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Effectiveness of Cooperative Learning (Theme: Limited Natural Resources) to Increase Intention to Save Energy in Students

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ABSTRACT

Some of the natural disaster occurred caused by people using natural resources unwisely. Before analyzing about that behavior, first will be analyzed is behavioral intention. The purpose of this study was to determine the effectiveness of cooperative learning group investigation type with the theme of "limited natural resources" to improve intention to save energy. The study used an experimental design Post-test-Only Design With Equivalent Groups, involving 66 people, divided into two groups, each 33 in the experimental group and 33 control group. Process experiments were conducted in a way, dividing the experimental group in 5 small groups, having given the matter of limited natural resources, then each group discussion, and sharing ideas with other groups in the jigsaw. The results showed that there are differences in energy-saving behavior intention significantly between the experimental group (KE) and the control group (KK) with t value of 3.192 with 0.002 significance ($p < 0.05$). Differences KE and KK with a positive t value indicates that the energy-saving behavior intention at KE has a higher value than the families who were not given the manipulation. In general score KE and KK if joined at the high category, but if sorted, KE scores at the high category and score KK in middle category.

Keywords: *Intention To Save Energy, Group Investigation*

Using natural resources unwisely, over time will result in a natural imbalance, so the variety of disasters caused by natural events continue to occur. Increasing global warming, prolonged drought, landslides, forest fires and prolonged drought. Such incidents happen because of human behavior that is not wise in the use of natural resources that are not easily updated. Gifford (2009) in a critical analysis contained in environmental psychology journal stated that, events natural damage occurs is generally more easily analyzed scientifically, whether related to natural or usage that involves a high level of technology. Apart from these two things, the issue of

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human behavior as it's was no less serious for scrutiny. Gifford explained that the environmental damage occurred because the man "not involved" with nature. Humans do not understand well about the "work" of nature to provide a variety of resources and energy to meet human needs. Therefore, human beings need "dipahamkan" or given adequate knowledge about the natural resources are limited, so it may be wise to take advantage of natural resources. Jaolis (2011) showed that extensive environmental knowledge affects the emergence of pro-environmental attitudes. A similar study conducted by Suki (2013) and the results show that the extensive environmental knowledge affect the emergence of pro-environmental behavior. Besides knowledge, other factors lead to the behavior of individuals is pro-environment is subjective norm. Subjective norm will motivate individuals to reinforce behavior that will be raised. Subjective norm are the external factors outside the individual form of solicitation or motivation of the people you trust. Marhaini (2008) showed that the attitude of the individual and subjective norm, partially or jointly influence the emergence and behavioral intention to consume the product.

Based on the above analysis, their knowledge (internal factors) and subjective norm (external factors) will strengthen individual intentions in the act, in this case the behavior of individuals to conduct a saving energy in everyday life. Various social interventions to improve human behavior related to nature has been done, including in Indonesia. Research conducted by Firmiana, Imawati, and Prasetya (2012) about the behavior of pro-conservation, shows that social interventions to change behavior to be more pro-conservation or environmental awareness begins with the provision of adequate knowledge about what is junk and what they need time to be described. This was followed by a series of conduct drawn up and scheduled to do. The result is a pro conservation behavior of the young generation in this case is the subject of research is the students showed an increase to be more environmentally conscious. The form of intervention offered in this study to improve the knowledge and intention of the individual to behave in energy saving is through learning cooperative learning type group investigation. Why is cooperative learning model with the type group investigation? Because of this learning model train individuals (students or students) to be more creative and have good communication skills. Given the learning strategies that offer allow individuals to be actively involved since the beginning, sharing duties with other group members to locate the material, then share it with other groups through presentations. The existence of cooperation among the members when searching for material from different sources but refers to a specific case will increase learning motivation of the individual. More specifically Lie (2007) showed that there are at least six stages in the process of cooperative learning group onvestigation of identifying topics and divide people in small groups, plan tasks and division, conducting investigations, preparing reports, presenting, and evaluating. Researchers concluded that the model of cooperative learning type group investigation with the theme of "limited natural resources" will encourage people to get

acquainted with the causal and the extent of human losses gained if the damage can be controlled should this occur.

The understanding of the intention is subjective chances of the individual about the possibility of doing a particular behavior (Fishbein & Ajzen, 1975). Generally Ajzen (2005) suggested that the intention (in this case is the intention of saving behavior of energy) consists of three aspects, namely: Attitude (attitude toward the behavior) is the individual evaluation positively or negatively to things, people, institutions, events, behavior or certain interests, subjective norm is the individual's perception of social pressure to show or not show a behavior, and perceived control behavior or beliefs about the presence or absence of the factors that facilitate and hinder the individual to perform a behavior.

Referred to cooperative learning is a learning model in which people learn and work in small groups collaboratively, with the number of 5 people and are structurally heterogeneous (Slavin, 2009). Types of cooperative learning is used mainly as a manipulation in this study there Group investigation (investigation group), a model of cooperative learning that puts students into groups heterogeneously based on different socio-economic, gender, ethnicity, and religion to conduct an investigation of a topic (Eggen and Kauchak, 2012). While Slavin (2009: 11) states that the group investigation is the process of planning and organizing classes where individuals working in small groups, with emphasis on cooperative inquiry, discussion groups, and cooperative planning and projects.

METHOD

The dependent variable were used in this study is the intention of energy-saving behavior. Operationally energy-saving behavior intention is the intention of the individual to behave efficiently use natural energy associated with his attitude toward the condition of limited natural resources and social norms are internalized and then believed. Intention will be measured using aspects intentions include: individual attitudes towards the condition of natural resources that not all infinite, subjective norms obtained from the environment if the environment emphasizes the individual to constantly bermat in energy use, and perceived control behavior or the ability of individuals consciously to control his behavior when using natural energy.

Subject of the study involved a number of 66 people, divided into an experimental group a total of 33 people and the control group a total of 33 people. The subject is the fifth semester student majoring in Psychology. This type of research used in this research is quantitative experimental design Posttest-Only Design With Equivalent Groups (Shadish, Cook, Campbell, 2012: 116). From the design it appears that the research will be conducted with the involvement of two groups: the experimental group and the control group, without giving a pretest. The treatment will be given to the experimental group, in the form of group learning investigation in which the

implementation of learning combined with a jigsaw. Learning material in the form of limited natural resources. After the completion of the treatment, the experimental group were asked to fill out a check sheet by manipulation and posttest questionnaire as his. As for the control group was not given any treatment and langsug asked to fill in questionnaires. Furthermore, the data from the two groups will be compared to determine whether there is a difference intentions.

Data will be analyzed using different test to see whether there are differences in the energy-saving behavior intention between experiment group and control group.

RESULT

The result that energy-saving behavior intention scale consisting of 33 items of items, there are 22 valid items grains and 11 grains of invalid item. Items that otherwise valid coefficients ranged from 0.264 up to 0.694. The reliability coefficient of 0.872, thus reliable measuring instrument is expressed in the high category. Descriptive highest score of energy-saving behavior intention on the subject as a whole is 85 and the lowest score is 59 with an average of 70.4091. The highest score in the experimental group is 85, while the lowest score was 63 with an average score is 72.6667. The highest score in the control group is 84, while the lowest score was 59 with an average total score of 68.1515. Furthermore, a general overview of the categorization of energy-saving behavior intention can be seen in the following table:

Table.1, Descriptive Intention to Save Energy

No	Group	Interval	Criterion	Frequncy	%
1	Experiment Group & Control Group	$X < 66$	Low	0	0%
		$66 \leq X < 99$	Moderate	29	44%
		$99 \leq X$	High	37	56%
2	Experiment Group	$X < 66$	Low	0	0%
		$66 \leq X < 99$	Moderate	8	24%
		$99 \leq X$	High	25	76%
3	Control Group	$X < 66$	Low	0	0%
		$66 \leq X < 99$	Moderate	21	64%
		$99 \leq X$	High	12	36%

Based on the table, it can be concluded that the energy-saving behavior intention on the subject KE (condition after treatment) are mostly located in the high category, while the energy-saving behavior intention on the subject of most of the families are in the medium category. The categorization of energy-saving behavior intention per briefly aspect can be seen in the following table:

Table. 2, Resume of Intention to Save Energy Each Aspect

No	Group	Kategori	Aspek		
			Attitude Toward Behavior	***Subjective Norms***	***Perceived Control Behavior***
1	KE & KK	Tinggi	0%	0%	0%
		Sedang	17%	23%	36%
		Rendah	43%	37%	24%
2	KE	Tinggi	0%	0%	0%
		Sedang	6%	9%	24%
		Rendah	94%	91%	76%
3	KK	Tinggi	0%	0%	0%
		Sedang	27%	36%	48%
		Rendah	73%	64%	52%

Furthermore, the results UJIA assumptions indicate that overall (KE & KK) value KS-Z = 0.831 and p = 0.494, while the KE value KS-Z = 0.629 and p = 0.824, while the KK value KS-Z = 0.832, p = 0.492 , Earned value of p all subject groups above 0.05 indicates that all the data are normal. Next homogeneity test results show the value of F = 1.064, p = 0.307, for p> 0.05 means that the data obtained are homogeneous. Next, the results of a test of hypothesis to test whether there is any difference between the groups experiment after being treated with a control group of untreated, can be seen in the table below:

Table. 3, t-test Between Experiment Group & Control Group

			Skor	
			Equal variances assumed	**Equal variances not assumed**
Levene's Test for Equality of Variances	F		1.062	
	Sig.		.307	
t-test for Equality of Means	t		3.192	3.192
	df		64	59.873
	Sig. (2-tailed)		.002	.002
	Mean Difference		4.51515	4.51515
	Std. Error Difference		1.41474	1.41474
	95% Confidence Interval of the Difference	Lower	1.68888	1.68512
		Upper	7.34142	7.34518

Based on the above table, seen the value of t obtained was 3.192 with a significance of 0.002 (p <0.05) this means that there are significant differences between the KE and KK. Differences KE and KK with a positive t value indicates that the energy-saving behavior intention at KE has a higher value than the families who were not given the manipulation. This is reinforced by the empirical mean difference of the two groups of subjects, where KE has empirical mean more than KK. The following table yangmenjelaskan comparison of mean both groups:

Table. 4, Empirical Mean Between Experiment Group & Control Group

	Kelompok	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Skor	KE	33	**72.6667**	4.93499	.85907
	KK	33	**68.1515**	6.45717	1.12405

Based on the hypothesis test there was a significant difference in energy-saving behavior intention variable between the experimental group and the control group. Where the experimental group showed energy-saving behavior intention score higher than the control group. This shows that the treatment was designed with the aim to influence the understanding of the subject of the experimental group can be declared a success. Form of treatment for the provision of knowledge about the importance of conserving natural resources are limited. Followed by a discussion and a presentation on the issue of human behavior are not saving natural resources and solutions, is thought to enhance the subject's intention to behave more energy efficient. This is in accordance with the opinion of Engel, et al (1995) which states that increased knowledge as information stored in memory that includes rules that knowledgeable about the availability and characteristics of an object is the social factors (external) that can improve the intentions of individuals to behave in a certain.

Furthermore, the analysis per aspect shows the following conditions, the results of analysis aspects of behavior or attitude toward the behavior in general (control and experimental groups) are in the high category, as well as the experimental group and the control group. This shows that the attitude of the subject towards energy-saving behavior is positive, meaning that the subject of interest for energy-saving behavior. Next to aspects Subjective norms, both the control group, the experimental, and the whole is in the high category. Similarly, the aspect of perceived control behavior, both the control group, the experimental, and the whole is in the high category. Nevertheless, if we look closely, the aspect of perceived control behavior in the experimental group was higher than the control group.

Furthermore, the results of different test analysis showed that there are differences in behavior intention significant energy saving between KE and KK. This means that the manipulation of the form of materials, followed by group investigation process that "forces" to actively seek out

subject matter waste of natural resources are limited, then thought of a possible solution, considered quite effective. This is according to the results of critical analysis Gifford (2009), which states that damage to natural events occur in general can not be separated from the problem of human behavior as users. Gifford explained that the environmental damage occurred because the man "not involved" with nature. Humans do not understand well about the "work" of nature to provide a variety of resources and energy to meet human needs. Therefore, human beings need "dipahamkan" or given adequate knowledge about the natural resources are limited, so it may be wise to take advantage of natural resources. Thus it can be predicted that the increase in energy-saving behavior intention on the subject that are participants KE caused by manipulation by the experimenter.

CONCLUSION

There are three conclusions can be obtained from this study, namely: a) description of behavior intention energy efficient in KE at the high category, b) description of behavior intention energy saving in households that are in the medium category, and c) there are differences in behavior intention saving energy significantly between KE and KK, where KE showed higher scores than KK. Advice can be given on the results of this study to further research is needed to make the treatment more complex variation, so that individuals are encouraged to behave more energy efficient. Besides, before making treatment of the "energy-saving" it is important to first analyze the factors that make individuals want to behave energy-efficient, so that manipulations are made according to individual conditions. Further advice for institutions, see the results of research in which the energy-saving behavior intention score high enough then the institutions necessary to facilitate through the courses and facilities on an ongoing basis so that the intention of this high can actually materialized in the form of concrete behavior.

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Conflict of Interests

The author declared no conflict of interests.

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