

## Comparative Study of Student Verbal Reasoning and Numerical Reasoning between Urban, Coastal and Highlands Areas in North Sumatra

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### Abstract

This study aims to determine differences in verbal reasoning and numerical reasoning in urban areas, highland areas and coastal areas. By using purposive sampling method, the sample was taken as many as 670 students in Urban areas, 767 students in the highland areas, and 662 students of coastal areas. Verbal and numerical test instrument used has been validated. Data analysis using ANOVA followed by Tukey HSD analysis and Bonferroni. The results showed that there are no differences in verbal reasoning and numerical reasoning of students who reside in urban areas with highland area. However, there are differences in verbal reasoning and numerical reasoning of students who reside in urban areas with coastal areas, as well highland area to the coastal area. While the scholastic value of the three locations are in the moderate category. Note the causes of these differences, views of culture, daily habits of learning, teacher competency, food consumed, parenting parents, and other factors. This data can be used as a reference in determining the policy of the management of education in North Sumatra.

**Keywords:** Verbal Reasoning, Numerical Reasoning, Urban, Coastal, and Highlands

### 1. Introduction

Through community service grants for lecturers from the Indonesian government (Science and Technology Program for Creativity and Innovation Campus - IbIKK), Counseling Centre of Medan State University was established in 2015. Managed by a group of lecture and build a cooperation with the school, the aims of Counseling Center aims are: (1) Counseling centers become a unit-based for intellectual product of lecturers, (2) As a psychological test services, counseling services promote and generating revenue for the State University of Medan, (3) Entrepreneurship based on science and technology in the field of counseling services to meet the needs of the community in terms of education and self learning, (4) Updating science and technology by following the international counseling events, (5) Counseling center as a product of IbIKK program is distributed in the form of scientific articles in national and international journals.

Counseling Centre of Medan State University is central to the delivery of counseling services. Its vision of becoming the best counseling service center to recognize their own potential and its alleviation discomfort feelings, thoughts, and behaviors that lead to inefficiencies in everyday life. One of the activities of the school and counseling centers help students recognize their potential through psychological tests. Psychological testing is a systematic procedure to obtain a sample of behavior, which is relevant to cognitive or affective, and to evaluate the samples in accordance with the standards. One aspect of psychological tests includes measuring the verbal reasoning and numerical reasoning. The meaning of language skills is how well a person can understand ideas and concepts expressed in the form of words, how easily a person can think and solve problems expressed

in the form of words. While the ability to calculate the point is how well a person can understand ideas and concepts expressed in the form of numbers, how easily someone solve problems expressed in numerical terms.

In the 20th century observers say there is a connection between language and life success (Buzan, 2002). Those who have good language skills, success in work life, social, personal and studies. It is therefore natural that the measurement of students' language skills, so that efforts can be made by the educators as parents, teachers, managers and education providers, as well as the foundations of education. There is also evidence that the quality and quantity of second language learning experiences affect brain structure. The need for training in written and oral communication skills have been widely recognized. "Interpersonal skills and communication" is one of the six core competencies Accreditation Council for Graduate Medical Education. Research shows that men have lower language abilities compared with women, especially the ability to read, write, and speak. (Gurian and Stevens, 2005)

As well as language skills, ability to calculate students is also important. Children's progress in acquiring knowledge of numerical highly malleable. This is influenced by informal activities such as board games, 25 experimental activities designed associated numeric (Sophian, 2009). Additionally (Bialik et al, 2015) said that mathematics is very meaningful to improve reasoning

The inability of students achieving competency in languages and mathematics make learning difficulties in school children, students finally drop out and failed to complete his education. It encourages curiosity thinking how good language skills and the numbers of students who live in urban, coastal and highland areas. Are there differences in verbal reasoning and numerical reasoning in those three areas, if there is a difference between these three areas, it will be a good findings particularly in terms of formulating policies in the future

## 2. Literature Review

Verbal tests aim to determine how well a person can understand ideas and concepts expressed in the form of words and how easily solve problems expressed in the form of words. The better a person's vocabulary and language skills, the more successful and confident someone is in life in general, in work, in social and personal life, and in the study (Buzan, 2002). Words have incredible strength. People, who use the power of words to give themselves the power to persuade, inspire, fascinate and influence in all sorts of ways the human brain. If students have the language skills to bring to life exciting. The life journey that will be obtained: 1) Finding and exploring a new world, 2) Imagination on concepts and new ideas, 3) Learn more about the amazing, 4) Learn the fundamentals of the power of words, makes it possible to expand the vocabulary today with thousands of words, 5) Learning how to use your body to communicate effectively, 6) Rediscover the joys of playing around with words and study, 7) Learning the secrets of basic read and understand quickly, and 8) Learn how to attract the attention of others with the strength and beauty conversation.

Verbal skills are essential in the teaching of academic and non-academic, verbal ability is a good predictor of the success of students in school academics and universities. Social intelligence refers to the ability of a person making a positive relationship at all levels of human life. It required verbal ability. Shakespeare is the one who has the biggest English vocabulary with 25,000 words, is regarded as the greatest portrayer has a height and depth of social skills. Besides language skills have a relationship with computing capabilities (Buzan, 2002)

Mainland North Sumatra Province consists of various reliefs such as mountains, plains, hills and coastal areas. Grydehøj and Hayward (2014) suggest that society is based on the islands are subject to factors related to certain islands (called 'island effect'). Isles of Scilly and the Isle of Wight both tourist areas. The conclusion that can be drawn from the interaction of the two islands that the spatial distribution of the island community has a significant influence on social development

Cultural studies (Farina and Pieretti, 2012) explains, the island does not only require an astute understanding of basic ecological, biological processes and human activity is the background to the creation of a culture, but also of the interaction between these elements. Culture Korean island was made in the middle of the unique maritime environment marked by the achievement of spatial harmony between the tides and the islands. Korean residents are mostly located along the western and southern shores. The majority of these islands belong to the category tidal island. More precisely, one of the geographical and topographical characteristics of the main island of Korea that they are surrounded by the tides. Therefore, Korea boasts islands ecologically and biologically unique characteristics, and diversity, which distinguishes them from the islands in other areas. Ups and downs are virtual excellence where people can find a variety of marine organisms. The locals have been able to adjust to their environment by utilizing organisms found in tidal and characteristics of the islands. This has led them to create a unique island and maritime culture.

Culture is highly dependent on the regional environment and natural resources. From the perspective of environmental history, of course, the destruction of human civilization resulting from the depletion of

ecosystems and resources. resource utilization and appropriate conservation strategies contribute to regional development. Due to the rapid changes recently in the climate, the environment of marine areas, the island change, ecosystems and biodiversity are also undergoing significant changes. Island residents are very vulnerable to changes in the natural environment, and the characteristics of diverse cultures and knowledge ecosystem that has been maintained until now under threat of extinction. Culture and traditional knowledge related to the survival of the island (Kee, 2013). Coastal communities have easily follow the social characteristics of urban culture, rivaling among residents, was contaminated with urban culture, livelihood as fishermen, the economy is in the middle and lower levels.

### 3. Research Methodology

The study was conducted in three regions: urban, coastal and highland areas. Samples were taken by purposive schools in collaboration with the State University of Medan in 2016. The entire population is also a sample of research in three areas totaling 2099 people. Urban areas amounted to 670 students, highland area amounted to 767 students, and the coastal areas amounted 662 students. Data collection tool used is a test of verbal and numerical tests that are standard with a number of validation tests of verbal 0.341 and 0.396 numerical tests (Palli, 1993). Language test consists of 50 questions done in 30 minutes. Numerical test consists of 40 questions done with a time of 35 minutes. While time for instruction about 5-10 minutes. The collected data were then analyzed using ANOVA followed by Tukey HSD and Bonferroni.

### 4. Finding And Discussion

Based on the test data using ANOVA found that (1) there are differences in language skills among students who were in the area of the city, mountains, and coastal areas with a p-value of 0.000; (2) there are differences between the compute capabilities of students who are in the area of the city, mountains, and coastal areas with a p-value of 0.000.

Specifically testing is then performed with Tukey HSD and Bonferroni analysis to determine differences in verbal reasoning and numerical reasoning of each area. Differences in verbal reasoning testing conducted with Tukey HSD showed that: (1) there is no difference between the verbal reasoning of students who reside in the urban and the highland area with p-value of 0.731; (2) there is a difference between the verbal reasoning of students who live in the urban and the coastal area with a p-value of 0.000. (3) There is a difference between the verbal reasoning of students who reside in the highland and coastal area with a p-value of 0.000. Tests using Bonferroni showed that: (1) there is no difference between the verbal reasoning of students who reside in the urban and the coastal area with a p-value of 1.000; (2) there is a difference between the verbal reasoning of students who reside in the urban and the highland areas with p-value of 0.000; (3) there is a difference between the verbal reasoning of students who reside in the highland and coastal area with a p-value of 0.000. Differences in the numerical reasoning students in the three areas performed using Tukey HSD test, which found that, (1) there is a difference between numerical reasoning of students who reside in the urban and the highland area with p-value of 0.000. (2) There are differences between numerical reasoning of the students who reside in the urban and the coastal area with p-value of 0.000. (3) There are differences between numerical reasoning of the students who reside in the highland and coastal area with p-value of 0.000. Tests using Bonferroni also showed similar results with Tukey HSD test.

Subsequent findings show that the highest number of students who were at the highland area and continue their studies to university as many as 61 students of the 767 votes (7.95%), students who were in the urban area as many as 29 out of 670 votes (4.32%), and students at the coastal area as much as 6 out of 662 people (0.9%). Thus the percentage of students who come from highland area higher than other regions in number to go to college, though the highland area is currently experiencing a catastrophic eruption of Sinabung Mountain. It is known from the value of verbal reasoning and numerical reasoning of the three locations that none of the students at the high category. Students who are in the category of being greater. Students in highland area as many as 61 people, students in urban area as much as 29 people, and students in coastal area as much as 6 people. Based on these data we can say that the students who come from the highland area has better numerical reasoning compared to two other area. So is the average value of students from the urban area at 17.10 with the number of student's 670 people, the highland area of 17.30 by the number of students 767 people, and the coastal area of 15.81 with the number of 662 students.

Another study, it was found there are differences in protein sufficiency State Primary School children coastal area and highland area. By using the Mann-Whitney test concluded that there are differences in the nutritional status of children Public Elementary School coastal area and highland area (p-value = 0.017). Energy Consumption Levels public elementary school children can be provided by either the coastal area 77.09% and

51.43% in the highland area. The results also show the percentage of children with both categories of energy consumption patterns in the coastal area of 15.3%, while the lowest highland area of 2.7%. (Nurdin, Hasanah, Uurfadilah). When analyzed the circumstances of location, beaches are well-nourished children compared with children who live in the highland area, verbal reasoning and numerical reasoning turned out better students who live in the highland area.

Viewed from the standpoint of the ecosystem, Kabanjahe and Berastagi (a highland area in North Sumatra) has fresh air, cool helping people grow vegetables and fruit crops which sent out the area and quite enjoyed by the public. Ecological theory holds the basic idea that organisms adapt to their environment. Organisms that fail to adapt will not survive. Basic assumptions ecological theory: (1) both biological and social human in nature; (2) their fortunes depend on their environment (i.e., air, food, and water); (3) their mutual dependence; (4) the human life cycle well as impose time constraints and resources; (5) human interaction is spatially regulated; and (6) of human behavior can be understood only by looking at both individual and population-related (White & Klein, 2008).

Applying this assumption to students in schools, we will assume some of the propositions. First, the children come to school with biological and social-emotional needs. Schools must meet all the needs of children, not just the intellectual part (McCabe, Tollerud, & Axelrod, 2006). Second, they rely on the school environment to get those needs including classroom. Especially the classroom and school system to students and teachers together create "cultural" norms of behavior already own.

Rapid climate change to date, the local marine environment, ecosystems and biodiversity are also undergoing significant changes. Communities around the coast are very vulnerable to changes in the natural environment. While knowledge about the ecosystem lower academic ability of students still need to get attention in the field of verbal and numerical. Therefore, the implementation of education for the coastal communities need to be handled very carefully and seriously to save children's lives beaches in the future. A case study Archipelago-Taiwan, with an overview of the history of 110 years of the period 1900 to 2010, examines how societies adapt to the problem of marine natural resources in order to understand the coping strategies. The results showed inadequate man-made capital in connection with maintaining the natural resources of the sea. The right investments in man-made capital are needed to solve the problem. The challenge is to invest in social capital so as to form a functional institution that employs physical and human capital on an ongoing basis. (Chi and Min, 2014).

## 5. Conclusions and Recommendation

The different verbal reasoning and numerical reasoning coastal areas compared to urban areas and highland areas are expected to be of particular concern for the institutions related to the implementation of education, good family, school, and NFE in order to fix the learning that has been implemented in order to improve the verbal reasoning and numerical reasoning students ranging from early childhood education, specifically in the coastal area. In addition, of the three study sites, students can continue their studies to refer to the results of research universities, in the highland area just as much as 7.95%, in urban areas as much as 4.32%, and in the coastal just as much as 0.9%. So that efforts are needed to improve the verbal reasoning and numerical reasoning to a higher classification level. Students in urban areas have a considerable learning facilities, to the role of the teacher make an impact on the learning process of students in school and out of school is very important and also for the people who were at the highland area.

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