

ICT as a Tool for Teaching and Learning

I- Introduction

The ICT stands for “Information and Communication Technologies” and is defined as a diverse set of technological tools and resources used to communicate, to create, disseminate, store and manage information.

ICT has become a very important part of the educational delivery and management processes. ICT facilitates the acquisition and absorption of knowledge, and hence can provide extraordinary opportunities for both teachers and learners.

II- The importance of information in ICT

ICT is used for the processing, transmitting and storing information and data using modern technology.

1. Information and Data

Data is raw unprocessed facts and figures that have no context or purposeful meaning and information is processed data that has meaning and is presented in a context.

For example, a computer operator may enter 36.41, which is data, because we do not know why or in what context it is being used. However, if this number then appears on a bill to show that you owe a company \$36.41 for goods received then this data has changed into information, because it has acquired a context (it’s a bill) and meaning.

2. Characteristics of Information

Good information is that which is used and which creates value. Experience and research shows that good information has numerous qualities.

a. Availability/accessibility

Information should be easy to obtain or access. Information kept in a book of some kind is only available and easy to access if you have the book to hand. A good example of availability is an e-dictionary, where you can easily find all what you need about words you look for (spelling, examples, pronunciation, synonyms...etc).

b. Accuracy

Information needs to be accurate enough for the use to which it is going to be put. To obtain information that is 100% accurate is usually unrealistic as it is likely to be too expensive to produce on time.

c. Reliability or objectivity

Reliability deals with the truth of information or the objectivity with which it is presented. You can only really use information confidently if you are sure of its reliability and objectivity.

Finding reliable information on the internet - where anybody can write unedited and unverified material and 'publish' it- is really difficult. You cannot be sure that the information is reliable unless you know who the author is.

d. Relevance

Information should be relevant to the purpose for which it is required. It must be suitable.

e. Completeness

Information should contain all the details required by the user. Ideally all the information needed for a particular decision should be available. However, this rarely happens; good information is often incomplete. To meet all the needs of the situation, you often have to collect it from a variety of sources.

3. Processing, transmitting and storing information

ICT is concerned with the **processing, storage, manipulation** and **transmission** of digital data. Importantly, it is also concerned with the way these different uses can work with each other.

a. Processing:

In terms of ICT it normally means that input data is 'processed' in some way in order to make the output meaningful.

Typical data flow is INPUT -> PROCESS -> OUTPUT (and sometimes FEEDBACK).

b. Transmitting:

It is the process of sending propagating and exchanging information via modern media.

c. Storing:

Most data needs to be kept for some time and so there is a need to have some method of doing this. This is called "Storage" which can include data that has been inputted, required during a process or the results of processing. Data which has been stored can be used at a later date.

III- ICT systems

ICT Systems have been a main driver of technological innovation during recent decades and now play a pivotal role in all aspects of modern life. An ICT system is a set-up consisting of hardware, software, data and the people who use them. It commonly includes communications technology, such as the Internet.

a. Hardware

It refers to objects that you can actually touch, like disks, disk drives, display screens, keyboards, printers, boards, and chips. In other words, it's the physical parts of a computer. Hardware can be divided into three main types: input devices, processing devices and output devices.

- Input devices:

Input devices allow us to enter raw data into a computer. Input devices can be manual or automatic.

The most common **manual** input devices are the keyboard and mouse. Other manual input devices include:

Digital camera :

A digital camera takes pictures and can usually record video too. The pictures it takes and the videos it records are stored in files. These files can be copied to a computer and later edited.

Microphone :

Microphones are used to input sound. In computing they can be used with voice recognition software and a word processing application to enter text. Webcams commonly have microphones built-in too.

Scanner:

A scanner can be used to digitise images. They're similar to a photocopier but they make a digital copy instead of a physical copy.

Automatic input devices are more developed, such as magnetic strip reader.

Magnetic strip reader:

Magnetic stripes are built into many plastic cards such as debit or credit cards and personal identity cards. The magnetic strip on the back of the card can hold the personal details of the card owner and, with the necessary PIN, will allow access to secure information, e.g. bank account details. Data stored on the strip is scanned and input into a computer system by a magnetic stripe reader.

- Processing devices:

The processing is mainly handled by the Central Processing Unit (CPU). It is the part of a computer system that is commonly referred to as the "brains" of a computer. The CPU is also known as the processor or microprocessor.

CPUs aren't only found in desktop or laptop computers, many electronic devices now rely on them for their operation. Mobile phones and DVD players are examples of equipment that have a CPU.

- **Output devices:**

Common output formats are printed paper, sound, video and on-screen documents. They let the computer communicate with the user. The most common output devices are: monitors, printers and speakers.

b. Software:

The term computer software is given to programmes which are installed onto a computer to enable it to perform a specific task, as opposed to the physical components of the computer system (hardware).

The table below shows some ICT applications and their use:

<i>Word processing</i>	E.g. Microsoft Word: Write letters, reports etc
<i>Spreadsheets</i>	E.g. Microsoft Excel; Analyse financial information; calculations; create forecasting models etc
<i>Database software</i>	E.g. Oracle, Microsoft SQL Server, Access; Managing data in many forms, from basic lists (e.g. customer contacts through to complex material (e.g. catalogue)
<i>Presentation software</i>	E.g. Microsoft PowerPoint; make presentations, either directly using a computer screen or data projector. Publish in digital format via email or over the Internet
<i>Desktop publishing</i>	E.g. Adobe Indesign, Quark Express, Microsoft Publisher; produce newsletters, magazines and other complex documents.
<i>Graphics software</i>	E.g Adobe Photoshop and Illustrator; create and edit images such as logos, drawings or pictures

IV- The use of ICT

The application of ICT gives more opportunities for communication between peer learners: they can exchange information in real time, they can participate in blog discussions, work in teams on different projects, exchange emails, search for information, etc.

In a language classroom the computer may have the following roles:

- **teacher** – it teaches students new language
- **tester** - it tests students on the already learned structures
- **tool** – it assists students to do certain tasks
- **data source** – it provides students with the information they need to solve different tasks
- **communication facilitator** – it allows students to communicate with others.

Students use Information Technologies to:

1. Participate in a media revolution, profoundly affecting the way they think about and use information technologies.
2. Improve the ways of learning in new learning fashions
3. Extend the ability and skills of applying their learning in real situation.
4. Working in groups for cooperative and collaborative learning
5. Developing self-learning habits at their own pace and time.
6. Learn with the teacher rather by the teacher.
7. Develop inquiry-learning habits.
8. Use right information at right time to achieve right objective.
9. Review and explore qualitative data.
10. Exchange learning experiences and information with other students and teachers living anywhere in the world.

Teachers use Information Technologies to:

1. Present the material in more interesting and attractive way.
2. Guide and help students in searching the qualitative material.
3. Make best use of time.
4. Coach the students.
5. Provide individualized instruction.
6. Direct the students toward cooperative as well as collaborative learning activities.
7. Prepare learning material for students, rather teaching in conventional situations.
8. Diagnose the learning problem of students and help them to overcome.
9. Solve the study problems of students.