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A NOTE ON THE COGNITIVE ABILITIES TOWARD NATURAL ECOSYSTEM OF GIFTED AND TALENTED MUSLIM STUDENTS

Nota Berkaitan Kebolehan Kognitif Pelajar Pintar dan Berbakat Muslim terhadap Ekosistem Semulajadi

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Abstract

Studies on gifted and talented are critically underrated in this leading-edge world. Humans now has become intellectual than ever and along the way has been moving forward ever since. Cognitive abilities including the skill on the memory, attention, reasoning and many more were the best approaches to identified the gifted and talented students. Gifted and talented students have a different level of ability and different levels of cognitive skills, that is known as the measurement of cognitive ability. In the consideration of a previous study that compares the cognitive abilities within two different exposures; natural ecosystem and urban districts, in quest to find the best natural ecosystem to be exposed to gifted and talented Muslim students in Kolej GENIUS Insan. The main objective of this research is to discuss on the cognitive abilities toward ecosystem including forest, river and lake that stimulate gifted and talented students' brain functions. The choice made is based on a verse in the Holy Quran, in which it is said that river is made supposedly to be a nerve-calmer and brain stimulator. The expecting result is that the natural ecosystem will affect more effective on the cognitive ability rather than urban environment.

Keywords: cognitive abilities, natural ecosystem, gifted and talented.

Abstrak

Kajian tentang pelajar pintar dan berbakat sangat kritikal sedangkan negara menuju era kemajuan. Manusia kini telah menjadi semakin intelektual berbanding zaman dahulu dan telah maju ke hadapan sejak itu. Keupayaan kognitif termasuk kemahiran untuk mengingat, perhatian, pemikiran dan banyak lagi yang merupakan pendekatan yang terbaik untuk mengenal pasti pelajar pintar dan berbakat. Pelajar pintar dan berbakat mempunyai tahap keupayaan dan kognitif yang berbeza, yang dikenali sebagai pengukuran keupayaan kognitif. Di dalam pertimbangan kajian yang terdahulu yang membandingkan keupayaan kognitif kepada dua pendedahan suasana yang berbeza; ekosistem semula jadi dan kawasan bandar, bertujuan untuk mengenal pasti ekosistem semula jadi yang terbaik untuk didedahkan kepada pelajar pintar dan berbakat Muslim di Kolej GENIUS Insan. Objektif utama kajian ini adalah untuk membincangkan tentang kesan keupayaan kognitif terhadap hutan, sungai dan tasik yang merangsang fungsi otak pelajar pintar dan berbakat. Pilihan ini dibuat berdasarkan ayat Al-Quran, yang menyatakan sungai dijadikan sebagai peransang otak dan menenangkan saraf di dalam badan manusia. Keputusan yang dijangkakan adalah ekosistem semula jadi akan memberi kesan yang lebih baik kepada keupayaan kognitif berbanding kawasan bandar.

Kata kunci: Kebolehan kognitif, ekosistem semulajadi, pintar dan berbakat.

INTRODUCTION

Human needs to think, process information and learn from daily basis. This requires the cognitive abilities which consist of the skills of memory, logical thinking, linguistic thinking, auditory perception and such. These abilities or skills are different for each and every one of the population due to different levels of intelligence quotient and various outer factors such as the calmness and the surroundings. Gifted and talented students are said to have a higher level of ability as they possess a higher level of intelligence quotient.

Throughout the years there has a few definitions proposed by different experts such as the Renzulli (2011) model, where he characterized gifted and talented student with high task commitment and high level of creativity. Another example is the Tannenbaum Model (1996), in which he classified gifted and talented students into two, producer and performer. Unlike the definition of the gifted and talented students, the studies on how they can improve their cognitive functions other than mental training.

Therefore, our studies will help the gifted and talented students with identifying the factors to stimulate their brains to function smoother and faster. This study will also be guided with guidance provided in Holy Quran. In one of the verses of the Quran,

Allah said how the nature is calming and helps us to think better. Lastly, our paper will discuss the cognitive ability of the gifted and talented students and how different natural ecosystems affect their cognitive function.

GIFTED AND TALENTED STUDENTS

A person with a higher level of task commitment and creativity or overall general abilities can be identified as a gifted and talented person. Gagné (1991) made a model which separates the term gifted and talented as he said 'not synonymously and cannot be utilized reciprocally'. While Siegle et. al. (2004) takes the results of his studies that approach more to the hypothesis of ability improvement rather than a lateral meaning of skills. It is also found that gifted children are more accurate than non-gifted children when solving problems that require them to retrieve from memories and time limited question. Studies shown that having a higher intelligence quotient does not always mean a faster performance rather it is the quality and accuracy of the gifted and talented students that sets the aside from the others. Gifted and talented students, when challenged, tend to work very hard and often get over-frustrated than they should be as they have a higher self-efficacy and self-competence build in themselves.

Giftedness itself can be categorized into four levels; mildly, moderately, highly and exceptionally. Students who are mildly gifted, the have the intelligence quotient that are slightly above average populating around 1 in 40 students in the world. They are fast learners, has a good memory and sometimes think of ideas that are out of the box. While the ones that are moderately gifted with the IQ around 140-145 has the population of 1 in 1000 in the world. They found the curriculum set for their age as unrewarding or not challenging enough.

As for highly gifted, they would require a different curriculum to enhance their knowledge to the fullest with new challenges and an advanced study way ahead than their classmates with the same age. These students populate the world around 1 out of 10,000. As for the last level of giftedness, exceptionally, has the IQ range of 160 and above and are in risk as they are very rare in the population. One study found that students that are exceptionally gifted can lead big and special problems without any help from facilitators.

COGNITIVE ABILITY

Cognitive ability is the process of translating each stimulus into an internal representation upon which further mental operations can be formed.

Attention Restoration Theory (ART) in Berman et. al. (1995) conducted a study on approach to identifying and restoring a cognitive mechanism. ART is based on past

research showing the separation of attention that is captured by inherently intriguing or important stimuli, and voluntary or directed attention, where the attention is directed by cognitive-control processes.

Cognitive functions of the brain are said to be structured about by a general factor; general intelligence and supported by several specific intelligence factors such as mathematical factors, verbal skills and other intelligence. These wide generic factors are defined by Spearman (1927) are the abilities of an individual of their capability of face experiences and educe relation and correlates. General intelligence as said Gottfredson (1997) is not just learning from a book or from a lecture, it's how to receive the information gain, or how to 'figure out' or 'making sense' from the information into a knowledge that can be processed. Furthermore, it involves the ability to reason, think abstractly, plan, problem-solving, process complex ideas, learning quickly and learn from experiences.

In a previous research on how cognitive ability and character skills influence behavior, it is founded that cognitive ability played a bigger influence on how an individual behavior. Thus, strengthening the statement that cognitive ability is the best general predictor of a person's chance of succeed in what they are doing. In integrating on effect and learning, beliefs and aesthetics are large correlates with the performances of a student.

Gill et. al. (2016) conducted a research to study the impact of cognitive ability towards behavior and success. Each session included 30 minutes of computerized test on cognitive ability using Raven's Progressive Matrices. Carpenter et. al. (1990) identified a test that analyse multiple choice question which consists of non-verbal multiple-choice questions. Raven test scores have been found to correlate with few errors done by Charness et. al. (2011) and it more accurate with the theory by Burks et. al. (2009). In the test, the question was in the form of making the participants to identify the missing images that completes a visual pattern. The test was divided into part A until part E, which part A and part B are the easier parts and part C until part E using the Standard Progressive Matrices Plus version of the Raven test where the level of difficulty lies between that of the Standard Progressive Matrices and the Advanced Progressive Matrices. Each part has 12 questions each and there are five parts thus, there are 60 questions in the test. Subjects were given three minutes for each of the easy parts (part A and part B) and eight minutes for each of part C, part D, and part E and if time permitting subjects could move back and forth and they even can change their previous answers.

McFall (2013) has done a research on searching for the best methods for measuring human cognitive ability. There are several categories of methods that had been

discovered. One of the methods is by interviewing the chosen subjects. This method was said to be a direct connection between the researchers and the subjects tested. This method gives the subjects to answer the questions more freely thus creating better results as there is more detail received. As great as the method is, there are a few issues that can disturb the process and this will give impure answers received. To avoid this disturbance, here are some of the rules to be followed; Interviewers were told to minimise disturbances and interruptions in the administration of the cognitive ability module. During the interview, the interviews have to record some of these supplementary variables;

1. Presence of others and whether they were household members.
2. Receipt of assistance.
3. Problems with the test, e.g., difficulty hearing, interruptions.
4. Use of aids, e.g., paper and pencil.
5. Reasons for refusal or stopping a test

Language barrier is also an issue to overcome scenarios where the subject refuses to answer as there are language differences.

Another method investigated by McFall (2013) is perceived or self-rated memory. The method mentioned provides information on the person's subjective memory abilities which can help represent performance that cannot be captured by objective testing. In the test, one question was asked to the subject of their perception about her or his memory. Some view self-rated memory correlates to metacognition. The interviewer will introduce the module to the subject; this interview was to measure the memory and ability to process in daily life. In the next section of the interview, some memory and concentration tasks was conducted.

Memory is one of the components that affect cognitive ability measurements. The examples memory test is immediate and delayed word. This recall task assesses memory on an event or episode. Recall process may be affected by age factors as retrieval processing source are not available in older folks. For this recall test, a computer or a device such as computers, tablets or iPad is used to read a list consists of 10 words with a constant speed. The words were only read once with a slow steady rate of two seconds per word and will not be repeated. After a certain period of time, the subjects are asked to recall the list of words in order again. The results will be strikingly different from the first attempt.

HOLY QURAN: THE NATURAL ECOSYSTEM

Observation on the creation through the Al-Quran is the privilege from Allah to the human and animals. As Allah said in Surah An-Nahl, verses 14 to 18:

It is He Who has made the sea subject, that you may eat thereof flesh that is fresh and tender, and that you may extract therefrom ornaments to wear; and thou seest the ships therein that plough the waves, that you may seek (thus) of the bounty of Allah and that you may be grateful; And He has set up on the earth mountains standing firm, lest it should shake with you; and rivers and roads; that you may guide yourselves; And marks and sign-posts; and by the stars (men) guide themselves; Is then He Who creates like one that creates not? Will you not receive reminders? If you would count up the favours of Allah, never would you be able to number them: for Allah is Oft-Forgiving, Most Merciful. (Surah An-Nahl 16: 14-18).

Allah has created mountains, flowing rivers, protecting clouds, relaxing yet magical forests and many more with its own benefits. Natural environment or ecosystem provides the green, relaxing yet magical surrounding that gave benefits to the human beings from the beginning of time.

As the fifths' verse in the Surah An-Nahl, mountains, creating the environment from a clump of dirt and forest, covered with plants and big trees, making mountains an unbeatable structure with the living creations. Providing higher ground surrounding, mountain is always the specular places to be visit. Furthermore, this verses mentioned the rivers created has a hidden benefit. The sounds of the rivers be as therapeutic, it is proving that the rivers are more than the water sources to human and living organism. By listening the sound of rivers during study session is proven to form of meditation and relaxation which triggers their mind to be in a relax state, allowing them to be more focus and process information gained in a more stable state of mind.

These situations stimulate the cognitive ability to a higher level of their mind. This makes the brain responses to stimuli are faster, thus making the information receive be processed faster.

CONCLUSION

In this paper, the introduction and approaches on the cognitive abilities, gifted and talented students and natural environment in Holy Quran are discussed. Gifted and talented Muslim students are the person with more efficient and less effort needed of brain function to process an information received. They are also having higher cognitive abilities but its changes over time and conditions. The different natural ecosystem provides different landscape, noise, scents and surrounding, it is also will affect the brain function differently. How different does the effect of the various exposure of natural ecosystem to gifted and talented Muslim students' cognitive abilities? The question shall be answered once the study is completed.

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