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Modern Cognitive Psychology & Applied Cognitive Psychology in the classroom proposal

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Abstract: Since the 20th Century, there has been a growing interest in the issue of cognitive psychologyand the functioning of the human brain. According to Eysenck and Keane, cognitive psychology is"aiming to understand human cognition observing the behavior of people performing various cognitivetasks". The purpose of this paper is to present the topic concerning how cognitive processes inlanguage influence students' presentations in the classroom. The research question of the paper iswhat linguistic devices should be applied to improve a student's performance?

Keywords: Cognitive Psychology, Applied Psychology, Human brain, behavior

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INTRODUCTION

People have always thought of language as a verbal means of expression without considering how cognitive systems are connected with such basic real-life activities. However, even a slight change in the word order of a sentence proves to be crucial for the recipient. Thus, students' success during project presentations depends not only on the level of preparation but on the correct usage of linguistic devices as well. According to Chomsky's theory, any existing language consists of surface and deep structures, where the latter represents cognitive happening in the human brain while absorbing information. Depending on a surface structure of a verbal message, there is a difference in actions undertaken by the mind to process the data correctly (Eysenck and Keane). Regarding this statement, some advice for students could be singled out. Firstly, the sentence structure should be concise and comprehensive. When trying to perceive the gist of a longer sentence, the human brain focuses on encoding the information and hence, loses the line of thought. To keep the attention of a classroom, the presenter should ask the audience rhetoric questions and state clear topic sentences, which express an intriguing idea. Considering the concern mentioned above, understanding fundamental cognitive processes is of crucial importance for a student. Correct implementation of linguistic devices into a presentation can change colleagues' and teacher's attitudes to the topic presented. Thus, the main point discussed in the paper might be of great use for high school and university students who have some issues with proper project preparation.

Cognitive psychology is a branch of psychology that investigates the mental abilities of human beings. These include how individuals think, perceive, remember, learn, reason, and understand different situations (Redelmeier, 2005). In the past, these mental processes were investigated by means of laboratory techniques. Nonetheless, it is apparent that the cognitive approach is important in today's scientific world. Since it mainly focuses on how individuals acquire, process, and store information, it is applied in understanding several developmental issues, social functioning, and the management of most mental

disorders. As a discipline in the larger field of cognitive science, cognitive psychology is closely related to other areas of study such as philosophy, linguistics, physics, neuroscience, anthropology, computer science, and biology. This modern system of psychology has undergone changes over time.

Renaissance philosophers of the seventeenth century attempted to use graphical representations to demonstrate the structure and operations of the human brain. However, empiricist philosophers were having imperative thoughts on the internal mental processes. One of them, David Hume, postulated that the internal creations and transformations occur in compliance with certain regulations and take time and effort to form.

Nowadays, this is the foundation for most investigations in cognitive psychology. In the nineteenth century, Wilhelm Wundt and Franciscus Cornelis Donders made further investigations on this matter. They performed experiments to measure the optimal reaction time needed for response. Further interpretations of these experiments gave rise to cognitive psychology five decades later.

In the mid twentieth century, radical change of events in research began to take place and cognitive psychology started to receive more attention from the researchers. It started to develop as a separate entity in the late 1950s and early 1960s when an intellectual movement known as the "cognitive revolution" was established.

During this time, scientists came up with theories of the mind founded on representations and computational procedures (Boeree, 2000). In 1959, Noam Chomsky sparked the debate by writing a book that criticized the theory of behaviorism. Behaviorism, which was heavily influenced by Ivan Pavlov and B.F. Skinner, was based on investigations without giving recourse to the internal mental processes whereas this was very fundamental to cognitive psychology.

For instance, inadequate understanding of the mental abilities resulted in no difference between memory and performance. This fell short of accounting for complex learning processes. Therefore, behaviorism was dropped as a predominant school of thought in scientific psychology and the cognitive approach replaced it. Donald Broadbent wrote a book, *Perception and Communication*, in 1958, which shade more light on cognitive psychology. From that time, the model that Broadbent proposed has been used as a standard for understanding information processing. He said that it is a method of thinking and reasoning regarding mental processes. This visualizes the mental processes as software operating on a computer, which is the brain.

Hypotheses alluded to types of input, symbolization, computation, and output and it was applied to understand language as the key mental knowledge symbolization system. In 1967, the publication of Ulric Neisser's book, *Cognitive Psychology,* also brought more prominence to cognitive approach in which he coined the term "cognitive psychology.' He describes individuals as dynamic information-processing systems whose internal mental processes can be represented in computational terms.

He theorized that cognitive approach is a point of view, which depicts the mind as comprising of a definite conceptual framework. In contrast to other views on cognitive physiology, his point of view about the subject goes past high-level concepts, for example, "reasoning." Other significant investigators in this field include Herbet Simon and Allen Newell.The cognitive revolution climaxed in the 1980s. During this time,

most researchers, for example, Daniel Dennet and artificial intelligence professionals like Douglas Hofstadter wrote major philosophical publications. The school of thought coming from cognitive psychology is referred to as cognitivism. It differs from the earlier physiological approaches in two main ways. First, the discipline recognizes the utilization of scientific methods. It generally fails to accept introspection as a suitable research method. Secondly, it extensively appreciates the presence of internal mental processes, for example, conviction, aspiration and inspiration. This is what distinguishes it from behavioral psychology.

However, the experimentation aspect of cognitive psychology together with its acknowledgement of the existence of internal process has attracted many criticisms from a number of researchers who say that it is incongruous. Similar to physics, cognitive psychology uses scientific methods as the main research instruments (Anissimov, 2010). These include the use of experiments and simulations or modeling techniques. Most of the time the predictions of the models are related to the behavior of people. Recently, cognitive neuroscience has been increasing its influence to the area of cognitive psychology. This can be attributed to the ready availability and widespread use of brain imaging systems.

There are four major approaches within cognitive physiology: “experimental cognitive psychology, cognitive science, cognitive neuropsychology, and cognitive neuroscience” (Davies, n.d.).Experimental cognitive psychology relates cognitive psychology to natural sciences and performing experiments on normal people, normally laboratory based studies. This approach has been for many years the engine room for advancement in the area of cognitive psychology as a whole. All the other three approaches have derived some benefits from it. Cognitive neuropsychology approach involves carrying out investigations of cognitive deterioration exhibited by victims suffering from brain injury. The results are then analyzed to understand the normal human cognition. Cognitive science is an area of study that aims to create computational models for comprehending human cognition.

Lastly, cognitive neuroscience approach focuses on the use of numerous methods for investigating brain functioning, for example, brain scans. This is then used to categorize the structures and processes employed in cognition. The four approaches are usually inter-connected. They give both self-regulating and corresponding insights in each sub-domain of cognitive psychology.

Major research areas in cognitive psychology include perception, attention, learning, and memory. Others are concept formation, judgment and decision, problem solving and language processing.

The research on perception aims at understanding the method of assembling subjective interpretations of proximal information from the surrounding by the use of psychophysical methods and brain imaging systems. The study of attention seeks to find a solution for information overload in cognitive processing systems. This is done by choosing some information for further processing. Cognitive psychologists investigate how learning enhances the response of people to their surroundings. Research on memory is based on its acquisition, storage, and retrieval.

The study of concept formation focuses on certain brain structures useful in construction of functionally relevant categories. The cognitive psychology of judgment and decision studies the process of human assessment and decision-making. Reasoning pertains to the process of assessing or developing logical

arguments. Investigations on problem solving focuses on the methods through which people pursue goal directed behavior. Cognitive psychology researchers investigate language processing by seeking to understand how humans acquire, comprehend, and produce language.

Cognitive psychology is applied in different research areas. A wide range of principles, representations, and algorithms has been developed due to this modern system of psychology. It has been applied to produce products ranging from custom-built expert systems to a collection of software and consumer electronics. These include production of computer interfaces that coordinate with users to assist them meet their communication requirements and function as intelligent agents. Knowledge representation and reasoning techniques have been successfully applied to advance flexible information infrastructure.

The financial industry has greatly benefitted by the development of intelligent tools. Cognitive psychology research has produced movable, smart robots, which are currently being used to perform duties mostly set aside for people. Bionic parts of the perceptual and cognitive neural system, for example, cochlear and retinal implants have been successfully produced thanks to cognitive psychology.

Generally, the field of psychology, and especially the area of experimental and theoretical psychology, has been in a state of turmoil, deconstruction, or reaffirmation. The area of cognitive psychology has undergone change over time. For example, the early cognitive psychologists said, “the brain is important, and it works like a digital computer” whereas the current cognitive psychologists say, “the brain is a complex product of evolution, and its strengths and weaknesses are the opposite of those of a digital computer” (Mann, 2002).In the area of cognitive psychology, the approach has been mostly of reconstruction within a vaguely defined tradition and deconstruction of other unrelated modes of approach.

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