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The contribution of cooperative learning approach to the awareness of environment in Geography

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Abstract

In the 21st century, one of the most important environment problems caused by mankind is waste and storage of it. The waste directly exposed to the nature has adverse effects on both physical and human environment. People, considering themselves the most valuable of all creatures, leave the waste on behalf of controlling the nature not only destroy it but also the human health and economy. The single solution of this artificial deterioration is hidden in the intervention of human himself. Although there are some broadcasts by some press associations, humans' being less consciousness on this issue prevents the complete success. The reasons why people cannot predictor even refuse to accept the negative effects of the waste they leave haphazardly to the environment is due to the lack of enough environmental conscious. We should certainly make everyone conscious of the environment to have a livable geographical milieu. Only the conscious people have the capacity to envisage a future dimension of a step. This research has aimed to make pre-service teachers conscious of the issues such as waste, recycling and recovery. Waste and recycling subject in Environment education course has been conducted in a cooperative approach to the students of social sciences teaching program of Necatibey Education Faculty of Balikesir University and students have been asked to make some activities and finally they have been taken for an observation to rubbish dump parse institution in Balikesir city. With the observation it has been aimed to give the pre service teachers the consciousness on the issues by the experts and laid the groundwork for their understanding of the different aspects of the problem. As a result it has been understood that there was a significant difference between pre and post attitudes of the students and also they have declared to have some positive behavior changes during and after their courses.

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1. Introduction

Since their existence, human beings have affected their environment negatively with their various activities and have caused the pollution of the environment. Especially since the 17th century, with the industrial revolution, mankind have evaluated the nature only as commodities from which they have to benefit as the conditions suited and they have realized too late that the nature's capacity to renew itself is limited. Today, this negative process has started to be understood by societies and the question "What is happening to our environment?" has often begun to be asked. These kind of questions contributed to attract our attention to the concept "environment" and to develop people's "awareness of environment". From now on, we all hear that people discuss environmental problems in their daily conversations and they express their discomfort from the current problems. Beyond that, it can also be seen easily that people sometimes criticize certain applications because of their environmental fears by undertaking active roles and in some situations; they convert their critics into massive protestations.

It has been stated from the carried out researches that approximately two hundred and fifty thousand people per day; ninety three million people per year join to the population of world. In this case, it is not so difficult to predict how much the increasing population of world affects the natural resources and how big pressure it makes on these resources. Air, water, land and noise pollution have first occurred in industry centers and in the cities where the

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population is increasing so fast and where there is overpopulation and the spread of these pollutions to whole world rapidly caused to the pollution and the corruption of the environment. In the matter of environment pollution, citizens and educators are responsible and tasked as well as local governments.

In this case, people need to know their responsibilities both as individuals and as organization and act in this direction so that the current and the next generations can breathe fresh air, drink healthy and clean water, our children can play on grass comfortably and we can reap ample and rich crop from lands. Everyone who cares his future needs to keep his environment clean and protect it and the way to keep the environment clean is education. The transfer of education that we get to the people in society will help to form environmental ethics. The secret lying under the term environmental ethics, which can also be described as the most important criteria in morale, is the statement “leave it in the way you want to see it the next time”.

Having environmental awareness constitutes the fragment of modern person behaviors which involves civil rights' equality and justice principle. Modern person's environmental awareness also requires struggle against inequality, poverty, hunger and moral fiber. Therefore, environment education has to be applied regularly, consistently and constantly to establish awareness of environment.

Environment education shouldn't only be limited with giving information and establishing responsibility consciousness, but it should also affect people's behaviors. Thus, education practices should focus on application with audial and visual materials.

What student knows, what student can do, how and which teaching methods teacher will use is important. Hence, methods that will involve students in courses to the utmost and that will draw students' attention by triggering their senses. In geography teaching, various methods like narration, question-answer, demonstration, trip-observation, experiment and problem solving should be used [1], [2], [3].

The teacher needs to determine students' needs and undertake a stimuli role to achieve an effective and correct teaching of geography. The standards that geography teaching is based on, teaching approaches and cases, the formation of correlation between the geography in our daily lives and the geography that we learn at school, the development of attractive areas in geography teaching and in this case, the discovery of on which subjects should be focused in detail will be helpful. The concept of education and the concept of learning should be thought together because education has a pedagogical value only if it carries out learning [4], [5].

In geography teaching where facts, concepts and generalizations are important, one of the common mistakes in the aspect of method is that teachers make students memorize the products of social researches as structure [6]. It will be more beneficial when the teacher who directs the course avoids using memorization during the teaching of facts, concepts and generalizations from the social researches and when the teacher summaries the content with practices that students can understand. One of the issues that should be focused on with care, especially in geography teaching, is the level of understanding the concepts. Each new concept that is being learnt should be taught in a way that facilitates understanding another concept. Students will learn creative thinking by making various inferences from the concepts and start to be competent in this way. Students who understand the concepts in this level won't have any problem acquiring similar concepts and they will reach the generalizations.

The most important component of cooperative learning is that students start to carry out scientific researches by working together in groups and they try to learn altogether. In cooperative learning; all components like motivation, achievement of the group aim, success gather in group work. If the group is successful, group members can achieve their own aims individually. At the same time, they can bring the success for the group. Group members help their classmates to reach their targets. Cooperative learning encourages students in group works to get to the success with their classmates [7].

The aim of the efforts that are seen in the matter of protection and improvement of the environment is to provide a healthier and safer environment for people to live in. The one who will make it true is the human beings since they are the one who both damages and protects and improves the environment. Today, awareness of environment accepts living in a healthy environment as one of the basic human rights. However, this is possible only thanks to an education high in quality.

The indispensable interaction between the human and the environment, the new dimensions that the concept of environment gained today make it compulsory to take the environment into account not only nationally but also internationally.

However, the environment is not an inheritance that is left to us from the past; it is a custodial that we need to protect, improve and transfer to the next generations.

Since the majority of our society is not aware of the environment, it is seen as a matter which is not worth caring. The main aim of the environment education is to make society gain a new human type, morale perspective and conscious of consumption and to educate a human model who consumes what he needs, who has the responsibility for next generations and who is responsive and conscious about the environmental problems.

In the core of education, appropriation and on the ground of education, love and responsibility lie. Love of nature will bring humanity, goodness, beauty and modern and peaceful relations with itself. This consciousness can only be gained with the help of a modern education system. Of course, it cannot be thought that educators who are not modern can constitute a modern society. However, the responsibility of leaving a healthy environment to next

generations belongs to educators and the next generation. Therefore, everyone needs to be environmentalist and have the responsibility.

2. Aim

This study aims to improve the knowledge and attitudes of candidates of teacher about waste and recycling to further levels of learning and develop their positive behaviors. In addition, it is planned to continue applying the scale used in this study periodically on the candidates of teacher who involve in the research till they finish their education in the institution of higher education, thus it is aimed to make the permanence of education model on attitudes more clear.

3. Procedure

3.1. Sample

The students who participate in the research are defined as intact group (N=30) from the second year students of Education of Social Studies Section in the Department of Primary School in Necatibey Education Faculty of Balıkesir University in 2009-2010 academic year. Fourteen (14) of the candidates of teacher in the research are men and sixteen (16) of them are women.

3.2. Restraints

The research is limited with the content of Environment Education Course which is taught in the Section of Education of Social Studies in 2009-2010 academic year. The research is constrained with the sample who attended the course. The research is restrained with the subject of waste and recycling. The research is limited with the applied methods of cooperative learning.

3.3. Method

In the study, the experimental group which consists of candidates of teacher is given the subjects of waste and recycling using the methods cooperative learning approach and to identify the effectiveness of the applied methods, students are given two times as before and after the experimental process;

- A data collection scale to acquire some advance information about the subject from the students.
- An attitude scale to identify the attitudes of students about the subjects of waste and recycling.

3.4. Demonstration

With this study, it is aimed to raise the awareness of environment of candidates of teacher and especially to expose the wittiness that they are the pioneers in infusing the awareness of environment. With respect to these aims, the group, which consists of candidates of teacher who are randomly chosen, is primarily given a pre-test to find out their advance information and attitudes about the matter of waste.

Students have continued working on the subject by dividing into five groups in total with six students in each group during the courses which lasted about for fourteen (14) weeks. However, instead of giving each group a different subject during the study, they are asked to search on the same subject, to support their researches with various visual materials, to make a report of the results and to prepare it for a presentation. Moreover, instead of dividing the subjects for each group members as titles, work sharing is chosen, therefore, they have maintained their work as a three headed mechanism with two people in each head. These heads are library search, meeting with institutions and field crew and search in electronic environment. Candidates of teacher who are in cooperation with researchers in each stage of the study are encouraged by researchers to avoid carrying out their duties which they have got in their groups with their friends who have got the same duty from the other groups. They are also informed about how to use the data during the report stage, how they can use the visuals and how they can write down their meetings by the researcher during the courses which are two course period per week.

In the studies where candidates of teacher have taken active place completely and the researchers have participated as a guide, candidates are also asked to obtain some information by the researchers. For examples, they are required to note down the garbage they have for one week in the place they live in (home, dormitory, pension, etc.), to involve not only their garbage but also people's garbage who live with them while noting and to make a list of density starting from the most common garbage at the end of one week.

As a similar application, they are asked to collect data from their friends as a request from them. Additionally, they are required to gain information from their friends about batteries that are used for various activities, their types and about how they eliminate these batteries when they are out of use. Also, candidates are wanted to save

the batteries those were used by their friends in the content of the same application.

Candidates of teachers have continued the reporting stage by collecting the information and data which they have gained from the studies they have conducted with the guidance of the researchers in this process. In the seventh (7.) week of the term, a demonstration trip, which has been prepared by the researchers in advance and for which all the formal permissions is taken in advance using the means of school, has been put in place for the candidates. This trip is a technical trip to the city garbage. The candidates who are to make preparations before the trip are asked to answer the questions on the work paper given to them. There are question like “*What is the waste type that you can encounter most in the garbage?, What km² may be the space of the city garbage that we will go to when you evaluate such issues as the population, economic level and economical activities of the city you live in?*” and questions that drive thinking like “*make a short pre-evaluation about the scene that is waiting for you in the garbage?*”.

3.5. Data Collection Device

The validity and reliability work out of the attitude scale inventory is carried out; the data collection device that consists of twenty one (21) questions is applied to a group of fifty (50) people from the second year students of Section of Education of Primary School Teacher in Necatibey Education Faculty for pilot application. The validity and reliability of the scale device is analyzed using the data gained as a result of the pilot application. The construction validity of the scale is tested with these studies, it is tried to make the scale one-factored and reliable. Moreover, the coefficient of reliability is calculated. The questions whose question total correlation and factor burden values are .30 or lower are taken out of the data collection device and the analyses is repeated. The value of the coefficient of reliability of twelve (12) questions in the likert gradation scale is a high Cronbach Alpha value like .91. The question total correlation of six (6) of twenty one (21) questions in the pre-application scale has a value lower than .30, one (1) question showed .30 and the other two (2) questions showed .32 question total correlation value. The question total correlations of the other questions change between the values of .35 and .91. Therefore, it is tested with factor analyses and confirmed that the scale which consists of twelve (12) questions remaining is one factored. As a result, the variances of constructions, who are one factored according to the factor analyses, are decided to be enough.

Twelve (12) questions take place in the scale as a result of the factor analyses and reliability studies and the Cronbach Alpha value is found out as 0.89.

3.6. Analyses

While SPSS 16.00 statistic program is benefited in the analyses of the data, percentage, frequency, arithmetic average and independent samples t-test are used in harmony with the sub-problems of the research.

4. Findings and Interpretations

Results and interpretations about some sub-problems of the research in the light of the findings as a result of the analyses of the data gained from the research are in the following.

4.1. Is there an expressive difference between the scores of pre-test and final test that students, who attend to the Environment Education Course, got from the attitude scale?

Table 1: The independent samples t-test results of the pre-test and final test scores that student, who attend to the Environment Education Course, got from the attitude scale

| Tests | N | \bar{X} | Sd | df | t | P |
|------------|----|-----------|------|----|--------|------|
| Pre-test | 30 | 39.90 | 6.24 | 58 | -8.161 | .000 |
| Final test | 30 | 50.10 | 2.29 | | | |

When the Table 1 is examined, it is seen that there is an expressive difference in the attitudes and behaviors of students, who got the Environment Education course with the methods of cooperative learning, when compared to their attitudes and behaviors before the course ($t_{(58)}=-3.26, p<.01$). From this result, it can be said that the candidates of teacher developed more positive attitudes and behaviors ($\bar{X}=50.16$) when compared to their attitudes and behaviors before the course ($\bar{X}=39.90$). When it is examined if there is an expressive difference between the scores of pre-test and final test of participants of the research according to their sex, it is seen that there is an expressive difference though it is a little bit ($t_{(58)}=-2.105, p<.01$). It can be said from the Table 2 that this difference is in women’s favor ($\bar{X}=46.8$).

Table 2: The independent samples t-test results of the scores from the attitude scale according to sex

| Tests | N | \bar{X} | Sd | df | t | P |
|--------|----|-----------|------|----|--------|------|
| Male | 28 | 43 | 7.80 | 58 | -2.105 | .036 |
| Female | 32 | 46.8 | 5.94 | | | |

4.2. *Is there an expressive difference between the scores of pre-test and final test of students and whether the people have enough sensitivity about producing waste?*

Table 3: The independent samples t-test results of the scores of pre-test and final test of students and of whether the people have enough sensitivity about producing waste

| Tests | N | \bar{X} | Sd | df | t | P |
|------------|----|-----------|------|----|-------|------|
| Pre-test | 30 | 3.73 | 1.01 | 58 | -3.54 | .001 |
| Final test | 30 | 4.46 | .50 | | | |

In Table 3, when the scores of the pre-test and final test, which belong to the scale in which the attitudes of the candidates of teacher about people's sensitivity about producing waste are measured, are examined, there is an expressive difference ($t_{(58)} = -3.54$, $p < .01$). While these attitudes were $\bar{X} = 3.73$ before the courses, they have been $\bar{X} = 4.46$ after the courses (Table 3). It is seen that there have been improvements in the attitudes of the candidates of teachers after the courses about people's being not so sensitive about producing waste. It is thought that especially the trips to the city garbage and decomposition institutions as well as the findings they got from the activities about waste during the courses had a great importance in the existence of this case.

4.3. *Is there an expressive difference between the scores of pre-test and final test of the candidates of teacher about the throw of waste, which they have produced at home and at school, without any differentiation?*

When Table 4 is examined, it is seen that there is an expressive difference between the scores of pre-test and final test of the candidates of teacher about the throw of waste, which they have produced at home and at school, without any differentiation ($t_{(58)} = -4.45$, $p < .01$). It can be said that this difference that comes out at the end of the courses is an improvement in favor of the final test ($\bar{X} = 4.46$). It is believed from this point that the candidates of teacher evaluated the waste separately which they produced or they started to keep the garbage, which has the possibility of recycling, apart from the other wastes at the end of the courses when compared to the beginning of the courses.

Table 4: The independent samples t-test results of the scores of pre-test and final test of the candidates of teacher about the throw of waste, which they produced at home and at school, without any differentiation

| Tests | N | \bar{X} | Sd | df | t | P |
|------------|----|-----------|-----|----|-------|------|
| Pre-test | 30 | 3.20 | .96 | 58 | -4.45 | .000 |
| Final test | 30 | 4.10 | .54 | | | |

When Table 4 is examined, it is seen that there is an expressive difference between the scores of pre-test and final test of the candidates of teacher about the throw of waste, which they have produced at home and at school, without any differentiation ($t_{(58)} = -4.45$, $p < .01$). It can be said that this difference that comes out at the end of the courses is an improvement in favor of the final test ($\bar{X} = 4.46$). It is believed from this point that the candidates of teacher evaluated the waste separately which they produced or they started to keep the garbage, which has the possibility of recycling, apart from the other wastes at the end of the courses when compared to the beginning of the courses.

4.4. *Is there an expressive difference between the scores of pre-test and final test of the candidates about the difficulty of the decomposition of wastes at their sources?*

Table 5: The independent samples t-test results of the scores of pre-test and final test about the decomposition of wastes at their sources

| Tests | N | \bar{X} | Sd | df | t | P |
|------------|----|-----------|-----|----|-------|------|
| Pre-test | 30 | 3.43 | .81 | 58 | -5.20 | .000 |
| Final test | 30 | 4.33 | .47 | | | |

When the independent samples t-test results about the sub-problem as “I believe it is so difficult to decompose the wastes at their resources” (Table 5), there is an expressive difference between the scores of pre-test and final test of the candidates of teacher about this matter ($t_{(58)} = -5.20, p < .01$). While the arithmetic average of the scores of the candidates of teacher which they have got about this matter from the pre-test is 3.43, the arithmetic average belonging to the scores they have got from the final test is 4.33. In this case, there is an improvement in favor of the final test. This improvement can be seen as a reflection of students’ opinions which they have got as a result of the group works they have conducted about recycling and their investigations in the decomposition institutions.

4.5. *Is there an expressive difference between the scores of pre-test and final test of the candidates about whether they prefer products, whose packages have the possibility of recycling, during shopping?*

Table 6: The independent samples t-test results of the scores of pre-test and final test about the preferences of products, whose packages have the possibility of recycling, during shopping

| Tests | N | \bar{X} | Sd | df | t | P |
|------------|----|-----------|------|----|--------|------|
| Pre-test | 30 | 2.96 | 1.09 | 58 | -3.687 | .001 |
| Final test | 30 | 3.72 | .67 | | | |

When the scores of the scale of pre-test and final test of the candidates of teacher about the preferences of products, whose packages have the possibility of recycling, during shopping are examined (Table 6), it is seen that there is an expressive difference between them ($t_{(58)} = -5.20, p < .01$). It is seen that there is a certain change in the preference of the candidates of teacher and this change is in a positive way towards the products whose packages have the possibility of recycling.

4.6. *Is there an expressive difference between the scores of pre-test and final test of the candidates about keeping the used batteries apart from other wastes?*

Table 7: The independent samples t-test results of the scores of pre-test and final test about keeping the used batteries apart from other wastes

| Tests | N | \bar{X} | Sd | df | t | P |
|------------|----|-----------|------|----|-------|------|
| Pre-test | 30 | 2.76 | 1.13 | 58 | -6.22 | .000 |
| Final test | 30 | 4.20 | .55 | | | |

It is seen that there is an expressive difference between the scores of pre-test and final test of the candidates about keeping the used batteries apart from other wastes ($t_{(58)} = -6.22, p < .01$). While the arithmetic average of the candidates from the pre-test about their attitudes to the evaluation of the used batteries is 2.76, these values rise to 4.20 at the end of the courses (Table 7). As a result of this point and the detailed investigation of Table 7, we can comment that the students became more conscious about the damages of the used batteries.

As the most important factor for this important difference between the scores of pre-test and final test of students about the used batteries, it is thought that special studies about this matter and the experience of battery wells in the city garbage had a great effect.

5. Conclusion and Suggestions

The most important aim of the education of environment course is to create sensitivity towards environment in universities as well as in primary and secondary education. The expectation from the students who attend to the course is not only the rise in their academic success but also and more importantly the changes in their attitudes. The attitudes to change which are expected from the candidates can also be summarized as a process of developing more positives behaviors about the awareness of environment.

When the data, which have been gained at the end of the process where the methods of cooperative learning have been used with the basis of the active attendance of the candidates during the fourteen-week-Environment Education course, are evaluated, it is ascertained that there are positive improvements on the attitudes of candidates’ awareness of education. It can be said that the candidates have developed more positive behaviors and attitudes ($\bar{X} = 50.16$) when compared to their behaviors and attitudes before the course ($\bar{X} = 39.90$).

The representation type of subjects and the attendance of students to the course during the education of environment are the most important factors in the formation and development of awareness. When the results of the studies carried out previously by other researches and by us in the content of the study, it is found out that the

most efficient methods in the development of environmental awareness are the methods of cooperative learning.

Making students be connected with the nature by organizing environmental trips with the present resources as well as the methods of cooperative learning, which are learner-centered and which are efficient in the improvement of students' attitudes toward the course and of their academic success, must be an indispensable part of these courses.

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