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ANALYZING THE CONCEPT AND METHODOLOGY OF EFFICIENT COGNITIVE STYLE IN LEARNING

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Abstract:

Cognitive styles are persistent patterns of behaviour that determine how an individual acquires and processes information. The concept of cognitive styles is one that crosses many disciplines. Initially part of the realm of Jungian psychology, cognitive style research is now an important part of fields such as, education, computer programming, and information science. All of these fields have common goals for studying cognitive style, namely, how users process information and how systems can be better built to accommodate the diversity of the user population. The purpose of this paper is to highlight some of the research that has been done on user cognitive style and searching in virtual environments. This study which is informed by cognitive styles theories is a descriptive study that examined the interactive effects of cognitive styles and their influence on academic performance.

Keywords: Cognitive style, awareness, perception, reasoning, and judgment

1. INTRODUCTION

To understand cognitive style, a definition of cognition must first be understood. Cognition is a collection of mental processes that includes awareness, perception, reasoning, and judgment. The study of cognitive processes has its roots in the Gestalt psychology of Max Wertheimer, Wolfgang Köhler, and Kurt Koffka and in the studies of cognitive development in children by Jean Piaget during the 19th century. At the beginning of the 20th century, Carl Jung published Psychological Types (1923) where he postulated that personality comprised of three facets each with a continuum descriptor. The first facet, attitude, can range from extraversion, those personalities that are outgoing, to introversion, those personalities that are focused inward. The second facet, perception, deals with a person's method of understanding stimuli; an intuitive person is meaning-oriented while a sensory person is detail-oriented [1].

Cognitive styles can generally be described as the manner in which information is acquired and processed. Cognitive style measures do not indicate the content of the information but simply how the brain perceives and processes the information [2].

A number of cognitive styles have been identified and studied over the years. Field independence versus field dependence is probably the most well known style. It refers to a tendency to approach the environment in an analytical, as opposed to global, fashion. At a perceptual level, field independent personalities are able to distinguish figures as discrete from their backgrounds compared to field dependent individuals who experience events in an undifferentiated way. In addition, field dependent individuals have a greater social orientation relative to field independent personalities. Studies have identified a number connection between this cognitive style and learning (see Messick, 1978). For example, field independent individuals are likely to learn more effectively under conditions of instrinstic motivation (e.g., self-study) and are influenced less by social reinforcement [3].

The construct of spatial abilities was originally investigated in connection with the study of mechanical aptitude in the 1920s. In addition to the many factor analysis studies that have been conducted since the mid 1920s, many predictive studies were conducted to assess the role of spatial abilities in predicting job success (Ghiselli, 1966, 1973; Smith, 1964) and course grades in vocational and technical education (Lichert and Quasha, 1970; Martin, 1951). Spatial visualization is the ability to mentally rotate or manipulate a visual image.

Other cognitive styles that have been identified include:

- **Scanning -** differences in the extent and intensity of attention resulting in variations in the vividness of experience and the span of awareness.
- **Leveling versus sharpening** - individual variations in remembering that pertain to the distinctiveness of memories and the tendency to merge similar events .
- **Reflection versus impulsivity** - individual consistencies in the speed and adequacy with which alternative hypotheses are formed and responses made.
- **Conceptual differentiation** - differences in the tendency to categorize perceived similarities among stimuli in terms of separate concepts or dimensions.

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2. PURPOSE OF STUDY

For the analysis of the purpose of this study, consider a situation in which if students interact to a situation where the content presented is not in line with its cognitive style, learning style and do not know any learning strategy to cope the situation, will not be able to acquire the desired objectives [4] [8]. In this sense, we should consider the cognitive style, learning style and knowledge of students learning strategies to create desired behavioural changes in students in a cyclic process.

In regard to school, Riding (2000) describes that the activity is assigned to bring change in students' behaviour. **These behaviours can be categorized as** -

i. **Attainment/ achievement:** a degree of learning.

ii. **Learning behaviour:** attitude towards learning.

iii. **Conduct behaviour:** how he/she perform an activity.

iv. **Emotional behaviour:** feeling about him/herself and others.

The above different behavioural outcomes can lead us to the estimation of school success or failure. Riding (2000) further described that above behaviours in the classroom are affected by following factors

i. Home background

ii. Peer influence

iii. School

iv. Individual characteristics

The school cannot change altogether the home environment of the child. To some extent it can control the peer influence. The only thing left to do by the school is to change its philosophy, culture and helpfulness to adjust according to the inbuilt/acquired characteristics of the student. Let us discuss the one cited the previous characteristic by looking at the fundamental dimension; that is the cognitive style [9].

3. METHODOLOGY: MODELS OF COGNITIVE STYLES

Curry (1983) organizes nine major learning style measures into three onions like layers. The inner most layers consist of dimensions measuring personality. In the middle there are dimensions assessing/measuring information processing. The outermost layer is made up of individual instructional preferences. The degree of modification of styles decreases from the outermost layer to the central layer.

Miller (1985) described the cognitive style as "it is a consistent strategy that a person displays in attempting to solve problems. Zhang (2005) commented on the miller's model (1985) and suggested that cognitive styles exhibited, are arranged in subordination/subsidiary to analytic-holistic dimension. The Analytic aspect of the style gives birth to field independent, sharpening, convergence and serial information processing. The counterpart, holistic pole give rise to the field depended, leveler, diverger and wholistic information processing. In Miller's, viewpoint the analytic-holistic dimension give rise to individual cognitive styles which leads to durable, long term individual differences in cognitive processing but these do not bear absolute consistency. He arranged cognitive style into four orthogonal dimensions that give rise to differences in processing of information in individuals [5].

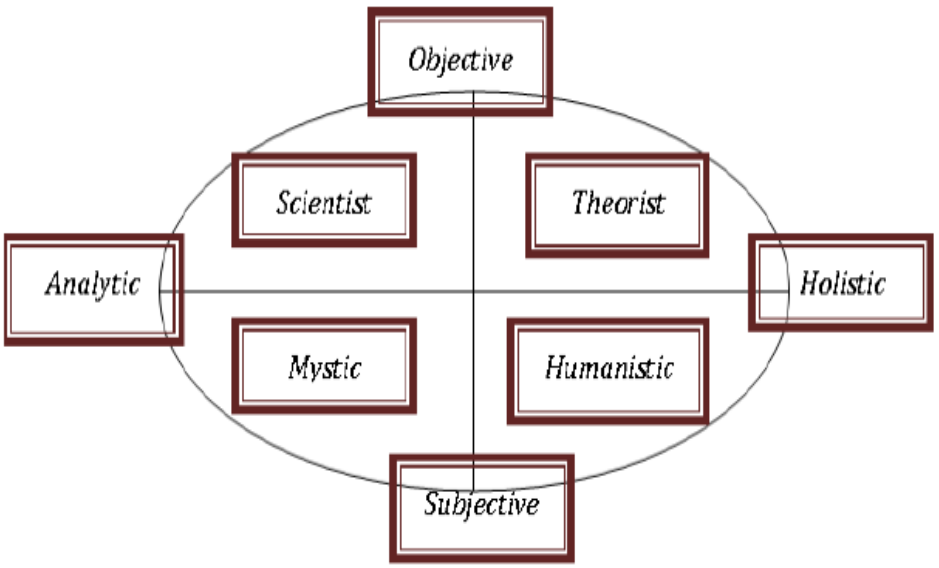

Figure No. 1: Miller Model of Cognitive Styles (1987)

According to Riding (2002), the way to view an event is affected by cognitive styles and this effect subsequently leads to, "how person responds, think and make decisions about life events." Cognitive styles affect attitudes about others. It is automatic respond to a situation. It is consistent in a person, it may not change, but when a person become aware of his/her style he/she may develop and use strategies to overcome or lower the weaknesses and utilize their strengths effectively Thus, there are two ways of this automatic response to an event. Individuals may take a whole view or even see things in parts. A Wholists see things in overall perspective and achieve total context appreciation. The analytics see an event as a sum of individual parts and can concentrate on one or two aspects of the situation. In the middle of these two extremes, there are intermediates having some advantages of both who lists and analysts. The wholists have blurred whole view and analytics have distorted view of an aspect. Wholists see the whole picture so they are less likely to have extreme views as compare to analysts [6].

In 2009, (Sadler) proposed that there are two basic information processing modes that may be used in the process of decision making and problem solving; intuitive and analytic styles. The intuitive mode is considered more affective, fast in operation but has slow formation. The analytic mode is not affective, relatively slow in operation but has fast formation. An Intuitive style is cognitively undemanding, is imagistic and can never be consciously available. The Analytic mode is cognitively demanding, symbolic and consciously available. Duplex model has the characteristic of changeability in its proposed styles. A person can develop inclination toward usage of two modes when encounter over a variety of specific tasks over a period. A Versatile style is formed at flexible level, but at specialized level [7].

4. CONCLUSION

Psychologists, educationists, corporate researchers and social scientists researched on many aspects of cognitive styles. Multidisciplinary applications of cognitive styles helped researchers to explain individual differences in receiving information, responding to the situation and development of different attitudes. Efforts to explain real world situations in perspective of cognitive style are the result of people's belief that cognitive styles are responsible for variations in performance that are considered beyond the explanation of abilities.

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