RESEARCH ARTICLE

A NEW APPROACH TO ENVIRONMENTAL EDUCATION: POSTER ACTIVITIES

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ARTICLE INFO	ABSTRACT
	The effectiveness of many alternative methods and techniques in the developing world is investigated and the question 'how can we set up the best learning environments?' has become the common question of educators. The education system has taken on a more dynamic structure with the question 'how do the students learn better' rather than 'what do we teach'. In this regard, the poster activities used in educational environments have attracted attention in recent years and its effectiveness is investigated. Therefore, in the study it has been sought answers to the questions including 'how are the poster activities used in educational environments, how is learning environment set up, how to do assessment and evaluation?'. As a result, the study has found that the abilities of individuals such as research and investigation, literature review, creativity, teaching of the topic, responsibility and public speaking have been improved by way of the posters used in education environments.

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INTRODUCTION

The educators have conducted the studies on the nature of learning over the years and seek an answer to question of how to occur the best learning. In this sense, increasing environmental issues and the role of human in protecting the environment are getting more important day by day; also it is sought the ways of giving effective environmental training to individuals. Environmental education provides training for protection and development of the environment. Therefore, the main point is the quality of the education. Generally, environmental education is an education to raise awareness about the environment in which human is intertwined from the birth to the death and can never be isolated from (Dikmen, 1993). Environmental education should be an integral part of formal education. Considering environmental education within the scope of programs implemented in our country in the past years it is known that rote learning has come to the forefront, the education has limited to the verbal-linguistic field, and ensuring permanent learning has remained inadequate. The lack of implementation is one of the biggest problems here (Kavruk, 2002). In this context, making main theme implementation in environmental education is to generalize learning activities related with daily life. The studies related to implementation of the poster activities in which students take responsibility in the process, conduct research-inquiry, feature their creativity and have learning activities related with daily

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life stand out. Although poster activities have been used in some academic fields as an alternative to traditional teaching techniques, it is usually bounded in teaching by the presentation of the results of undergraduate research projects at professional conferences (Sisak, 1997). Poster presentations have drawn attention after the success in the conference and it has been started to be used as a training strategy (Akister, J., 2000) especially in nursing education (Moule *et al*., 1998; Pelletier, 1993; Moneyham *et al*., 1996). Poster presentations are also used in many areas such as psychology, geology, nursing and mathematics (Sisak, 1997). The critical researches have been conducted on posters so far. For example, it has been used as an art product (Rivers, 2007), to make propaganda (Seidman, 2008), or with the purpose of advertising (Timmers, 1998). The first study on the use of the posters in the educational environments was conducted in 1985 by Kennedy J. the effectiveness of poster presentations in laboratory coursework was investigated in this study. In the course of basic analytical chemistry the students do poster work as a result of the process carried out related to separation, electro analytical techniques. In the work, the students have indicated to experience personally, to learn by doing and living, to develop the feeling of devotion through poster activity, and to improve the presentation skills. Posters are used not only for the means presenting decorative and visual content but also for conveying a message to the society (Carter, 2008). In this way, the posters with its visual and its content can reach the large crowd of people. The use of posters in the education is also effective in the concretization of learnt information. It concretizes learning through its content,

visuality and noticeability and increases effectiveness of learning more than a page of book. Poster sessions are used as a means in all disciplines in order to show the research and information sharing to common visual audience (Dunstan and Bassinger, 1997). Also, poster activities provide an opportunity to exchange of ideas by the way of direct discussion and presentation (Akister *et al.*, 2000). Posters become more effective when they combined with oral presentations (Crooks and Kilpatrick, 1998). Thus, giving the feedbacks to the students who prepared the poster can enable to achieve the purpose.

The posters used in environmental environment are designed with visuals, a summarized text and simple style (Seidman, 2007). The features collating with creativity combined with bold colours convey the essential message (Hegarty, 1998). Moreover, connection with visuals and curriculum in educational posters is very important (Hubenthal *et al.*, 2011). By this means, classroom posters practices annihilate the problems such as inability to relate information to each other, incapability of concretisation, inability to relate to everyday life in education. In this process, the students take his own responsibility and the teacher helps the students by virtue of the guiding identity. Many of these properties are directly related to the nature of science education because science education is to understand the real world, natural life (wildlife) and try to explain it. Many researchers have emphasized the importance of using posters in science education. On the other hands, the posters ensure to occur the learning in the classroom (Dunstan and Bassinger, 1997; Hubenthal *et al.*, 2011). Educational posters practices can be used in order to make sense of content, associate the subject with daily life, support of teaching process and make assessment and evaluation more meaningful. Moreover, the use of posters also enhances the creativity of students. The first point to note in poster applications in educational environments is to appeal to the readers through an interesting design and noticeability of poster (Griffin, 1992). During the preparation of the posters, the other points to be noted are that the parts such as accordance of visuality and content, the correctness of the scientific information in the poster are related curriculum (Hubenthal *et al.* 2011). One of the strengths of performing the presentations and preparing posters in education is that different observers see different things. Therefore, poster activities stand out the creativity and give an opportunity to look at the subject from different angles. According to Baird (1991), the use of poster in education improves creativity, cooperative learning, critical thinking, research and communication skills. Based on the expressed features in the study the paths and steps to be followed are determined in a concrete way in the process of poster applications in the educational environment. In the presentation process, the points in the poster activities to which the students should pay attention, poster preparation rules, and evaluation of classroom poster presentation are discussed in detail.

MATERIALS AND METHODS

Research Model

In the study, qualitative data were obtained from the process of the students' poster activities regarding the designated environmental issues. A descriptive analysis approach was used in the analysis of the collected qualitative data. According to this approach, obtained data has been summarized and interpreted according to the questions used in the activity process. In descriptive analysis, direct quotations were given many times to strikingly reflect the opinions of the students interviewed during the activity process. Purpose of descriptive analysis is to organise and interpret the findings and present them in cohesion to the readers. Data obtained for this purpose were initially described in a logical and understandable way and thereafter these descriptions were interpreted.

Study group

The research was conducted with the participation of 35 students studying in the 3rd class of science teacher education in Gaziosmanpaşa University Faculty of Education.

Data Collection Tools and Data Collection

The study conducted with students studying in science teacher training of education faculty was based on current environmental problems. Opinions of the subject field experts were taken in determining the current environmental problems and 4 environmental issues identified. The identified environmental problems were distributed to the students as poster topics. The poster topics given to students listed below.

- Global warming
- Ozone Depletion
- Air pollution
- Acid rains

In the activity process, guidelines for poster presentation are explained. Guidelines should be clearly defined in poster events. Many researchers have expressed its importance. For example, Akister and Kim (1998) determining the rules for poster preparation is an important need; therefore, it is necessary to make a detailed description of the process. According to Brown (2008) expressing what to expect from students during poster preparation and creating instructions for it are increasing the effectiveness of the poster. Similarly, Duchin and Sherwood (1990) stated that the students' needs, content and knowledge should be well organized during the poster development process. For the specified reasons, guidelines for preparing posters have been concretely determined in the study.

Guidelines for Poster Preparation

In our study, in order to set standards it was identified the main points that need to be known in the poster preparation process and explained to the students by being demonstrated in practice in the process of students' poster preparation. In this way, it is aimed to enable students to understand what is expected of them, to need to note which points, to be knowledgeable and conscious about how to prepare the poster and to transfer this knowledge to their students in the following years. The steps that students should follow in the poster preparation process are indicated below;

Guideline for Poster Preparation

1. The posters should be prepared a in Microsoft PowerPoint.
2. Posters should be prepared in portrait format with dimensions of 90 cm height × 70 cm width.
3. Title should be written as 95-100 point size.

4. The poster will have an intriguing and interesting title.
5. Under the title, Gaziosmanpaşa University Faculty of Education, name and surname will be written as 40-45 point size.
6. The images and explanations in the poster will be linked to one another. The explanations should be written as 40-45 point size.
7. Information from books, magazines, internet, etc. related to the intended subject in the poster should be searched and analyzed.
8. It is attached importance to the design and noticeability of the poster to reach readers and make an effective presentation.
9. In the right corner of the poster, sources should be written as 20-25 point size.

Poster Progress Form

It is the most effective and efficient evaluation on condition that the studies in the process are also takes into account. Therefore, it was prepared poster monitoring form and determined the procedures that need to be done every week in order to monitor the progress of the students in the process. The following Table 1 presents 'poster progress form' developed to concretely monitor the works which the students did until the final day, the long way they came, and the researches they did and to evaluate the process and product together more effectively;

Table 1. Poster Progress Form

Procedure	Time left
Determining the purpose of the poster	1 week
Academic literature review related to the topic	1 week
Searching and analyzing sources such as books, magazines, internet etc.	2 week
Finding a title for a poster	1 week
Preparing the sketch of the poster	1 week
Making the pre-presentation of the poster	1 week
Completing and printing poster	1 week

As shown in Table 1, it is determined the procedures that the students need to be done every week and enables them to be active in the process within the allocated time interval. In this way, the works done by the students was regularly followed up and given instant feedback.

Poster Activity Evaluation Form

The works done by students were evaluated with multi-evaluation system. It is aimed to reach a large number of people allowing teachers and students to evaluate together. By this way, the evaluation of the poster is also made more objective and reliable. The students were asked to present the posters that they prepared to their classmates and to answer questions about the topic. 'Poster Activity Evaluation Form' was prepared in order to make a more effective evaluation during presentations. In the process of preparing the form in Table 2, the students were interviewed, the key points highlighted in research on poster activities were analyzed, and the important points that need to be placed on an effective poster were discussed, so the form was given the final shape. In the form, a 1-to-5 rating scale were presented to the students as 1: Poor, 2: Acceptable, 3: Average 4: Good 5: Very Good. Not only the peers and teachers but also the students preparing the poster were included in the evaluation process of the

posters. In this way, it is aimed at ensuring the objectivity of the scoring performing multiple evaluations.

Also, there are 2 open-ended questions for both the peer and the poster preparer at the bottom of the poster evaluation form. The open-ended questions on the form are given below;

1. What is the most favorite part of the prepared poster? Briefly explain the reason of your liking.
2. What is the most important shortcoming you have observed in the prepared poster? Explain briefly the reason.

Thanks to these questions, the parts that are most liked and developed on each poster were analyzed, the evaluation of the posters was provided with more concrete data.

Table 2. Poster Activity Evaluation Form

	1	2	3	4	5
1.The title of the poster is intriguing					
2. The poster title is original					
3. The descriptions and images in the poster is parallel with one another					
4. The explanations in the poster have reached the goal					
5. The poster has a good colour match					
6. The poster background is well prepared					
7. The information in the poster is current					
8. The information in the poster is scientific					
9. The bibliography in the poster is adequate					
10. The type font in the poster is appropriate					
11. The font size in the poster is appropriate					
12. the poster is worth reading and reading					
13. The poster gives enough information about the subject					
14. The poster is free from unnecessary information					
15. The pictures, photos and graphics are effectively used on the poster					
Total					

After the presentation of the poster and the evaluation of the posters, two open-ended questions were asked to make the process more effective and to take the views of the students related to the process. The questions asked to students are below.

1. Did poster events contribute to the teaching of the subject? Explain.
2. What have you earned from the activity? Explain.

As a result of two open-ended questions asked to the students, it was revealed whether the study is effective or not and students' thoughts on poster activities and it was aimed at leading the way to further studies.

Analysis of Data

In the study in which the effectiveness of the process of poster preparation for environmental issues was examined, the answers in the form of 2 open-ended questions distributed to students were analyzed at the end of the process. During the analysis process, it is separated into themes by "content analysis" technique. Content analysis is expressed as identification, counting and interpretation of recurring problems, concepts and topic in the qualitative data (Miles and Huberman, 1994; Silverman, 2000). The answers of the students were expressed as frequency (f) and percentage (%), and sample of student sentences are given during the content

analysis process. In this way it is ensured to support the interpretations with more concrete data. It was observed that reliability of research was calculated using formula Reliability = Consensus / (Consensus + Consensus), it was seen that a compliance level of 94% provides reliability. In such studies, generally values that are above 95% appear to be highly reliable (Miles and Huberman, 1994).

Findings and Comments

The findings of the form with 2 open-ended questions in which the students made a general evaluation of the process of poster preparation activity were examined and analyzed. Table 3 and Table 4 show frequency and percentage of the students' answers to the question 'did poster activities contribute to the teaching of the subject? and also give the examples of students' opinions.

Table 3. 'Did Poster Activities contribute to the teaching of the subject? Explain

Answer	Frequency (f)	Percent (%)
Yes	35	100
No	-	

Table 4. The students' answers to the question 'Did Poster Activities Contribute To the Teaching of The Subject? Explain

Theme	Frequency (f)	Percentage (%)
Learning by doing-living	30	85,71
Positive development of mental structure	25	71,42
Gaining research-examination skill	22	62,85
Meaningful, and lasting learning	19	54,28

When Table 3 and Table 4 are examined, it is seen that all of the students have emphasized that the activity contributes to the teaching of the subject. When we examine the reason for this, It is observed that there are the expressions involved in the basic acquisitions of authentic learning such as the activity is related to real life, related to everyday life, concrete, permanent and learning by doing-living was realized, their information increased and they learned the topic.

Some of the students' answers to the question *'Did Poster Activities contribute to the Teaching of the Subject'* are listed below:
S1: I directly researched the topic through posters; visuals and scientific information were very meaningful to me. Bringing my creativity to the forefront and revealing a tangible product help me to learn. It was very exciting.
S2: This was a very lasting activity. It was very valuable to me to make presentation to my teachers and my friends. I also learned a lot of concepts that I did not know while listening to my friends.
S3: I do not think I can forget this experience. Posters are very different from reading books, listening, watching videos. I learned the topics permanently, as if we combined all of them.

The second question in the form prepared to examine the effectiveness of the posters prepared by the students at the end of the process is 'What have you earned from the activity? Explain.' At the end of the process, it was tried to find out the skills the students earned through this question. Table 4 shows

frequency and percentage of the students' answers to the question ''what have you earned from the activity? Explain.' and also give the examples of students' opinions.

Table 5. The students' answers to the question ''what have you earned from the activity? Explain.'

Theme	Frequency (f)	Percentage (%)
Qualified (permanent, meaningful) learning	28	80
Building a Positive Attitude	25	71,42
Gaining research-examination skill	25	71,42
Including in the measurement and evaluation process	22	62,85
Taking sense of responsibility	22	62,85
Improving the sense of creativity	19	54,31
Gaining public speaking skill	18	51,42

Some of the students' answers to the question *''what have you earned from the activity? Explain.'* are listed below;

S1: absolutely, I learned to prepare a poster, my knowledge increased, I have been working regularly since the assignment was given to me and I think I have put out a very nice product..
S2: I certainly make my students prepare a poster in the future. I have learned so much better, so they would learn also. It's good to know that.
S: 3 I talked to teachers and my friends about my posters. They liked it very much. I have taken pride in my product. I said it is mine. I also took part in the measurement and evaluation process for the first time. I've tried to be as objective as I could. Thank you very much to my teacher to enable me to feel these beautiful feelings.

When Table 5 and the answers given by and the students are examined, the students indicated that they have gained a lot of skills that they need to have through poster activity. These important skills includes learning literature review, improving public speaking skill, having knowledge about the subject, and experiencing the excitement to put out a product, and improving evaluation skill. They also stated that they will use these activities when they are teachers in the future.

Conclusions and Recommendations

Through educational posters, the students indicated that their knowledge and awareness regarding the identified environmental issues increased, learning by doing-living occurred, they were glad for the evaluation of process and product together, and their creativity was allowed to be exhibited. In this way, poster activities helped students become environmentally literate. In this study, similarly to the results of Brown, S., and Burroughs, E. (2008) the students indicated that they learned the topic much better through posters activities and it was a fun activity. Similarly, Paris and Glynn (2004) pointed out that the use of posters in education makes learning easier for students; McHale (1994) stated that posters prepared in educational settings make the topic related to daily life; Brown, S. and Burroughs, E. (2008) also indicated that the educational posters help the students improve mathematical communication skills, make them proud of their products, and provide the retention of what is learned. Additionally, Moule *et al.* (1998) have revealed the result that students' sense of accomplishment in the process of preparing posters and banners has improved. Yalvac and Doğan (2011) found that the poster applications have made a significant contribution to the learning of environmental subjects by pre-service teachers

and help them improve cooperative learning and awareness of responsibility. Dunstan and Bassinger (1997) concluded that poster activities have increased the interest related to modern chemistry topics, contribute to science literacy, and are pleasant experience for students.

From the findings we have achieved in our work, poster activities enable the students;

- To motivate the topic
- To make examination and investigation
- To stimulate sense of the curiosity and to think critically
- To concretize and to make sense of their learning
- To structure their own information
- To develop their creativity and self-confidence
- To develop self-evaluation and self-improvement skills
- To take responsibility
- To evaluate of process and product together
- To establish a relationship with the curriculum and daily life
- To create a product in the learning process so to take responsibility

Based on the expressed attributes, if appropriate environments are provided the appropriate environments where they can overcome and taste the sense of accomplishment for the students the possibility of development and growth of individuals who learn to learn will increase. When these conditions are met, instead of unawareness of learning-teaching and measurement-evaluation processes, the awareness that they are an important link of these processes will also be settled (Hastürk and Doğan, 2016). As a result, the use of poster activities in educational environments supports the development of many positive and critical skills that the students are intended to have.

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