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Developing an Instrument of Measure Cognitif Style Field Dependent and Field Independent In Junior High School Students

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Abstract

The purpose of this research is to design and develop cognitive style measurement instruments In Junior High School students. The method used is research and development in phases: designing and developing instruments that come with manual charging and usage tips, expert testing, pre-test the empirical, and empirical testing. Test experts or assessments by experts through quantitative and qualitative assessment. Pre empirical testing or pre field test is a test instrument on a small scale and empirical testing or field testing is testing on a large scale to Junior High School students. The stage of pre-test of empirical and empirical testing is testing the validity and instrument reliability calculation. Each stage of testing experts and empirical testing, followed by refinement or revision of the instruments developed. Based on the results of this study concluded that cognitif style measurement instrument can be developed with six indicators consist of: The ability to think, learn orientation, ability to remember material, reinforcement Receiving, Choosing the type of lesson, and problem solving skills. The dimention of cognitive style consist of field dependent dan field independent.

Keywords: Cognitif style, field dependent, field independent, measure instrument.

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Introduction

Cognitive style refers to the way a person to process, store and use the information to respond to a task or responding to various types of environmental situations. Known as the style and not as the ability for referring to how people process information and solve problems and not referring to how the process is the best solution.

Cognitive style has an important role in learning. According to Spector (2012), one thing for a teacher to be considered in planning learning activities is important to know the characteristics of students, the goal is to find early support for the most likely and relevant for granted. One way to know the characteristics of students that have implications for the planning of student learning is a cognitive style. Cognitive style is distinctive in the way students learn, both with regard to how the reception and processing of information, attitudes towards information, and practices related to the learning environment.

Cognitive styles of students plays an important role in the meaningfulness of learning. According Ngilawajan (2013) says "The style is the way a person's cognitive process, store and use the information to respond to a task or different types of environment." The same think in Nasution opinions Messick (2011) illustrates that cognitive style as a habit of behaving that are are relatively fixed in a person in receiving, thinking about problem solving, and store information.Each student has a distinctive trait in learning and give effect to the students' mastery of concepts. Cognitive styles according Sarbana and Dina in Susilawati and Saragih (2015) is the diversity, uniqueness different with others by using the information it receives and how to process them as a tool to consider and take a decision. One type of cognitive style is a kind of received information field dependent and field independent.

cognitive styles of individuals with regard to the consistency in the use of cognitive processes, does not describe the content or level of cognitive performance of individual, cognitive styles include stable attitudes, preferences, habits or strategies that distinguish individual style to perceive, remember, think, and solve problems. Each student has a distinctive trait in learning and give effect to the students' mastery of concepts. Everyone has a certain way that is relatively consistent in processing information, how to remember, think and solve problems. Cognitive styles of learning, which is one variable learning conditions be one consideration in designing learning. Knowledge of cognitive style in the learning required to design or modify the learning materials, learning objectives, and learning strategies. The purpose of this research is the development of instruments to get the appropriate indicator in measuring cognitive style field filed dependend and independent Junior High school students.

Materials and Methods

The method used is a method of research and development. There a number of models of steps Involved in developing the questionnaire being propose. According Meerah *et al.,* (2012) A five-phase models was used for the development of the questionnaire that phases 1) a review of the literature, phase 2) Operational depenition of the construct and development of items, phase 3) Field testing to content validate by expert judment and reliabiity test, phase 4) Item analysis and preparation of the final draft, and phase 5) Pilot study to calculate reliability. Sources of data in this study consisted of: the literature, experts and middle school students pertma. Data collection techniques used in this study consisted of: literature studies, interviews, and questionnaires. The instrument used consisted of: journals, books, other reading materials, assessment sheets and questionnaires.

Product design is developed in the form measuring instrument that consists of lattice and grain statements and charging instructions and instructions for use. Then the product was carried out by an expert assessment consisting of: three experts in educational psychology. Assessment in the form of quantitative assessment sheet that consists of 19 assessment indicators are divided into three aspects, namely constructs, aspects of legibility and practicality aspects. Grading scale of 1 to 5 with a level of construct validity were developed based on the median (Md) and Quartile (Q). The median value is then interpreted based on the following criteria: 1-2 means to be replaced, 3 means fixed, 4-5 mean good or maintained.

Results

The design of the initial instrument to measure cognitive style in the form of a grid as in the following table:

Table 1: Grid Instruments Early Cognitive Style.

Variable	Indicator	Item Butir		Item Total
		Positif	Negatif	
Field Independent	Having the ability to analyze to separate objects from the surrounding environment, so that perception was not affected when the environment changes	1,	11	2
	Tends to be less sensitive, cold, keep others at a distance, and individualistic	7	12,33	3
	Choosing a profession that can be done individually with a material that is more abstract or require the theory and analysis	31	4,9,19	4
	Tend to define its own goals	35	11,30	3
	Tends to work with emphasis on intrinsic motivation and more influenced by the strengthening intrinsic	3,7,25	14	4
Field Dependent	Tend to think global object as a unity with the environment, so that perception is influenced by environmental changes	10,13	20,24	4
	Having a social orientation so it seemed good-natured, friendly, thoughtful, considerate and compassionate towards other people	2,23	15,29	4
	Tend to choose professions that emphasize social skills	16		1
	Tend to follow existing destination	18,26		2
	Tend to work with emphasis on external motivation and more interested in the external reinforcement, in the form of gifts, praise or encouragement from others.	6,8,17,22,28,32	5,34	8
Total Item			35	

The next step is the design assessment instruments developed by experts. Expert judgment related to the suitability of the dimensions, indicators, grain and sentence statement. The assessment of the experts is the first step in validating the instrument construct. The results of the qualitative assessment experts play a role in changing the lattice instruments developed. The assessment of the experts have a role as an expert judgment, meaning that the assessment of the experts is very influential on the instrument developed. However, sometimes it is subjective assessment of experts in accordance with the areas of expertise expert. But sometimes the expert ratings are subjective depending on the background or area of expertise expert. (Mardapi, 2011). The results of the expert assessment at the initial design of the instrument in the form of qualitative and quantitative assessment. Grating instrument thinking style expert assessment results in the table below:

Table 2: Revised Grid Cognitive StyleAssessment Instrument Specialist.

Varieble	Indicator	Item Butir		Item Total	
		Field Dependent	Field Independent	Field Dependent	Field Independent
Gaya Kognitif	The ability to think analytically and globally	1,4,13,23,	25,36,42,43	4	4
	Oriented social and individual	2,5,14,24,	26,35,41,44, 50	4	5
	The ability to remember the subject matter	3,6,15,22,	30,34,40,45	4	4
	Receiving extrinsic and intrinsic reinforcement	7,10,18,21,29,	33,39,46,49	5	4
	Kind of learning social skills and abstract or require the theory and analysis	8,11,17,20,	28,32,38,47	4	4
	Problem-solving skills	9,12,16,19	27,31,37,48	4	4
Total Item				25	25

The next stage is the instrument developed and then submitted a limited basis to students. Besides tested by experts, raw instrument developed should be tested to the respondent on the ground or students who have been determined. Supardi (2015) The instrument was developed through Several stages of testing both the expert testing and empirical testing. It is intended that the instrument developed a standard instrument louvers instruments such limited trial results in the following table:

Table 3: Revised Grating Instrument Cognitive Style Limited Trial Results.

Varieble	Indicator	Item Butir		Total Item	
		Field Dependent	Field Independent	Field Dependent	Field Independent
Gaya Kognitif	The ability to think analytically and globally	1,4,13,23,	25,36,42,43	4	4
	Oriented social and individual	2,5,14,24,	26,35,41,44,29	4	5
	The ability to remember the subject matter	3,6,22,	30,34,40,45	3	4
	Receiving extrinsic and intrinsic reinforcement	7,10,18,21	33,39,46,24	4	4
	Kind of learning social skills and abstract or require the theory and analysis	8,11,17,20,	28,32,38,47	4	4
	Problem-solving skills	9,12,16,19	27,31,37,48	4	4
Total Item				23	25

In addition to limited testing, instruments developed extensively tested. This means that the number of respondents who were sampled for testing the instrument as much as 10 times the number of grains developed. In testing instruments, samples used must be qualified. Hendry (2015) concluded that To test the validity of a construct, EFA and CFA, it takes a minimum sample of 5-10 x number of items used. Alternatively, for a number of questionnaire items as much as 10. The grille instruments comprehensive test results obtained valid item consisted of 23 field dependent and 25 independent field. So that the number of grains of field dependent and independent filed the same, then the raw instrument shown in the following table:

Table 4: Grid Instrument Cognitive Style Baku.

Varieble	Indicator	Item Butir		Item Total	
		Field Dependent	Field Independent	Field Dependent	Field Independent
Gaya Kognitif	The ability to think analytically and globally	1,4,13,23,	25,36,42,43	4	4
	Oriented social and individual	2,5,14,24,	26,35,41,44	4	4
	The ability to remember the subject matter	3,6,22,	30,34,40,45	3	4
	Receiving extrinsic and intrinsic reinforcement	7,10,18,21	33,39,46,24	4	4
	Kind of learning social skills and abstract or require the theory and analysis	8,11,17,20,	28,32,38	4	3
	Problem-solving skills	9,12,16,19	27,31,37,48	4	4
Item Total				23	23

Discussion

Cognitive style is one of the characteristics of individuals who can help explain individual differences in learning success. According to Rahman (2013) divides into a cognitive style cognitive style field dependent and field independent cognitive style. Daniels in Yousefi (2011), summarizes some of the characteristics of individuals who have cognitive style independent fields, among others: (1) have the ability to analyze to separate objects from the surrounding environment, so that perception was not affected when the environment changes, (2) have the ability to organize object- objects that have not been organized and reorganized objects that have been organized, (3) tend to be less sensitive, cold, keep others at a distance, and individualistic, (4) to choose a profession that can be done individually with a material that is more abstract or require theoretical and analysis, (5) tends to define its own purposes, and (6) tend to work with emphasis on intrinsic motivation and more influenced by intrinsic reinforcement.

Witkin in Stavredes, stating that the characteristics of the field dependent learners consists of: 1) perceives global, perceives the field as a whole, 2) cognitive tasks are more difficult,, 3) has difficulty with ambiguous or unorganized material-needs to have structure imposed, 4) needs to have defined goals for learning, 5) is externally motivated external needs reinforcement.

The various concepts can be concluded that the style of thinking independent and dependent is the

tendency of individuals to behave remains characterized by indicators: 1) the ability to think global and analytical, 2) socially oriented and individuals, 3) the ability to remember material, 4) receive reinforcement ektrinsik and intrinsic, 5) the type of abstract learning and social skills or require the theory and analysis, 6) the ability to solve problems

Based on the above indicators is then developed to measure cognitive style secondary school students by five stages according Meerah *et al.,* (2012) yaitu: 1) a review of the literature, phase 2) Operational depenition of the construct and development of items, phase 3) Field testing to content validate by expert judment and reliabiity test, phase 4) Item analysis and preparation of the final draft, and phase 5) Pilot study to calculate reliability

Draft item then validate by expert judgment three senior researcher for content validation. Each expert is asked to review each item and put the items correspond to construct the operational definition. judment each work separately. After the completion of a review by all judment, then the item diperiksalagi. If there is an error on the placement of items to construct as defined (item is an appropriate step of the construct) then the item is not selected. Most of the items are found suitable for measuring the construct. Draft questionnaire piloted to test the reliability of the test. The questionnaire was tested on group of 40 junior high students. Internal consistency of the methods used to calculate the reliability of the test. From the output shows that the reliability of the test and constructs that have reached a high enough coefficient shows its reliability. Reliability test results showed 0.98. This indicates that it is highly appropriate questionnaires

The next phase, item analysis and preparation of the final draft, the output of the analysis of the intercorrelations between item and its construction. Some items were removed from the questionnaire because the value of the coefficient was below 0.312. The final draft of the questionnaire that was tested again to another group of 40 junior high students. The results indicate that there are four items under kooefisien value, so that all four items tersebit not used. Reliability for each construct seen from the reliability of a construct that is high enough then the instrument is ready for use. Furthermore, the validity is checked by comparing students' scores on a questionnaire with data collected through interviews. The interview was conducted on a sample of students. They asked students in difficulty and preparedness on the skills measured after the student has answered the questionnaire.

Conclusion

Based on the results of research and discussion, it was concluded that the indicators of measuring instruments consist of the style of thinking: The ability to think, learn orientation, ability to remember material, reinforcement Receiving, Choosing the type of lesson, and problem solving skills.dimensi thinking style consists of field dependent and field independent. The results of this study can be used as a measurement tool style variable think middle school students.

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