thermodynamic are obeyed under most situations, however, there are exceptions. At end, he emphasizes that exceptions happen when comes to kinetic energy of molecules which is about random motion of atom

Keywords: heat; theories; physics; atom; motion; energy; mechanical; kinetic; thermodynamics;

Temperature: Temperature is the average kinetic energy within a given object.

Thermal Energy: Thermal energy is defined as the total of all kinetic energies within a given system.

Heat: It is important to remember that heat is caused by flow of thermal energy due to differences in temperature (heat flows from object at higher temperature to object at lower temperature), transferred through conduction/convection/radiation. Additionally thermal energy always flows from warmer areas to cooler areas.

10. Female student and male student math score and English scores

This lecture mainly talks about the boys and girls performance in English and Mathematics. According to the lecture and the PPT provided to us, over the 6 years, girls outperform boys in English which is around 10% higher. However, in terms of Math, there is no clear difference between boys and girls.

There are 3 reasons to explain this. Firstly, biological factors (读图片内容).

Second is the social factors (仍然读图片内容).

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Thirdly, pre-school factors (仍然照着图片说).

11. Dimensions (has a diagram which 4 parameters)

This lecture talks about dimensions.

Dimension means how many points (or parameters) that required describing a position.

If describe a position on equator, then just need one parameter, that is longitude.

If describe a position on the earth, then need two numbers: Longitudes, latitude

If describe a position over the earth, then need three numbers: Longitudes, latitude, and altitudes

Similar, when describing a position in the space, then takes the time into account, this is the 4th parameter.

12. Licking and Grooming (LG): rat experiments about low LG and high LG.老鼠

Some mother rats spend a lot of time licking, grooming, and nursing their pups. Others seem to ignore their pups. Highly nurtured rat pups tend to grow up to be calm adults, while rat pups who receive little nurturing tend to grow up to be anxious. The offspring of High LG rats have better ability to deal with stress and alcohol, but low LG didn't.

It turns out that the difference between calm and an anxious rat is not genetic—it's epigenetic. And the epigenetic pattern that mom establishes tends to stay put, even after the pups become adults.

13. 拉美经济(会给表格)

Economic growth 84%, reform 之后只 9%, 4% (80% 4% 5%)

拉丁美洲经济在经历全球化和 reform 之后增长变慢, 原来 20 年涨了 80%多, reform 后 20 年涨了 10%一下 (有个图)。经济变得 unsustainable。人们开始怀疑 reform 到底是好的

This lecture mainly talks about the economic development in Latin America. According to the lecture and graph provided, we can find that in the past 20 years, the percentage of economic development in Latin America grew 80%. However, after the globalization and reform, the growth turns slow down from 80% to 10%. Therefore, the speaker mentions the economic after reform become unsustainable. And some people start criticizing is the reform a positive or negative development.

14. Sound receptor 声音如何传到大脑

The lecture talks about the mechanism behind the sound receptor in our ears.

The speaker mentioned about how beautiful it is and it appears to be the spiky and flappy thing in the ear; it can translate vibrational energy coming from the ear drum into physical motion throughout the fluid, and then further into electrical signal.

The speaker in the end invites MIT students to learn more about it as they think it as a remarkable device.

15. Welsh Language 威尔士语 (有 PPT)

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原文:

Welsh is a Celtic language spoken in Wales (Cymru) by about 740,000 people, and in the Welsh colony (yr Wladfa) in Patagonia, Argentina (yr Ariannin) by several hundred people. There are also Welsh speakers in England (Lloegr), Scotland (yr Alban), Canada, the USA (yr Unol Daleithiau), Australia (Awstralia) and New Zealand (Seland Newydd).

At the beginning of the 20th century about half of the population of Wales spoke Welsh as an everyday language. Towards the end of the century, the proportion of Welsh speakers had fallen to about 20%. According to the 2001 census 582,368 people can speak Welsh, 659,301 people can either speak, read or write Welsh, and 797,717 people, 28% of the population, claimed to have some knowledge of the language.

According to a survey carried out by S4C, the Welsh language TV channel, the number of Welsh speakers in Wales is around 750,000, and about 1.5 million people can 'understand' Welsh. In addition there are an estimated 133,000 Welsh-speakers living in England, about 50,000 of them in the Greater London area.

答案:

Welsh language is a Celtic language which is spoken by people living in Welsh and other western countries. At the end of the century, the proportion of Welsh speakers had fallen to 20%. According to the 2001 Census, the number of Welsh speakers has decreased. 582,368 people can speak Welsh, 659,301 people can speak, read or write and 797,717 people, 28% of the population claimed to know Welsh. There are 1.5 million people can understand Welsh. In addition, many Welsh speakers living in England and greater London area.

16. Population Growth 人口增长 Mega City

The lecture is about population growth and resource consumption from 1900 to 2000. In 1900, the population was about 1.5 billion and it increased to 6 billion in 2000. The increase of energy consumption was much more significant which is increased by 16 folds. Due to the urbanization, cities, which only account for 2% of the land, have 50% of the total population and consumes 75% of the resources. At the end, the lecturer emphasizes that people not only use every resource on the planet but also produce tons of wastes.

Consuming resources has increased 60 fold and it makes big burden to the environment.

17. Bomb calorimeter 热量计

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There are the components of a bomb calorimeter, the food chamber is filled with oxygen, there will be chemical reaction between the food and the oxygen, the device is used to determine the heat coming from the combustion.

The water chamber absorbs the released when food is burned.

The thermometer measures the increased temperature of the water, so that it can calculate the energy of the food.

The air space and insulation prevent heat loss. This is similar the way human body breaks down the food to give off the energy.

Human digest system cannot absorb full energy, so bomb calorimeter cannot measure as same as the actually absorbed.

18. Australia's changing role (export)

The changes of Japan, America and China's export to Australia started from 1995.

In the past, Australia was isolated from UK & USA.

Nevertheless, nowadays with the rise of Asian countries, especially China, Australia has become a famous destination and export country. Japan now is the largest exporting country to Australia, and China will replace the position in the future. Australia should take the advantage of China's raise to develop its exports.

19. Napoleon 3 innovate Paris 拿破仑三世

This lecture mainly talks about the renovation of Paris in 1890s. The renovation was a vast public program commissioned by Napoleon the third and directed by Haussmann. Napoleon the third instructed Haussmann to bring air and light to the center of Paris and to drain the sewage. And he also asked Haussmann to plant more trees, build roads and to make the city safer. The reason for doing this was that the old Paris had many serious problems such as overcrowding, diseases and crimes.

20. DNA

The lecture talks about one of the four findings from biology studying. Although butterfly, flowers and dolphin and other creatures look different, they are closely related to each other. They all rely on DNA and RNA to store and transmit genetic information. They all based on cells, which is the fundamental structure of lives. All organs have metabolism system, which convert energy from one form to another.

21. Universe Civilization

The universe produces one hundred something of planets annually, however, only averagely 7 planet are suitable for high civilization, and the rest planets are either too cold or too hot. Therefore, only 20% of planet can support human to survive. The lecture has a ppt, you can found some figure and information on it.

22. Insufficient sleep's impact on adults

23. 6 ways mushroom can save the world (search Ted's talk)

24. Non-government Organizations 非政府组织 (有 PPT)

The lecture talks about non-governmental organization which may be established by governments, foundations, companies, or individuals. NGOs are highly diverse organizations engaged in a wide range of activities. The number of NGOs in America is 1.5 million and India has around 2 million in 2009. Last but not the least, the speaker suggested that it is hard to define the NGO and the term is rarely used. The most common focus is on orientation and level of operation.

另一个题：

This profound movement towards harnessing voices and resources from outside the realm of government and officialdom reflects a profound growth in NGO'S, the third sector, as some call it. As Robert Putnam discovered in the field of local government in Italy, the best predictor of governmental success was the strength and density of a region's civic associations. Its number has increased by 40 fold since last century.

25. Immigration effects 移民影响

Nowadays immigrates who work in industrialized countries can send back money to their home country about 200000 billion or million dollars. However, the money that they receive as a help from government is about 100000 million or billion dollars (bar chart)

26. CEO SURVEY

The lecture talks about a survey of 100 CEO's opinions about what will affect the company's operation. The main question here is which area of activity should contribute most effort.

58% of CEOs agree with IT, because IT is time consuming and complex.

It also mentions other two aspects, which are marketing of sales and finical management while IT is the most important one.

27. Civil Society Group 公民社会

原文：



But in the face of this sense of disempowerment, there surprisingly is no decline in involvement in organizations, which seek to share wealth and opportunities, protect one another's rights and work towards the common good. According to the United Nations, civil society groups have grown 40 fold since the turn of last century. Internationally, the non-profit sector is worth one trillion dollars, and there are 700,000 such organizations in Australia alone. The UN recognizes 37,000 specifically civil society organizations across the globe, and gave 3,500 accreditation to the 2002 World Summit on Sustainable Development.

This profound movement towards harnessing voices and resources from outside the realm of governments and officialdom reflects a profound growth in NGO's, "the third sector", as some call it. As Robert Putnam discovered in the field of local government in Italy, the best predictor of governmental success was the strength and density of a region's civic associations.

答案 :

This Lecture talks about the disempowerment and non-profit sector. The non-profit sector is worth 1 trillion dollars and there are 700,000 organizations in Australia. The United Nations recognizes 37,000 civil social organizations and 3,500 of which was accredited to the World Summit on sustainable development. The best predictor of governmental success was power and density of a countries' non-governmental association.

28. Marshmallow experiment 棉花糖实验

This experiment is based on the bonus for not eating candy within 15 mins, self-control ability will be affected by environments. The children under 4 year old will eat it at once, while elder children can resist for a longer time and thus receiver more extra rewards. The lecture is about marshmallow experiment. In the test, the longer a child can resist the treat has been correlated with higher competency later in life. Also, another factor is personal experience.

29 Paper Windmill

<https://www.youtube.com/watch?v=0VfxdRbOVNI> 前 50s

30. Open border – 4 Level 开放边境(有 PPT)

This lecture discusses 4 reasons to support open borders. Firstly, the speaker believes that people should be allowed to move freely on principle. Secondly, open board contributes to the economy of developing countries, Thirdly, opening borders provides people from developing countries to get richer in developed countries. This is a humanitarian reason which leads to social justice. In conclusion, the speaker supports opening borders because of principle, economic, humanitarian and (另一个) reasons.

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31. Monkey and Typewriter 猴子打莎士比亚一句句子

听力原文材料：

The infinite monkey theorem states that a monkey hitting keys at random on a typewriter keyboard for an infinite amount of time will almost surely type a given text, such as the complete works of William Shakespeare. In this context, “almost surely” is a mathematical term with a precise meaning, and the “monkey” is not an actual monkey, but a metaphor for an abstract device that produces a random sequence of letters and infinitum. The theorem illustrates the perils of reasoning about infinity by imagining a vast but finite number, and vice versa. The probability of a monkey exactly typing a complete work such as Shakespeare’s Hamlet is so tiny that the chance of it occurring during a period of time of the order of the age of the universe is minuscule, but not zero. But technologies can help monkeys to write. If the monkey are given a pen and some papers to spell the word “monkey”, they can only scratch on the paper. By contrast, if they are given a typewriter, it will take those over 10 years to produce the right spelling. However, if they can use computer programing, they can finish the task within a day.

Summary:

The speech is a hypothesis about monkey and typewriter. People believe that a monkey hitting key at a random on a typewriter keyboard for a very long time such as 600 million years, it can almost surely complete works of Shakespeare. This assumption is possible in mathematic but not in reality.

32. Eukaryotes & prokaryotes 真核生物和原核生物

This lecture talks about the Eukaryotes and prokaryotes.

Human cells are eukaryotic, and Bacteria are examples of prokaryotes.

Eukaryotes can be single-celled or multi-celled.

Cells are huge in comparison to bacteria.

Organelles are an efficient way to organize everything that's going on in the cell

Having a nucleus or not is the biggest difference between eukaryotes and prokaryotes

33. Democracy, 权利集中和下放

(Reducing government/modifying government, there is an issue of moving power to people, moving away power from state. The power system is private power)

The lecture first stated the need to modify government powers. Then it followed by addressing the

different opinions holding by the Democratic Party and the Republican Party. While the Democratic Party claims that government should hold the big power and entitlements, the republicans believe government should share its powers with the states and people.



34. Globalization

The changes caused by globalization. Government of the USA subsidy farmers, which lead to the decrease price of agricultural products in comparison to India, 10 million farmers in India earn just about \$2 per day. In general, this lecture talks about the problems caused by globalization.

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RL- 机经

Retell:

1. 拿破仑重建巴黎 一带图

Napoleon III reconstruction/renovation of Paris.

This lecture mainly talks about the renovation of Paris in 1890s. Napoleon the third saw the old Paris was the evil Paris, so he decided to reconstruct it. The renovation was a vast public program commissioned by Napoleon the third and directed by Haussmann.

Napoleon the third instructed Haussmann to bring air and light to the center of Paris and to drain the sewages. And he also asked Haussmann to plant more trees, build roads and to make the city cleaner and safer.

The reason for doing this was that the old Paris had many serious problems such as overcrowding, diseases and crimes.

Haussmann's renovation of Paris was a vast public works program commissioned by Emperor Napoléon III and directed by his prefect of the Seine, Georges-Eugène Haussmann, between 1853 and 1870. It included the demolition of crowded and unhealthy medieval neighborhoods, the building of wide avenues, parks and squares, the annexation of the suburbs surrounding Paris, and the construction of new sewers, fountains and aqueducts. Haussmann's work met with fierce opposition, and he was finally dismissed by Napoleon III in 1870; but work on his projects continued until 1927. The street plan and distinctive appearance of the center of Paris today is largely the result of Haussmann's renovation.

In the middle of the nineteenth century, the center of Paris was overcrowded, dark, dangerous, and unhealthy. In 1845 the French social reformer Victor Considerant wrote: "Paris is an immense workshop of putrefaction, where misery, pestilence and sickness work in concert, where sunlight and air rarely penetrate. Paris is a terrible place where plants shrivel and perish, and where, of seven small infants, four die during the course of the year." The street plan on the Île de la Cité and in the neighborhood called the "quartier des Arcis", between the Louvre and the "Hôtel de Ville" (City Hall), had changed little since the Middle Ages. The population density in these neighborhoods was extremely high, compared with the rest of Paris; in the neighborhood of the Champs-Élysées, there was one resident for every 186 square meters; in the neighborhoods of Arcis and Saint-Avoye, in the present Third Arrondissement, there was one inhabitant for every three square meters. In 1840, a doctor described one building in the Île de la Cité where a single room five meters square on the fourth floor was occupied by twenty-three persons, both adults and children. In these conditions, disease spread very quickly. Cholera epidemics ravaged the city in 1832 and 1848. In the epidemic of 1848, five percent of the inhabitants of these two neighborhoods had died. Traffic circulation was another major problem. The widest streets in these two neighborhoods were only five meters wide; the narrowest were only one or two meters wide. Wagons, carriages and carts could barely move through the streets.

The center of the city was also a cradle of discontent and revolution; between 1830 and 1848, seven armed uprisings and revolts had broken out in the

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centre of Paris, particularly along the Faubourg Saint-Antoine, around the Hôtel de Ville, and around Montagne Sainte-Geneviève on the left bank. The residents of these neighborhoods had taken up paving stones and blocked the narrow streets with barricades, and had to be dislodged by the army.

(2)

2. Underwater Antares detector (Remote technology system) [远程探测]

The lecture is about a kind of remote technology - underwater Antares detectors. Detectors can be used to observe the surrounding environment change and water temperature change. More importantly, these detectors/cameras are installed under water to monitor fish's reaction to the feeding. This makes it possible for people to change their feeding strategy quickly when fish do not react to the feeding. *water quality*

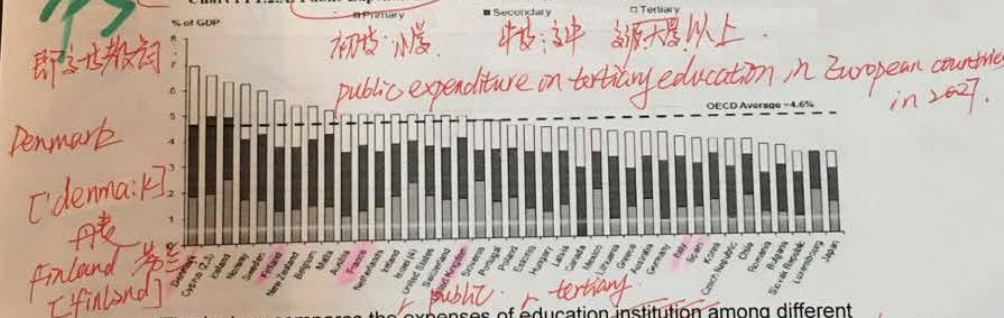
There is a development in remote distant monitoring technology which can help people to observe fish reactions without being physically there. Putting a camera into the cage and then put into the water to monitor the fish reaction to feed. If they are not likely to eat, then stop feed. The technology can also identify the water quality.

(3)

3. Educational fees: public and private

欧洲各国在教育的花费 (有表格) 注意加数字进去 UK expenditure on tertiary education *公共教育 (大学也)*

一些国家 Higher education 占 GDP 百分比, 有表格可以参考
 Chart PF1.2.A: Public Expenditure on Education by level, per cent of GDP, 2007¹



The lecture compares the expenses of education institution among different European countries. UK spent 1.04% of its GDP on education institutions, which was insufficient as compared to other European countries including Italy, Denmark and Spain. The expenditure of Italy and France is close to that of UK. By contrast, Denmark and Finland spent much more than the rest of the European countries. *UK spent 1.04% of its GDP on education institutions*

4. Ideal society, transport and humanity of London

5. Influence of immigration on USA economy

6. High LG, Low LG: Diabetes cancer blood

(4)



Heart disease.

Some mother rats spend a lot of time licking, grooming, and nursing their pups. Others seem to ignore their pups. Highly nurtured rat pups tend to grow up to be calm adults, while rat pups who receive little nurturing tend to grow up to be anxious. It turns out that the difference between a calm and an anxious rat is not genetic—it's epigenetic. The nurturing behavior of a mother rat during the first week of life shapes her pups' epigenomes. And the epigenetic pattern that mom establishes tends to stay put, even after the pups become adults. High LG rats 的后代以后更能处理 stress 和 alcohol, low LG 则相反。还有一些特性可以照着图片念。

7. Eukaryotes & prokaryotes
 In this lesson, we discuss the similarities and differences between the eukaryotic cells of your body and prokaryotic cells such as bacteria. Eukaryotes organize different functions within specialized membrane-bound compartments called organelles. These structures do not exist in prokaryotes. People cells are eukaryotic, and Bacteria are an example of prokaryotes. Eukaryotes can be single-celled or multi-celled. Cells are huge in comparison to bacteria. organelles are an efficient way to organize everything that's going on in the cell. Having a nucleus or not is the biggest difference between eukaryotes and prokaryotes.

Handwritten notes on the page include:
 corticosterone [kɔ:ti'kɔ:stɪrɔ:n] 皮质酮
 [PAP]
 [epi'dʒi'netɪk] 表观遗传学
 [nu:kli:əs] 细胞核
 membrane [ˈmembren] 膜
 organelle [ˌɔ:ɡə'nel] 细胞器
 [ju:'kærɪəʊts] 真核
 [prɔ:'kærɪəʊts] 原核
 [nu:kli:əs] 细胞核

Wind power

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 A device that can convert wind to mechanism energy, which we can use the water power pump or electricity generator. That the power the turbine creates is obviously depend on the wind speed, it also obviously depends on the number of sails, the area of the sails and the angles that the sails make to the wind. As bending the angle of the blades, the wind hits them and could turn the blades. And you can use that for powering things. We could make simple windmills to drive electrical devices.



IT: high (low) licking grooming
 AM: some mother rats spend a lot of time LGS pups.
 (1) while others ignore.
 MI: (2) The pups with high LGS have lower rate of - Heart disease.
 (3) then tend to grow up to be calm adults; while be anxious (more [æŋ'ziəs]).
 And: It turns out the diff between calm/anxious rat is not genetic,
 it's epigenetic. The mother's behavior during the first weeks of life
 can shape her pup's epigenomes.

IT: difference / similarities < eukaryotes | ju:'kæriəuts|
 the largest diff is prokaryotes.
 AM: Eukaryotes contain membrane-bound organelles, such as: nucleus. |'memb(ə)rən/ 膜 |, 'ɔ:rgə'nel| |'nju:kliəs|
 Prokaryotes do not have those structures. 细胞器
 MI: fungi, ppl's cells → Eukaryotes.
 Bacteria are prokaryotes.
 LS: Eukaryotes can be single-celled or multi-celled.
 they are larger than prokaryotes.

Some mother
 pups. Others se
 up to be calm ad
 it turns out that th
 genetic— it
 We-



globalization 有 two stages, 但是我听到他讲完一个解释完就结束了。内容大概是说 developing countries 难以 complete 还有产量多价钱就会比较便宜

⑦ **9. Australian Export to other countries**
 一个有曲线图, 日本中国美国英国对澳出口的变化从 1985 到现在
 The growing of Japan and Asian Tiger leads to more exports
 China is the 2nd largest export country followed by Japan, and China is predicted to be the largest market in the future

⑧ **9.2. Australian economy:** 远, 担心发展, 临近亚洲经济发展好, 从中受益
拉丁美洲经济:
 拉丁美洲经济在经历全球化和 reform 之后增长变慢, 原来 20 年涨了 80% 多, reform 后 20 年涨了 10% 一下 (有个图)。经济变得 unsustainable 人们开始怀疑 reform 到底是好的?
 This lecture talks over Economic development in Latin America (Table)
 According to the lecture and graph provided, we can find that in the past years, the percentage of GDP in Latin America grew slowly. However, after the globalization and reform, the growth became slow down from 80% to 10%.

⑨ **10. Physical kinetic 运动的 energy and thermodynamic.** 大多数现象 obey 物理原理, unusual situation 违背, atomic 运动, 热, 活跃 heat and motion transmission
 Key Words: heat theories physics atom-motion/energy mechanical/kinetic thermodynamics
 mechanism: Heat and motion transmission.
 kinetic: Atom motions etc.

(5) 19th-century developments of physics
Development of physics in 19th-century
 1. 物理学 物理现象
 • Energy Conservation Law 能量守恒定律 1. 守恒/不变
 the total energy of an isolated system remains constant - it is said to be conserved over time. Energy can neither be created nor destroyed; it transforms from one form to another.
 ① 能量守恒 = statement of energy conservation.
 ② the direction of conservation.
 ③ reaching absolute zero
 • Kinetic Theory 运动理论
 kinetic theory of gases 分子运动论 (molecules) are in constant rapid motion
 考的太久了, 不记得具体内容, 但熟悉下面相关内容将帮助你理解和听懂这篇内容:
 Temperature: Temperature is the average kinetic energy within a given object.
 Thermal Energy: Thermal energy is defined as the total of all kinetic energies within a given system.
 Heat: It is important to remember that heat is caused by flow of thermal energy due to differences in temperature (heat flows from object at higher temperature to object at lower temperature), transferred through areas.
 thermal energy Entropy [Entropy] 熵: 混乱状态.
 explained pressure, temperature etc.



Australian exports
Sb, annual

120
100
80
60
40
20
0

China Japan Korea US India ASEAN EUSA

1994 1996 1998 2000 2002 2004 2006 2008 2010 2012

Source: ABS, etc.

回忆要点 1985

- 讲日本、美国、中国近几十年来的出口业务，以及澳大利亚应该怎么趁亚洲这个好势头促进自己的出口业
- ① 日本 中国 美 英对澳出口的变化从 1985 到现在。
the growing of Japan & Asian Tiger leads to more exports
- Used to isolate from North America/UK followed by export country
- China is 2nd largest exporter to Japan
- ② China's rise changed situation, influenced Australia. It is predicted to be the largest market in the world
- ③ Australia should take advantage of China's rise

Aus 出口 中国, Japan

globalization 有 two stages
是说 developing countries

9 Australia



conduction/convection/radiation. Additionally thermal energy always flows from warmer areas to cooler areas.

11. Coffee - Vietnam

The lecture is about the changes that have taken place in coffee production. Coffee production has increased from 6 billion to 30 billion. The huge demand of Europe/Germany and America has made Vietnam the second largest coffee producer which has greatly affected Columbia's production. The output of central America is witnessing dramatic decrease. People's drinking habit is also undergoing changes.

① compared with 10 yrs ago
 ②
 ③
 ④

Vietnam [vi:et'ni:m]

Columbia [kə'lumbi:ə]

coffee 1. 产地变化 最大产出国 越南 而中美洲下降 2. 喝的习惯改变

The lecture is about the changes that have taken place in coffee production. As compared with ..., coffee production has increased to ... (数据自己纪录). The huge demand of Europe and America has made Vietnam the second biggest producer which has greatly affected Columbia's production. By contrast, the output of Central America is witnessing drastic decrease. Apart from that people's drinking habit is also undergoing changes. For example, ...

11-1.

SST 巧克力可可豆

(8) Cocoa

During the time of the Aztecs, cocoa was mainly used as a beverage. Wines and drinks were made from white pulp around the seeds of the cocoa pod. The beans themselves were used to make hot or cold chocolate drinks. Both the Maya and the Aztec secular drinks used roasted cocoa beans, a foaming agent, toasted corn and water. Vanilla and/or chili were also used as an ingredient in the drinks. Cocoa beans were also used as a currency and as a tribute (tax) from peoples ruled by Aztecs. The oily layer floating in the chocolate drink (cocoa butter) was used to protect the skin against the sun. For the Aztecs cocoa had a religious significance. Cocoa was believed to be of divine origin: the cocoa tree was a bridge between earth and heaven. Human sacrifices to propitiate God or sun were first sanctified by giving him chocolate. Cocoa beans were given to priest's assistants at children's coming of age ceremonies. During marriage ceremonies, the couple drank a symbolic cup of chocolate and exchanged cocoa beans. Aztecs believed that drinking chocolate gave mortals some of Quetzalcoatl's (God of learning and of the wind) wisdom.

12. Language extinction: globalisation and urbanisation, migration little language are disappearing at a rate that has never been before in history. The main reason for the disappearing is urbanization where people are moving to cities and being influenced by mainstream language. The ideal place for little language to survive is in isolated areas.

①
 ②
 ③

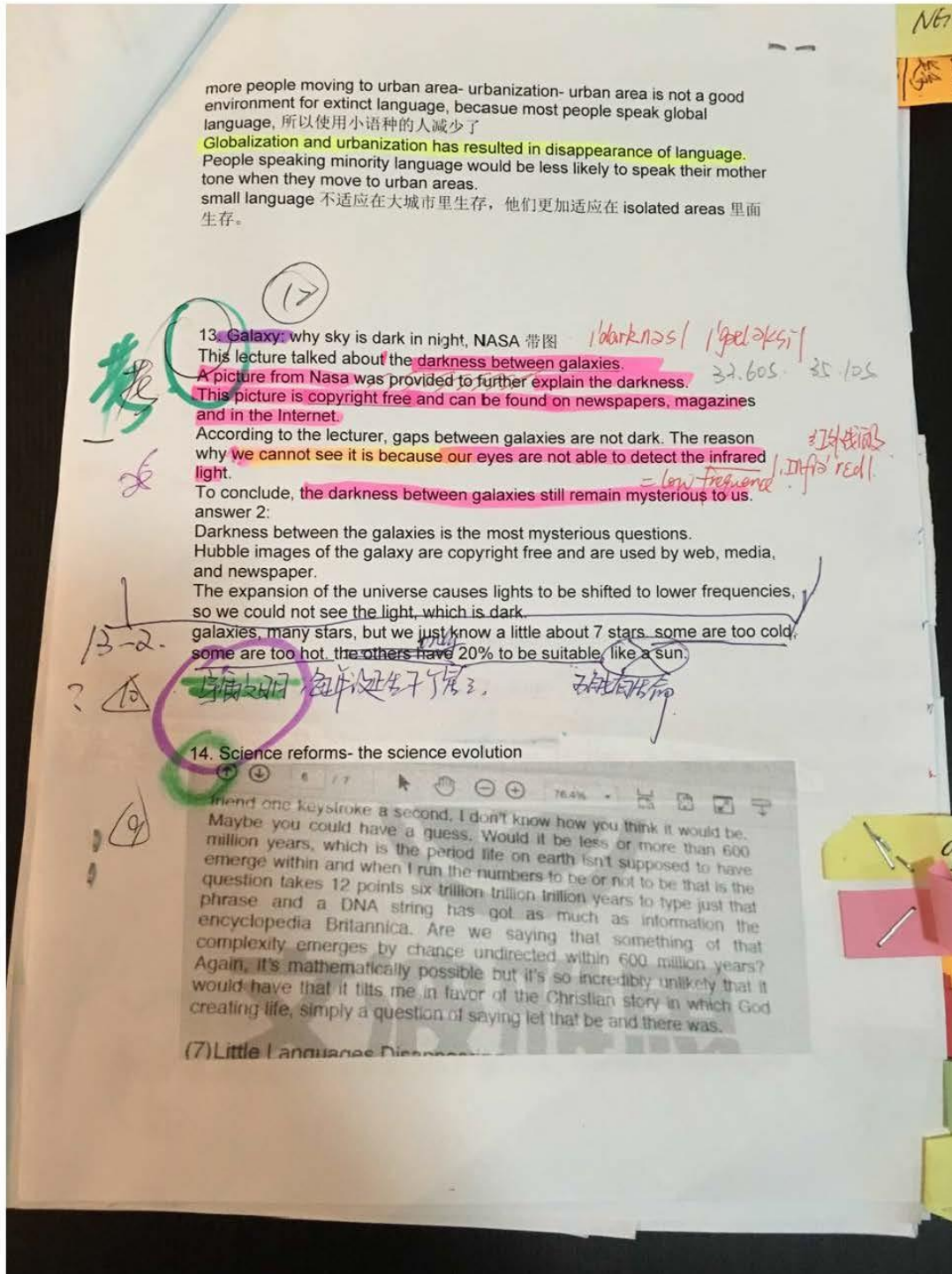
[ɪ'di:ə]

globalization 和 urbanization 会造成 disappear of language, 因为说小语种的人 move to urban areas 会有 pressure 而不愿意再说自己的母语。

③

speaking minority language = less likely to speak. They prefer to speak global/mainstream language.

④ It is hard for small language to survive, ④ -> isolated areas ideal place.





作用. 自给给食物而观测能级.
 但不能给与有少能管部消化吸收

15. Bomb calorimeter 量热仪

A calorimeter consists of two vessels, outer vessel and an inner vessel. The space between these vessels acts as a heat insulator and hence there is very little heat exchange in between the inner and outer vessels. Thermometer measures the temperature of the liquid in the inner vessel. The stirrer functions in such a way to stir the liquid to distribute the heat in the entire vessel. The fibre rings in the calorimeter helps to hold the inner vessel hanging in the center of the outer vessel. It also has an insulating cover or lid with holes for attaching the stirring rod and thermometer.

16. (Survey in CEO) Consumption on IT important. Time consuming and complex, marketing development, financial management, a survey about CEO's opinions about that impact the company's operation including IT, sales and marketing, and financial management. It is the most important one. 然后说到 IT 是最 time consuming, complex, costly system integration. 然后 integration 很重要哈? 会计培训 & consultation, 3 个 service to 供. 如何预防疾病. 这些 training 由大医院 & 医院做出来. 然后 weekly meeting to following, large consultation. 预防知识需要重视, 尤其是在印度国家. Birth Rate dropped to its lowest point that has never been seen in the history. This have impact on males in the society, especially. 近年来女人不太想要生育, 尤其在西方国家, 30 岁以下的女生, 未来这也将会 the young man. 影响男性的发展, 例如家庭生活 and 失业率等. 可能 has some connection with unemployment rate.

17. Community service worker (ppt) hiv 的传播, seminar 没有用 community health worker, hiv, heart disease, trainings can prevent spread of the disease, indian has quarterly meetings, seminars not necessary in some cities. hiv 的知识 应该广泛教育, 预防知识需要重视, 尤其是在印度国家. Birth Rate dropped to its lowest point that has never been seen in the history. This have impact on males in the society, especially. 近年来女人不太想要生育, 尤其在西方国家, 30 岁以下的女生, 未来这也将会 the young man. 影响男性的发展, 例如家庭生活 and 失业率等. 可能 has some connection with unemployment rate.

18. More and more European women are reluctant to give birth. Leading to the low birth rate, unemployment for males. impact on males in the society, especially. 近年来女人不太想要生育, 尤其在西方国家, 30 岁以下的女生, 未来这也将会 the young man. 影响男性的发展, 例如家庭生活 and 失业率等. 可能 has some connection with unemployment rate.

20. Environmental legislation and law in America

21. Open boarder to developing countries: 4 factors (ppt 上有给出) factors 只记得两个 --> humanitarian: we should help those people in developing countries // economics: the country itself will also become rich



7. Bomb calorimeter thermo mechanics

回忆要点:

- bomb calorimeter ^[bamb] ^[kælə'ɹɪmɪtə] used to measure in calories. 测量化学反应的温度变化, 测量食物的卡路里
- 在这个容器里要测量的食物 (脱水), 由温度计测量水升温的温度, 从而计算出测试的 sample 热量
- ① The nutritional value of food can be measured on many different scales. The most basic measurement scale is the free energy content of the food.
- How much energy is released when chemical bonds within the food are broken?
- ② The energy content of food is measured in calories, the amount of kinetic energy ^[kɪnetɪk] ^{动能} required to raise the temperature of one ml of water, one degree C. ^{食物燃烧}
- Food is burned under controlled conditions, breaking chemical bonds, and releasing free energy.
- The burning is chemically similar to the breakdown of food in cellular respiration although the process occurs much more quickly and in a less controlled fashion during ignition. ^{点火} ^[ɪg'nɪʃən]

food
 ↓
 energy content of food
 ↓
 calories
 ↓
 bomb calorimeter

75
 7.425

③ This process involved placing the food in a sealed container filled with water. Then burn the food with electrical energy

④ they will use thermometer to measure the water temperature to see how much energy is released.

21. Open boarder, 4 reasons (ppt)

- ① This lecture talks about open boarder.
- ② First of all, the speaker says that developed countries should open the gate for developing countries so that ppl from developing countries can get richer.
- ③ After that, the speaker says that open boarder contribute to the economy of developing countries so ppl can work in developed countries.
- ④ At last, the speaker says that developed countries should pay more attention to humanity to allow more freedom and respects.

[hju'mænətɪ].
 人道



Developed countries should open gate for developing countries. Give more freedom and help them rich

22. Development of NGO (ppt)

A non-governmental organization (NGO) is an organization that is neither a part of a government nor a conventional for-profit business. Usually set up by ordinary citizens, NGOs may be funded by governments, foundations, businesses, or private persons. Some avoid formal funding altogether and are run primarily by volunteers. NGOs are highly diverse groups of organizations engaged in a wide range of activities, and take different forms in different parts of the world. Some may have charitable status, while others may be registered for tax exemption based on recognition of social purposes. Others may be fronts for political, religious, or other interests. The number of NGOs in the United States is estimated at 1.5 million. Russia has 277,000 NGOs. India is estimated to have had around 2 million NGOs in 2009, just over one NGO per 600 Indians, and many times the number of primary schools and primary health centres in India. NGOs are difficult to define, and the term 'NGO' is rarely used consistently. As a result, there are many different classifications in use. The most common focus is on "orientation" and "level of operation". An NGO's orientation refers to the type of activities it takes on. These activities might include human rights, environmental, improving health, or development work. An NGO's level of operation indicates the scale at which an organization works, such as local, regional, national, or international.

(18)
 USA
 美国
 UN
 联合国

41.275
 38.385
 most common use of
 the classification is
 mainly focus
 on

In this lecture the speaker talks about non-governmental organization, according to the speaker, he mentions that NGOs may be funded by governments, foundations, businesses or private persons. Moreover, he indicates that the number of NGOs in the US is 1.5 million and India has around 2 million in 2009. Last but not least, he suggests that it is hard to define and it is rarely used. In general, this lecture is about non-governmental organization.

23. Mega city: Population growth and the resource use

带图 line graph: 上面两个线, 一根 population 一根 resource consumption
 The lecture is about population growth and resource consumption from 1990 to 2000. The population increased from 1.5 billion in 1990 to 6 billion in 2000 in the 20th century. The increase of resource consumption was much more significant which is increased by 16 folds. Due to the (globalisation and) urbanisation, cities, which only account for 2% of the land, have 50% of the total population and consumes 75% of the resources. At the end, the lecturer emphasizes that people not only use every resource on the planet but also produce tons of wastes / generate wastes.

in mega cities

Mega city 涌向城市

巨大城市

-fold = 几倍 = x times

25. Dimensions --- latitude, longitude



BB Info:

community health workers. (CHW).

在 many developing countries.

highly educated health professionals 很稀缺.

目前 medical and nursing schools 并不能培养出足够多的人
 以满足市场的剧烈需求.

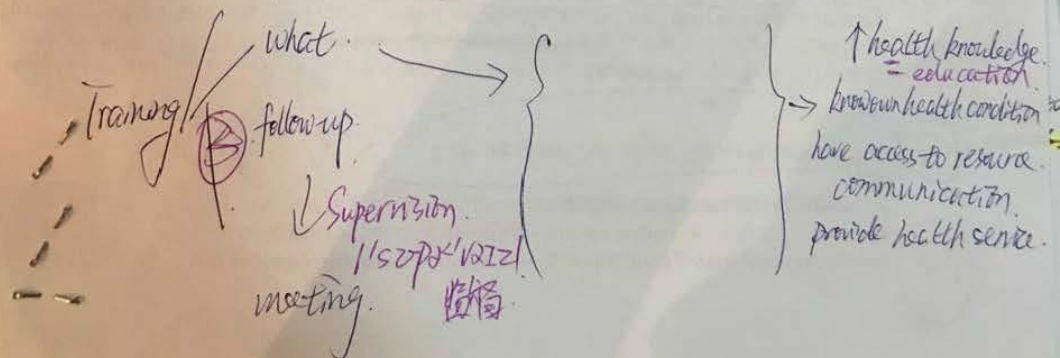
① Community Health workers are given a limited amount of
training, supplies, support to provide primary health services
 to the population.

"Task shifting" from professional health workers
 ↓ to community health workers.

to make more efficient use of HR available and.

↑ health of ppl at reasonable cost.

② 谁提供 - organizations.



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dimensions—numbers needed
 1d-line 2d-square 3d-space 4d-time ...space and time
 1. how to locate a position. one dimension, longitude. 2. longitude and latitude.
 3. lon and lat and altitude. 4. plus time. it can be 5 or more.

Dimensions can be defined as the number of space or variables used to describe position. One dimension refers to one variable, which means longitude. Two dimensions contain two variables: namely, longitude plus latitude. Three dimensions contains 3 variables: longitude, latitude and altitude. Four dimensions include the above-mentioned variables and time. We can use these dimensions to represent every event; however, we seldom use 4 dimensions. *in outer space.*

给了一张 PPT, 图上列有五个点, 分别是 1-longitude, 2-latitude, 3-altitude, 4-time, 5-event: where/when. 大致意思就是 The number of variables used to specify position. 如果 near the equator 就用 one number: longitude. 这是一个地方, 这是 two dimension: on the surface 就用 two numbers: longitude 和 latitude 去 locate 一个地方, 这是 two dimension: over the surface 用 three numbers: longitude, latitude, altitude (three dimension): in the space 用 4 numbers: longitude, latitude, altitude, 还有 time (four dimension). 最后阐明只有带四维才能解释空间是 where does it happen and when does it happen.

26. **Maths and English score of girls and boys** (PPT 给出 factors) *表格比较图*
 Boys and girls' performance on English and Mathematics. Girls are usually better at English than boys over the first 6 years. But as for math, there is no real difference between boys and girls. There are 3 reasons to explain this. Firstly, biological factors (读 ppt 内容). Second is the social factors (仍然读 ppt). Thirdly, pre-school factors (仍然照着 ppt 说). biological and social factors are closely related.

The speaker talks about the academic performance of male and female in school. According to the statistics, girls' English results are 10% higher than the boys, and they achieve the same performance in Math. So the speaker ask what is the reason leading to this result, 然后看下面那一张图, 按照上面写得东西照着读出来. 内容记不清了, 大概是 biological 和 geological patterns, 然后这两个 are directly linked to each other.

A lecture talking about boys & girls' performance in English and math: for kids over the 6 years old, girls outperform boys in English, yet for math, there is no real difference between boys and girls. And the result is closely related with the biological, social and pre-school factors.

原因是女孩的 pattern recognizing abilities 更好?

27. **Welshes, celtic language** 很多数字



6. Welsh speaker /keltik/ (Wels)

Welsh is a Celtic language spoken in Wales by about 740,000 people, and in the Welsh colony in Patagonia, Argentina by several hundred people. There are also Welsh speakers in England, Scotland, Canada, the USA, Australia and New Zealand.

At the beginning of the 20th century about half of the population of Wales spoke Welsh as an everyday language. Towards the end of the century, the proportion of Welsh speakers had fallen to about 20%. According to the 2001 census 582,368 people can speak Welsh, 659,301 people can either speak, read or write Welsh, and 797,717 people, 28% of the population, claimed to have some knowledge of the language.

According to a survey carried out by S4C, the Welsh language TV channel, the number of Welsh speakers in Wales is around 750,000, and about 1.5 million people can

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 'understand' Welsh. In addition there are an estimated 133,000 Welsh speakers living in England, about 50,000 of them in the Greater London area.

Welsh speaker, man
 speaker numbers de
 different number and %

IT: welsh speaker. 287,775.

AM: is lang. spoken in Wales and Welsh colony.

MI: ^{beg} 20th. half of the pop speak. We as first language.
~~end~~ the ^{it} ~~proportion~~ is ↓ to 20% at end of 20th ce.

L.S: ^{28%} many have some knowledge of the lang in 2001 census.
 = understand.
 only few ppl can speak.

And: ~~According to W4 TV channel~~: the number of Ws in Wales
 is ↑ 750,000.
 increased to.

IA:



welsh speaker, many ppl can understand welsh but not speak or read, welsh speaker numbers decrease, professor said a positive prediction on welsh speaker
 different number and % for these different speakers

retell lecture

1. 引用——学习语言和 co 什么的能力吧 他把能力分为两部分 lower level 的持续时间长 在图上只有几个月这个时候会发展 vision 和 什么 然后 language 一条曲线在中间最后 higher level 就会持续时间长 十几年能发展 con 那个能力。
 再引用——the brain development with respect to cognitive and language skills. High level parts of brain are dealing with higher level functions such as logical thinking while lower level brain part deals with lower function. 然后又讲了大类的脑发育并不同时发生什么三两个月——岁能发展到什么地步。 Conclusion is that some defects in brain development may have bad impact on a human's future life.

33. 大脑认知发育什么的, 有图片, 讲到了不同认知能力的发育阶段, 一共有三个, 其中一个好像是 language?
 brain development, consists of billions of cells, 中间忘了, brain can store information and remember things, need further study on human brain

Human Brain Development
 Experience-Dependent Synapse Formation

Sensory Pathways (Vision, Hearing) Language Higher Cognitive Function

Conception Birth (Months) (Years)

Handwritten notes: 感知的发育, 形成, 认知, Cognita, neuron /'nɔ:ran/ 神经元

experience-dependent 经验依赖的
 experience-expected 经验期待
 neuron /'nɔ:ran/ 神经元

感大的可以等的时间越

回忆要点:

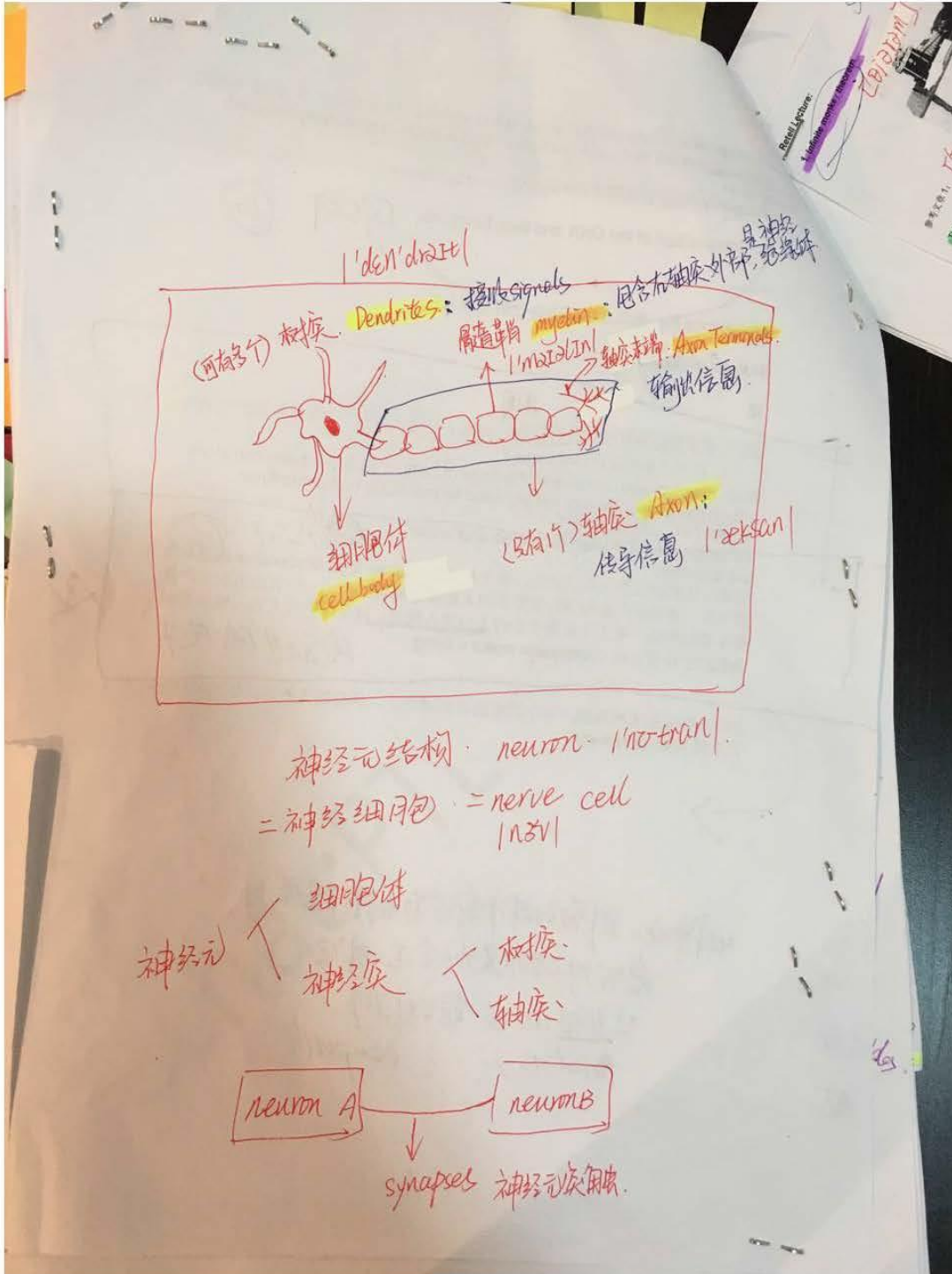
- 坐标: 横轴是人的年龄, 曲线表示人大脑发育的阶段 感知能力 perception 语言能力 cognition
- Brain development, cognitive, 3 factors. (graph very useful)

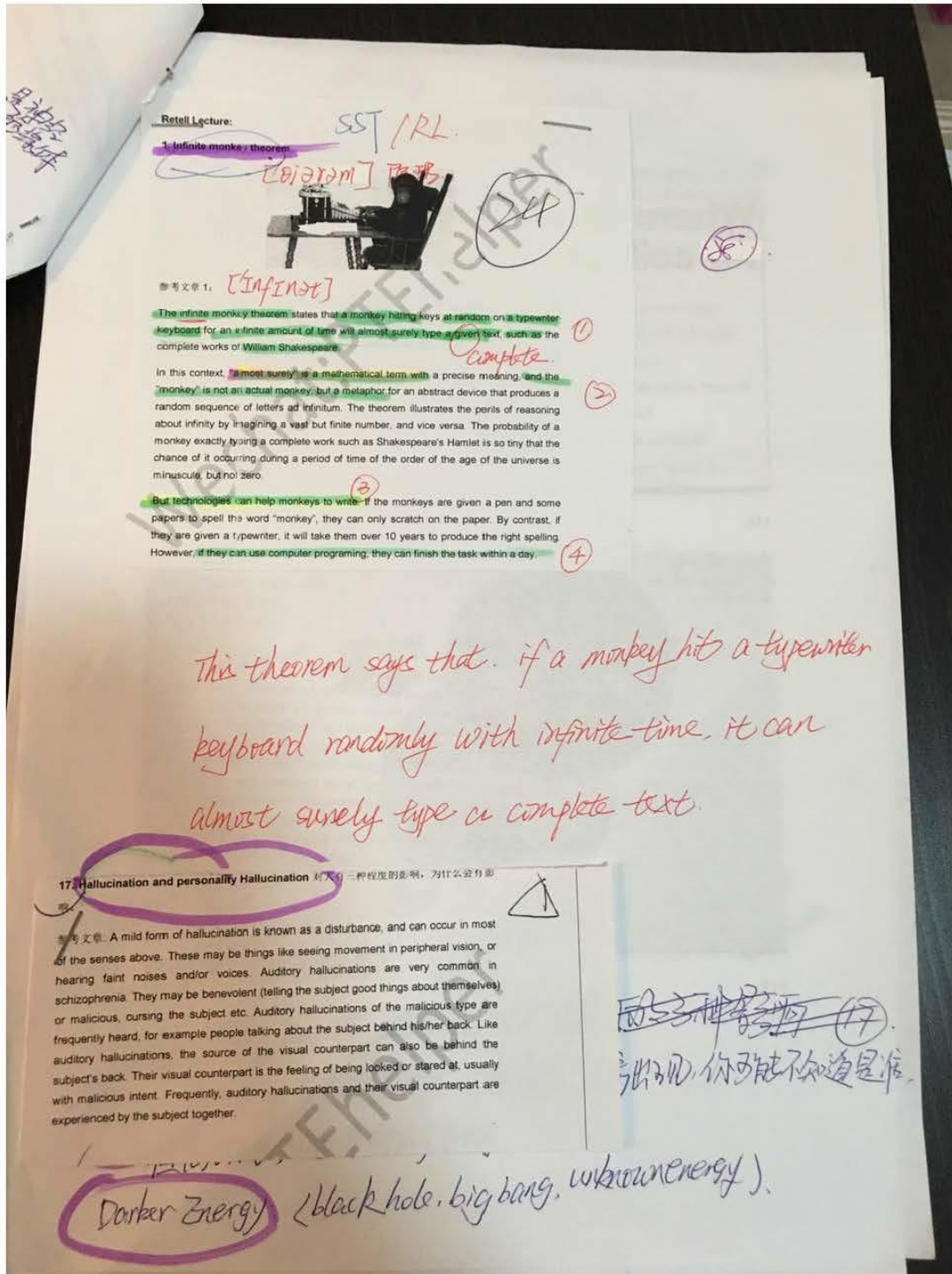
提到一些低级的大脑发展 高级的大脑发展 cognitive last longer

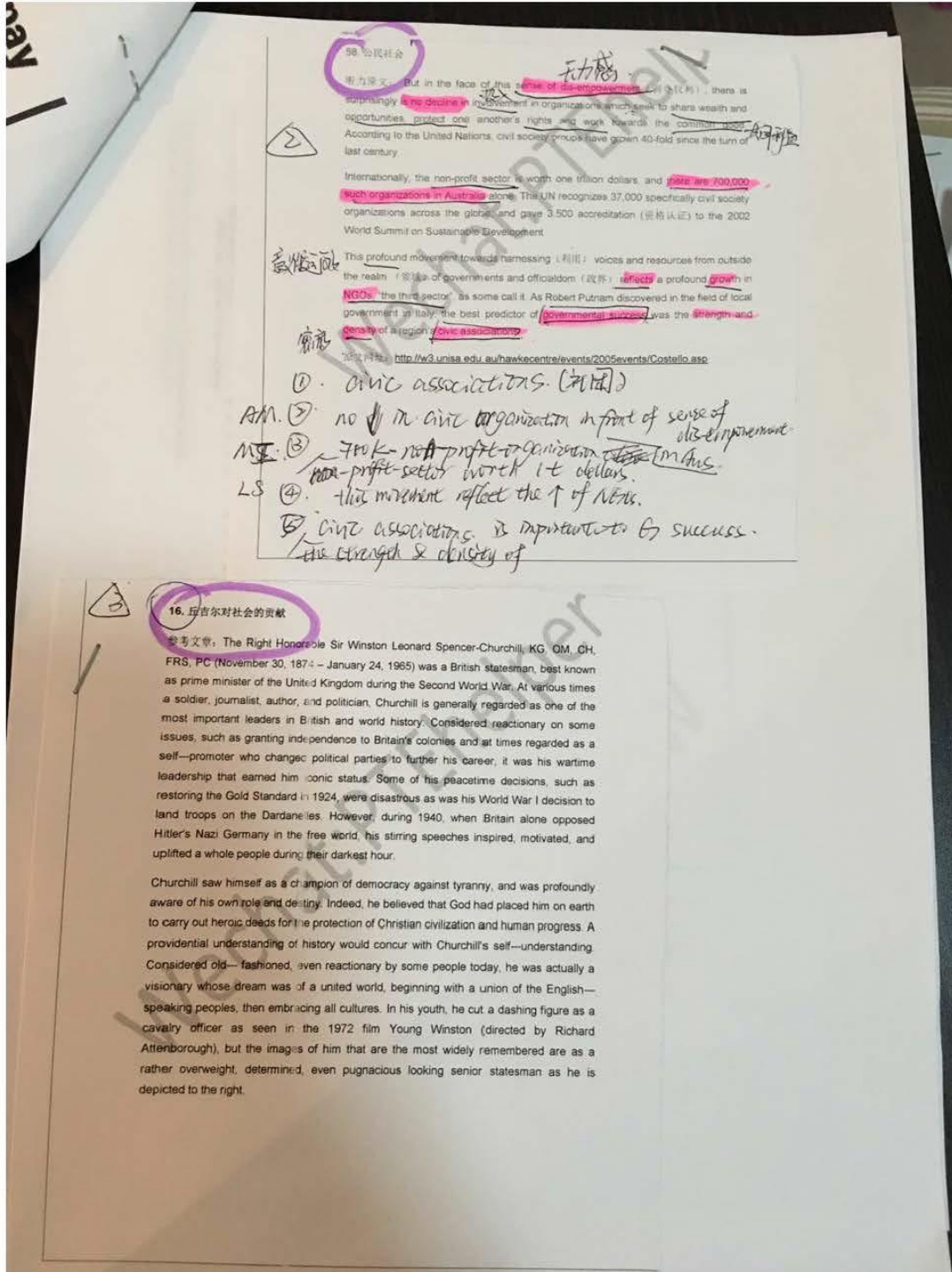
AM: Sensory pathways like those for basic vision and hearing are the first to develop, followed by early language skills and higher cognitive function.

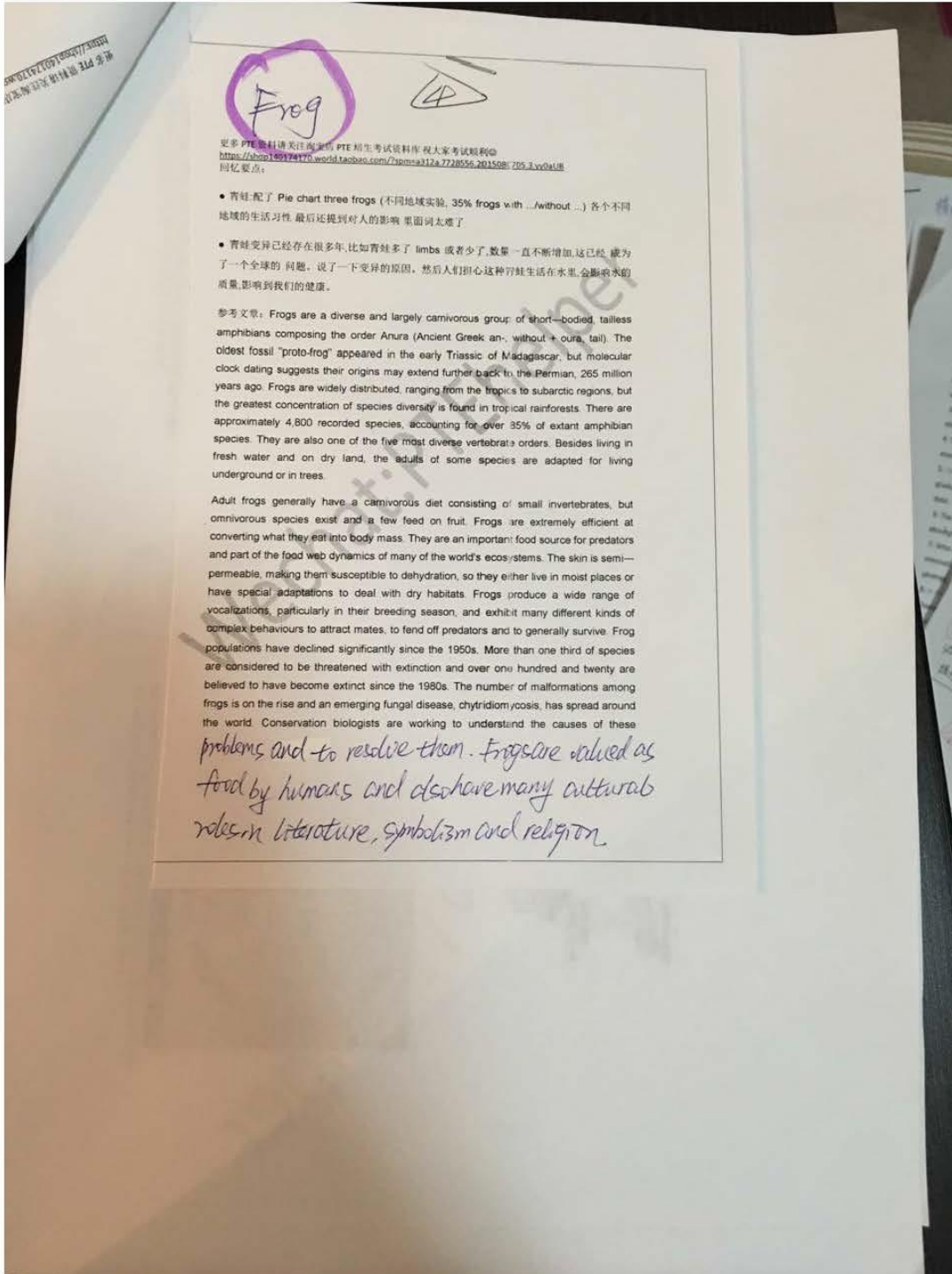
MJ: The synapses that form for vision and hearing peak at just 3 month.
 language " at 9 month.
 higher cognitive function " at 1 year.

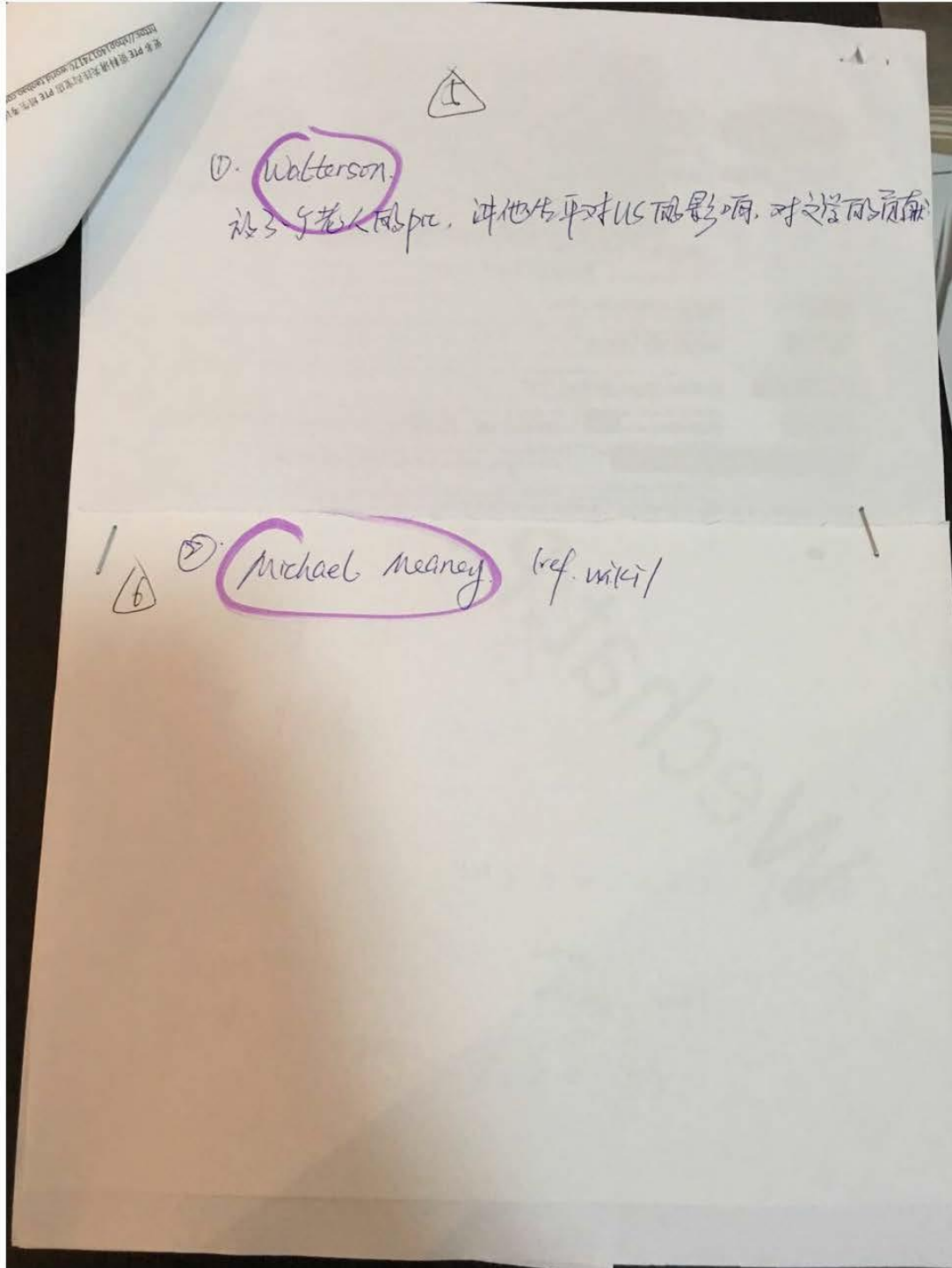
LS: higher level function, such as logical thinking.
 higher level development are based on lower level development













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3 Stages of Brain Development - Brain development during childhood, there are three stages, starting from the primitive brain (the action brain), limbic brain (feeling brain), and finally to the neocortex (thought brain).

Although interrelated, the three had its own function. Primitive brain functions to manage the physical to survive, manage reflex, motor motion control, monitoring body functions, and process information coming from sensing. Limbic brain functioning as a liaison to process emotions and the brain thinks, and the primitive brain.

While the thinking brain, which is the most objective part of the brain, receiving input from the primitive brain and the limbic brain. However, he needed more time to process information from the primitive brain and the limbic brain. The brain thinks the merger is also a place of experience, memory, feeling, and thinking ability to give birth to ideas and actions.

Nerve myelination of the brain take place in sequence, starting from the primitive brain, the limbic brain, and brain thought. Neural pathways are more frequently used to make more myelin thicken. Increasingly thicker myelin, the faster the nerve impulses or signals travel along nerves. Therefore, a growing child is encouraged to receive input from the environment in accordance with its development.

49. Marshmallow test

They call it the "marshmallow test." A four- to six-year-old child sits alone in a room at a table facing a marshmallow on a plate. The child is told, "If you don't eat this treat for 15 minutes you can have both it and a second one." Kids on average wait for five or six minutes before eating the marshmallow. The longer a child can resist the treat has been correlated with higher general competency later in life.

Now a study shows that ability to resist temptation isn't strictly innate—it's also highly influenced by environment.

Researchers gave five-year-olds used crayons and one sticker to decorate a sheet of paper. One group was promised a new set of art supplies for the project—but then never received it. But the other group did receive new crayons and better stickers.

Then both groups were given the marshmallow test. The children who had been lied to waited for a mean time of three minutes before eating the marshmallow. The group that got their promised materials resisted an average of 12 minutes.

Thus, the researchers note that experience factors into a child's ability to delay gratification. When previous promises have been hollow, why believe the next one?