ETHIOPIAN INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH

eISSN: 2349-5715 pISSN: 2349-5707

Volume: 11, Issue 12, December-2024 SJIF 2019: 4.702 2020: 4.737 2021: 5.071 2022: 4.919 2023: 6.980 2024: 7,662

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HIGH DEVELOPMENT OF COGNITIVE ABILITIES

Abstract: Intelligence and creativity are two fundamental aspects of the human mind that underlie many achievements in science, art and technology. Despite the fact that these concepts are often perceived as separate qualities, they are deeply connected and able to interact on a variety of levels. In this article, we will try to consider what intelligence and creativity are, how they develop and why their combination is of great importance for personal growth and the progress of society.

Keywords: Intelligence, functions of intelligence, measurement of intelligence, creativity, abilities, verbal and non-verbal, giftedness. the concept of intelligence .

Abstract: Intelligence and creativity are two fundamental aspects of the human mind that underlie many achievements in science, art and technology. Despite the fact that these concepts are often perceived as separate qualities, they are deeply connected and able to interact on a variety of levels. In this article, we will try to consider what intelligence and creativity are, how they develop and why their combination is of great importance for personal growth and the progress of society.

Intelligence is traditionally defined as a person's ability to solve problems, adapt to new conditions, extract knowledge from experience and apply it in practice. It includes components such as logical thinking, memory, attention, and learning ability. The so-called "emotional intelligence" is also important, which helps not only to cope with intellectual tasks, but also to interact effectively with other people.

Intelligence is considered by many researchers as the equivalent of the concept of general giftedness, as the ability to learn and work in general, regardless of their content. This is the point of view held by Binet, Spearman, Rubinstein. Intelligence is considered as a mechanism of adaptation to the environment, for example, Piaget writes that developed intelligence manifests itself in universal adaptability, structuring equilibrium relations between the individual and the environment. The most complete, from a meaningful point of view, is Wexler's definition of intelligence, he understands intelligence as the ability to behave appropriately, think rationally and interact effectively with the outside world. Following Vernon, Wexler adheres to a hierarchical model of intelligence, in which the factor of general intelligence, or general (G), the main group factors are distinguished: verbal and nonverbal (or spatial, practical and technical), as well as partial factors (including individual perceptual and sensory abilities). Verbal intelligence to a large extent depends on socialization, familiarization with culture, the level of knowledge and intellectual skills. Kettel calls this substructure of intelligence connected or crystallized intelligence. Non-verbal, practical and technical intelligence (or free, fluid) does not depend on familiarization with culture, its level is determined by the general development of the tertiary or associative zones of the cerebral cortex. This intelligence is manifested in solving perceptual problems, when it is necessary to perceive and find the ratio of elements. Partial factors are determined by the level of development of individual sensory and motor zones of the cerebral cortex. The nature and functions of intelligence. The main approaches to the interpretation of the nature of intelligence:

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1. Sociocultural approach (intelligence as a result of the process of socialization, as well as the influence of culture in general).

2. The genetic approach (intelligence as a consequence of increasing adaptation to environmental requirements in natural conditions of human interaction with the outside world).

3. The procedural - activity approach (intelligence as a special form of human activity).

4. Educational approach (intelligence as a product of purposeful learning).

5. Information approach (intelligence as a set of elementary information processing processes).

6. The phenomenological approach (intelligence as a special form of consciousness content).

7. A structural-level approach (intelligence as a system of different-level cognitive processes).

8. Regulatory approach (intelligence as a factor of self-regulation of mental activity).

There are three varieties in understanding the function of intelligence: 1) the ability to learn, 2) the operation of symbols, 3) the ability to actively master the patterns of reality around us.

The structure of intelligence. The operational theory of intelligence J.Piaget.According to J. Piaget, intelligence is the most perfect form of adaptation of an organism to the environment, representing the unity of the assimilation process (reproduction of environmental elements in the psyche of the subject in the form of cognitive mental circuits) and the process of accommodation (changing these cognitive circuits depending on the requirements of the objective world). Thus, the essence of intelligence lies in the ability to carry out flexible and at the same time stable adaptation to physical and social reality, and its main purpose is to structure (organize) human interaction with the environment.

M. A. Kholodnaya identifies a minimum of basic properties of intelligence: "1) level properties characterizing the achieved level of development of individual cognitive functions (both verbal and nonverbal), and presentations of reality underlying the processes (sensory difference, RAM and long-term memory, volume and distribution of attention, awareness in a certain content area, and etc.); 2) combinatorial properties characterized by the ability to identify and form various kinds of connections and relationships in the broadest sense of the word — the ability to combine in various combinations (spatial-temporal, causal, categorical-meaningful) components of experience; 3) procedural properties characterizing the operational composition, methods and reflection of intellectual activity up to the level of elementary information processes; 4) regulatory properties characterizing the effects of coordination, management and control of mental activity provided by intelligence. The classification of types of intelligence is Cold: general – private intellectual abilities, convergent – divergent, reproductive – productive, crystallized (verbal) – fluid (non-verbal) Measurement of intelligence. The methods of intelligence research are roughly divided into: experimental, survey and creative (intuitive). The first ones give the fastest and clearest result. The latter allow a series of correlated data, but are slightly more difficult to process. The third type is placed in a special class, is the most informative, but presents significant difficulties in processing the result and its interpretation, moreover, the results obtained using this group of techniques are not always clearly related to similar results of another group. Binet and Simon created the first tests, traditionally called intelligence tests. They came up with scales for selecting mentally retarded children. The first scale consisted of 30 tests, arranged in ascending order of difficulty and covering a wide range of the range of functions. Judgment, understanding, and reasoning were highlighted, which Binet considered to be the main components of intelligence. In the second scale, the number of tests was increased, and all of them were grouped by

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age levels based on their performance by about 300 normal children between the ages of 3 and 13. The mental age, or the mental level corresponding to the age of normal children, whose indicators it was equal, was used as an indicator. Binet's tests proved to be very successful and were very quickly adopted by English and American psychologists. The test results were fixed in one concept, the so-called “intelligence quotient" or IQ. Historically, IQ has been designated as the proportion of mental development and chronological age multiplied by 100. Nowadays, IQ is measured in other ways, but still on a scale of 100 units with a standard deviation of 16. The concept and concepts of creativity.Creativity is a creative, creative, innovative activity. People can be creative in different ways. Some are creative in the professional field, without being so in their personal lives. Many writers consider creativity to be part of general intelligence, but differences in creativity among people with equal IQs refute this. Creativity is indeed related to intelligence and IQ, but IQ tests are not able to measure creativity directly. Creativity is the inventiveness of thinking ("creativity"). Creativity is the creative abilities of an individual, characterized by a willingness to produce fundamentally new ideas and included in the structure of giftedness as an independent factor. According to P. Torrence, creativity includes an increased sensitivity to problems, to a lack or inconsistency of knowledge, actions to identify these problems, to find solutions based on hypotheses, to test and change hypotheses, to formulate the result of a solution. Various tests of divergent thinking, personality questionnaires, and performance analysis are used to assess creativity. In order to promote the development of creative thinking, learning situations can be used that are characterized by incompleteness or openness to integrating new elements, while students are encouraged to formulate a variety of questions. Creativity by Torrence (from Latin creatio creation): the individual becomes sensitive to problems, deficits and gaps in knowledge, to the unification of diverse information, to the disharmony of elements; identifies related problems; seeks their solutions, puts forward assumptions and hypotheses about the possibility of solutions; checks and refutes these hypotheses; modifies them; rechecks them; finally substantiates the result. Divergent and convergent thinking. Divergent thinking (from Latin. divergere to diverge) a form of thinking. It is based on the strategy of generating multiple solutions to a single problem. Convergent thinking (from Latin convergere to converge) is a form of thinking. It is based on a strategy of precise use of previously learned algorithms for solving a certain problem, i.e. when instructions are given on the sequence and content of elementary operations for solving this problem. Guilford stated that two types of operations can be involved in the process of extracting information from memory – convergent playback and divergent playback. Convergent reproduction is the search for specific information to solve a problem that requires one, logically necessary, correct answer. Divergent reproduction is required to solve problems that may have many different and equally acceptable solutions. Guilford stated that creativity involves divergent thinking, represented by fluency, flexibility and originality of thought processes. People with well-developed abilities to form and perceive ideas develop many more ways to solve a problem in a short time. They are highly flexible and can easily switch from one approach to solving a problem to another, a new one, if the problem and its conditions are new and require an appropriate approach. Original people can create new and universal assumptions and ideas (fluency), “break boundaries” to attack problems from a new position (flexibility) and develop new and truly unique ideas (originality). Characteristics of a creative personality. Creative people have the following personality traits: independence – personal standards are more important than group standards, non–conformity of assessments and judgments; openness of mind - willingness to believe their own and others' fantasies, receptivity to new and unusual; high tolerance to uncertain and insoluble situations, constructive activity in these situations; developed aesthetic sense, striving for beauty. Diagnostics of creativity. Torrence has developed many tests to measure divergent thinking. They include tasks for creating new ways to use boxes or bricks, or for suggestions on how to improve a stuffed animal so that it is easier to play with

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it. Reactions and responses to these tasks were the main criteria for measuring fluency, flexibility and originality. These tests have a low correlation, but are of great importance in relation to IQ tests. Torrance's research shows that children with low IQs did not perform well in divergent reproduction tests. The people who scored the highest in the divergent thinking tests usually had an average level of intelligence, but a higher IQ does not guarantee that the ability to divergent reproduction will be very good. Getzels and Jackson were at the very origins of the study of the relationship between divergent thinking, intelligence and creative action. In a group organized mainly of the most outstanding students, they found striking differences between students with the highest levels of intelligence and with low levels of divergent thinking and students with outstanding indicators of divergent thinking, but with low IQ scores.

Conclusion:

Intelligence and creativity are not only two key aspects of cognitive abilities, but also complementary components that play an important role in achieving personal and social success. Intelligence allows you to analyze information, systematize knowledge and solve complex problems, while creativity opens up new horizons, allowing you to think outside the box and find original solutions. Together they create a synergy that makes great discoveries and breakthroughs possible.

The development of these qualities is an important part of personal growth and professional realization. It is important to understand that intelligence and creativity are not fixed characteristics, but abilities that can and should be developed throughout life. By investing in self-development, using various methods and approaches, we can not only increase our intellectual flexibility, but also unleash our creative potential. Ultimately, the combination of highly developed intelligence and vibrant creativity allows us not only to solve the challenges we face, but also to pave new paths for future generations.

Thus, in order to achieve the maximum development of cognitive abilities, it is important to strive for a harmonious combination of rational thinking and creative initiative. This is the key to effective adaptation in a rapidly changing world and an important component of progress at all levels — from individual achievements to global transformations.

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