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Metacognitive Knowledge Difference Of Grade Xi Senior High School Students Of Social Science Program In Geography Observed Through Field Dependent (FD) And Field Independent (FI) Cognitive Styles

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Abstract: *The aim of this research is to know the metacognitive knowledge difference of grade XI senior high school students of social science program who have field dependent (FD) and field independent (FI) cognitive styles in geography dealing with demography dynamics in Indonesia, on behalf of the development planning. In addition, this research is also aimed at describing the learning achievement difference (based on the scores in the report book of the odd semester in 2018/2019 academic year) of the grade XI senior high school students of social science program who have field dependent (FD) and field independent (FI) cognitive styles. The finding shows that there was a difference of metacognitive knowledge between the students with field dependent and field independent cognitive styles, which was proven through statistical test using T-test with 5% level of significance obtaining Sig. (2-tailed) value of 0,000. Meanwhile, there was no difference between the students with field dependent and field independent cognitive styles which was proven through statistical test using T-test with 5% level of significance obtaining Sig. (2-tailed) value of 0,082.*

Keywords: *metacognitive knowledge, cognitive style, field dependent, and field independent*

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I. Introduction

The issues or trends developing at international level were organized and completed so that curriculum 2013 came as a result. The international-standardized improvement emphasizes on the standard of content and standard of evaluation. In the attachment of Permendikbudnumber 26 year 2016, there is an explanation that factual, conceptual, procedural, and metacognitive knowledge dimensions need to be mastered by the students at technical, specific, detailed, and complex level; which deals with: 1) science, 2) technology, 3) art, 4) culture, and 5) humanities.

Students are required to have metacognitive skill so that they will be able to do activities that require HOTS (High Order Thinking Skills). According to Kuhn (2002), metacognition is defined as a procedure and cognitive result owned by an individual as a state of understanding and control, which is simplified into "thinking about thinking". Generally, metacognition is understood as a set of multidimension. Any knowledge or activity related to cognition systematization or regulation is called as metacognition (Schneider &Lockl, 2007).

Different characteristics will be shown by the students when they are observing and processing certain information from the problem they are facing. The difference of students in organizing and processing this information is known as cognitive style. Liu and Ginther (in Tafrilyanti, 2015) state that cognitive style refers to the consistency and identification of individual characteristics in feeling, remembering, organizing, processing, thinking, and solving a problem. The cognitive styles that are consistent and be able to depict one's behavior are field dependent (FD) and field independent (FI). It is in line with Young & Eastman's (in Jones &Wrigt, 2012) view which mentions that the common dimension of cognitive style used is field dependent-independent. This dimension has additional advantage of being stable in depicting individuals from time to time. In addition, Witkins (in Danili and Reid, 2006) also explains that FD and FI cognitive styles are observed as one variable which determines one's ability to solve a problem.

Geography is a subject in social science program at senior high school level. According to the students, geography is regarded as a subject which is difficult to understand and to comprehend. The lack of understanding of how to learn geography makes the students confused in solving geography problems given by the teacher. Some of them state that learning geography is learning of memorizing some terms dealing with

physical parts of the earth. Actually, if they go a little bit deeper in learning geography, they will surely know that the things they are learning in geography are phenomena existing in daily life including natural and social phenomena. Other tendency that can be seen from the students of social science program is their cognitive styles in which when they got a problem from the teacher, only few of them are considered capable or smart enough (the ones with field independent cognitive style) to solve it. After some students are considered capable in solving the given problem, the others who tend to be lazy (the ones with field dependent cognitive style) will directly copy the answer done by the previous students.

From the background of the problem explained above, the researcher is interested to conduct a research about the metacognitive knowledge difference of grade XI senior high school students of social science program in geography observed through field dependent (FD) and Field Independent (FI) cognitive styles.

II. Research Methods

This research is pre-determined with statistical data analysis and statistical data interpretation. Based on that rationale, the researcher used quantitative approach which aims at revealing the metacognitive knowledge difference of grade XI senior high school students of social science program in geography observed through the field dependent (FD) and field independent (FI) cognitive styles. Later on, this research resulted pre-test of geography, GEFT test, and metacognitive knowledge test. The results of the tests done by the students were stated in the form of score with range of 0-100, which were then processed and analyzed in terms of the difference through statistical test. The statistical test used was independent sample T-test in order to see the metacognitive knowledge difference and the learning achievement scores observed through field dependent (FD) and field independent (FI) cognitive styles.

III. The Results Of The Research And The Discussion

3.1 Result of Test Validation

The researcher used an instrument in the form of tests which had been validated by two experts working in team before the tests were given to the students. The validation of the tests covered the pre-test of geography and also metacognitive knowledge test, both of which emerged these following results:

Table 3.1 Result of Geography Pre-test Validation

No	Validity Aspects	Results Obtained from the Validator		
		Score	Percentage (%)	Category
1	Content Validity	3,92	98,13	Very suitable
2	Language Validity	3,98	100	Very suitable
Mean		3,94	98,57	Very suitable

The table above shows that the mean result from the expert validator is 3,94 with percentage of 98,57%. According to the resulted percentage, the suitability of the test can be categorized into "very suitable". The construction of the geography pre-test was based on students' cognitive skill dealing with thinking aspect of C1 (remembering) up to C5 (analyzing) as the ones existed in Bloom's taxonomy.

Table 3.2 Result of Metacognitive Knowledge Test Validation

No	Validity Aspects	Results Obtained from the Validator		
		Score	Percentage (%)	Category
1	Content Validity	3,88	98,13	Very suitable
2	Language Validity	3,77	100	Very suitable
Mean		3,83	95,71	Very suitable

The table above shows that the mean result obtained from the expert validator is 3,83 with percentage of 95,71%. According to the resulted percentage, the suitability of the test can be categorized into "very suitable". The construction of the metacognitive knowledge test was based on the indicators of students' metacognitive knowledge which consists of four indicators, including: 1) the ability to give argument that supports their thinking, 2) the ability to use the strategy that raise their awareness, 3) the ability to evaluate the procedure used, and 4) the ability to overcome errors/obstacles in solving a problem ((Deseote, 2007).

3.2 Result of GEFT Test

The recapitulation of the GEFT test result on the students who have medium ability shows that most students have field independent cognitive style as shown by the mean score of GEFT test obtained, that is 9,87. The following table shows the percentages of each cognitive style of the 39 students involved.

Table 3.3 Comparison on the Number of Students with Field Dependent and the Field Independent Cognitive Style

No	Cognitive Style	Percentage (%)
1	Field Dependent	43,59
2	Field Independent	56,41

A person with field independent cognitive style tends to be interested in society, have higher awareness towards others with higher social and interpersonal skills, and prefer situation which requires direct communication with others. Therefore, such person tends to be global, directed to be dependent on others, difficult in solving problem, and problematic at school. However, that person is able to collect information through taking notes and important points. These characteristics help explaining the reason on why a person with field dependent cognitive style shows a tendency to choose having career in social, law, behavioral science, and education.

In line with an idea of field dependent (in Suradi, 2007), it is explained that the characteristic of students with FD cognitive style is that they tend to get to know a certain pattern as a whole. As a result, it will be difficult for them to concentrate on a single situational aspect or analyze a certain pattern into various patterns. Meanwhile, students with FI cognitive style identically understand the separated parts of a certain pattern based on its components.

3.3 Metacognitive Knowledge of Students with Field Dependent and Field Independent Cognitive Styles The research finding shows that the metacognitive knowledge of the students with field dependent and field independent cognitive styles are different. The difference can be seen in the result of statistical test using T-test with 5% level of significance which indicates the probability value of 0,000.

Table 3.4 Result of Independent Sample T-Test on Eleventh Graders of Social Science Program's Metacognitive Knowledge Scores

Independent Sample T-Test										
		Levene's Test for Equality of Variances		T-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Metacognitive knowledge	Equal variances assumed	.785	.381	-4.307	37	.000	-10.717	2.488	-15.758	-5.675
	Equal variances not assumed			-4.524	34.377	.000	-10.717	2.369	-15.529	-5.905

Nevertheless, viewed from the obtained metacognitive knowledge score, it was revealed that the difference between both cognitive styles were not too divergent. The mean of metacognitive knowledge scores of the two groups of students with those two cognitive styles are presented as follows:

Table 3.5 Comparison on Means of Metacognitive Knowledge Score between Students with Field Dependent and Field Dependent Cognitive Styles

No	Cognitive Style	Means of Metacognitive Knowledge Score
1	Field Dependent	64,53
2	Field Independent	75,25

From the table above, it can be seen that the mean score of the students with field dependent cognitive style was 64,53, while the mean score of the students with field independent cognitive style was 72,25. These results are in line with Abrory's (2017) study about solving mathematic problems for MTs students observed through field dependent and field independent cognitive styles. There was no big difference between the students with field dependent and field independent cognitive styles in solving problems in which both of them could get the correct solution of the problem. However, the students with FI cognitive style looked more analytic and precise compared to the ones with FD cognitive style.

3.4 Metacognitive Knowledge of Students with Field Dependent and Field Independent Cognitive Styles The research findings show that there was no difference between the learning achievement of the students with field dependent and field independent cognitive styles. In this case, the learning achievement of the

students were obtained from the report book of the odd semester. Based on the statistical test using T-test with 5% level of significance, it was known the probability value was 0,082.

Table 3.6 Result of Independent Sample T-Test on Eleventh Graders of Social Science Program's Learning Achievement

Independent Sample T-test										
		Levene's Test for Equality of Variances		T-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Learning Achievement	Equal variances assumed	.566	.457	-1.789	37	.082	-3.79167	2.11927	-8.08572	.50239
	Equal variances not assumed			-1.744	27.422	.092	-3.79167	2.17396	-8.24906	.66573

The learning achievement (based on the report book) of the students with those cognitive styles was not too different. The students with field dependent cognitive style had mean score in the report book of 81, while the students with field independent cognitive style had mean score in the report book of 84,79. The following is the comparison of those mean scores in the report book:

Table 3.5 Comparison on Means of Learning Achievement Score (based on the Report Book) between Students with Field Dependent and Field Dependent Cognitive Styles

No	Cognitive Style	Means of Metacognitive Knowledge Score
1	Field Dependent	81,00
2	Field Independent	84,79

The finding is in line with the finding of Abrory's (2017) study about solving mathematic problems for MTs students observed through field dependent and field independent cognitive styles, in which it that the success of learning is not affected by cognitive style only.

The students with field independent cognitive style have more superior metacognitive knowledge compared to the students with field dependent cognitive style. However, if it is observed through the analysis of the learning achievement, they are the similar. The learning achievement of the students with field dependent cognitive style should be higher as stated in Evy Sofia's book entitled under-achiever "murid pintar, kok prestasinya rendah?", in which most people consider students' intelligence goes in line with good learning achievement. A high intelligence test score should be followed by high learning achievement score in the report book.

IV. Conclusion

The conclusions that can be drawn from this research are:

1) Metacognitive knowledge of grade XI senior high school students of social science program who have field dependent (FD) cognitive style got mean score of 64,53 and the other 15 out of 24 students with field independent (FI) cognitive style got score of 75,25, in which the difference can be seen from the result of statistical test with 5% level of significance obtaining Sig. (2-tailed value) of 0,000.
2) Learning achievement of grade XI senior high school students of social science program who have field dependent (FD) cognitive style got mean score of 81 and the other 15 students out of 24 students got score of 84,79, in which the difference can be seen from the statistical test with 5% level of significance obtaining Sig. (2-tailed value) of 0,082. Therefore, there was no significant difference between the learning achievement of the students with field dependent and field independent cognitive styles.

References

[1]. Kuhn, Deanna. 2011. Metacognitive Development Current Direction in Psychological Science. Sage Publication, Inc. 9(5).
[2]. Kementerian Pendidikan dan Kebudayaan Republik Indonesia. 2013. Modul Implementasi Pelatiha Kurikulum 2013. Jakarta: Kementerian Pendidikan dan Kebudayaan.
[3]. Cox, Michael T. 2005. Metacognition in computation: A selected research review. Artificial Intelligence. 169: 104-141.
[4]. Flavell, John H. 1976. Metacognitive Aspects of Problem Solving. In L.B Resnick (Ed) the Nature of Intelligence. 231-236.

[5]. Eriawati. 2013. Aplikasi Keterampilan Metakognisi Dalam Pembelajaran Ekosistem di MAN Rukoh. Jurnal Biotik. ISSN: 2337-9812, 1(1): 1-66.
[6]. Arikunto, Suharsimi. 2006. Prosedur Penelitian Suatu Pendekatan Praktik. Jakarta: PT. Rinek.
[7]. Nugraha, Muhamad Gina dan Santy Awalliyah. 2016. Analisis Gaya Kognitif Fiel Dependent dan Field Independent Terhadap Penguasaan Konsep Fisika Siswa Kelas VII. Prosiding Seminar Nasional Fisika. Volume V. ISSN: 2339-0654
[8]. Riansyah, Indra Cepy. 2013. Kontribusi Motivasi Belajar dan Kreativitas Peserta Didik Terhadap Kemampuan Berpikir Secara Geografis di SMA Kota Bandung. Tesis: Sekolah Pasca Sarjana (SPS) Universitas Pendidikan Indonesia.
[9]. Trianto. 2007. Model-model Pembelajaran Inovetif Berorientasi Kontruktivistik. Jakarta: Prestasi Pustaka Publisher.
[10]. Woolfolk, A. 2009. Educational Psychology Active Learning Edition (Tenth Edition). Yogyakarta: Pustaka Pelajar.
[11]. Zubaida, Anggun. 2015. Pengembangan Asesmen Metakognisi Calon Guru IPA Melalui Pembelajaran Berbasis Masalah. Jurnal Penelitian. 12(2): 2013-222.

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