

## 'SCIENCE MOTIVATION' ANALYSIS OF ELEMENTARY STUDENTS

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### ABSTRACT

Based on the results of the PISA study in 2015 the level of science education in Indonesia has increased but not all regions have been surveyed properly. The low education in Demak Regency and the low interest of students in science subjects indicates the lack of student motivation towards science. The focus of this research is to find out the results of the analysis of Science Motivation of fifth grade elementary school students in Mijen District, Demak Regency on the Value of Career aspect. This research was conducted at public elementary schools in Mijen sub-district, Demak Regency. The population of this research is the fifth grade students of the 2018/2019 school year with a total sample of 198 students. The method used in this study consisted of observation and questionnaire questionnaire. Using a questionnaire instrument adapted from the SMQ (Science Motivation Questionnaire). Based on the results of the study it can be concluded that Science Motivation of fifth grade elementary school students in Mijen District, Demak Regency in the Value of Career aspect is categorized in the "High" criteria (9.1).

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## 1. Introduction

The Ministry of Education and Culture (Kemendikbud) released the achievement of the value of the Program for International Student Assessment (PISA) which stated the results of a 2015 survey which showed a significant increase in educational attainment in Indonesia, amounting to 22.1 points. These results put Indonesia in fourth place in terms of increasing student achievement compared to the results of a previous survey in 2012 from 72 countries that took the PISA test. Based on the average value, there was an increase in the PISA value of the Indonesian state in the three competencies tested and the biggest increase was seen in science competencies, from 382 points in 2012 to 403 points in 2015. PISA is a test system initiated by the Organization for Economic Cooperation and Development (OECD), to evaluate the education system of 72 countries around the world and the theme in 2015 is the Science competition.

Based on observations made by Henry (2017: 172) in class III SDN Ngelowetan 01, Mijen Subdistrict, Demak Regency, found several problems that often arise in science learning activities. while As'ad (2014) found that Education in Demak Regency was not evenly distributed in all Subdistricts in Demak District, it could be said that the level of education and human resources in Demak District were still relatively low because most of the population were still certified with SD / MI equivalent and there are still many who only work as company laborers, farmers, fishermen, housewives and others, even though Demak Regency has provided many kinds of facilities in various ways, especially in the field of education to Demak residents, but there are still many residents in Demak Regency who do not so concerned with high quality education that causes a lot of unemployment or just become unskilled laborers of companies in Demak Regency that is why researchers want to know the motivation of education in their area which also comes from Demak Regency especially namely Mijen District.

Science Motivation is an internal state that activates, directs, and maintains science learning behavior. The existence of scientific motivation in students will be a good start for main studying science, at least they will have attitudes and behaviors that are urgent to be active in learning science. Science motivation influences student behavior related to their achievements in science. Science Motivation has an accurate instrument for conducting research to assess overall learning in science. This assessment will

use the Science Motivation Questioner (SMQ II). The scientific motivation instrument is a questionnaire consisting of several statements explained by Glynn et al., (2011) about the Value of career (career value) that reveals their educational and work goals or future career plans, so that teachers more easily understand and direct and develop what students want. Therefore, a research on Science Motivation, entitled "ANALYSIS OF SCIENCE MOTIVATION OF ELEMENTARY SCHOOL STUDENTS IN MIJEN SUB-DISTRICT, DEMAK DISTRICT, 2018/2019 ACADEMIC YEAR" Mijen Subdistrict has 27 elementary schools which will be targeted in taking samples with a research focus. to identify students' tendencies towards science and how enthusiastic they are about learning science in school and their expectations about the science they are learning. Of the many elementary schools in Mijen Sub-district, only 13 schools will be taken to be sampled by random data collection. The importance of mapping the area that will be used for research by considering various school criteria in Mijen Subdistrict especially at this elementary school level in order to obtain valid data. So that the data obtained are not only from public or private schools but are mapped to several schools that are assumed to be able to represent the whole school in Mijen District to find out the science motivation measures of elementary school students in Mijen District so that later the data generated can be used by teachers to direct or motivate students on the importance of learning Science for equipping students in determining careers and students' desires for a better and structured future so that students physically and mentally will be better prepared to face various things for their future journey.

## 2. Methods

The population in this study were all grade 5 elementary school students in Mijen District, Demak Regency, which totaled 754 students from 27 elementary schools in Mijen District. The sample in this study was grade 5 students from several elementary schools selected as samples in Mijen Subdistrict, Demak Regency and the sample elementary schools to be taken were 13 elementary schools covering each village, sampling data using a sampling technique. In this study the sampling technique used is Proportionate Stratified Random Sampling which is included in the Probability Sampling technique / sampling technique that provides equal opportunity for each population element to be selected as a sample member. The Stratified Random Sampling Proportionate Technique is used because the population has members that are not homogeneous and proportionally distributed by Sugiyono (2015: 118). Based on the sampling technique it is expected that the number of samples 100% can represent the population. So that the greater the error rate, the smaller the number of samples needed and vice versa if the smaller the error rate, the greater the number of sample members needed as data sources. Thus the determination of the number of samples from certain populations developed by Isaac and Michael, for error rates of 1%, 5%, and 10%. The formula for calculating the sample size of a known population is as follows:

$$S = \frac{\lambda^2 \cdot N \cdot P \cdot Q}{d^2(N-1) + \lambda^2 \cdot P \cdot Q}$$

Information:

$\lambda^2$  with  $dk = 1$

P and Q = 0,5

N= total population

d = the error level can be 1%, 5%, 10%

This research is expected to have a small error so that it uses an error rate of 10%. The following is the sampling

$$S = \frac{\lambda^2 \cdot N \cdot P \cdot Q}{d^2(N-1) + \lambda^2 \cdot P \cdot Q}$$

$$= \frac{6,75}{0,51} = 13,23 \text{ (Rounded to 13)}$$

So the number of students is 394 students from 13 elementary schools in Mijen Subdistrict in each village that have been determined. The sample size in this study was determined by Slovin formula as follows:

$$n = \frac{N}{N(d^2) + 1}$$

Information:

n = Number of sample members  
 N= Number of population  
 d2 = Precision (5%)  
 the precision is set at 5%,

$$n = \frac{N}{N(d^2) + 1} = \frac{394}{394(0.05)^2 + 1}$$

= 198,49 (198 students).

So the number of samples is as many as 198 students, who will be sampled from each school. The large number of samples to be counted from each school is as follows:

$$ni = \frac{Ni}{N} n$$

Information:

Ni = Number of population members according to strata  
 ni = Number of sample members according to strata  
 n = amount of the whole sample member  
 N = Total population members

After obtaining sample numbers from each school, random sampling from each school will be taken randomly from some 5th graders in each of the schools. In keeping with the character of the private school in the District of Mijen, here is a sample of 13 average schools in each District. The total number of respondents with a 10% error rate in this study was 198 students in the District of Mijen District. The data analyzed is an instrument of the questionnaire data list. The data to be analyzed is the students' answer to the questions raised by this research and the subject of this research is the 5th grade student in Mijen District, Demak Regency. The data source used by the researcher is the primary and secondary data sources. The primary source of data obtained by the researcher is the data obtained from the respondents through the questionnaire and the interview of the researcher with the source, The secondary data source is the researcher documentation and the data obtained by the researcher from the school used as the research site. In terms of Value of Career The questions asked are the questions developed by Glynn et al., (2011).

Table 1

Questionnaire instruments and Science Motivation questionnaire indicators on the Value of Career aspect.

Method of Data Collection	Questionnaire Instrument	Indicators	Number	Score
Questionnaire sheet	Value of Career published by (Kim, S.K., Yoo, M.H., 2012)	Understanding the ability to develop career values and determine various motivations, initiatives, and ability to adapt to problems.	1-10	Yes = 1 No = 0

Determination of category scores using the Benchmark Reference Assessment approach. The approach focuses on what the student can do or what the student has achieved after completing a small portion of the entire program. To determine the graduation value of this approach, each student's score is compared to the student's ideal achievement (Arifin, 2009).

In the process of data collection, the first step is to find data about SD in the District of Mijen. The methods used in this study are: Observation Methods. This method of observation was carried out by researchers to determine the state of elementary school in Mijen District to be studied. The Questionnaire

/ Questionnaire method uses questions to obtain useful information that supports the theory and information needed for the project. From the very beginning of the research on Science Motivation the researchers have begun the collection of reliable and reliable data through: Demak District Central Statistics Agency, Dapodic Intelligence District especially for Elementary Schools, and of course this research will be done directly by the researchers with the permission of the parties researched. So, the data that will be generated will surely test its validity.

Data analysis in qualitative research is done at the time of data collection, and after completion of data collection over a period of time. According to Mile and Huberman (1984) in Sugiyono (2015: 337) it is argued that activities in qualitative data analysis are interactive and are continuous until complete and complete. In data analysis by Reducing data means summarizing, choosing the basics, focusing on the important things, looking for themes and patterns and removing unnecessary Sugiyono (2015: 338). to be used is coding, coding is an attempt to clarify respondents' answers accordingly. An example of using coding is the answer obtained from the respondent given the number symbol. Once the data is reduced, the next step is to present the data. In quantitative research this data can be done in the form of tables, graphs, pie charts, pictograms and the like. The third step in data analysis according to Miles and Huberman (1984) is draw conclusions and verification and Determination of score categories using the PAP (Benchmark Reference Assessment) approach. The approach focuses more on what students can do or what abilities students have achieved after completing a small part of the entire program. To determine the passing grade of this approach, each student's score is compared with an ideal score that might be achieved by students (Arifin, 2009). The stages / procedures for conducting the research. This stage must be carried out systematically, the following stages carried out by the researcher are Research Preparation by Requesting permission to research and search for data in the educational data warehouse of Mijen District, Conducting initial observations by looking at news and gathering various information relating to education in Demak Regency specifically Mijen District. Then Conduct research by taking research data that is giving questionnaire instruments to a predetermined sample, conducting data analysis from each elementary school in the village, drawing conclusions from the results of research to get the best solution to improve education in Mijen District.

### 3. Findings and Discussion

Data on Science Motivation Analysis Results of Elementary Students in Mijen District, Demak Regency on the Value of Career aspect described in Table 2.

Table 2.  
Comparison of average scores of aspects of Value of Career Elementary Schools in Mijen District, Demak Regency.

No	School Code	Total Samples	Average Score	Criteria
1	A	15	8,87	Very High
2	B	18	8	High
3	C	20	8,1	Very High
4	D	29	8,44	Very High
5	E	12	8,33	Very High
6	F	13	8,07	High
7	G	18	8,05	High
8	H	11	8,45	Very High
9	I	10	9,1	Very High
10	J	20	7,1	High
11	K	7	8	High
12	L	12	7,6	High
13	M	13	8,84	Very High
Total Average		198	8,19	High

Then, based on Table 2, the highest average total score is in SD I with an average score of 9.1 and the lowest average score is in SD J with an average score of 7.1 while the average score obtained by all students sampled in the aspects of Value of Career Elementary Schools in Mijen District, Demak Regency totaled 8.19 which could be categorized as high criteria.

Table 3

Percentage of Elementary School Student Answers in Mijen District, Demak Regency on the Value of Career Aspect.

No	Statement	"YES" (%)	"NO" (%)
1	Because that job can help me developing my ability	97%	3.03%
2	Because it can produce a lot of money	84%	16.16%
3	Because I can work in the same place for a quite long time	64%	36.36%
4	Because the job can be someone else's pride	87%	13.13%
5	Because I can lead people to work in team	81%	19.19%
6	Because I can work in team	86%	14.14%
7	Because I can help one another	92%	8.08%
8	Because I can develop my self-ability	95%	4.54%
9	Because I can express my Ideas	80%	20.20%
10	Because I can work without burden from my supervisors	52%	48.48%

Based on Table 3, the most students who agreed were the most in statement number 1 with a percentage of 97%, while the statement of students who disagreed was the most in statement number 10 with a percentage of 48.48%.

Science Motivation of Grade V Elementary School students in Mijen District, Demak Regency viewed from the Value of Career aspect. Value of Career is related to students' reasons for determining their future careers. Students participate in career planning to express their educational and work goals in the future. Value of Career is an aspect that supports Science Motivation developed by the University of Lethbridge. Science Motivation of elementary school students in Mijen Subdistrict, Demak Regency In the Value of Career aspect the results of the questionnaire showed "high" criteria with an average score of 8.19. In the criteria of "Very High" there are 7 elementary school samples namely SD I with a score of 9.1, SD A with a score of 8.87, SD M with a score of 8.84, SD H with a score of 8.45, SD D with a score of 8.44, SD E with a score of 8.33, and SD C with a score of 8.1. In the criteria of "High" there are 6 elementary school samples namely SD F with a score of 8.07, SD G with a score of 8.05, SD B with a score of 8, SD K with a score of 8, SD L with a score of 7.6 and SD J with a score of 8.0 7.1 for more details can be seen in Table 4.3 and Figure 4.3.

The main purpose of Science Motivation students relating to premises Value Of Career is the expectation of the work to be achieved by students. Expectations of work to be achieved by students are very diverse, Grade V Elementary School Students in Mijen District, Demak have an understanding of the types of work that are of various types. This is evidenced by the variety of types of work chosen by fifth grade elementary school students in Mijen District, Demak Regency, as many as 33 types of work can be seen in Table 4.10 and Figure 4.9. The most widely chosen job expectations are doctors with a percentage of 23.23%, teachers with a percentage of 18.18%, soccer players as much as 12.62% and police as much as 11.11%. The most popular type of work is work that is already known by students because it is often encountered by students among the community and is often introduced by teachers or parents of students, so they already understand these jobs.

Based on the Table and Figure obtained the results of the questionnaire Value of Career students with 5 answers with the highest percentage of reasons students choose a job. In statement number 1 "Because the work can help develop my ability" in that statement obtained an answer "YES" as much as 97% and an answer "NO" as much as 3.03% in this statement has the highest percentage of "YES" answers of the 10 other statements because many of the students have jobs that are in accordance with statements such as doctors. In statement number 8 "Because you can develop your abilities" get a percentage of answers "YES" as much as 95% and answers 'NO" as much as 4.54%, many of them answered yes because they agreed with the statement in accordance with their work expectations. In statement number 7 "Because it can provide assistance to others" get a percentage of the answer "YES" as much as 92% and

answer "NO" as much as 8.08%, many of them answered yes because they agreed with the statement in accordance with their work expectations as well as doctors and teachers. In statement number 4 "Because the work can become the pride of others" get a percentage of answers "YES" as much as 87% and answer "No" as much as 13.13%, many of them answered yes because they agreed with the statement in line with work expectations they. In statement number 6 "Because you can work with others" get a percentage of "YES" answers as much as 86% and answers "NO" as much as 14.14%, many of them answered yes because they agreed with the statement in accordance with their work expectations.

Based on the 5 most answers about the reasons students chose the job there were 5 statements that were not widely chosen as reasons for choosing a job namely statement number 2 "Because making lots of money" got a percentage of "YES" answers as much as 84% they did not choose this statement because it might be for them money is not everything and their reasons for developing their abilities and can help others are more meaningful than just earning a lot. In statement number 3 "Because of being able to work in the same place for a long time" obtained a percentage of answers "YES" as much as 64% and answers "NO" 36.36% which makes this statement a statement that is not approved by students because many students who do not understand the statement. Whereas in statement number 10 "Because it can work without the burden of superiors" get a percentage of "YES" as much as 52% and answer "NO" as much as 48.48%, many of those who answered disagree because they do not understand the statement and this statement be the statement with the most disagreeing answers.

The statement relates to the work expectations chosen by students, that 23.23% of students choose work as doctors, 18.18% of students choose work as teachers, 12.62% of students choose work as soccer players, and 11.11% of students choose a job as a police officer. But of the many jobs desired by students there is a unique job that was found by researchers because the work is really far different from the work of other friends. It turns out that after further exploration of this unique work is a job as a house builder or abusive language is a construction worker, if the other children will aspire to become a successful person but why is this child doing the opposite. It turned out that after being asked further by the researcher why he chose the job was because the child idolized the father who also worked as a construction worker, he assumed that the figure of the father was a formidable fighter to support his family, the researcher was quite surprised by the child's good thoughts but not means the researcher is degrading pthis work but researchers want the child to be able to aspire better in order to be able to raise the level of family by motivating the child.

According to the results of data analysis there are still many students who do not understand what they aspire to, most still write down their ideals according to what they often see, they have not really determined the ideals that are in accordance with their hearts or according to the situation or conditions in the environment around them, they still do not really understand about the challenges of life in the future. Therefore teachers and parents must know the interests and talents that children have, so that their potential can continue to be explored so that they will be able to choose jobs according to their potential by recognizing knowledge about themselves (eg interests and talents), extensive knowledge about the world of work and the awareness of the need for career planning.

Obtaining high criteria results on the Value of Career aspects of elementary school students in Mijen Subdistrict, Demak Regency is strongly influenced by the background of their parents and their parents' profession. Because many of them choose a type of work because they see the work of their parents, some are because their father is a construction worker so he wants to be a construction worker too. Therefore planning expectations on a job is very important to have by students because a hope that will greatly affect the motivation of students for the future so that they are able and more prepared to face challenges in achieving his career. That is why the value of the Career Value will later be used as an initial understanding for teachers and parents to direct students' interests and talents to become careers in the future. According to Fouad et al., (2008) that value perception is closely related to career development and decisions. Values according to Can et al. (2006) in journals published by Keygin (2013: 118-119) are sources of individual differences that function to evaluate our own behavior and attitudes as well as others. The values of individuals will affect their attitudes, behavior and thoughts. Therefore, values also influence career choices. This is considered important, because career choices are one of the most important decisions in everyone's life.

#### **4. Conclusion**

Based on the results of research and discussion on Science Motivation of fifth grade elementary school students in Mijen District, Demak Regency Particularly in the Value of Career aspect, it is categorized in the "High" criteria with a score of 9.1. Therefore the teacher has an important role in building students' scientific motivation while at school. Teachers need creativity in arousing the

activeness and interest of students in learning science, because Science Motivation of elementary school students in Mijen Subdistrict, Demak Regency on the Value of Career aspects are interconnected with the goals of the work they want.

## References

- Arifin, Zainal. 2016. *Evaluasi Pembelajaran*. Bandung : PT.Remaja Rosdakarya Offset.
- As'ad.M. 2014. "Gambaran Umum Profil Kabupaten Demak". [eprints.undip.ac.id/43537/3/Bab\\_II.pdf](http://eprints.undip.ac.id/43537/3/Bab_II.pdf). Diakses tanggal 5 Desember 2018.
- Dale, Paul, dan Judith. 2012. *Motivasi Dalam Pendidikan*. Jakarta : PT.Indeks.
- Datadikdasmen Online. "Kabupaten Demak Tahun 2018". *Website*. Accessed 5<sup>th</sup> December 2018
- Fitri, L., & Roshayanti, F. 2016. "Analysis Science Motivation (Aspek SMQ II) Siswa MA Se-Kabupaten Kudus Tahun Ajaran 2015/2016". *Prosiding Seminar Nasional*. ISBN: 978-602-14020-3-0. Semarang: Universitas PGRI Semarang
- Glynn, S. M., Brickman, P., Armstrong, N., & Taasobshirazi, G. (2011). Science motivation questionnaire II: Validation with science majors and nonscience majors. *Journal of research in science teaching*, 48(10), 1159-1176.
- Hamdu, G., & Agustina, L. (2011). Pengaruh motivasi belajar siswa terhadap prestasi belajar IPA di sekolah dasar. *Jurnal penelitian pendidikan*, 12(1), 90-96.
- Henry, Arifin, Ferdiansa. (2017). Keefektifan Pembelajaran IPA Menggunakan Model *Complete Sentence* Berbantu *Card* Terhadap Hasil Belajar Siswa Kelas III SDN Ngelowetan Kabupaten Demak. *Jurnal Ilmiah Sekolah Dasar*. Vol.1 (3) pp. 171-178.
- Katalog BPS : 1102001.3321010. 2016. *Kecamatan Mijen dalam Angka 2016*. Demak : Badan Pusat Statistik Kabupaten Demak.
- Kaygin, E., & Gulluce, A. C. (2013). The relationship between career choice and individual values: A case study of a Turkish University. *International Journal of Humanities and Social Science*, 3(3), 119-134.
- Kemendikbud. 2016. "Peringkat dan capaian PISA Indonesia mengalami peningkatan 06 Desember 2016" *Online*.\_\_\_\_\_ [\(https://www.kemendikbud.go.id/main/blog/2016/12/peringkat-dan-capaian-pisa-indonesia-mengalami-peningkatan\)](https://www.kemendikbud.go.id/main/blog/2016/12/peringkat-dan-capaian-pisa-indonesia-mengalami-peningkatan). Accessed 20<sup>th</sup> January 2019
- Mubeen, S., & Reid, N. (2014). The Measurement of Motivation with Science Students. *European Journal of Educational Research*, 3(3), 129-144.
- Rachmatullah, A., Roshayanti, F., Shin, S., Lee, J. K., & Ha, M. (2018). The Secondary-Student Science Learning Motivation in Korea and Indonesia. *EURASIA Journal of Mathematics, Science and Technology Education*, 14(7), 3123-3141.
- Rosantika. P., & Roshayanti, F. 2016. "Analysis Science Motivation (Aspek SMQ II) Siswa SMP Se-Kota Semarang Tahun Ajaran 2015/2016". *Prosiding Seminar Nasional*. ISBN: 978-602-14020-3-0. Semarang: Universitas PGRI Semarang.
- Refiane, Fine. 2015. *Dasar-Dasar Pendidikan IPA SD*. Semarang : Univeritas PGRI Semarang.
- Shin, S., Rachmatullah, A., Roshayanti, F., Ha, M., & Lee, J. K. (2018). Career motivation of secondary students in STEM: A cross-cultural study between Korea and Indonesia. *International Journal for Educational and Vocational Guidance*, 18(2), 203-231.

- Siregar, Eveline, dan Nara Hartini. 2014. *Teori Belajar dan Pembelajaran*. Bogor : Ghalia Indonesia.
- Soegeng, A.Y. 2009. *Pengantar Ilmu Pendidikan*. Semarang : FIP IKIP PGRI Semarang.
- Soegeng, A.Y. 2018. *Filsafat Pendidikan*. Yogyakarta : Magnum Pustaka Utama.
- Sugiyono. 2015. *Metode Penelitian Pendidikan (Pendekatan Kuantitatif, Kualitatif, dan R&D)*. Bandung : Alfabeta.
- Susanto, Ahmad. 2016. *Teori Belajar dan Pembelajaran di Sekolah Dasar*. Jakarta : Prenamedia Group.
- Taufik, Puji, dan Lestari Hera. 2007. *Pendidikan Anak SD*. Jakarta : Universitas Terbuka.
- Wicaksono, A. G. C., Minarti, I. B., & Roshayanti, F. (2018). Analysis of students' science motivation and nature of science comprehension in middle school. *Jurnal Pendidikan Biologi Indonesia*, 4(1), 35-42.
- Wonorahardjo, Surjani. 2010. *Dasar-Dasar Sains (Menciptakan Masyarakat Sadar Sains)*. Jakarta Barat : PT Indeks