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The Analysis of Natural Intelligence Relates to Environmental Attitudes in Elementary School Students

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ABSTRACT

This article describes the relationship between Natural intelligence and environmental attitudes in elementary school students. The problems in this study are: (1) What are the description of Natural intelligence and a general description of the caring attitude of elementary school students? (2) Is there a relationship between Natural intelligence and environmental perspectives of elementary school students? This research uses a quantitative approach with the type of correlation method, ex-post-facto. The population of this study was elementary school students in Makassar City, consisting of elementary school students grade IV and V. Samples were taken by proportionate stratified random sampling technique. Data analysis using the Pearson Correlation analysis technique. The results show that the correlation between fourth and fifth-grade Natural intelligence belongs to the high category. In contrast, the environmental care attitude of fourth and fifth-grade students is very high. It shows that there is a relationship between Natural intelligence and the manner of caring for elementary school students with the strength of the link in the medium category.

Keywords: Natural intelligence, environmental care, students' attitudes, ex post facto, elementary students

1. INTRODUCTION

The development of human thinking ability develops naturally and it can improve well through education. Furthermore, this process develop all aspects of human personality, both elements of knowledge, values, attitudes, and skills. The target of National Education Programs in Indonesia is the development of cultural values and character attitudes in schools. Specifically, learning in primary and secondary education aims to provide opportunities for students to develop potential spiritual beliefs and social attitudes, knowledge, and skills needed for life.

The education process at the level of primary education also develops an attitude of caring for the environment. This attitude is base on intricate knowledge about environmental problems and the risk of damage. A caring attitude towards environmental safety will give birth to actions and responsibilities towards environmental conditions. Theoretically, children have a natural intelligence that begins with the pleasure of nature and the ability to participate in producing the right environment.

Natural intelligence is one of eight compentency of knowledge identified by Howard Gardner. Gardner divides human intelligence into eight groups. There are linguistic, logical-mathematical, spatial, kinesthetic, music, interpersonal, intrapersonal, and Natural. Natural intelligence is the intelligence to recognize and classify animals and plants and the ability to use and preserve the natural surroundings. If Natural intelligence possessed from the beginning in children, it would have a high interest in the outside world or the animal world [1]. They like subjects, stories, and performances related to animals and Natural phenomena. The power of feelings associated with nature can provide a separate understanding of observing similarities, differences, and changes in the environment much faster than others in general. Based on the description, gradually, the atmosphere is increasingly under pressure after the development of industry and technology. The stress caused by the population that continues to grow, the situation becomes damaged, destroyed, quality deterioration caused by pollution and destruction by humans; disasters also cause the damage caused itself. Other references declared that Natural intelligence is a

type of knowledge that is closely related to the environment, flora, and fauna, which not only enjoys nature for its beauty. However, at the same time also has concern for the preservation of life [2], [3].

This research elaborated on the relationship between Natural intelligence and environmental care attitudes of elementary school students in Makassar city, Indonesia. The results of this study contributing to the school manager in making a strategy to develop Natural intelligence and environmental care attitudes of students in the school environment.

2. RESEARCH METHODS

The approach used in this study is a quantitative approach, with the type of ex-post-facto research. Furthermore, the definition of Natural intelligence is the ability of students to recognize and classify various kinds of rocks, flora, and fauna, interested in animals and plants. While environmental care is an act based on conviction and belief not to hurt and love everything that affects the existence, growth, and welfare of an organism on earth.

The research population is all elementary students in fourth and fifth-grade students. The sampling technique used in this research is probability sampling with the type of sample used is the Proportionate Stratified Random Sampling. The description of example are 64 students in the fifth class, and 94 students in the fourth class, Students in each stratum used as samples in this research, will be determined randomly. Random determination means not based on missing numbers, learning achievements, or gender. The step of determining the sample is by writing one student's name on each small paper, and then the documents are rolled up. Furthermore, the paper rolls collected according to their respective classes, then the rolls take to the names of the students sampled.

Data collection techniques used Questionnaire with Guttman scale and two selected items. Then the validity test and the instrument reliability test are carried out to measure whether the instrument to use is valid and reliable. Data analyzed with descriptive quantitative and statistical analysis. The Prerequisite Test Analysis is a normality test, Linearity Test, and Hypothesis testing.

3. RESEARCH RESULTS AND DISCUSSION

3.1. Research Results

3.1.1. Validity and Reliability Test of Instrument Testing Results Data

After testing the construct validity and content validity, the instrument verified. The implementation of

empirical instrument testing in this study carried out in one of the elementary schools in Makassar. There are 31 statement items in the Natural Intelligence variable. The validity test produces only 20 valid items. Also, the Attitude variable for Environmental Care Attitudes shows 22 actual items.

The reliability test of instrument Natural Intelligence Variables resulted in an alpha value of 0.723, and alpha calculation shows 0.70. The produced indicated that the instrument for the Natural intelligence variable that is reliable. Furthermore, the reliability of the Environmental Care Attitude Variables resulted in an alpha value of 0.721, and the alpha calculation was 0.70. The instrument for the variable environmental care attitude is reliable.

The instrument tested for validity and reliability used to find the data about the variables, and Presentation of Research Results Data.

3.1.2. Descriptive Statistical Analysis

The instrument used in the form of a questionnaire has 20 items. The assessment is done with a range of 0 to 1 so that the lowest possible score obtained is 0, and the highest score is 20 from the results of the Natural intelligence score analysis data collected as follows.

Table 1. Description of Natural Intelligence Data

Variable	Number of items	Statistics	Data Result
Natural Intelligence	20	Amount of Data	158
		Minimum Score	4
		Maximum Score	19
		Mean	11.43
		Median	11.50
		Modus	11
		Standard Deviation	3.040

Furthermore, the data classification of Natural intelligence showed in figure 1.

Based on the table above, it seen that 41 students have a Natural intelligence variable with a percentage of 25.9% in the very high category, 81 students with a rate of 51.3% in the top grade, 22 students with a portion of 13.9% in the low class, and 14 students with a percentage of 8.9% were in the deficient category. Thus, Naturals have the intelligence of students in one of the elementary schools in Makassar, including in the high class. Also, based on the table above, that the highest percentage is in the High category, which is 51.3%, meaning that children have a high interest in the flora, fauna, and surrounding nature.
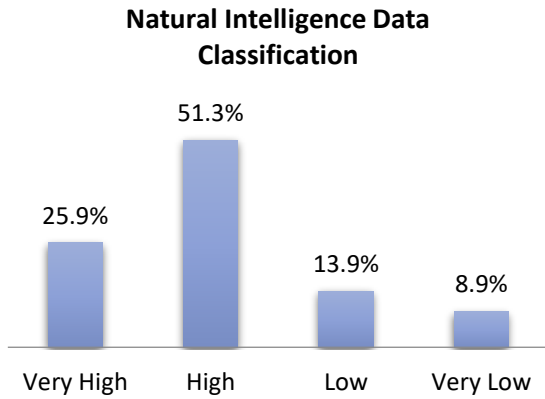
Natural Intelligence Data Classification

Figure 1 Diagram of Natural Intelligence Data Classification

In addition to categorizing as above, Natural intelligence variables can be classified based on the average scoring results of each indicator by the instrument lattice. Thus, researchers can find out which signs have the greatest and least influence on students Natural intelligence. The following are the results of the research data scoring of Natural intelligence variables based on instrument lattice indicators.

Table 2. Results of Researching Natural Data Variables in Natural Intelligence Based on Instrument Grid Indicators

No.	Indicator	The average score of each indicator
1.	Have an interest in animals and plants	123
2.	Happy to care for animals and plants	315
3.	Enjoy a walk in the open air or to the zoo or Natural history museum	274
4.	Have a high interest and good understanding of topics or projects that are nature-based	210
5.	Demonstrate sensitivity to Natural forms	218
6.	Know and distinguish different types of rocks, flora, and fauna	282
7.	Love being in the garden and aquarium	230
8.	Have notes on phenomena of animals, plants, and similar things	169

The presentation of the results of the research data scoring of Natural intelligence variables based on the instrument grid indicators in the bar diagram is as follows.
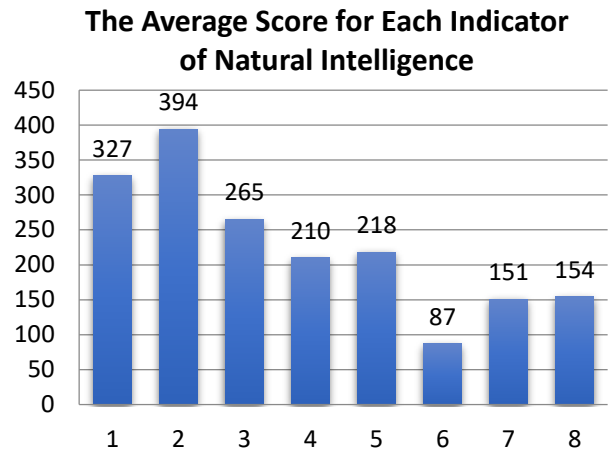
The Average Score for Each Indicator of Natural Intelligence

Figure 2 Rod Diagram of Natural Intelligence Variable Based on the Instrument Grid Indicator

Based on the bar diagram, the results of the scoring of Natural intelligence variable instrument indicators that indicator number 2 "happy to care for animals and plants" is an indicator of the highest Natural intelligence variable instrument compared to other signs. Thus, the symbol "happy to care for animals and plants" is the factor that most influences students' Natural intelligence. The results of data scoring based on indicators show that the lowest score of Natural intelligence indicators is the number 6 indicator, namely "knowing and distinguishing various types of rocks, flora, and fauna." These results indicate that the sign "knowing and distinguishing various types of rocks, flora, and fauna" is the least influential factor in students' Natural intelligence. 2) Environmental Care Attitudes To reveal the Natural intelligence data, the instrument using for the form of a questionnaire consisting of 22 items. The score used with a range of 0 to 1, so the lowest possible score obtained is 0, and the highest score is 22. From the results of the analysis of Natural intelligence, score data is getting below.

Table 3. Description of Environmental Care Attitude Data

Variable	Number of items	Statistics	Data Result
Environmental Care Attitude	22	Amount of Data	158
		Minimum Score	6
		Maximum Score	22
		Mean	16.87
		Median	17.00
		Modus	18
		Standard Deviation	3.678

Furthermore, it can be made a data classification table of Natural intelligence variables to find out the categories

of very low, low, high, and very steep. By using the ideal average value (Mi) and the ideal standard deviation (SDI). Mi and SDi are obtaining through the formula:

$$Mi = \frac{Smi}{2}$$

$$SDi = \frac{Mi}{3}$$

Information:
Smi = Item Score x number of item

Based on the ideal average value and ideal standard deviation, the classification of data classification variables of environmental care attitudes can be seen in the table below.

Table 4. Data Classification of Environmental Care Attitude Variables

No	Category	Interval	F	Percentage (%)
1.	Very High	X > 14.66	119	75.3
2.	High	14.66 > X ≥ 11	29	18.4
3.	Low	11 > X ≥ 7.34	8	5.1
4.	Very Low	X < 7.34	2	1.3

Based on the table, that the environmental care attitude variable data is 119 students with a percentage of 75.3% in the very high category, 29 students with a level of 18.4% in the top group, eight students with an interest of 5.1% in the low grade, and two students with a percentage of 1.3% were in the poor category. Thus, the attitude of caring for the environment in students in one of the elementary schools in Makassar is in a very high group.

In addition to categorizing as above, environmental care variables can be classified based on the average scoring results of each indicator following the instrument grid. Thus, researchers can find out which signs have the greatest and least influence on students' environmental care attitudes. The following are the results of the research data scoring of environmental care variables based on instrument lattice indicators.

As for the presentation of the results of the research data measurement of environmental care attitude, intelligence variables based on the instrument grid indicators in the bar diagram are as follows.

Based on the bar diagram, the results of the scoring of the indicator grid of environmental care variables, it can be seen that the number 4 indicator that is "wise in using Natural resources" is an indicator of the environment with the highest score compared to other signs. Thus, symbols of "wise in using Natural resources" are the factors that most influence students' environmental care attitudes. The results of data scoring based on indicators show the effects that the lowest score of environmental

care indicators is the number 2 indicator, namely "taking the initiative to protect the environment." This result shows that the signs of "taking the initiative to protect the environment" become the least influential factor in students' environmental care attitudes.

Table 5. Research Data Scoring Results of Environmental Care Attitudes Variables

No	Indicator	An average score of each indicator
1	Hard work protects nature	644
2	Initiate to protect the environment	348
3	Appreciate health and cleanliness	503
4	Wise in using Natural resources	674
5	Environmental responsibility	586

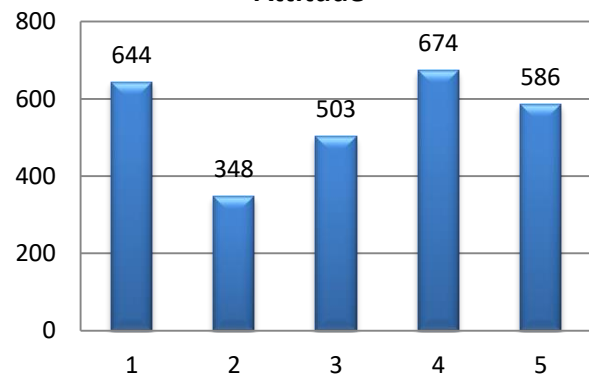**The Average Score for Each indicator of Environmental Care Attitude**

Figure 3 Stem Diagram of Variable Attitude Result of Environmental Care Attitudes Based on Instrument Grid Indicators

3.1.3. Assumption Test

Before a statistical test applied, an examination of assumptions or prerequisite tests first applied — this test used before testing the hypothesis. There are two tests carried out, namely the normality test and linearity test.

3.1.3.1. Normality Test

The normality test uses to find out whether the data obtained from the field normal distribution or not. Data can be stated as a normal distribution if the significance value> 0.05 and declared not generally distributed if the significance value is <0.05.

A normality test applied to each research variable. The formula used in the normality test in this study is to use Kolmogorov Smirnov. Based on the results of

compute utilizing the help of the SPSS version 20 application, the distribution data obtain as follows.

Table 6. Normality Test Data

No	Variable	Significance	Information
1	Natural Intelligence	0.75 > 0.05	Normal Distribution
2	Environmental Care Attitudes	0.51> 0.05	Normal Distribution

From the data in the table above, computational results using the normality test on the Natural intelligence variable obtained a significance value of 0.75 (0.75> 0.05), and the environment care attitude variable received a significance value of 0.51 (0.51> 0, 05). The result obtains that the variable data of Natural intelligence and variable data on environmental attitudes are normal distribution.

3.1.3.2. Linearity Test

In this study, a linearity test applied to determine whether Natural intelligence variables are linearly related to environmental care variables. The calculation of the data linearity test help by the SPSS 20 application. Data is linear if the significance value is higher (>) than 0.05; it states that there is a direct (linearity) relationship between the dependent variable and the independent variable.

Based on the results of computed using the SPSS version 20 application, the following data obtained.

Tabel 7. Linearity Test Result

Correlation	Significance	Information
Natural Intelligence with Environmental Care Attitudes	0.924 (0.924 > 0.05)	The Relationship is Linear

The result of the linearity test indicated that there is a linear relationship between the dependent variable and the independent variable evidenced by a significance value of 0.924 more (>) than 0.05.

3.1.3.3. Hypothesis Test

Hypothesis testing of this study uses parametric statistics using simple correlation techniques with the Pearson Product Moment formula. The calculation of the hypothesis test uses. After the count, the following results obtained.

The results of the analysis with Pearson Product Moment give a significance value of 0,000. Based on this analysis, there is a significant relationship between Natural intelligence and environmental attitudes of elementary school students. After the hypothesis is accepted, the next step is to know the close relationship

between both. To find out the close relationship between Natural intelligence and ecological interest, based on the data analysis guidelines table, according to Sugiyono below.

Table 8. Results of Tests for Simple Correlation of Natural Intelligence with Environmental Care Attitudes

Correlation	Significance	r_{value}
Natural Intelligence with Environmental Care Attitudes	0.000	0.450

Tabel 9. Data Analysis Guidelines

Coefficient Interval	Relationship Level
0.00 – 0.199	Very low
0.20 – 0.399	Low
0.40 – 0.599	Medium
0.60 – 0.799	Strong
0.80 – 1.00	Very Strong

The results of the analysis with Pearson Product Moment give a calculated r-value (correlation coefficient) of 0.450. Based on this analysis, it deduces that the level of relationship between Natural intelligence and environmental care attitudes is in the medium category. The amount of useful contribution (SE) given by Natural intelligence to care for students' environment known from the determinants of determination (r^2). Based on the results of calculations, the value of r^2 in this study is 0.2025. Thus, the useful contribution of Natural intelligence (SE) to students' environmental care attitude is 20.25%, and other factors determine the remaining 79.75%

3.2. Discussion of Research Results

One of the most critical attitudes toward the welfare of humanity is environmental care. Furthermore, ecological responsibility is the attitude and actions that always protect the environment from genetic damage, and development efforts to repair natural damage that has occurred [4], [5]. Activities to maintain environmental conditions that can support life are the obligations of all individuals who living in this universe without exception, including students.

The students expected to have the knowledge, care, and skills and a positive attitude towards the environment. Judging from the aspect of cognitive development. Also, elementary school age in a concrete operational phase characterized by the ability to do things such as classifying objects based on the same characteristics, composing or associating numbers or numbers, and simple problem-solving.

Intellectual ability at this time is enough to be the basis for giving various skills that can develop a mindset or reasoning power. Also, at the primary education stage, a student instills the eternal characters in him that he will carry throughout life. By introducing an environmentally caring attitude towards elementary school students, it expected that when they are adults, they can devote themselves to caring for and preserving the earth [6], [7].

Environmental care is influenced by several factors, one of which is Natural intelligence. The components of character contained in environmental care are hard work, initiative, respect for health and cleanliness, wisdom, and responsibility [8]. The Natural can be described as a person who has a deep interest in the environment, involves himself in nature, maintains nature from pollution, easily navigates nature, can see patterns in nature with easy, recognize various types of rocks, flora and fauna, even various species of birds that live in nature.

It reinforced by research on the relationship between Natural intelligence and environmental care attitudes that carried out. The results show that Natural intelligence is significantly related to environmental care. Based on the results of the calculation, the results of the bivariate correlation analysis obtained a significance of 0.000 <0.05, with the closeness of the relationship equal to 0.450, which is at the level of moderate relations. Based on these conclusions, it can conclude that Natural intelligence has a significant relationship with environmental care attitudes. The results of this study are by the opinions of several experts. According to references that ecological care states that general attitudes toward environmental quality manifested in the willingness to show activities that can improve and maintain environmental quality in every environment-related behavior [9].

The strength of a person's relationship with the Natural surroundings is influenced by several factors, one of which is Natural intelligence. Relationship environment and Natural intelligence are offered by the concept of diversity of knowledge, providing a new understanding of the state of the universe, along with the contents of all living organisms, It is indicated by the great interest in the surrounding environment, including animals and plants at school age. Enjoy objects and stories related to Natural phenomena, such as the occurrence of clouds and rain, the origin of animals, plant growth, the Big Bang theory of the universe and the solar system, formed in the cognitive aspects of humans. Characterize Natural intelligence that students are familiar with pets, like gardening or near the garden, showing a deep understanding of the school in topics involving life systems (for example, biological problems in science subjects, environmental issues in social studies subjects, and so on),

Thus, Natural intelligence has a relationship with environmental care. The results of correlation calculations and analysis of the opinions of the experts above, it can conclude that the research hypothesis which reads "there is a significant relationship between Natural intelligence and environmental care attitude" is proven. The results of the analysis of research data on the relationship between Natural intelligence and environmental care attitudes show that most of the fourth and fifth-grade students of an elementary school in the IKIP complex have Natural intelligence in the high category, which is 51.3%. Accordance with Armstrong's opinion that small children are indeed real Natural. Data research on Natural intelligence variables based on instrument lattice indicators shows that indicator number 2, namely "happy to care for animals and plants," is an indicator of Natural intelligence variable instrument with the highest score compared to other signs. Thus, the symbol "happy to care for animals and plants" is the factor that most influences students' Natural intelligence. This proves that elementary school and fourth-grade students already have a sense of care for creatures and the surrounding environment. As stated by Lindgren that children's behavior reflected in attitudes and feelings that can lead to further interpersonal actions; therefore, interpersonal events can be learned from the kinds of activities a person takes, such as acceptance, rejection, aggression, love dear, and avoidance. Students, in this case, show one of the interpersonal behaviors, in the form of recognition of living things other than humans and how they treat these living things [10].

The results of data scoring based on indicators show that the lowest score of Natural intelligence indicators is number 6, namely "knowing and distinguishing various types of rocks, flora, and fauna." These results indicate that the sign "knowing and distinguishing various types of rocks, flora, and fauna" becomes the least influential factor in students' Natural intelligence. Consistent with the opinion of Armstrong (2013), which states that if a child grows up in an urban environment, they have more sensitivity to popular "forms" of cultures such as canvas shoes, CD covers, and car models [11]. Students in Makassar mostly grow in urban areas, allowing them to divert their attention and interest to objects in the city, not to plants and animals.

Based on the results of the study of the relationship between Natural intelligence and environmental care attitudes, the majority of students have very high ecological care attitudes, namely 75.3%. Piaget explains that during particular operational periods (ages 7-12 years), children have begun to classify, compile, and associate numbers, and to conserve specific knowledge. At this stage, children still bound by the concrete logic rules, but they can follow the rules [12]. The children at the primary school age have started to behave socially by paying attention to the surrounding environment and having a caring attitude towards the environment.

Data scoring based on indicators shows the results that the lowest score of environmental care indicators is indicator number 2, which is "taking the initiative to protect the environment." This result shows that the signs of "taking the initiative to protect the environment" become the least influential factor in students' environmental care attitudes. In primary school age, children often referred to as groupage. This period is marked by an increase in children's interest in the activities of friends, in line with increasing interest in groups.

4. CONCLUSIONS AND SUGGESTIONS

4.1. Conclusions

Based on the results of research conducted on elementary school students in the IKIP Complex, it can be concluded that the Natural intelligence of fourth and fifth-grade students from elementary schools throughout the IKIP Makassar complex is included in the high category. The results showed that the caring attitude towards the environment of fourth and fifth-grade students was in a very high class. The strength of the relationship between Natural intelligence and environmental attitudes is included in the medium category.

4.2. Suggestions

Suggestions Based on the results of the research, the suggestions that can be given are as follows.

1. Students are expected to be able to care for animals and plants both at school and at home to be able to develop Natural intelligence and environmental care attitudes of students.

2. For parents to cultivate the attitude of caring for plants in the home environment and familiarizing students to interact with pets so that the Natural intelligence and caring attitude of students can develop frequently.

3. For teachers to continue to invite students to care for plants in the school environment and seek learning that raises student interest in plants and animals in order to develop Natural intelligence and environmental care attitudes of students.

REFERENCES

[1] H. G. Garner, Teamwork models and experience in education. Allyn & Bacon, 1995.

[2] K. D. Goldman and K. J. Schmalz, "MIT:'Multiple intelligences tips' for tailored teaching," Health Promot. Pract., vol. 4, no. 2, pp. 87–90, 2003.

[3] B. Ekinci, "The relationships among Sternberg's triarchic abilities, Gardner's multiple intelligences, and academic achievement," Soc. Behav. Personal. an Int. J., vol. 42, no. 4, pp. 625–633, 2014.

[4] F. G. Kaiser, M. Ranney, T. Hartig, and P. A. Bowler, "Ecological behavior, environmental attitude, and feelings of responsibility for the environment.," Eur. Psychol., vol. 4, no. 2, p. 59, 1999.

[5] D. Hicks and A. Bord, "Visions of the future: student responses to ecological living," Westminster Stud. Educ., vol. 17, no. 1, pp. 45–55, 1994.

[6] S. B. Palmer and M. L. Wehmeyer, "Promoting self-determination in early elementary school: Teaching self-regulated problem-solving and goal-setting skills," Remedial Spec. Educ., vol. 24, no. 2, pp. 115–126, 2003.

[7] J. A. Palmer, Environmental education in the 21st century: Theory, practice, progress and promise. Routledge, 2002.

[8] T. M. Schusler and M. E. Krasny, "Environmental action as context for youth development," J. Environ. Educ., vol. 41, no. 4, pp. 208–223, 2010.

[9] J. A. Anderson and W. K. Mohr, "A developmental ecological perspective in systems of care for children with emotional disturbances and their families," Educ. Treat. Children, vol. 26, no. 1, p. 52, 2003.

[10] T. Samuelsson, A. Sparrman, D. Cardell, and A.-L. Lindgren, "The active, competent child, capable of autonomous action: an inherent quality or the outcome of a research process?," AnthropoChildren, no. 5, 2015.

[11] T. Armstrong, Multiple intelligences in the classroom. Ascd, 2009.

[12] S. C. Nurrenbern, "Piaget's theory of intellectual development revisited." ACS Publications, 2001.

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