Education, its Evolution and how it can be internationalised

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Abstract

The main purpose of this paper is to demonstrate the role of innovative approaches to education with a view to its internationalisation. The paper provides an overview of how learning has evolved and progressed over the years and then it presents and discusses the impact of facilities and institutes, equipment and technologies on learning over the centuries. An innovative way of capturing, storing and transferring knowledge is put forward.

Discussions on past and present learning means and methods intend to encourage us to think about the future of education. The paper investigates ways of crossing the language barriers and internationalising the language of education through more advanced information technology ideas.

Key words: Education, Internationalisation, Innovative

Introduction

Do we need to learn for the purpose of survival, just like our ancient ancestors did, or are we motivated by our questioning minds? It may be rather difficult to provide a definitive answer to these questions but we are aware of the fact that we have advanced, learnt and achieved a great deal over the past several thousand years. However, when we consider the fact that all our achievements have been limited to a very tiny corner (a planet with a diameter of 12,000 km) in this vast universe, we may wonder about the significance of what we have learnt.

Recent advances in Information Technology and its applications have certainly made an important contribution to our learning and information sharing. The Internet, in particular, has taken us to different heights in terms of information storage and communication.

Many universities, including the regional ones, are very active in attracting international students to their actual or virtual campuses. In most cases the language of instruction is not the same as students' mother tongue. Whether or not choosing to learn in a different language is the learner's own choice is not the issue for discussion in this paper.

The main purpose is to explore ways of identifying the lowest common denominator in conveying the main messages in what is being taught. In order to determine what may be happening in the future, it would be necessary to take a look at what has happened in the past. So, let us provide a brief overview of the facilities, means and ways of human learning over the years. Discussions will then

attempt to promote thought about the future direction with a view to internationalisation of learning.

The Early Days

Around 40,000 years ago the direct ancestors of the modern man (Homo Sapiens) started populating many parts of the world. Our ancestors needed to learn ways to protect and feed themselves; and Mother Nature was, perhaps, the main learning facilitator for them. Information was available in an unsystematic manner through natural sources. For instance, observing nature and learning from it had to be the main approach to knowledge acquisition.

As time progressed, human beings learnt how to build tools and weapons, to hunt or fight, to domesticate animals and to grow crops, cultivate and irrigate. So, the questioning nature of the human mind and trying to find out and know more about what surrounded them motivated them to approach learning more systematically.

Evolution of Learning Facilities

A very important achievement was the devising of the means of recording information so that it could be archived for future reference or transferred to others. Writing was a significant step in the right direction. The earliest form of writing dates back to about 8000 years ago. Symbolic and pictographic writings such as hieroglyphics were gradually replaced by alphabetic ones which were based on sounding out or pronouncing words.

It was the beginning of the publicising of learning when this powerful medium (writing), which reflected our thoughts and ideas, was stored in a more organised fashion. The early libraries date back thousands of years. Perhaps the earliest library in the world was in Babylonia in the 21st Century BC and it contained clay tablets (*Concise Columbia Encyclopedia*). Although papermaking can be traced back to ancient China, it was probably introduced to Europe around and after the Middle Ages. Until then, books were made out of parchment and they were bound in an exquisite manner. Therefore, they had reasonably high price tags on them. The invention of printing by Johannes Gutenberg in the early 15th Century had a significant impact on the costs of books.

One of the notable ancient libraries was the Alexandria Library. See Bibliotheca Alexandrina (http://www.unesco.org/new/en/communication-and-information/access-to-knowledge/libraries/bibliotheca-alexandrina/). This library was built about 2300 years ago (in the fourth century BC). It became the world's first university. Scholars such as Euclid, Erastosthenes, Heron and Archimedes were associated with the Library and its colleges. The Library had a catalogue of around 700,000 listed and classified manuscripts.

Beginning of the Universities

One of the most important ancient academic institutes was the "Academy School of Philosophy". Plato established the Academy near Athens almost 2400 years agro. He taught at the Academy until his death. His non-sophist approach to teaching was motivated by his belief in the pursuit of truth.

The establishment of the universities can be traced back to the Middle Ages. Initially, these institutions were either ecclesiastical or had royal links. Some of the oldest universities in Europe include Oxford, Cambridge and Paris; these were established sometime in the 12th Century. Until the late 19th Century, women were not allowed to enter universities, and most of the medieval universities were developed to educate young men in law, religion and medicine.

According to the *Guide to Oxford* (n.d.), the three main introductory subjects to be learnt by students were Grammar, Rhetoric and Logic. They then moved on to reading Arithmetic, Geometry, Astronomy and Music as part of their Bachelor of Arts degree. Masters who undertook the teaching, usually hired rooms and charged students 3d (pence) for logic and 8d for Grammar. Students spent the mornings in the class and the afternoons were reserved for exercises and reflection. Teaching materials were mainly books. These books were quite expensive as they had to be copied by hand.

Text-based learning was the main approach until the Second World War when the US military introduced audiovisual learning. Its main applications included the use of maps, graphs and recorded audio and sound. When it became possible to incorporate sound and video features into computers, a new generation of audiovisual instruction was born. This was interactive multimedia-based teaching and learning.

Based on a survey[1] by the author, most High School students (about 58%) have a preference for visual learning with regard to statistics (see Figure 1).

This finding indicates that learning via multimedia, with interactive animations, appears to be an attractive approach in' new times'. Although the focus of the study was on statistics, there are likely to be many similarities and commonalities with other subjects which require data manipulation and model building. The next section presents knowledge as a basis of ideas. It then proposes innovative ways o transferring knowledge to learners.

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[1] This survey was a part of a formal research project funded by the Faculty of Business, University of Southern Queensland in 2002. The study was conducted by surveying year-12 students of ten High Schools in and around Toowoomba in Queensland. Both public and private schools were included in the study. The sample comprised 133 randomly selected students.

Students' Preferences

11% 31%

58%

□ verbal explanation
■ graphics
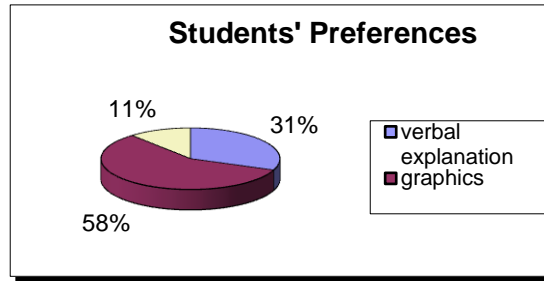
Figure 1 - Learning medium preferences of students

Development of Ideas

We may separate information from knowledge by adopting the Artificial Intelligence approach and define knowledge as a level above information. In other words, knowledge consists of pieces of information which can connect and communicate with each other in our brain. So, our mind and thought process interlink pieces of information to generate knowledge.

An example of relevant and still valid definition of knowledge is by Pigford (1995) who describes knowledge as refined information which can also include other elements such as concepts and heuristics for problem solving.

Let us use the analogy of a bookshop owner who has access to a great deal of information in his books. Our bookshop owner is not necessarily a knowledgeable person. If on the other hand, this bookshop owner has read most of the books and analysed the information, then he would be a "knowledgeable" person in topics related to his books. So, if we consider knowledge above information, then it would be logical to realise the role of knowledge in developing ideas and concepts.

As we are aware, one of the common ways of transferring knowledge and ideas to other sources is via language (spoken and written). Before we explore and present alternatives, let us discuss language in general.

In any given language, different phonemes specific to that language are put together in a sequence to produce new sounds which we call words. These words represent various objects, actions or descriptions.

The language of thought, however, is universal and is not based on a particular type of language. In a strictly natural way, we do not have to pronounce words in our thoughts to describe ideas. Our ideas can be "seen" in our thoughts. Perhaps these images are like Plato's Forms (*Plato's Republic*) or Aristotles' Essences (*De-Anima*).

As a multi-lingual person, the author often switches between. at least, five different languages. If the author is asked to identify the language of his thoughts, he would not be able to provide an exact answer. However, he may be able to force himself to choose a language and create the thoughts in a sequential manner

by mentally "sounding out" words of that language to represent various objects or actions.

We know that the trains of thought run in parallel in our mind. With the "eyes" of our mind we visualise an image of an idea. This image may consist of a number of sub-images, which are linked to each other. Could we somehow, transfer the blueprint of an idea to a learner in an almost original format? If we could transfer our thoughts in a more direct manner to other sources or people without the use of intermediate conversions then a great deal of time and effort would be saved. Using new technologies, one day, we may be able to transfer large amounts of information (data) and the necessary mental and physical skills to another person directly too.

Interfacing the Human Brain with Computers

We can create the most sophisticated animations and multimedia in our thoughts as we can select different types of thought-based "audio" and "visual" effects as well as "actors". In other words, we have an unlimited amount of resources to choose from to design our thought-based multimedia system.

We can create the best animation and multimedia in our thoughts; and then utilise the technology to capture and store them directly. Therefore, the technology can play a significant role in transferring our knowledge and ideas onto storage devices for future reference and other people's use. As suggested by Hawking (2001), the power of computing has been doubling every 18 months. The availability of sophisticated and almost human-like features on the modern handheld devices and smart phones is a clear indication of this phenomenon. As an example, one should consider how a compact smart phone such as Apple iPhone has advanced. One can now hold an almost meaningful conversation in at least four different languages and a few dialects with the device (see Apple 2012). It should be noted that this rapid enhancement in the computing power will change exponentially. Hence, the doubling will increase and the time period for the improvement will reduce at an exponential rate.

At the present time, we do not have the technology for any direct interface and transfers between humans and machines. Therefore, to be practical, we should focus on feasible approaches. For instance, we may compromise and encourage the use of more non-text materials in the form of concept maps and animations in the teaching materials. In other words, we should try and move away from the language-specific materials and instead rely on the universally understood means of presentation. The uses of less language-dependent teaching media may allow us to cross the language barriers and make a significant contribution towards internationalisation of learning.

For example, an idea about writing a paper can be illustrated graphically as shown in Figure 2. The Inspiration software (by Inspiration Software: http://www.inspiration.com/) was used to generate the graphics for this idea. The purpose is to demonstrate how the blueprint of an idea can be developed in a form which is not explicitly sequential. In other words, in a language which is as close as possible to the generic language and though mechanism of our brain. The labels

are used for the readers' identification purposes. Ideally, alphabetic tags should be redundant. Their meanings and descriptions should, instead, be incorporated into the "images" as 'Meta tags'.
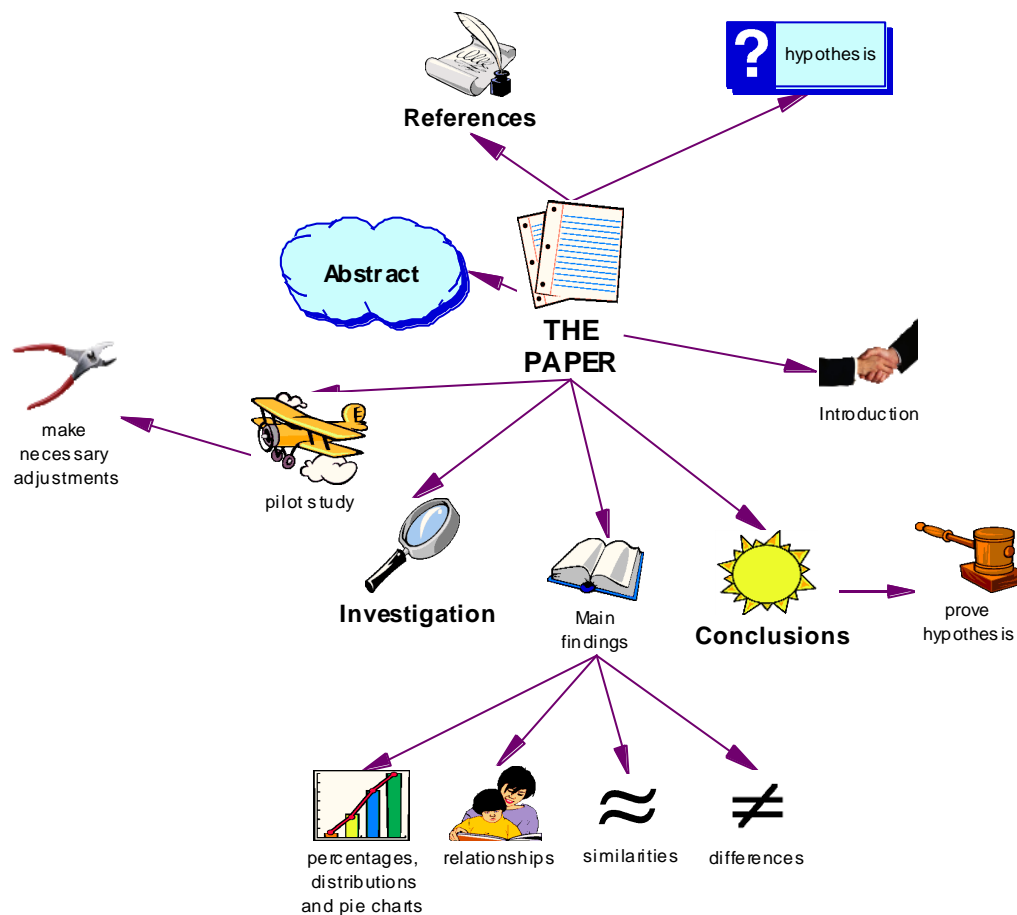
Figure 2 – An idea Map of Writing a Paper

Producing an animation of a concept in general, will certainly assist in communicating the underlying message to the learners. Modern computing and clever apps on handheld devices in conjunction with the Web based technologies can provide an ideal environment for production of such systems.

Conclusions

Learning facilities have certainly taken an interesting journey over the years and progressed to what we have now. The latest computing devices, handheld devices and smart phones computers, and the Internet and its related technologies have put a different 'colour' on learning. But can we predict how the technology will progress and impact the future of education?

Yes, perhaps future information technology products will facilitate capturing, digitising, storing and transferring human thoughts as an independent medium directly to other sources. Imagine the ability of directly transferring an animation of a concept to a learner in a 'thought file'. In this way, all the language dependent

barriers will be removed and we will achieve that ultimate level of internationalised teaching/learning.

This level of sophistication will not probably be achieved in a foreseeable future. However, more feasible approaches towards, at least partially; achieving this goal should be encouraged in design of educational materials.

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