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Pattern and Relationship Between Multiple Intelligences, Personality Traits and Critical Thinking Skills Among High Achievers in Malaysia

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Abstract. Research findings have shown that learners encountered many learning difficulties. However, for effective learning one has to know oneself and having knowledge about one's strengths and weaknesses. The process of teaching and learning will be more effective and meaningful when teachers and learners know their potential, their unique styles, strengths and weaknesses in learning. Howard Gardner's theory of multiple intelligences is a psychological and educational theory espousing that ten types of "intelligence" exist in humans, each relating to a different sphere of human life and activity. Nowadays, how learners interpret knowledge differs greatly from what used to be perceived by the teachers. The manner in which teachers deliver the knowledge may not match the expectations of the learners, thus results in teachers' instructional methods became inefficient and learners failed to learn. The dramatic change in learners should be balanced by an equal change in teachers' instruction especially among high achievers. This paper examines the Multiple Intelligences pattern, personality traits and critical thinking skills among the high achievers. The population involved were high achievers from all over Malaysia comprising of 1268 students selected at random from secondary schools enrolling high achievers such as boarding schools, Mara Science College, as well as religious schools nationwide. These data include the frequency, percentage and level of achievement and relationship for aspects of personality types, multiple intelligences and critical thinking skills of the high achievers. The Multiple Intelligences Inventory was modified and validated according to the research needs. The results showed that high achievers possess the following intelligences: Intrapersonal > Existential > Bodily/Kinesthetic > Logical/Mathematical > Visual/Spatial > Interpersonal > Verbal/Linguistic > Naturalist > Musical/Rhythmic. The personality traits of the high achievers are in the order EN > ES > IS > IN. Whilst their critical thinking skills are in the order of EA > DE > RA > IF > IT. The results also displayed some significant correlations between multiple intelligences, personality traits and critical thinking skills of high achievers.

Keywords: high achiever, multiple intelligences, Personality Traits and Critical Thinking Skills

1. An Overview of High Achiever

An educational innovation towards the end of the century was the recognition that students learn differently from each other. With this revelation, a lot of groundbreaking work has laid a solid foundation for understanding individual differences, such as personality types, learning styles, and multiple intelligences. As we enter the new millennium, differentiation has become enormously important in the delivery of services to all students (Silverman, 2000). Unfortunately methods of instruction remain more or less the same for the normal students as well as the high achievers in the classroom. This causes much frustration especially to the high achievers as a result of the mismatch between their learning and instruction. Thus, a teacher or an educator has to bear in mind that (Tatyana, 2006):

- People differ consistently from each other in their preferences (e.g., emotional, environmental) for certain ways of processing information (the 'individual differences' assumption).
- These individual differences are measurable.

- Matching or mismatching students' learning styles with instructional techniques affects learning significantly (the 'matching hypothesis')

According to Marland (1972) in S. Deborah, (1998: pg. 277), high achievers and talented students are those identified by professionally qualified persons who by virtue of outstanding abilities are capable of high performance. These are students who require differentiated educational programs and services beyond those normally provided by the regular school program in order to realize their contribution to self and society. Students capable of high performance include those with demonstrated achievement and/or potential ability in any of the following areas singly or in combination:

- General intellectual aptitude
- Specific academic aptitude
- Creative or productive thinking
- Leadership ability
- Visual and performing arts

Thus high achievers have different needs compared to the normal students. However, many educators including teachers in schools and instructors in institution of higher education did not recognize this difference, thus are generally disappointed at their attitude towards knowledge and their lack of motivation to learn. High achievers come to the class unprepared and are easily bored by the traditional teaching method that is being practiced by teachers. As a result, teachers are not grooming the high achievers and also high achievers are not developing their own abilities. The failure of helping the high achievers to develop and expand their abilities is a lost to the country as well as the community.

It is clear that teachers or the academic instructors should change their teaching strategies and materials to cater to high achievers' needs and preferences. For instance, Multiple Intelligence proposed by Howard Gardner (1983) implies that learning or teaching should focus on the particular intelligences of each learner. When asked how educators should implement the theory of multiple intelligences, Gardner says, "It's very important that a teacher take individual differences among kids very seriously. The bottom line is a deep interest in children and how their minds are different from one another, and in helping them use their minds well." An awareness of multiple-intelligence theory has stimulated teachers to find more ways of helping all students in their classes. Many research related to this theory indicate that students' multiple intelligences contribute significant differences in their learning output. So, it is critically important that a better understanding of students' intelligences especially for the high achievers, will allow appropriate instructional materials or strategies to be developed according to the diversity of the learners.

Patterns of personality, critical thinking and patterns of multiple intelligences are closely related to factors such as attitude, opportunities, interests, unique abilities and learning style. These factors are very important to help students and educators because they act as vital influence on academic achievement. Teaching and learning methods can be designed and modified to produce students' excellent academic achievement by knowing their pattern of personality, critical thinking and patterns of multiple intelligences. Much research on multiple intelligences, personality traits and critical thinking skills were conducted on normal students. The high achievers are considered as learners without learning difficulties and are therefore given less attention. As a result full potential of these group are not tapped. Therefore, the purpose of this study was to identify patterns of personality, critical thinking and patterns of multiple intelligences among high achievers. In line with the above purpose, this study comprised two research objectives:

- To identify patterns of personality, multiple intelligences and creative and critical thinking skills among high achievers.
- To identify relationships that exist between patterns of personality, multiple intelligence and creative thinking among high achievers.

2. Method

This study used a quantitative survey approach. According to Wiersma (2000), survey research suit to investigate the psychological and sociological variables in their natural forms such as in investigating on

behavior, attitude, intelligence and achievement. Furthermore, it saves time by collecting data in a short period and follow-up action on the respondents is not required.

2.1. Population and research sample

The population involved were students from all over Malaysia comprised of 1268 students selected at random from secondary schools catering to high achievers in boarding schools, Mara Science College, as well as religious schools nationwide.

2.2. Instruments

This study was carried out through three sets of inventories to get accurate information about the high achievers' personality, critical thinking and multiple intelligences. Inventories used in data collection for this study are Myers-Briggs Type Indicator (MBTI), Watson-Glaser Critical Thinking Appraisal (WGCTA), and Multiple Intelligences (Howard Gardner).

2.2.1. Multiple Intelligences (MI)

The students' Multiple Intelligence (MI) modes were determined using the Multiple Intelligence questionnaire (1999 Walter McKenzie). The MI consists of nine modes, which are Visual/Spatial, Verbal/Linguistic, Logical/Mathematical, Bodily/Kinesthetic, Musical/Rhythmic, Naturalist, Interpersonal and Intrapersonal. Each mode has 10 statements or descriptions that describe an individual.

2.2.2. Myers-Briggs Type Indicator (MBTI)

Data of students' personality patterns were collected through Myers-Briggs Type Indicator (MBTI) to categorize the students into the four personality type, namely Extrovert-Intuitive (EN), Extrovert-Sensing (ES), Introvert-Intuitive (IN) and Introvert-Sensing (IS).

2.2.3. Watson Glaser Critical Thinking Appraisal (WGCTA)

Watson Glaser Critical Thinking Appraisal (WGCTA) probably is the most widely used test in determining one's critical thinking. It was based on Dressel and Mayhew's (1954) skills of critical thinking, was comprised of five subtests which are not hierarchical in nature. The five subtests were Inference, Recognition of Assumptions, Deduction, Interpretation, and Evaluation of Arguments (Watson and Glaser, 1994).

2.3. Data analysis

The data analyses obtained from respondents were presented in table forms. These data include the frequency, percentage, mean score, standard deviation and level of achievement for aspects of personality types, multiple intelligences and critical thinking skills of the high achievers. Pearson-r was used to analyze the correlations between multiple intelligences, personality traits and critical thinking skills of high achievers.

3. Results and discussion

3.1. High Achievers' Personality Traits

The analysis findings have shown that majority of the students involved in this study are more inclined towards MBTI Extrovert-Intuitive (EN) type of personality. It was found that most students were likely to possess extrovert personality pattern with a total of 990 of them (78.1%) out of the total 1268 students involved. It was also found that most students were likely to possess intuition personality patterns, which consist of 746 students (58.8%) out of the total 1268 respondents. Overall, the majority of the high achievers tend to be in EN personality type, which was about 614 of them (48.4%) while the minority were likely to be in IN personality type with a total of 132 (10.4%) .

Students with dichotomy "Extrovert (E)" often act hastily and feel inhibited when they do not interact with the outside world which can easily motivate them. They also like diversity and changes among humans. Students with the dichotomy "intuitive (N)" like to learn in creative ways such as in the discovery method. They can also relate their observations to the theory or formula in deductive (general to specific) manner. Students who have a combined extrovert and intuitive personality show different personality characteristics.

Being entrepreneurs, stock brokers and politicians are among careers suitable for them as they usually ignore moral rights of others and often exploit situations.

There were personality differences among the high achiever students and normal students. The personality type for high achievers is a sequence of EN>ES>IS>IN while for the normal students, the sequence is EN>IN>ES>IS.

3.2. High Achievers' Critical Thinking Traits in WGCTA

Based on the analysis of this study, majority of the high achievers possessed Evaluation of Arguments skill in Watson-Glaser Critical Thinking Appraisal (WGCTA) followed by Deductive (DE), Recognition of Assumptions (RA), Inference (IF) and finally Interpretation (IT). The findings showed that majority of the students surveyed could distinguish between justified and relevant reasons or otherwise for specific questions. Most of them are able to determine if a conclusion is built upon the information given in a statement. However, their skill in identifying how true an inference is from the data given is not satisfactory.

All the findings from the previous studies have revealed a critical problem and should be of concern. Although the students involved in this study are excellent in their academic performance, their critical thinking skill in identifying the truth between an inference and interpretation was weak. Such problem should not arise among students with excellent academic performance. Studies should be conducted to identify the problem and efforts should be enhanced to improve critical thinking skills and Interpretation (IT) as well as Inference (IF) skills to all students regardless of their academic achievement to reach the country's vision.

3.3. Multiple Intelligence (Howard Gardner) Traits among High Achiever Students

Based on the data analysis majority of the students have high intrapersonal intelligences followed by existential, kinesthetic, logical-mathematical, spatial, interpersonal, linguistic, naturalist and lastly musical intelligence. It was found that high achievers understand their own goals and hobbies as they have high intrapersonal skills. They have personal instinct, are motivated and confident. On the other hand, normal students are able to socialize well with others and learn through interaction as they have interpersonal intelligence. They have many friends and can teach in group activities, seminars and conduct dialogues. However, comparisons on existential intelligence cannot be done for high achievers and normal students as the test was not carried out on normal students.

3.4. Relationships between multiple intelligences, personality traits and critical thinking skills of high achievers

For the relationships that exist between personality and thinking skills, the results showed that thinking Inferences (IF) had a significant relationship with the four personality types. Recognition of the Assumption (RA) had a significant relationship with personality types ekstrovert while Interpretation (IT) had a significant relationship with extrovert and introvert. However, the relationship that existed was weak as the value of Pearson r was within 0.06 to 0.12.

For the relationship that exists between personality and multiple intelligence, the results showed that the numerous multiple intelligences had a significant relationship with the four personality types except in logical-mathematical intelligence. In addition, spacial intelligence had no significant relationship with the ekstrovert and introvert. Intrapersonal intelligence and naturalistic intelligence also had no significant relationship with the sensing and intuitive. However, the relationship that existed was weak and medium as the value of Pearson r was in the range between 0.06 and 0.50.

For the relationship between critical thinking skills and multiple intelligences, the results showed that IF had a significant relationship with intelligence interpersonal and kinesthetic; RA had a significant relationship with musical intelligence; DE had a significant relationship with verbal linguistic intelligence, naturalist and existential; IT had a significant relationship with verbal linguistic and intrapersonal intelligence, while EA had no significant relationship with any intelligence. Similar to the relationship that existed for the aspects of personality-thinking skills and personality-critical thinking skills, the relationship that existed between the multiple intelligence critical thinking skills was with Pearson r value between 0.07 and 0.10.

4. Conclusion

The research findings showed a marked difference between personality traits, critical and creative thinking and multiple intelligences between high achievers and normal students. These results implied that high achievers are different, have different needs and learn differently from their normal counterparts; as such some attention and consideration must be given to these group of learners. Education providers should be aware of these differences so that they may cater to the needs of these high achievers. With the emergence of learning with computer technology the task of providing learning environments suited to the high achievers personalities, multiple intelligences and critical and creative thinking may not be impossible.

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