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A Study of Intelligence Quotient for Primary School Students in Mahasarakham Province

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Abstract

This research focuses on intelligence quotient (IQ) of the primary school students in Mahasarakham Province. There are 5,053 subjects from 64 schools under the Mahasarakham Primary Education Office. Stratified Random Sampling is applied in selecting the subjects. The subjects are divided according to their districts and school sizes (Small, Medium-Sized, and Large) with three units: schools, classrooms, and students. The results are shown in both "Descriptive Statistics" to describe demographic factors and "Inferential Statistics" to compare the cognitive levels among the elementary school students from different demographic factors. The results of the study indicate that the IQ of the primary school students in Mahasarakham Province is at the normal level. Most of them, 3,358 students or 66.46%, have the average level of IQ. 148 students or 2.93% have the higher-than-average level while 68 students or 1.35% had the lower-than-average level. After considering the IQ of the students on an individual basis in the designated educational area, there are different factors contributing to the results including the sizes of the school, the parents' education level, and the parents' average monthly incomes ($F = 2.521$, P-value = 0.040). The level of intelligence is not only the result of genetics and environment, but also the result of many internal and external factors. The study shows that the level of intelligence among the elementary school students in Mahasarakham is at the average level with different basic information and factors such as individuals, families, and schools. Therefore, all related sectors to educational development should realize the importance of promoting the students' intelligence in order to reach the students' full potential.

Keywords: IQ, primary school, Mahasarakham Province

1. Introduction

Human resource is important to the development of the country in every aspect. The current National Economic and Social Development Plan emphasizes on Human Resource Development (HRD) in order to promote personnel in several areas such as skills, aptitude, attitudes, and working performances. The foundation of the country is in the hands of the next generation considered the powerful and efficient force for the prosperity and security of the country. To prepare all of the children for the highly competitive world, they should be fully developed especially in terms of intelligence. IQ: Intelligence Quotient is the measure for a problem-solving ability with rational and consequential principles, language skills for verbal and verbal communication, and social skills to effectively share interests and relationship with others (Sternberg et al., 1981, cited in Chumlong Disayawanich., 2000). Actually, each child has different levels of intellectual development. Parents and teachers have to realize and understand the ability of all children while encouraging the children to accomplish their most potential.

The results of the survey on the intellectual level of Thai students in 2011 showed an IQ of 98.59, lower than the international standard (IQ = 100). The overall results showed that 48.5% of Thai students had IQ <100 and 6.5% of them had intellectual impairment (IQ <70), higher than the international standard at 2% (Department of Mental Health, 2011). The study of IQ aims to learn about the level of intelligence when compared with the average level of the group with the same age. The principle of measuring intelligence is to identify children with special needs through differences among learners including children with learning disabilities or gifted children. For example, 8-year-old children with the IQ level of 6-year-old children cannot keep up with their peers of the same age in Grade 3. When there are problems

in their learning, teachers should organize learning activities to meet their level of learning. Likewise, children with the IQ level of the 12-year-old may get bored to be in the class with their 8-year-old peers in Grade 3. When children go against discipline in the classroom, the lack of understanding or knowledge about the children's needs may lead to punishment and likely to obstruct their intelligence to be developed to its full potential (Chankrisana Pholwiwat, 2014).

In 2014, there were 64,189 kindergarten and primary school students in Mahasarakham divided into 32,343 students from small schools, 18,739 students from medium-sized schools, and 13,107 students from large schools. Large schools are usually located in an urban area while most small and medium-sized schools are located in a rural area (Mahasarakham Primary Education Office, 2014). This study examined the level of intelligence among all primary school students in Mahasarakham to support all related sectors with relevant information to policies and guidelines for creating a learning environment or process to promote intelligence. When students reach their full potential and competence, they will become the important work force for the development of the country.

2. Method

This research focuses on the level of intelligence among the elementary school students in Mahasarakham Province to examine the differences with several factors such as sizes of school, genders, grades, parents' education, parents' average monthly incomes, living, and time of birth

2.1 Research Tools

The tools include Colored Progressive Matrices (CPM), developed by John C. Raven, British Psychologist, in 1956, published in 1998, and revised in 2004. This revised version consists of more difficult tests with 3 sets with 12 questions: A, AB and C. The total of 36 questions are in 6 multiple choices, printed in colors. The test will take 15-30 minutes. (Pranee Charnnarong and Bundit Sornpaisan, 2010, referred to in the Department of Mental Health, 2011). The standard test has a neutral culture with the reliability of the results in comparison with the detailed tests of Wechsler with the correlation of Full Scale IQ 0.70 to 0.80 (Raven, Raven, & Court, 2004).

2.2 Sampling Design

The population in this study is 50,381 primary school students (Grade 1-5) from 573 primary schools in Mahasarakham Province (Mahasarakham Primary Education Office, 2014). The subjects of 64 schools under the Office of Mahasarakham Primary Education Area are randomly selected through Stratified Random Sampling. The subjects are divided according to the districts and school sizes (Small, Medium-Sized, and Large). The three units are schools, classrooms, and 5,053 students.

2.3 Data analysis

The result of the study includes the relevant statistics to analyze the data: 1) Descriptive Statistics to describe the characteristics of the population, 2) Wechsler Intelligence Scale for Children–Fifth Edition (WISC-V) IQ classification Intellectual Deficient (Kaufman et al.,2005) : IQ < 70 Border line, IQ 70 – 79 Low Average ,IQ 80 – 89 Average , and IQ 90 – 109 High Average IQ 110 – 119 ,and 3) Inferential Statistics to compare the cognitive level of all elementary school students with different basic information. The t-test has a statistically significant value at 0.05. The data with two independent variables are analyzed with "One Way ANOVA" and those with more than two independent variables with differences of statistically significant values are analyzed with Least Square Difference (LSD).

3. Results

The primary school students in Mahasarakham Province can be classified according to the level of IQ. The majority of the students, 3,358 students or 66.46%, have the average level of IQ. 148 people or 2.93% have the higher-than-average level of IQ while 68 students or 1.35% have the lower-than-average level of IQ. When considering the levels of IQ with personal characteristics, the summary are as follows:

3.1 Education Area

In Mahasarakham Education Area 1, 2, and 3, the students have the average level of IQ at 93.84, 95.70, and 95.54, respectively. Based on the statistical hypothesis, the level of IQ among the students from each different education area are different. ($F = 20.486$, P-value = 0.000). The students in Mahasarakham Education Area 2 and 3 have the higher level of IQ than those in Mahasarakham Education Area 1. The students in Mahasarakham Education Area 2 and 3 have the same level of IQ.

3.2 School Sizes

The sizes of school are small, medium-sized, and large. The students have the average level of IQ at 93.98, 94.90 and 95.72, respectively. Based on the statistical hypothesis, the students from different sizes of schools have the different level of IQ ($F = 19.327$, P-value = 0.000). The students with the highest level of IQ are from large schools followed by medium-sized and small schools, respectively.

3.3 Genders

Both male and female students have the average level of IQ. The male students have the average level of IQ at 94.73 and the female students have the average level of IQ at 94.97. Based on the statistical hypothesis, the male and female students have the same level of IQ ($t = -0.845$, P-value = 0.398).

3.4 Class

The students in Grade 2 to 5 have the average level of IQ. The students in Grade 5 have the highest level of IQ (the average at 100.58). The students in Grade 1 have the lowest level of IQ (the average at 86.51). Based on the statistical hypothesis, the different classes have different levels of IQ ($F = 400.787$, P-value = 0.000).

3.5 Parents' Education

The students with parents in any educational background have the average level of IQ. The students in the group of the parents with a bachelor's degree or higher have the highest level of IQ (the average at 96.34) while the students in the group of the parents with secondary education have the lowest level of IQ (the average at 93.51). Based on the statistical hypothesis, parents with different levels of education have children with different levels of IQ ($F = 25.512$, P-value = 0.001).

3.6 Parents' Average Monthly Incomes

At any level of the parents' average monthly incomes, the students have the average level of IQ. The students with the highest level of IQ have the parents with the average monthly incomes at more than 20,000 baht (the average at 97.20). The students with the lowest level of IQ have the parents with the average monthly incomes at 5,000-10,000 baht (the average at 93.08). Based on the statistical hypothesis, the students with different levels of IQ have the parents with different average monthly incomes ($F = 2.521$, P-value = 0.040).

3.7 Living

The students who live with their mother have the higher level of IQ (the average at 95.56) while the students who live with their father have the lower level of IQ (the average at 88.89). Based on the statistical hypothesis, the students with different livings have no difference in the level of IQ. ($F = 1.763$, P-value = 0.134).

3.8 Time of Birth

The students who were born at any time have the average level of IQ. The students who are an only child of their parents' have the highest level of IQ (the average at 95.43). The students with the lowest level of IQ are the third child of their parents' (the average at 92.87). Based on the statistical hypothesis, the students with different time of birth have no difference in the level of IQ ($F = 0.327$, P-value = 0.860).

4. Impacts of the Issue on Intelligence Levels

4.1 Learners Students

Learners Students with the lower-than-average level of intelligence may learn slowly and poorly affecting their learning achievement. If their parents and teachers do not understand this condition, this group of students may cause problems in the classroom or even in the society. Some may be stigmatized as trouble makers with emotional and social problems such as no motivation to study caused by pressure from parents and teachers and no self-esteem resulting in anti-social behaviors. On the contrary, if students have a higher-than-average level of intelligence without their parents and teachers' knowledge, they will lack support obstructing the development of their full potential.

For students with the average level of intelligence, they also have to be taken care of to reach their full potential in any field of interests. Howard Gardner, a psychologist with the theory of multiple intelligences, describes how people have their own potential in different disciplines. However, any kind of intelligence do not suggest a success or failure in others. Gardner has presented nine categories of intelligence: Linguistic Intelligence, Logical-Mathematical Intelligence, Musical Intelligence, Bodily-Kinesthetic Intelligence, Spatial Intelligence, Interpersonal Intelligence, Intrapersonal Intelligence, Naturalist Intelligence, and Spiritual Intelligence (Gardner, 2000). Each individual had more than one kinds of intelligence, but there may have ones superior or inferior to others. At last, students should be empowered in any area of their interests.

4.2 Parents

Parents One of the key factors for the students' intelligence is parents because of the relation to genetics and environment. A family is the primary institution contributing to the development of intelligence. Understanding about the children's needs will help parents to realize their roles in improving their children's intelligence. Children with lower-than-average intelligence are to be understood about their natures by their parents. Without proper understandings about their characteristics, parents may put unnecessary pressure on their children such as high expectation and lead to more problems in the family. On the other hand, children with higher-than-average intelligence should be supported in a certain way to help them reach their most potentials. The lack of appropriate support will delay their progress.

4.3 School

School is responsible for educating all learners in every aspect especially in the development of intelligence. If school does not have any knowledge of students' intelligence, school will not learn about students with special needs such as those with higher-or-lower-than-average intelligence. Students with special needs may not be properly taken care of leading to other problems in learning. School should, therefore, play a role in the development of the program and curriculum for the improvement of all students' intelligence.

4.4 Office of Basic Education Commission

With the responsibility for educational policy, the reflections of this study can be applied to the overall policy to develop the cognitive level for all students to reach their best potentials in various areas.

5. Suggestion

Intelligence is the result of genetics, environment, and other internal and external factors. The level of intelligence among the majority of the elementary school students in Mahasarakham is at an average level. The basic information includes family and school backgrounds. All sectors related to the child development should realize the importance of these factors and work together to develop the students' intelligence to reach the students' full potential.

Table 1 Proposal of Policy

Agency	Practice	Method
Before Birth: Provincial Public Health	- Provide a policy on antenatal care, proper iodine consumption, and care during pregnancy (such as promoting advantages of listening to classical music during pregnancy).	-Be proactive to create a network of Village Health Volunteers to implement a systematic care for pregnant women.
Provincial Public Health , Communities, and Parents	-Recommend women to start taking folic acid before pregnancy at least 1-3 months in advance. In case of unplanned pregnancy, all women of productive age are recommended to take folic acid every day.	- Educate pregnant women with an access to public health services like Provincial Public Health Services.
Pre-school: Child Development Center, Sub district Administration Organization, and Sub district Municipality School, and Parents	-Provide a quality food program to promote IQ development with relevant experience to IQ development.	- Create a network of parents to take care of their children with quality food and enough sleep while preventing children from watching inappropriate TV shows such as TV dramas, or obsessively using smartphones. - Organize a project with an experience-based approach to promote IQ development.
School Age: Primary Educational Service Area, Schools, and higher education institutions (Rajabhat Maha Sarakham University, Mahasarakham University).	- Provide IQ development for students in school.	- Focus on developing the learning environment to promote the development of IQ (physical). - Focus on a teacher's proficiency including instructional design to promote learning for IQ development. - Provide suitable toys and books to promote the students' IQ development. - Provide a system of exercises to promote physical development and intelligence. - Focus on learning activities for IQ development such as BBL. - Set up the policy for schools to analyze their students' problems and teach students how to solve problems independently. - Set up the policy for the management team on working time in teaching students in schools. - Set up a teaching-learning policy for developing learning skills for all learners in every dimension, not only for scores or achievements.
Agency	Practice	Method
Community leaders, Public bodies, Police, Soldier	- Control the opening time of the internet caf éto prevent the youth from in appropriate conducts.	- Encourage staffs to consult and plan a school curriculum for each level of learners. (Kindergarten, Primary, and Secondary) to make it in the same direction. - Create a school curriculum and related activities to improve skills, knowledge, and positive attitudes to motivate learners to learn. - Promote learning environment in both academic and life skills. - Set up the evaluation model reflecting the ability of the learners to help design relevant learning activities to improve learners' potential consistently. - Provide personnel with knowledge and expertise in teaching different subjects and classes. - Set up a budget to support teaching supplies such as media and related equipment to provide effective teaching and learning.
Schools, Mahasarakham University, and Communities	-Observe students to learn about their skills and interests to find appropriate learning. -Create factors to promote IQ and child development.	Coordinate with Mahasarakham University to: - Educate teachers on observing students' skills and interests. - Provide effective observation tools. - Provide creativity space for children in the community.

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