

EFFICIENT E-LEARNING BY DINT OF COGNITIVE ABILITIES

By

AMUDHA ASAPH *

B. WILLIAM DHARMA RAJA **

* Research Scholar, Department of Education, Manonmaniam Sundaranar University, Tirunelveli, Tamilnadu, India.

** Head, Department of Education, Manonmaniam Sundaranar University, Tirunelveli, Tamilnadu, India.

ABSTRACT

The purpose of this article is to portray the effective ways of utilizing cognitive abilities for efficient e-learning. In the present scenario, globalization and advancements in technology have driven changes in the sphere of social, technological, economic environment and political landscapes at a rapid rate. E-learning is, one among the new technologies, which has become an important aspect of learning for all ages where, learning done over an electronic platform, allows the learner to learn almost anytime from anywhere. Cognitive abilities, the brain based skills allow to perform simple and complex tasks. Cognitive abilities categorized into lower order cognitive abilities include perception, attention and memory and higher order cognitive abilities include problem solving, decision making critical thinking, etc. Cognitive abilities enhance e-learning and vice-versa.

Keywords: Lower Order Cognitive Abilities, Higher Order Cognitive Abilities, E-learning.

INTRODUCTION

Technology is the medium of daily activities and power in modern societies. Every major technical change reverberates at many levels - Economic, Political, Religious and Cultural levels (Feenberg, 2012). Technology is neither good nor bad in itself, but it is the way that it is used that matters. The value of technology in teaching is its ability to meet better the newly emerging educational needs of an information society, and to improve the quality of learning (Bates, 2005). The student is now living in the age of informatics. In order to thrive in digitally driven economy, students of 21st century need digital age proficiencies. To make sensible information and to carry out the technological instructions, the learner need cognitive abilities. Critical thinking, deepen knowledge of learning and problem solving skills positively support the ongoing development of the individual.

E-Learning

Anybody will be able to learn anything, anywhere, at any time through a new development called e-learning (EL). It marshals computer and network technologies to the task of education. EL is the use of information and computer technologies to create learning experiences (Horton,

2006). EL refers to technology mediated learning in all its form (Larhib; Plaisent; Bernard; Maguiraga & Benslimane, 2005). It incorporates learning for degrees, work requirements and personal fulfilment, institutional and non-institutional accredited programmes, in formal and informal settings. It surpasses campus-based extensions to face-to-face classes.

EL encompasses any form of telecommunication and computer-based learning. As a working definition of EL, the Higher Education Funding Council for England (HEFCE) given that "the use of technologies in learning opportunities, encompassing flexible learning as well as distance learning; and the use of ICT as a communications and delivery tool, between individuals and groups, to support students and improve the management of learning" (Andrews & Haythornthwaite, 2007). EL comes in many forms like standalone courses, virtual-classroom courses, learning games and simulations, embedded e-learning, blended learning, mobile learning and knowledge management.

EL includes all levels of education from pre-school to secondary/high school, higher education and beyond. EL is taking classes via internet. More and more students take online classes, because of the flexibility and convenience it

provides. One can attend class sessions from the comfort of their home and complete assignments at almost any time of the day. Online classes are great for individuals who have a demanding work schedule and family responsibilities. In addition, online classes are more cost efficient because they don't require any commuting, allowing one to save on gas and the wear and tear of one's vehicle. Online courses are also great for individuals in the military or who travel frequently. The distance learning format allow students to pursue education through an out-of-state school without having to transfer residence. Adaptation of online or computer-based courses gives self-confidence to the students, and further, encourages taking responsibility for their independent and lifelong learning (Asaph & Raja, 2015 and 2016).

Cognitive Abilities

Cognitive abilities are the skills which are controlled by the brain which allow to carry out many different tasks from simple to highly complex (Asaph & Asaph, 2014). This main focus is on how one perceive, remember, reason, understand, solve problems and make decisions. Cognitive abilities help the individual to perform the tasks effectively and efficiently in daily life. They are the capabilities that make the individual responsible and allow interaction with the environment. Cognitive abilities will be able to provide a personalized path for each learner, based on their progress or responses (Askar & Altun, 2009).

Cognitive abilities help learners in their learning activities. It assists learners on identifying images, analyzing sounds, recapitulating information, searching facts in memory, learning scientifically, and arguing logically. By supporting in these ways, it encourages and inspires learners to do multiple activities in various fields.

Cognitive abilities are internal, the development of which demands a more sophisticated learning process. It encompasses a wide variety of abilities and is necessary for analyzing sound and images, recalling information, making associations between different pieces of information and maintaining focus on a given task. In general cognitive abilities can be categorized into lower order cognitive abilities and higher order cognitive abilities.

Lower Order Cognitive Abilities

The important aspects are the basic cognitive abilities like perception, attention and memory which the information, the stuff of cognition is obtained from the senses, transformed as the interpretive process of perception and thinking. It is stored and retrieved through the process of memory and used in problem solving and language (Lahey, 2002).

Higher Order Cognitive Abilities

Higher order cognitive abilities include reasoning, decision making, problem solving, critical thinking, etc. In each of these tasks, the information that has been received was processed and stored by basic cognitive processes which get used, combined, reformatted or manipulated by higher-order cognitive processes. These higher-order cognitive abilities are called as executive functions (Santrock, 2011). Executive functions are a set of mental processes that help to connect past experience with present action. It comprises abilities which enable an adolescent to respond in an adaptive way to novel situations and also serve as the basis of many cognitive abilities, emotional and social skills.

Cognitive Abilities & E-learning

The usage and implications of cognitive abilities in the technology enabled teaching-learning situations, allow the learners to access the navigations for their learning path based on their cognitive abilities, which aim at scaffolding learning in a constructivist perspective. Cognitive abilities assist learners in achieving learning objectives. These skills enable learners to diagnose their shortcomings related to subject contents and use of technological tools, and further, encourage them to work upon their shortcomings for the eradication or ramification. Thus, it asserts that, cognitive abilities are considered as essential elements in an EL environment (Sethy, 2012).

Memory plays a key role in EL, as it stores information temporarily and manipulates it to perform cognitive tasks like comprehension and reasoning. It is useful to keep recently presented information available over a short term. The development of higher level cognitive abilities like problem solving, decision making, critical thinking in e-learning can be facilitated with activities where students

have to identify, describe, compare and contrast, select among a few, express their own opinions. Hence, cognitive abilities are considered as essential elements in an EL environment.

Utilization of Cognitive Abilities for Effective E-Learning

Following are the effective EL activities that utilize cognitive abilities and avoid overloading the brain's capacity.

- Starting with an overview of the material and clear learning objectives for the learning session in the e-learning experience.
- Presenting the content in small concepts first in order to scaffold up to more difficult and complex concepts, giving the working memory time to assimilate the new information.
- Using verbal memory aids like mnemonic devices helps to remember the key concepts.
- Using Visual representations of complex concepts such as flow charts, graphic organisers, charts, or other visual representations is needed.
- Chunking the information into easy to digest sections with not more than 3 to 5 memorisation items in each chunk.
- Providing practice opportunities for learners to immediately put their new knowledge to use in a simulation.
- Linking difficult items with more meaningful ones, such as through the use of narratives or metaphors to remember well.
- Simplifying the language of the EL module, using active language and direct statements.
- Revising key objectives, key topics and critical information reinforce and strengthen retention.
- Striking Animated graphics, colours, music narration, video, graphic organisers and other aids can help learners engage in content when used sparingly.
- Encouraging the reflection and meta-cognition to move information out of the working memory into long-term memory (Sethy, 2012; Asaph & Raja, 2016).

Conclusion

Cognitive abilities are the brain based skills, including

attention, perception, reasoning, problem solving and decision making. These abilities can enhance EL and EL also enhances the cognitive abilities. EL is the effective means of developing the learners for higher education. However, many kinds of EL and computer-assisted teaching entering all arenas of education, from schools to work places. Hence, effective EL activities engage and help the learners to use their cognitive abilities to full capacity without overloading it. If the student is engaged with this type of EL activities, then he/she will learn, evolve, and grow to a novel heights in life. Nevertheless, this article provides an initial step for effective EL and paves way for further research in it.

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ABOUT THE AUTHORS

Amudha Asaph is a Full-time Research Scholar in the Department of Education at Manonmaniam Sundaranar University, Tirunelveli, Tamilnadu, India. She has completed her Postgraduate in English, Psychology and Education, and an M. Phil in Education. Her research interest is in Cognitive Science area. She served as resource person in four forums on enriching cognitive abilities in students. She has presented many papers in National and International level Conferences and also published a plethora of articles in her research area in various International Journals. She had been a Teacher in School and worked as a Teacher Educator in colleges of Education.



Dr. B. William Dharma Raja is a Head i/c in the Department of Education at Manonmaniam Sundaranar University, Tirunelveli, Tamilnadu, India. He is a passionate academician, research supervisor in Education, with more than 28 years of accomplished experience in teaching. He has published over 150 articles in National and International referred Journals. He has penned four books in the areas of Educational Technology, Cognitive Science, and Learning Disability which has received a laudable response among Teacher Educators.

