
Descriptive analysis of students' Verbal Comprehension (A preliminary study on 4 Puyoh and 3 Soco Elementary School)

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Abstract. The cognitive development of elementary students becomes a critical issue because it starts from the age of 0 – 11 years. Verbal ability is part of cognitive development. This development is closely related to the concepts and actions that a person has. Verbal comprehension is the fundamental foundation that enables individuals to easily and flexibly communicate and express ideas. This is a preliminary study that aims to analyze students' verbal comprehension using the Wechsler Intelligence Scale. We recruited 3rd-grade students from Soco and Puyoh Elementary School, Kudus district. Our finding shows variation in verbal comprehension score among the students (n= 33). Analysis, conclusion, and implications are discussed.

Keyword: WISC, Verbal Comprehension, Intelligence

INTRODUCTION

Intelligence is a general aptitude that involves the ability to argue, plan, solve problems, think abstractly, think about complex ideas, learn quickly and learn from experience. Intelligence is not only the way to study books or complete academic tasks well, but also the to reflect on broader and deeper abilities about understanding things that are around us, to sense and discover what must be done (Gottfredson, 1997). According to Gottfredson (1997), general intelligence (or g factor) can predict many achievements outside of academic achievements, such as unemployment, income, pregnancy, divorce, crime, and so on. According to Coleman (1990), there are three factors based on the discussion on the definition of intelligence in psychology, which are: verbal, problem solving and practical intelligence. Sternberg defines these as components of intelligence. Measurement of intelligence since nearly 100 years ago has developed from a non-scientific study on intellectual differences to a science of psychometrics. In the 19th century, measurement instruments for intelligence were not based on empirical evidence but rather on a speculation to measure individual differences in achievement (White, 2000).

The definition of general intelligence approach by using the Wechsler Scale has dominated the intellectual measurement for over 50 years (Wilson & Reschly, 1996). The Wechsler Scale is a testing tool widely used around the world. The inseparable concepts, methods, and procedures that it has with the design of the Wechsler Scale have been influential in the development of other tests and researches for more than half a century (Flanagan, McGrew, & Ortiz, 2000). The first publication of Wechsler Intelligence Scales occurred in 1939, and since then has undergone developments and adjustments. Wechsler Intelligence Scales have been considered one of the best among all psychological tests due to their good psychometric properties and ability to produce information relevant to practitioners (Groth & Marnath, 2010). Wechsler Intelligence Scale for Children (WISC) is an adaptation of the Wechsler-Bellevue Intelligence Scale and is designed with new sub-tests. These two sub-tests are verbal comprehension and performance. WISC has undergone three revisions (Kezer & Arik, 2012). Wechsler test scale was originally an IQ test developed for adults by an American psychologist named David Wechsler, with verbal and performance

sub-tests that result in verbal score IQ, performance IQ and full-scale IQ (Colman, 1990).

The relationship between intelligence and academic achievement is something that is certain (Reynolds and Turek, 2012). IQ tests are very good predictors of academic achievements and occupational performance (Groth & Marnath, 2010). Verbal comprehension refers to a person's ability to understand linguistic materials, such as newspapers, magazines, books, lectures, etc. It has long been a part of intelligence and become the main topic for many years in experimental and differential psychology (Sternberg, Powell, & Kaye, 1982). A research conducted by Luwel et.al (2013) also shows that verbal intelligence is a significant predictor in children strategy selection and execution. Working memory significantly influences a child's achievement and is very important in children.

Verbal ability has become an important factor in a child's development, both socially and academically. The learning process requires reading ability that emphasizes the importance of vocabulary and understanding of written text, as well as a verbal ability of the main stakeholder in this process (Piacente, 2012). A research by Nikolaev and McGee (2016) on verbal intelligence and happiness shows that there is a positive significant relationship. People who have better verbal intelligence tend to also have higher levels of happiness. Piacente (2012) also states that verbal ability plays a role in understanding texts, particularly understanding concepts. A concept is a cognitive unit from meaning and knowledge. Concepts require elements, words, situations, events to classify them into categories. A study conducted by Caemmerer et al (2018) on the relationship between the ability of children and teenagers and mathematical, reading, and writing achievements, examined using WISC shows that knowledge comprehension has a direct effect on reading and writing ability.

All communication systems, both simple and complex, have the same principle, which is to transmit a message from a source to a destination. Language is the only symbol used by humans to communicate (Krauss, 2002). Teaching and formal literacy learning and mathematical competence begin when children enter elementary school, and by mastering numerical and verbal abilities children can be supported in their development and in their education to achieve

success when they graduate from school (Duncan et al, 2007; Geary, 2011).

This research is a preliminary research aimed to analyze statistical descriptive results of third-grade students' verbal abilities in SDN Soco and SDN Puyoh. This study is a beginning step for the main research, which emphasizes the improvement of students' verbal abilities through certain learning methods. The subject selection process in these two schools is based on observation and interview conducted by the researcher.

Observation and interview results define the research subject as children living in a community far from the city center. The social economic status and education levels that tend to be low have an impact on children in the local villages. The parents' work as factory workers, with 24-hour shifts in 7 days is the main cause for minimum parent-child interaction. Parents are having difficulties in accompanying their children, specifically in their education. Education is not a priority of the majority of the community in that region. Laura (2010) states that linguistic intelligence is influenced by genetic and environmental factors that include parenting, social change, and child education. The parent's role becomes crucial in the development of a child's verbal ability.

The researcher uses WISC to identify a child's verbal ability. Verbal ability in WISC involves six sub-tests, namely information, comprehension, arithmetic, similarities, vocabulary, and digit span.

METHOD

The subjects of this research are third-year elementary school students. The elementary school chosen by the researcher are SD 4 Puyoh and SD 3 Soco. The number of subjects in this research is 33 subjects. The sample selection uses purposive sampling method. Purposive sampling is a research subject sample selection with several criteria.

The WISC test is used to define child intellectual development levels (Budrina, 2017). Verbal comprehension involves six sub-tests (Groth & Marnath, 2010), which are:

1. Information that measures general knowledge, long-term memory and required facts. It consists of it ranges from general factual knowledge, previous learning, intellectual curiosity. This sub-test challenges students to recall what has been previously taught in school.
2. Comprehension is not only understanding of reading; this sub-test measures students'

common sense regarding knowledge and social maturity, along with their level of moral development. Practical knowledge demonstration, knowledge about behavioral convention standards, ability to evaluate past experiences, think abstractly and generalize. This sub-test focuses on a person's ability to assess information and use those that are emotionally appropriate.

3. Arithmetic measures numerical accuracy, reasoning and mental arithmetic ability. This consists of counting ability, short-term auditory memory, ability to sort, numerical reasoning, concentration and attention, active relationship with the outside world, as well as logical reasoning, abstract and numerical problem analysis. This sub-test emphasizes the short-term memory and the use of the intellectual ability. Mental arithmetic and essay questions play an important role in the success of the students.
4. Similarities measures logical thinking, verbal concepts and verbal abstract reasoning. Preparing two objects or concepts that are similar but different, and asking the students to state whether they are identical or different. This sub-test emphasizes long-term memory as well as language expression and the responses.
5. Vocabulary measures the students' verbal fluency and concept, knowledge of words, and use of words. This includes language development abilities, word knowledge, general verbal intelligence, language utilization and accumulation of verbal learning ability, a rough measurement of the optimal intellectual efficiency of the subject, background education and idea range, experience or interests that have been obtained by the subject. This sub-test emphasizes a person's ability to easily and flexibly express ideas. Prior knowledge does play a role in this subtest.
6. Digit span measures short-term attention and memory. These numbers do not have a logical connection with one another and are presented in a random way by the tester. Students have to repeat these numbers in the correct order. In the second part of this sub-test, students must memorize the numbers presented, but when they repeat it, they have to repeat it in the reversed order.

RESULT AND DISCUSSION

The researcher, in measuring, categorizes the measurement results into two groups, male and female students. There are 15 male students and 18 female students. The verbal

ability measurement on third year students can be described as follows:

Table 1. Verbal Numbers

No	Score	Verbal Numbers	
		Male	Female
1	Mean	38.83	39.06
2	Maximum	67	56
3	Minimum	22	14

Table 1 describes verbal number scores, with male verbal scores showing a mean of 38.83 with a maximum of 67 and minimum of 22. In female students, a mean of 39.06 can be seen with a maximum of 56 and a minimum of 14. Generally, verbal numbers show an understanding of verbal communication, ability in constructing sentences, verbal fluency, ability to do verbal-oriented work.

Table 2. Information

No	Score	Information	
		Male	Female
1	Mean	9.07	9.22
2	Maximum	15	13
3	Minimum	6	2

The information sub-test shows a person's long-term memory ability, background education and attitude toward school. Table 2 shows the mean score for information sub-test of males of 9.07 with a maximum of 15 and minimum of 6. The mean for females is 9.22 with maximum of 13 and minimum of 2.

Table 3. Comprehension

No	Score	Comprehension	
		Male	Female
1	Mean	7.13	6.78
2	Maximum	17	16
3	Minimum	2	0

The comprehension sub-test shows a person's ability to create judgement by involving emotions and interaction with the social environment. Table 3 shows a mean of 7.13 for males with a maximum of 17 and a minimum of 2. Females show a mean of 6.78 with a maximum of 16 and a minimum of 0.

Table 4. Arithmetic

No	Score	Arithmetic	
		Male	Female
1	Mean	7.47	8.67
2	Maximum	13	15
3	Minimum	4	3

The arithmetic sub-test shows capacity to concentrate, short-term auditory memory ability, and the ability to ignore distraction. Table 4 shows arithmetic scores of male students having a mean of 7.47 with a maximum of 13 and a minimum of 4. In the

female group, the mean is 8.67 with a maximum of 15 and a minimum of 3.

Table 5. Similarity

No	Score	Arithmetic	
		Male	Female
1	Mean	10.67	10.33
2	Maximum	15	16
3	Minimum	6	6

This sub-test shows a person's ability in long-term memory and how a person performs abstract reasoning. Table 5 shows a mean score of male students of 10.67, not far from the female mean score of 10.33. Similarly, the male students' maximum score is 15 and minimum is 6, compared to female students' maximum of 16 and minimum of 6.

Table 6. Vocabulary

No	Score	Similarity	
		Male	Female
1	Mean	3.87	3.39
2	Maximum	16	10
3	Minimum	0	3

This sub-test shows a person's general intelligence and language development. In table 6, the mean score for male students is 3.87 with a maximum of 16 and a minimum of 0. The mean for female students is 3.39 with a maximum of 10 and a minimum of 0.

Table 7. Digit Span

No	Score	Digit Span	
		Male	Female
1	Mean	8.33	9.17
2	Maximum	13	16
3	Minimum	3	6

The digit span sub-test shows a person's concentration, and how stress and anxiety affect the person's attention. In table 7, the mean score for male students is 8.33, with a maximum of 13 and a minimum of 3. Female students show a mean of 9.17 with a maximum of 16 and a minimum of 6.

Table 1 to 7 display the scores for male and female students. Generally, male and female students do not show extreme differences in scores. Research result from Budrina (2017) also shows that in the early stages of school, there is no effect of gender in academic achievement and intellectual development, although we found that differences in the intelligence structure.

Arguments on whether gender becomes its own characteristic that must be considered in establishing an education system has always taken place. Maccoby and Jacklin (1978) state that education does not create differences in child education from 2.5 to 8 years, not give

preference to boys (nearly every age from 5 to 25 years). Despite that, Sluis et al (2008) in their research find differences in gender among students in The Netherlands and Belgium. In both samples, girls outperformed boys on the coding sub-test, while boys outperformed girls on the information and arithmetic sub-tests. The cognitive differences between boys and girls concern sub-test specific abilities.

Other discussions that have surfaced include the effect of nutrition on intellectual capacity. Studies on this have begun several decades ago (Arija et al, 2006). Arija et al (2006) in their research show that there is a significant and positive relationship between iron intake and both total and non-verbal IQ. Other than nutrition, SES (Socioeconomic Status) is an interesting research theme regarding its effect on intelligence. Cianci et al (2013) state that a number of studies prove the relationship between SES and cognitive performance since infancy, but there are still arguments on what aspects of SES are strongly connected to cognitive development. Schwartz (2015) in a research shows that genetical factors have a greater influence on verbal IQ of students who study in schools with higher levels of SES. Shared environmental factors are factors that have more influence on students' verbal IQ in schools with lower levels of SES.

Other than discussions on what factors affect intelligence, there are also debates on whether IQ changes or stays the same over time. Sternberg, Powell, and Kaye (1982) state that Werner and Kaplan in their research tested children the age of 8-13 years on their ability to acquire new words, finding that (a) performance improves gradually with age, although the various processes that underlie performance do not necessarily change gradually-whereas some change gradually, while others abruptly; (b) there is an early abrupt decline in signs of immaturity that relate to inadequate orientation toward task itself; (c) the processes of signification for words become rather decisive at the ages of 10 to 11 years; and (d) language behavior shows different organizations at different ages. This is consistent with results from Schruerger & Witt (1989) that show that IQ is often misconceived as static, cannot change and is inherent in nature, even though there is a tendency for IQ to be stable in adults. Perkin & Grotzer (1997) also find that changes in IQ are possible, particularly in children. Groth and Marnath (2010) emphasize that the vocabulary sub-test generally reflects a

person's characteristics and level of sophistication and learning in school. Vocabulary depends on the wealth of the environment in the early learning stages, but also easily undergoes increases due to experiences and school.

CONCLUSION

Verbal comprehension is an important part of intelligence and plays a role in a child's academic and social life. The Wechsler scale is an intelligence measurement scale that is widely implemented around the world. This scale has been translated, adapted, and standardized in a number of countries around the world. This scale has evolved, but it is still based on the general foundation of the definition of intelligence according to Wechsler in 1939, which is "the aggregate or global capacity of the individual to act purposefully, to think rationally, and to deal effectively with his/her environment" (Weiss et al, 2016).

Discussions on the variables that affect intelligence do not undermine the effectiveness of intelligence as a score. Even though intelligence can change, among a few, due to environmental factors, this possibility is greater at a younger age. Moreover, the tendency of intelligence score stability in adults is quite high.

This is a preliminary research that has become the basis of the main research on verbal comprehension. The verbal comprehension score along with its sub-tests have become the researcher's initial assessment in an attempt to improve student learning methods regarding verbal comprehension.

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