

## MEETING 12

### ARTIFICIAL LIFE (AL)

#### A. LEARNING OBJECTIVES

In this module students will be able to use adjective clauses in sentences, able to write sentences by using adjective clauses, students will be able to speak about artificial life (AL), understand reading text about artificial life and understand listening text artificial life (AL).

#### B. DESCRIPTION OF ADJECTIVE CLAUSE

An adjective clause is a clause that describes a noun. Because the clause is an adjective, it is placed directly after the noun that it describes (Phillips 2011).

Example:

1. The students are requested to buy a book that the lectures recommend



Adjective clause

2. The book that the lecturer recommend is computer science book



Adjective clause

In the first example there are two clauses: the students is the subject and the verb are requested and the lecturers is the subject of the verb recommend.

In the second example there are also two clauses: the book is the subject of the verb is, and the lecture is the subject of the verb recommend.

Adjective clauses need connectors, they are who (for people), which (for things), that for things and people

Example:

- ❖ The computer which was on electronic fair yesterday was very expensive.
- ❖ Artificial Intelligent which many people study about is interesting.
- ❖ The laptop that Apple produce is not cheap.
- ❖ Coding that students think difficult is actually fun and easy.
- ❖ Artificial intelligent which develop to help people in every sector is massively used these days.

**C. EXERCISES****1. Structure****1.1 Mark True or false the sentences underline the adjective clause**

- 1) It is important to follow the procedure that you have been told  
☐ true  
☐ false
- 2) The computer I have been using for two years for updating application  
☐ true  
☐ false
- 3) I just finished updating the software which the computer request  
☐ true  
☐ false
- 4) The computer that she really want has big device storage  
☐ true  
☐ false
- 5) The coding the we studied last night wasn't very difficult  
☐ true  
☐ false
- 6) Artificial life which is used to make synthetic DNA can create protein.  
☐ true  
☐ false
- 7) Modern living which support by artificial intelligent challenging for computer scientist .  
☐ true  
☐ false
- 8) Android phone who everybody has control people lives  
☐ true  
☐ false
- 9) Computer scientists where develop artificial life make impressive progress on AL  
☐ true  
☐ false
- 10) Artificial life who is popular in medicine industries has been introduced.  
☐ true  
☐ false

**1.2 Combine the two sentences by using adjective connectors that, where, who, which below!**

**Example:** I study computer science. It needs hard work to understand it  
I study computer science **which** needs hard work to understand it

1) I finally bought new laptop. I brought it to campus yesterday.

---

2) The game wasn't very interesting. I played it last night.

---

3) I know a professor. Her classes are always full.

---

4) I didn't like the gaming keyboard. I tested it yesterday.

---

5) I didn't do my homework. **It** was very hard to do

---

6) I bought book. It was recommended by the teacher.

---

7) I love the animation. It makes me laugh.

---

8) We study computer system. it connects campus area.

---

9) I read book about artificial life . it makes synthetic DNA.

---

10) Students submitted the project. It needed a lot of calculation.

---

11) We study Algorithm. It supports artificial intelligent system

---

12) We study together with our classmate. He won national robotic championship.

---

**1.3 complete the sentences below with words or words phrase in the box!**

- a. international conference**
- b. computer technology**
- c. healthcare**
- d. artificial intelligent**
- e. serious illness**
- f. automatic application**

- 1) Artificial intelligent in medicine and \_\_\_\_\_ have been popular issues in these recent years.
- 2) AI in medicine refers to \_\_\_\_\_ diagnosis and treatment of patient who require care.
- 3) Medical devices which are developed by \_\_\_\_\_ are set to make radical change in medical field.
- 4) There is a great potential to apply \_\_\_\_\_ in medicine but people also concern about the lost human-touch.
- 5) American computer scientist Christopher Langton who named the Artificial life in 1987 organized the first \_\_\_\_\_ on synthetic and simulation of living thing.
- 6) People are happy about the application of artificial intelligent in medical devices which have been helped many people to survive from \_\_\_\_\_

## 2. Speaking :

### 2.1 work in pair to Practice The Conversation Below

- Mark                      Can I ask you few questions about artificial intelligent?
- Mike                      Sure what do you want to know?
- Mark                      Last we you told me many things about artificial intelligent, but I am confuse about the term artificial intelligent and artificial life.
- Mike                      Don't be confuse with the term artificial intelligent and artificial life. Artificial Life is dealing with living things such as self-reproduction mechanism, genetic mutation and many more. While artificial intelligent is dealing with machines that think and act like human.
- Mark                      Is it possible to create artificial life ?
- Mike                      Yes It is possible according to U.S researchers. They said living organism has been developed which combine both natural and artificial DNA.
- Mark                      Can DNA be made artificially?
- Mike                      Well In fact there is there is Artificial gene synthetic which knows as DNA printing.
- Mark                      Seriously? So what is the synthetic DNA for?
- Mike                      It is used to make protein in living cell.
- Mark                      Is the protein from synthetic DNA for human?
- Mike                      I am not sure but the researcher said it can be used to improve medicine and even can change function of cells.

## 2.2 Match the picture (1-8) and the name(A-H) and then discuss the questions! (see example)

**A.Smart Home Devices, B.Security and Surveillance, C.Banking and Finance, D.Navigation and Travel, E.Online Ads Network, F.Video Games,G. smart car, H.social media**



<https://beebom.com/examples-of-artificial-intelligence/>

1. Which of the devices above do you use everyday?
2. Which device is the most important to you?
3. Which device is best for making friends?
4. Which do people use for business?
5. What kind of business is used internet?
6. What kind of business is depended on device number 5?
7. Which business is depended on device number 3?
8. What is the function of device number 1? Where do people use it?
9. Which device is good for entertainment? Why?
10. Which are those device are available for all people? which are not available yet, why?

## Example

- Sue Which of the devices above do you use everyday?
- Linda I use social media everyday
- Sue Which device is the most important to you?
- Linda I think all devices are important but the most important one is banking and finance which we use for shopping online or transfer money.
- Sue Which device is best for making friends?
- Linda I think social media is the best device to make friend. I can have many friends from all over the world because of social media.
- Sue Which do people use for business?
- Linda People use online ads network to build online business.
- Sue What kind of business is used internet?
- Linda There are many kind of business. Almost all business these days use internet. Shopping online is become more popular.
- Sue What kind of business is depended on device number 5?
- Linda I think travel, hotel and transportation business depend on Google navigation.
- Sue Which business is depended on device number 3?
- Linda Banking system and financial business depend on the device.
- Sue What is the function of device number 1? Where do people use it?
- Linda The device is for security system. It is commonly uses in housing, office building and even in park.
- Sue Which device is good for entertainment? Why?
- Linda It depend who you ask. For gamer game online will be the best entertainment, for women business online and social media are best entertainment.
- Sue Which are those device are available for all people? which are not available yet, why?
- Linda These days all those device above are available for all people who need them and can afford to buy them.

### **3. Reading**

#### **3.1 Underline the adjective clauses in the reading text below!**

#### **3.2 Read and record loud the reading text in your phone!**

### **Artificial Life (AL)**

This is an emerging field that attempts to simulate the behavior of living things in the realm of computers and robotics. The field overlaps artificial intelligence (AI) since intelligent behavior is an aspect of living things. The design of a self-reproducing mechanism by John von Neumann in the mid-1960s was the first model of artificial life (see von Neumann, John). The field was expanded by the development of cellular automata as typified in John Conway's Game of Life in the 1970s, which demonstrated how simple components interacting according to a few specific rules could generate complex emergent patterns. A program by Craig Reynolds uses this principle to model the flocking behavior of simulated birds, called "boids" (see cellular automata).

The development of genetic algorithms by John Holland added selection and evolution to the act of reproduction. This approach typically involves the setting up of numerous small programs with slightly varying code, and having them attempt a task such as sorting data or recognizing patterns. Those programs that prove most "fit" at accomplishing the task are allowed to survive and reproduce. In the act of reproduction, biological mechanisms such as genetic mutation and crossover are allowed to intervene (see genetic algorithms). A rather similar approach is found in the neural network, where those nodes that succeed better at the task are given greater "weight" in creating a composite solution to the problem (see neural network).

A more challenging but interesting approach to AL is to create actual robotic "organisms" that navigate in the physical rather than the virtual world. Robotics Hans Moravec of the Stanford AI Laboratory and other researchers have built robots that can deal with unexpected obstacles by improvisation, much as people do, thanks to layers of soft-ware that process perceptions, fit them to a model of the world, and make plans based on goals. But such robots, built as full-blown designs, share few of the characteristics of artificial life. As with AI, the bottom-up approach offers a different strategy that has been called "fast, cheap, and out of control"—the production of numerous small, simple, insect like robots that have only simple behaviors, but are potentially capable of interacting in surprising



ways. If a meaningful genetic and reproductive mechanism can be included in such robots, the result would be much closer to true artificial life (see robotics).

The philosophical implications arising from the possible development of true artificial life are similar to those involved with “strong AI.” Human beings are used to viewing themselves as the pinnacle of a hierarchy of intelligence and creativity. However, artificial life with the capability of rapid evolution might quickly outstrip human capabilities, perhaps leading to a world like that portrayed by science fiction writer Gregory Benford, where flesh-and-blood humans become a marginalized remnant population. Encyclopedia of Computer Science and Technology Revised Edition by Harry Henderson

### **3.3 Answer the question below**

- 1) What is artificial life?
- 2) What was first model of artificial life?
- 3) When was self reproducing mechanism designed?
- 4) Who designed self reproducing mechanism?
- 5) Who developed cellular automata?
- 6) When was cellular automata developed?
- 7) What is boids?
- 8) Who develop genetic algorithms?
- 9) How did genetic algorithms develop?
- 10) How does the act of reproduction work?
- 11) What is the more challenging but interesting from AL?
- 12) What has Hans Moravec built?
- 13) What does the bottom-up approach offer?
- 14) What did Gregory Benford write about?
- 15) What can the Insect like robots do?
- 16) What do philosophers think of artificial life?
- 17) What do you think about artificial life
- 18) Do you think artificial life is important for people life? why

**3.4 Mark True for true statement and Mark false for untrue statement below!**

- 1) Artificial Intelligent is dealing with the aspect of living things.  
☐ true  
☐ false
- 2) Self-reproducing mechanism was introduced by John von Neuman.  
☐ true  
☐ false
- 3) Simple emergent pattern can be generated if simple components interacting based on specific rules  
☐ true  
☐ false
- 4) John Conway developed genetic algorithms.  
☐ true  
☐ false
- 5) Genetic mutation and crossover are forbidden to intervene in biological mechanism.  
☐ true  
☐ false
- 6) Robots that can handle unexpected barrier have been build by Robotic Hans Moravec  
☐ true  
☐ false
- 7) It is possible to develop of true artificial.  
☐ true  
☐ false
- 8) Human beings are used to viewing themselves as the bottom of a hierarchy of intelligence and creativity.  
☐ true  
☐ false

#### 4. Listening

**4.1 listen to Sultan Issa Hampton talking about artificial life AL and mark True for true statement and mark False for false statement!**

- 1) Many years people used computers to discourage Nature.  
☐ true  
☐ false
- 2) Artificial Life AL has nothing to do with biology and physics.  
☐ true  
☐ false
- 3) The biology researchers keep examining our world living organism  
☐ true  
☐ false
- 4) AL in the environment is an genuine, virtual world inside a computer.  
☐ true  
☐ false
- 5) Our world hasn't been categories as real world by the philosopher  
☐ true  
☐ false
- 6) Artificial Life researchers focus on many fields for many purposes  
☐ true  
☐ false
- 7) Simulation does not need to be same as the reality  
☐ true  
☐ false
- 8) People always can compare simulation result with reality  
☐ true  
☐ false

## 5. Writing

### 5.1 translate the Sentences below

- 1) Medical devices which are developed by computer technology are set to make radical change in medical field.  

---

---
- 2) There is a great potential to apply artificial intelligent in medicine but people also concern about the lost human-touch.  

---

---
- 3) American computer scientist Christopher Langton who named the Artificial life in 1987 organized the first international conference on synthetic and simulation of living thing.  

---

---
- 4) People are happy about the application of artificial intelligent in medical devices which have been helped many people to survive from serious illness.  

---

---
- 5) Artificial intelligent in medicine and healthcare have been popular issues in these recent years.  

---

---
- 6) People are happy about the application of artificial intelligent in medical devices which have been helped many people to survive from serious illness.  

---

---
- 7) AI in medicine refers to automatic application diagnosis and treatment of patient who require care.  

---

---

**5.2 make adjective clause sentences by using the words or words phrase below!**

1) Artificial intelligent

---

2) Computer and robotics

---

3) Genetic algorithm

---

4) Researchers

---

5) Living organism

---

6) Reproduction mechanism

---

7) Development of computer system

---

8) Medical devices

---

9) Robotic

---

10) Smart living

---

11) Healthy people

---

12) Science fiction

---

13) Modern life

---

14) Public service

---

15) Big data

---

## 6. Key words

Write the synonym and the meaning

English	Synonym	Indonesia
approach, aspect, attempt, attempt, behavior, behavior, composite, crossover, demonstrated, emergent, Emerging, expanded, fit, flocking, generate, intervene, involves, marginalized, mutation, navigate, numerous, obstacle, obstacle, outstrip, pattern, portrayed, realm,		

**D. BIBLIOGRAPHY**

Henderson Harry, Encyclopedia of Computer Science and Technology Revised Edition, Infobase Publishing, New York, 2003 page 130-131

Phillips Deborah, Complete Course for the Toefl Test , Preparation for computer and Paper test, Longman a Pearson Education company, N.Y 2001.

<https://beebom.com/examples-of-artificial-intelligence/>

<https://medium.com/widgetlabs/10-uses-of-ai-in-your-everyday-life-5ebfbf310157>