UNIT 6
Recent Development on Information Technology

Learning Outcomes:

By the end of the lesson, the students are expected to be able to use appropriate English to:

- identify, describe and explain the recent developments on video games
- identify, describe and explain the recent developments on IT
- identify, describe, explain, and present the other new recent technologies on IT.
- make predictions using future tense
- make a summary of an article of an IT journal.

6.1. Video Games

Exercise 1: Work in pairs. Discuss these questions:

1. Do you play video games? What kind of game is it?
2. How and where do you play it?
3. What are your favorite video game? Make a list. Why do you like them?

Exercise 2: Label the pictures (a-f) with the types of the game.

1

2

a. PC Games
b. Console Games
c. Arcade Games
d. Handhеld Games
e. Mobile phone games
f. Massively multiplayer online games

3

4

5

6

Exercise 3: Video games are played on a variety of electronic devices, or platforms. Complete these sentences with game platforms from the box and types of game from exercise 2.

Personal computer	video game consoles
Portable gaming devices	3G mobile phones

1. _____ are played on _____, such as the Sony PS3 or Microsoft Xbox 360. In the past the electronic devices were just connected to a standard TV or video monitor; now they can also be connected to the Net, via cables or wirelessly.
2. _____ are played on _____, such as the Sony PSP and the Nintendo DS. You can also play games on some graphing calculators and watches.
3. Don't worry if you don't have a game console. You can still play _____ on a _____. The graphics are even more impressive if you have a high-resolution monitor. You can buy games on CDs and DVDs, or download them from the internet.
4. _____ allow you to play against other users in other parts of the world using the internet - something unique to electronic gaming. Players connect to a game server hosted by an ISP, a game company, or an individual enthusiast.
5. Some _____ are programmed to run natively on the chip of _____. For instance, *Snake* is installed on many Nokia phones. Many Java-based games are also available via download.
6. _____ are played on coin-operated machines, typically installed in restaurants, bars, and amusement arcades. For example, you can play an aircraft or a spaceship using a joy stick.

Exercise 4: How many different game genres can you think of? In pairs, make a list and then read the text to see how many genres from your list are mentioned.

There are so many different genres and mixes of genres that it's difficult to put each game into a-specific category. In the following article we'll cover the basic genres that differentiate between games.

The **First-person shooter (FPS)** and **Action** genres are currently the most popular. Games like *Half-Life*, *Halo* and *Call of Duty* are the most popular games in the FPS category. For action, innovative titles like the *Grand Theft Auto* series, *Gears of War* and *Splinter to Cell* are huge successes.

The **Role-playing game (RPG)** genre has remained strong throughout the entire history of console and PC gaming. Current hits like *Final Fantasy XII Oblivion* and the *Knights of the Old Republic* series are all based on RPG roots. The recent development of massively multiplayer online RPGS has been made possible by widespread broadband access, allowing games to play internationally with thousands of people across the globe in a constant virtual world.

Adventure games and **Puzzle games** remain strong despite being limited in scope and technology. The new concept of party games- where people play together in multiplayer mode - has recently injected new life into this genre. Titles like *Zelda* and *Wario- Ware* are familiar names.

Sports games are an increasingly popular portion of the gaming industry. Electronic Arts (EA) have been making games licensed from the NBA, NFL, WWE, and MLB for over a decade. Another sector of the *Sports 3* industry is the entire racing sub-genre. Massive hits like the *Burnout* and *Need for Speed* series are hugely exciting, and the crashes can be realistic and terrifying

The **Simulation** genre has enjoyed wild success, including the best-selling PC games of all time: *The Sims & The Sims 2*. The entire *Sims* series, designed by *Maxis*, is dominant in this genre. Jet fighter and flying sims are also important types of simulation game.

Strategy is a genre mainly restricted to PC, largely because the mouse and keyboard are central to gameplay. There are a few good Strategy games for console, however, big names in Strategy include *Warcraft III, Starcraft, Command* and *Conquer* and *Warhammer* 40,000.

Finally, we have the **Fighting** genre. Developed from early hit games like *Street Fighter II, Fighting* games have enjoyed a renaissance as they've been updated fully to include 3-D characters and arenas. Titles like *Dead or Alive*, *Tekken*, and *Soul Calibur* are big favorites.

So, what kind of game player are you? Chances are that if you're a PC gamer, you prefer FPS, RPG, Simulation, and Strategy games. The console gamer typically enjoys Sports, Racing, Fighting, RPGS, and a few FPS titles. Of course, many people own both a console and a PC, therefore combining the best of both worlds.

Exercise 5: These statements about gaming are all false. Read the text again and correct them.

1. Role-playing games are currently the most popular.
2. Massively multiplayer online RPGs have been made possible by widespread internet access.
3. *Oblivion* is an Action game.
4. *The Sims* series is the least popular in the Simulation category.
5. Strategy games are mainly restricted to game consoles.
6. *Warcraft* belongs to the Fighting genre.
7. Console gamers typically prefer Simulation and Strategy games.

Exercise 6: Find words or phrases in the text with the following meanings.

1. now; at this time or period (2nd paragraph) _____
2. existing or happening in many places and/or among many people (3rd paragraph) _____
3. in spite of; notwithstanding (4th paragraph) _____
4. more and more (5th paragraph) _____
5. a smaller category within a particular genre (5th-6th paragraph) _____
6. big successes (5th-6th paragraph) _____
7. sold in very large number (6th paragraph) _____
8. modernized (7th paragraph) _____

Exercise 7: Listen to an interview with Matt Robinson, the administrator of the TPS Report gaming blog. How many game platforms does he mention?

Exercise 8: These statements below are false. Listen the interview again, and correct them.

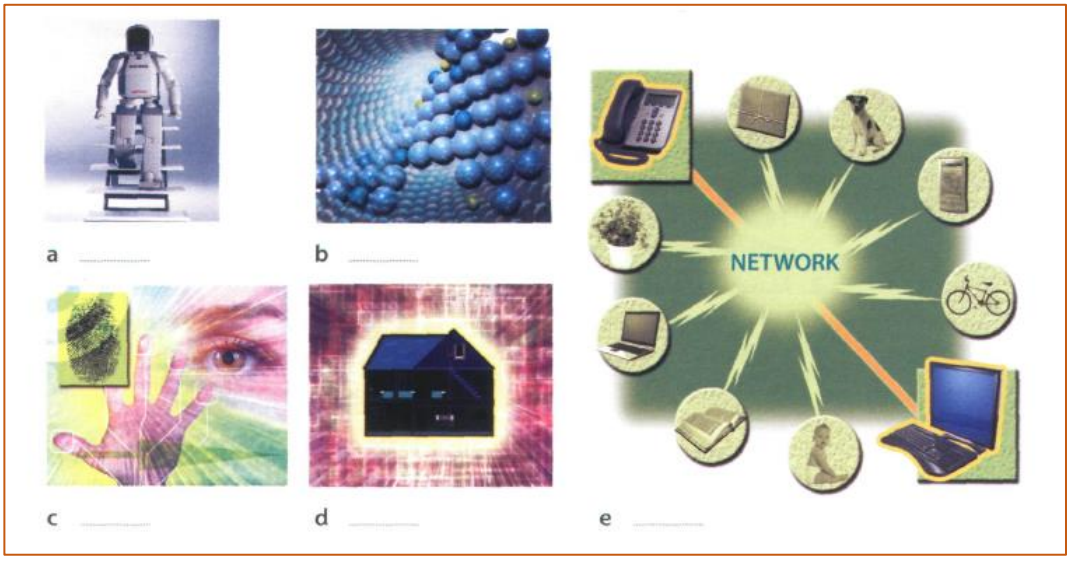
1. Video games are popular because they are fun and addictive.
2. Well-known Hollywood actors appear in video games.
3. The Nintendo Wii is aimed at hardcore gamers.
4. It's free to play *World of Warcrafts.*
5. Holography is an advanced form of photography that uses lasers to produce two-dimensional images.
6. In the future, gesture recognition systems will produce photo realistic images.

6.2. Other Current Developments in IT

Exercise 9: In pairs, discuss these questions.

1. What do you think a trend is?
2. What trends in ICT do you think will affect our lives in the future? Make a list.

Exercise 10: Match the texts (1-5) with the pictures (a-e). Which trends from your list in exercise 9 are mentioned?


a
b
NETWORK
c
d
e

①

By all accounts, **nanotechnology** - the science of making devices from single atoms and molecules - is going to have a huge impact on both business and our daily lives. Nano devices are measured in nanometers (one billionth of a meter) and are expected to be used in the following areas.

- **Nanocomputers**: Chip makers will make tiny microprocessors with **nanotransistors** ranging from 60 to 5 nanometers in size.
- **Nanomedicine**: By 2020, scientists believe that nano-sized robots or **nanobots**, will be injected to the body's bloodstream to treat diseases at the cellular level.
- **Nanomaterials:** New materials will be made from carbon atoms in the form of **nanotubes**, which are more flexible resistant and durable than steel or aluminium. They will be incorporated into all kinds of products, for example stain-resistant coatings for clothes and scratch-resistant paints for cars.

②

Artificial Intelligence (**AI**) is the science of making intelligent machines and programs. The term originated in the 1940s, when Alan Turing said: "A machine has artificial intelligence when there is no discernible difference between the conversation generated by the machine and that of an intelligent person." A typical AI application is **robotics**. One example is ASIMO, Honda's intelligent humanoid robot. Soon, engineers will have built different types of **android**, with the form and capabilities of humans. Another AI application is **expert systems** -programs containing everything that an expert knows about a subject. In a few years, doctors will be using expert systems to diagnose illnesses.

③

Imagine you are about to take a holiday in Europe. You walk out to the garage and talk to your car. Recognizing your voice, the car's doors unlock. On the way to the airport, you stop at an ATM. A Camera mounted on the bank machine looks you in the eye, recognizes the pattern of your iris and allows you to withdraw cash from your account.

When you enter the airport a hidden camera compares the digitized image of your face to that of suspected criminals At the immigration checkpoint, you swipe a card and place your hand on a small metal surface. The geometry of your hand matches the code on the card, and the gate opens. You're on your way.

Does it sound futuristic? Well, the future is here. **Biometrics** uses computer technology to identify people based on physical characteristics such as fingerprints, facial features, voice, iris and retina patterns.

Adapted from the Richmond Times Dispatch

④

Ubiquitous computing, also known as **pervasive computing**, is a new approach in which computer functions are integrated into everyday life, often in an invisible way. **Ubiquitous devices** can be anything from smartphones to tiny sensors in homes, offices and cars, connected to networks, which allow information to be accessed anytime and anywhere - in other words, ubiquitously. In the future people will interact naturally with hundreds of these **smart devices** (objects containing a microchip and memory) every day, each invisibly **embedded** in our environment and communicating with each other without cables.

⑤

In the ideal **smart home, appliances** and electronic devices work in sync to keep the house secure For example, when a regular alarm system senses that someone is breaking into the house, it usually alerts the alarm company and then the police. A smart home system would go further turning on the lights in the home and then sending a text message to the owner's phone. Motorola Homegraven sends images captured by wireless cameras to phones and PCs.

Smart home remember your living patterns, so if you like to listen to some classical music when you come home from work, your house can do that for you automatically. They will also know when the house is empty and make sure all appliances are turned off. All home devices will be interconnected over a home area network where phones, cable services, home cinemas, touch screens, smart mirrors and even the refrigerator will cooperate to make our lives more comfortable.

Adapted from www.businessweek.com

Taken from Infotect English for Computer Users, pp 150-151

Exercise 11: Read the text again and answer these questions.

1. Which unit measurement is used in nanotechnology?
2. What are the advantages of nanotubes over regular materials?
3. What will the doctors use *expert system* for?
4. What features are analyzed by biometrics?
5. Which trend refers to computers embedded in everyday devices, communicating each other over wireless network?
6. What will the alarm system do if someone breaks into a smart home?
7. How will devices be interconnected inside the smart home?

Exercise 12: Find words in the texts with the following meanings.

1. a microscopic robot, built with nanotechnology (text 1) _____
2. a robot that resembles a human (text 2) _____
3. biological identification of a person (text 3) _____
4. integrated; inserted into (text 4) _____
5. electrical devices, or machines, used in hone (text 5) _____

The Internet of Things

Should you worry if your jeans go smart?

The **Internet of Things**, shortened to IoT, is the integration of the physical world with the virtual world of Internet. Objects such as your car, house, clothes, fridge or family pet are electronically tagged with important information and then can be connected to the Internet through remote, contact-less technology.

What if those new jeans you've just bought start tweeting about your location as you cross London Bridge? It sounds bizarre, but it's possible – if they are equipped with a tiny RFID device, your location could be revealed without you knowing about it. This technology is just one of the current ways of allowing physical objects to go online – the so-called **Internet of Things***.

Those in favour of the IoT claim that interconnectivity would allow us to locate and monitor everything, everywhere and at any time. Imagine a smart building where you know how many people are inside just by detecting movement with motion-sensitive lights. This could help save lives in an emergency.

But as more objects become part of the digital world, there is growing debate over the benefits of smart technology versus the lack of privacy. To what extent can surveillance of people be accepted? Which principles should govern the use of the IoT? The European Commission, for example, has established a framework to safeguard consumer privacy as industries develop this technology further.

Within the retail industry, a number of stores have started using RFID tags to check and track stock more easily. However, some people are worried that the RFID reader being used by a shop employee to check the number of pairs of jeans could also read the data on a customer's driving licence, for example, if it contained a RFID chip. This could then lead to identity theft. If the tag is not removed at the checkout, the item could be tracked on the street. Once the tag is thrown away, it can still be scanned, allowing someone to get an idea of your shopping habits.

Supporters of the IoT point out that in our already digital and high-tech society your mobile phone operator and bank know much more about your life than your partner does and it is certainly more critical information than the type of jeans you wear.

Source – BBC News – © 2011 BBC

Taken from ELI Best Commercial Practice - Module 1, Worksheet 2

Exercise 13: Read the text and decide if these sentences are true (T) or false (F).

1. You are always aware that RFID tags are communicating your location.
2. The Internet of Things means everyday objects and items can be connected to the Internet.
3. There are more people in favour of the IoT than against it.
4. The European Commission is against the development of RFID technology.

5. If someone has a document with an RFID chip, they could be at risk of identity theft.
6. Because of digital technology, many companies already hold a lot of private, important information about us.

Exercise 14: Discuss these questions in small groups.

1. Is the Internet of Things a positive or negative technological development? Why?
2. Can you think of examples (e.g. a situation or a specific object) where it could cause problems/be useful?
3. Do you think the issue of privacy is important?
4. Some schools in Texas, USA, introduced RFID chips in student badges. What is your opinion on this?
5. How do you see the future of the Internet of Things?

Exercise 15: Listen to Sarah Wood, an ICT teacher, giving a class about RFID tags. Choose which definition best describes RFID?

a. A smart technology worn on the user's body so that they can email and access the Web.
b. A technology that uses radio waves and chip-equipped tags to automatically identify people or things.

c. A technology that uses microchips and bar codes to track people or things at the distance.

Exercise 16: Listen Sarah's talk again and choose the correct answer.

1. RFID stands for
   a. Radio Frequency Identification
   b. Radio Frequency Identification Download
2. Radio tags
   a. Can only be attached to or embedded into products
   b. Can be attached to or embedded into products, animals and human
3. Active RFID tags
   a. Have a communication range of several hundred meters.
   b. Have a communication range of five meters
4. RFID chips
   a. Will help us track ordinary objects when they are lost or stolen.
   b. Won't be able to track ordinary objects when they are lost or stolen.
5. Radio tags can be implanted under the skin
   a. To confirm a patient's identity and cure illness
   b. To give doctor instant access to patient's history.
6. According to consumers association
   a. Could be used to track consumer or to steal a person identity
   b. Are secure and private. There is no need for concern.

6.3. Grammar Study

Exercise 17: Read the following explanation about expression used for making prediction. After you understand it, make predictions about the given things using the expression you have learned.

Making Predictions

Study these expressions used to make predictions

Many more people will use the Internet.

Doctors will experiment with new procedures on simulated patients.

Micro-machines are going to be used for drug delivery.

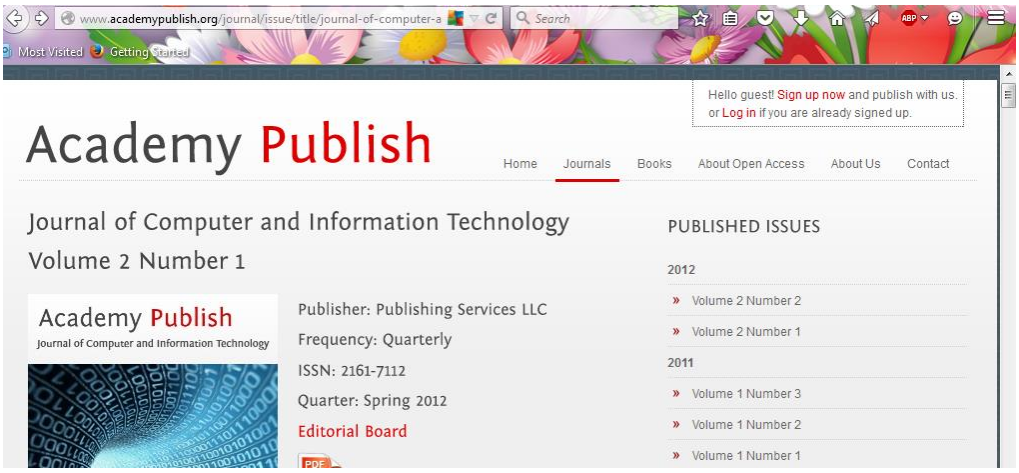
We can use will and is/are going to make predictions about things we are confident will happen.

1. the number of PCs in use.
2. the power of computer.
3. the capacity of storage device.
4. the size of computer.
5. robots and housework
6. computers and cars
7. the price of computers
8. the use of smart card

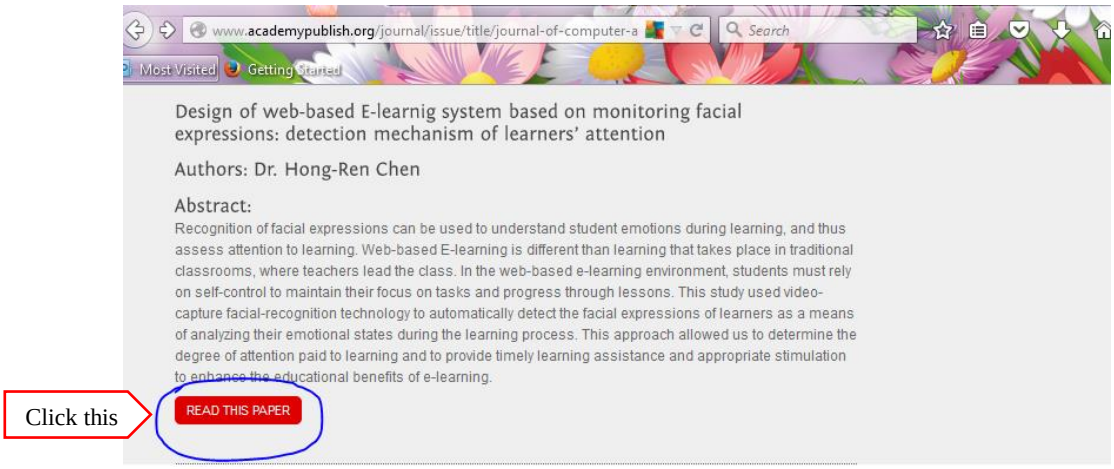
6.4. Making Summary of an Article

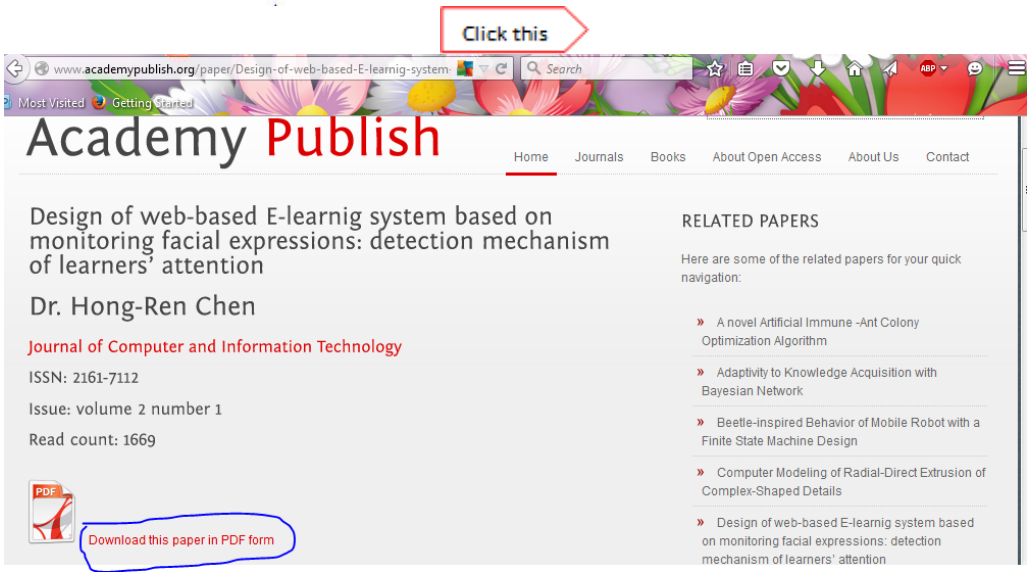
Reading an article of a journal is necessary to get ideas of making the final project and your thesis report. Therefore, you need to be able to do it. Below is the example of how to do it.

Name of the journal	:	Journal of Computer and Information Technology
Source	:	http://www.academypublish.org/journal/issue/title/journal-of-computer-and-information-technology/volume/2/number/1



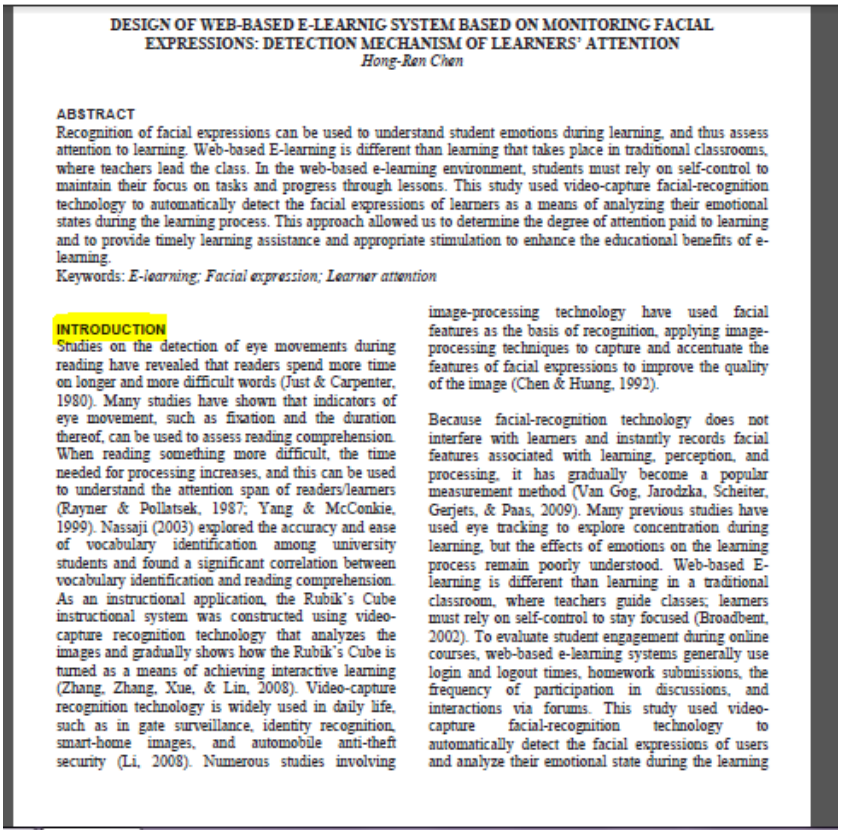
Title of the article	:	*Design of Web-Based E-Learning System Based on Monitoring Facial Expressions: Detection Mechanism of Learners' Attention*
Author(s)	:	Hong-Ren Chen
Source	:	http://www.academypublish.org/paper/Design-of-web-based-E-learnig-system-based-on-monitoring-facial-expressions:-detection-mechanism-of-learners-attention





Kind of article (*is it based on research or literature study? Find on the article, is there any research data or not. Is there any If yes, then, it is research-based article*)	:	Research Based Article
The reasons why the author(s) do the research or literature study (*read*	:	The result of study on the movement of the eyes shows that the movement such as fixation and duration on difficult words can be used to examine the readers' reading comprehension. The further study develops an application called

the introduction section of the article)	*the Rubik's Cube instructional system* using video capture recognition technology that analyzes the images used facial features as the basis of recognition (face recognition). Facial-recognition technology instantly records facial features associated with learning, perception, and processing. Therefore, the study uses video capture facial-recognition technology to automatically detect the facial expressions of users and analyze their emotional state during the learning process as a means of assessing their attention. To implement this, web-based e-learning systems is used to monitor login and logout times, homework submissions, the frequency of participation in discussions, and interactions via forums.



DESIGN OF WEB-BASED E-LEARNIG SYSTEM BASED ON MONITORING FACIAL EXPRESSIONS: DETECTION MECHANISM OF LEARNERS' ATTENTION

Hong-Ren Chen

ABSTRACT

Recognition of facial expressions can be used to understand student emotions during learning, and thus assess attention to learning. Web-based E-learning is different than learning that takes place in traditional classrooms, where teachers lead the class. In the web-based e-learning environment, students must rely on self-control to maintain their focus on tasks and progress through lessons. This study used video-capture facial-recognition technology to automatically detect the facial expressions of learners as a means of analyzing their emotional states during the learning process. This approach allowed us to determine the degree of attention paid to learning and to provide timely learning assistance and appropriate stimulation to enhance the educational benefits of e-learning.

Keywords: *E-learning; Facial expression; Learner attention*

INTRODUCTION

Studies on the detection of eye movements during reading have revealed that readers spend more time on longer and more difficult words (Just & Carpenter, 1980). Many studies have shown that indicators of eye movement, such as fixation and the duration thereof, can be used to assess reading comprehension. When reading something more difficult, the time needed for processing increases, and this can be used to understand the attention span of readers/learners (Rayner & Pollatsek, 1987; Yang & McConkie, 1999). Nassaji (2003) explored the accuracy and ease of vocabulary identification among university students and found a significant correlation between vocabulary identification and reading comprehension. As an instructional application, the Rubik's Cube instructional system was constructed using video-capture recognition technology that analyzes the images and gradually shows how the Rubik's Cube is turned as a means of achieving interactive learning (Zhang, Zhang, Xue, & Lin, 2008). Video-capture recognition technology is widely used in daily life, such as in gate surveillance, identity recognition, smart-home images, and automobile anti-theft security (Li, 2008). Numerous studies involving image-processing technology have used facial features as the basis of recognition, applying image-processing techniques to capture and accentuate the features of facial expressions to improve the quality of the image (Chen & Huang, 1992).

Because facial-recognition technology does not interfere with learners and instantly records facial features associated with learning, perception, and processing, it has gradually become a popular measurement method (Van Gog, Jarodzka, Scheiter, Gerjets, & Paas, 2009). Many previous studies have used eye tracking to explore concentration during learning, but the effects of emotions on the learning process remain poorly understood. Web-based E-learning is different than learning in a traditional classroom, where teachers guide classes; learners must rely on self-control to stay focused (Broadbent, 2002). To evaluate student engagement during online courses, web-based e-learning systems generally use login and logout times, homework submissions, the frequency of participation in discussions, and interactions via forums. This study used video-capture facial-recognition technology to automatically detect the facial expressions of users and analyze their emotional state during the learning

Methods *(how the writer explains about the design of the system, the implementation, and the solutions, read the Methodology section of the article or any relevant section)* :

Fig 1. The framework of E-learning System with catpuring facial-expression images

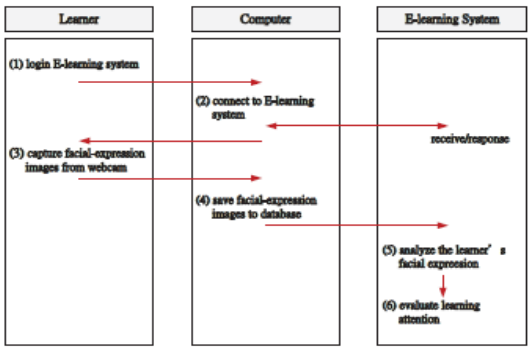


Fig 2. The process of capturing facial-expression and evaluating learning attention

The explanation of the system design:

(*write here*) …….

SYSTEM DESIGN AND DETECTION MECHANISM

The web-based E-learning system with facial expression-recognition is shown in Figure 1. First, learners login the e-learning system with an account number and password. Then, as the learner views the presented content, the webcam captures facial expressions continuously for the time set by the system. The images are saved to a remote database for

Figure 2 shows more details of this process. After login sucessfully, the learner selects a subject to learn about. As the learner views the web-based e-learning website, the webcam detects facial expressions and captures continuous images within a fixed timeframe, as shown in Step 1. In Step 2, the software begins to analyze the images, dividing them into two components: an outline of the facial profile and

Exercise 18: In pairs, find an article of an IT journal, make a summary based on the example above, and present it to the class.