THE HUMAN BRAIN

Unit 1-Lessons 3 (Reading)

Week 2

Grade 12 Advanced

5/09/2021

LEARNING OBJECTIVES

. Identifying topics, main ideas and details. . (Evaluate)

- Distinguishing facts from assumptions. (Apply)

- 3. **Learners work in groups to predict meanings and ideas of the paragraphs .** (Remember)
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PART 1

Think and Comment

"Follow your heart, but take your brain with you."

READING 1

The Human Brain

FRONTAL LOBE

PARIETAL LOBE

OCCIPITAL LOBE

TEMPORAL LOBE

CEREBELLUM

SPINAL CORD

HUMAN BRAIN

3 **Thinking and predicting** Work with a partner or in small groups. Read the following questions and suggest possible answers. Make notes under each question.

1. How are human brains different from animal brains?

2. Why do some people seem to be more creative than others?

3. What is the difference between the left and right sides of the brain?

4. How can we improve our memories?

5. What activities may make people less focused intellectually?

6. What activity may make people more relaxed?

PART 2

4 **Predicting topics and information** Look at the headings of the paragraphs in the reading text. What is the topic of each paragraph? What kind of information do you expect to read about in each paragraph? Make notes in the chart.

	Headings	Topic and Information
Paragraph A	New Discoveries	1. 1- New discoveries scientists found out. ? 2. 2- Scientific data related to brain functions or formation. ?
Paragraph B	Left Brain/Right Brain: Truth or Myth?	1. 1- The two parts of the brain. ? 2. 2- Confirm their existance ?
Paragraphs C and D	Memory: True or False?	1. 1- How can animals and humans remember? ? 2. 2-Is there a part responsible for memorizing? ?
Paragraph E	The Teen Brain	1. 1-Stages of brain ring growth. ? 2. 2- Features of human brain during ?
Paragraph F	Male versus Female Brain?	1. 1- The difference between male and female brain formation ? 2. 2- The main features of both ?
Paragraphs G and H	A Change of Mind?	1. 1- Development of human mind ? 2. 2- How today's mind is different from the past ?

While You Read

5 **Reading** Read the article and compare your expectations in 4 with the content of each paragraph.

6 **Reading again** Read the article again and compare your suggested answers in 3 with the information in the article. Are there answers for all the questions in the article? Discuss with a partner or in a group.

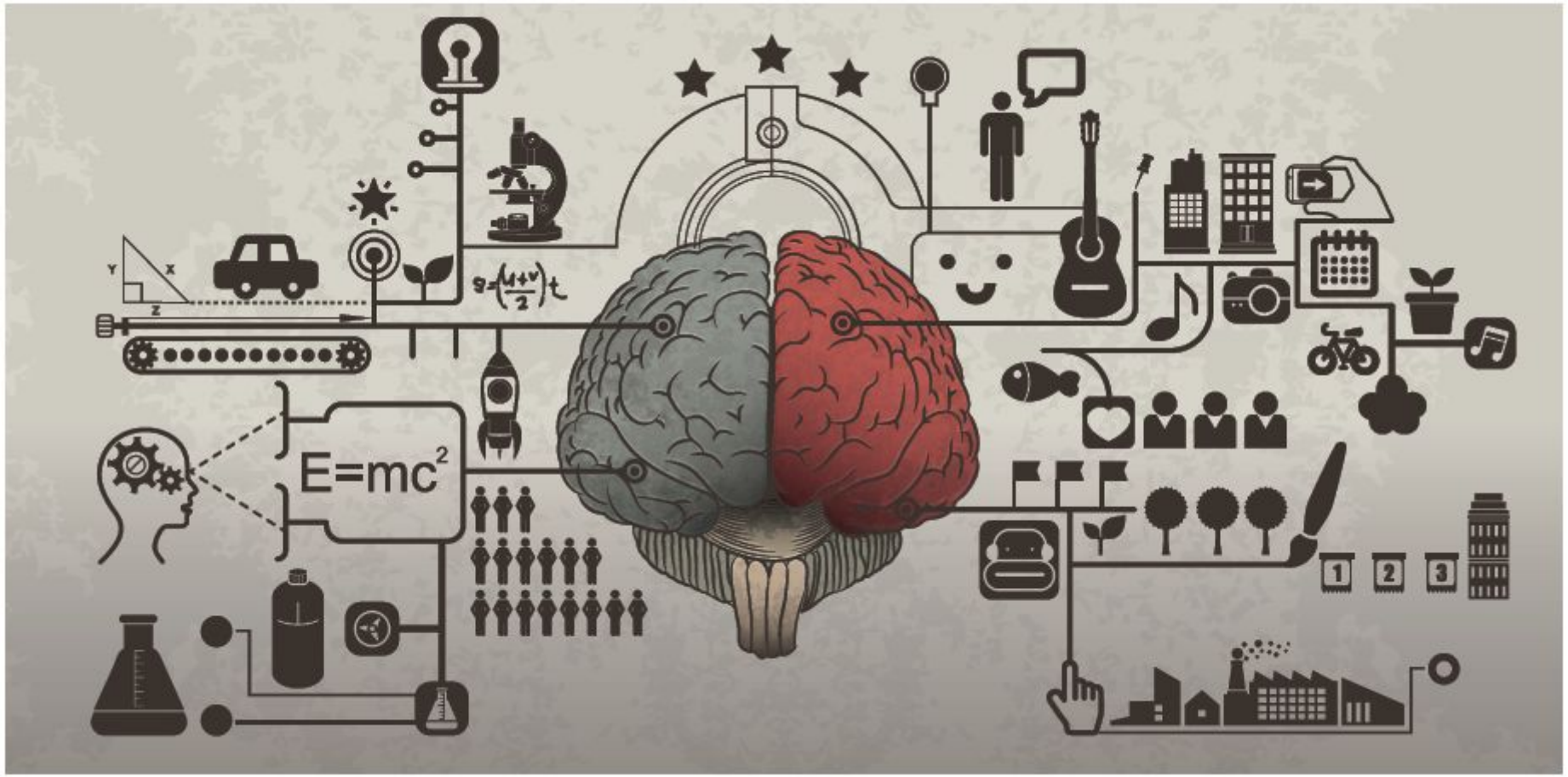
Getting meaning from context Find the words from the vocabulary in the reading text and try to figure out their meaning from context.

blood vessels	*going into training*	*maturation*	*origins*
cognitive	*hemispheres*	*mature*	*precise*
collaborate	*intuition*	*maturity*	*repressed*
colleagues	*logic*	*memory*	*toxins*
disruptions	*logical*	*neuroscientists*	*wiring*

The Human Brain

New Discoveries

A Most of us learn basic facts about the human brain in our middle or high school biology classes. We study the subcortex, the "old brain," which is found in the brains of most animals and is responsible for basic functions such as breathing, eating, drinking, and sleeping. We learn about the neocortex, the "new brain," which is unique to humans and is where complex brain activity takes place. We find that the cerebrum, which is responsible for all active thought, is divided into two parts, or hemispheres. The left hemisphere, generally, manages the right side of the body; it is responsible for logical thinking. The right hemisphere manages the left side of the body; this hemisphere controls emotional, creative, and artistic functions. And we learn that the corpus callosum is the "bridge" that connects the two hemispheres. Memorizing the names for parts of the brain might not seem thrilling to many students, but new discoveries in brain function are exciting. Recent research is shedding light on creativity, memory, maturity, gender, and the possibility of changing the brain.


E=mc²
1
2
3

Left Brain/Right Brain: Truth or Myth?

B Scientists agree that the left hemisphere of the brain specializes in different areas or skills than the right hemisphere. Up until recently, many believed that people were either left-brained (in other words, more logical) or right-brained (in other words, more creative) depending on which hemisphere they used most. However, new research suggests that this is a myth and that dividing creativity and logic into the right and left hemispheres is a simple way of looking at the human brain, as well as the things a person can do. Rather than being separated, the two hemispheres continually collaborate. Being able to solve a mathematical equation requires both logic and creativity. So does producing a work of art. Therefore, scientists are now theorizing that any type of activity requires the use of different parts of the brain both in the left hemisphere and the right. The confusion was probably caused in the 1940s when doctors would surgically separate the two hemispheres in patients suffering from seizures. After such an operation, the patient's brain seemed to function normally, but there were disruptions in perception and cognition which proved that the left and right hemispheres were different.

Memory: True or False?

C In the 1980s in the United States, there were many cases of adults who suddenly remembered, with the help of a psychologist, things that had happened to them in childhood. These memories had been repressed – held back – for many years. Some of these newly discovered memories have sent people to prison. As people remember crimes that they saw or experienced as children, the police have reopened and investigated old criminal cases. In fact, over 700 cases have been filed that are based on these repressed memories.

D However, studies in the 1990s suggested that many of these might be false memories. At a 1994 conference at Harvard Medical School, neuroscientists discussed how memory is believed to work. It is known that small pieces of a memory (sound, sight, feeling, and so on) are kept in different parts of the brain; the limbic system, in the middle of the brain, pulls these pieces together into one complete memory. But it's certain that people can "remember" things that have never happened. Even a small suggestion can leave a piece of memory in the brain. Most frightening, according to Dr. Michael Nash of the University of Tennessee, is that "there may be no structural difference" in the brain between a false memory and a true one.

The Teen Brain

E Parents of teenagers have always known that there is something, well, different about the teen years. Some parents claim that their teenage children belong to a different species. Until recently, neuroscience did not support this belief. The traditional belief was that by the time a child was eight to twelve, the brain was completely mature. However, very recent studies provide evidence that the brain of a teenager differs from that of both children and adults. According to Jay Giedd of the National Institute of Mental Health, "Maturation does not stop at age ten, but continues into the teen years" and beyond. In fact, Giedd and his colleagues found that the corpus callosum "continues growing into your 20s." Because, it is believed, the corpus callosum is involved in self-awareness and intelligence, the new studies imply that teens may not be as fully self-aware or as intelligent as they will be later. Other researchers, at McLean Hospital in Massachusetts, have found that teenagers are not as able (as adults are) to "read" emotions on people's faces.

Male versus Female Brain?

F Watch a group of children as they play. You'll probably notice that the boys and girls play differently, speak differently, and are interested in different things. Of course, there are gender differences but do they really determine the way male and female brains work? As with the left-brain and right-brain theory, scientists in the past studied the origins of these differences and proposed the theory of male versus female brain. Some of their arguments were interesting. For example, they suggested that men were better at reading maps and fixing stuff, whereas women were better at multitasking, using their intuition, or reading the emotions of people in photographs. After further research, however, some scientists don't agree with the male–female distinction of brains. They believe that our brains are "plastic" and can change in many different ways throughout our lives despite our gender. Although the debate over male and female brains continues, it seems that they are more alike than we used to think.

A Change of Mind?

G We all know the expression "to change your mind". But is it possible literally to change your mind – or, to be more precise, to change your brain? Reports from 2005 say yes. First, the bad news, at least for smokers: a study from the University of Aberdeen and the University of Edinburgh, in Scotland, concludes that smoking makes people less intelligent. On cognitive tests (that is, tests that involve judgment), smokers did significantly worse than non-smokers. The theory is that toxins – poisons – in the smoke enter the blood and damage blood vessels providing the brain with oxygen. And there is more bad news, for most of us: a study from the University of London says that "infomania" – the constant flood of information from cell phones, emails, and text messaging – can reduce intelligence by ten points on an IQ test.

H However, there is also good news: meditation seems to change the "wiring" in the brain in several positive ways. In a study that compared the brains of eight lifelong Buddhist meditators who work with the Dalai Lama with the brains of beginner meditators, scientists discovered that there were significant differences. The expert meditators had higher levels of gamma brain waves, which improve memory, learning, and concentration. Meditation appears to do for the brain what physical training does for the body. The researcher Richard Davidson said, "The trained mind, or brain, is physically different from the untrained one." Perhaps we should consider going into training.

3 **Thinking and predicting** Work with a partner or in small groups. Read the following questions and suggest possible answers. Make notes under each question.

1. How are human brains different from animal brains?

Both animals and humans have the "old brain" that is responsible for basic functions. However, only humans have the "new brain" which allows complex activity to take place in our brain.

2. Why do some people seem to be more creative than others?

-They apparently use the right side of their brain more, although this is probably a myth.

3. What is the difference between the left and right sides of the brain?

Studies have shown that the left side of the brain focuses on logic, whereas the right side of the brain is more creative.

4. How can we improve our memories?

Not answered

5. What activities may make people less focused intellectually?

Using a cell phone, reading and writing emails, and text messaging can distract people.

6. What activity may make people more relaxed?

Meditation can make people more relaxed and focused.

After You Read

7 **Getting meaning from context** Find the words from the vocabulary in the reading text and try to figure out their meaning from context.

blood vessels	*going into training*	*maturation*	*origins*
cognitive	*hemispheres*	*mature*	*precise*
collaborate	*intuition*	*maturity*	*repressed*
colleagues	*logic*	*memory*	*toxins*
disruptions	*logical*	*neuroscientists*	*wiring*

hemispheres =	- two halves of the brain
logical =	-that uses logic
memory =	-the skill/ability of remembering things
maturity =	- behaving like an adult
logic =	-a mature and reasonable way of thinking and acting
collaborate =	-working together
disruptions =	-interruptions in an activity
repressed =	-held back
neuroscientists =	-scientists that study the brain and nervous system
mature =	-a person who behaves like an adult
maturation =	-the process of becoming mature

colleagues =	- people who you work with
origins =	-the beginning of something
intuition =	the ability to use one's feelings in order to understand
precise =	- exact
cognitive =	connected with thinking
toxins =	-poisonous substances
blood vessels =	-tubes in your body
wiring =	- the system that connects parts of your brain
going into training =	-starting to train

Additional Exercise

https://quizlet.com/612414358/pushing-boundaries-flash-cards/3new

PART 3

Skills Focus

Strategy

Distinguishing Facts from Assumptions

Words or expressions in statements usually indicate the existence of facts – that is, information that has been proven accurate. Here are some more words that indicate facts:

certain	*know*	*positive*	*scientific*	*sure*
clear	*objective*	*prove*	*show*	

Other words can indicate assumptions – that is, ideas that are believed by some people but have not been proven to be true. Here are some more words that indicate assumptions:

(dis)agree	*imply*	*possibly*	*theorize*
claim	*likely*	*probably*	*think*
doubt	*possible*	*subjective*	

- Fact
  - Measurable
  - Observable
  - Verifiable
- Assumption
  - Refer to things we believe to be true
  - Based on patterns
  - Guide behavior

8 **Distinguishing facts from assumptions** For each statement, write fact or assumption, according to the presentation of information in the reading selection *The Human Brain*. (You'll need to look back at the reading text for words that indicate fact or assumption.)

1. There's no doubt that the left hemisphere is different to the right hemisphere. **Fact**
2. A person isn't just "left-brained" or "right-brained". **Assumption**
3. The myth of left-brain and right-brain is due to scientific research conducted in the past. **Assumption**
4. A logical activity and an artistic activity require both brain hemispheres to be active. **Assumption**
5. Over 700 cases have been filed that are based on newly discovered memories. **Fact**
6. Many newly discovered memories are false. **Fact**
7. Small pieces of memory are kept in different parts of the brain. **Fact**
8. People "remember" things that have never happened. **Fact**
9. There is no structural difference between a false memory and a true one. **Assumption**
10. The brain of a teenager differs from that of both children and adults. **Fact**

9 **Thinking critically** If you want to improve your brain, what can you do? Turn back to the reading text and find at least one way. In a small group, discuss your own ideas about what you can or will do to improve your brain.

PLENARY

- Let's review what you have just learnt.
- Did you meet the objectives?
- Would you like more clarification?