Effects of Creative Drama Method on Students’ Attitude towards Social Studies, Academic Achievement and Retention in Turkey

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Abstract: The purpose of this study was to investigate the effect of creative drama as a teaching method on academic achievement and retention in social studies, students’ attitude towards social studies of 4th grade. The research is designed according to quasi-experimental model. The research was conducted with 4th year students in a public school in Adana in Turkey. There are 42 students in experimental group and 39 in control group. Creative drama activities were used to develop social studies achievement and attitude of students as a treatment for the experimental group. The treatment consisted of 15 hours, 40 minutes sessions that equal a class hour in school and 3 hours a week. Control groups had been taught by classroom teachers as the way they do traditionally. Data collection tools are “Attitude Towards Social Studies Scale” developed by Gencel “Achievement Test” developed by the researchers. Data were processed by using covariance analysis. Findings indicated that creative drama method has a significant effect on social studies achievement and students’ attitude towards social studies but not a significant effect on retention of social studies knowledge.

Keywords: Creative drama, social studies achievement, social studies attitude, primary school.

Introduction

Education process, aimed to facilitate individuals’ conformation to society, undergoes differentiation in parallel with the changes in social structure with time. Education enables individuals to develop whereas the individual makes an impact on the change and progress of the society. As a result of this interaction and in line with the progressing technology and science, the position of the individual, who will meet society’s needs, within the education process has been restructured. This restructuring process, elicited the requirement of placing the necessary emphasis on the individual in the curriculum development efforts (Kaf Hasirci, 2005). As a result of these changes, student centered education, where the student herself constructs the information and is actively participating in the learning process, lies at the foundations of the primary school curriculum in Turkey which came into effect in 2005 and was revised in 2009. In line with the progressing regulations, changes in learning-teaching process have occurred in social studies curriculum. National Council for Social Studies, NCSS (1993), in the USA, the homeland of Social Studies Curriculum, an organization comprising professional social studies educators, defines social studies as "the integrated study of the social sciences and humanities to promote civic competence". Social studies subject in the primary and middle schools helps the child to have a better understanding of immediate surroundings, strengthen the love of the country, to sharpen the sensory organs and to develop the ability to understand the reasons of the events and research. In the social studies class the child finds the opportunity to better grasp the near and far social environment he/she lives in with its past, present and future. This subject plays an important role in the development of social personality of the child (Meydan, 2010).

The primary purpose of social studies is to help young people develop the ability to make informed and reasoned decisions for the public good as citizens of a culturally diverse, democratic society in an interdependent, global world (NCSS, 1993). Ministry of National Education (MEB, 2005) categorizes the goals of the social studies subject under the following four headings in the curriculum; duties and responsibilities of citizenship, interpersonal relations in the society, developing the skills of understanding the environment, homeland and the world, developing the notion and skills for economic living. The skills aimed to be acquired, developed and put into practice by the students through the
learning process are expressed as critical and creative thinking, communication, problem solving and observation skills (MEB, 2005).

The question of how to introduce these skills to the students brings the method selection problem into focus. In the modern education approach, using methods which empower individuals in the learning process, enabling them to learn by doing and living, to become creative and productive individuals and achieve self-actualization, contribute to their positive social interaction with others, in short contributing to their development in all fronts, may be effective. Creative drama in education gives the individual an active role and is one of the methods contributing to effective learning of the skills required to be acquired, developed and put into practice by the students, within the group coherence and facilitated by the teacher.

The learning in the drama is a type of reconstruction. The students, whether children or youth, consider their learning, information through a new perspective, re-examine previously acquired notions and give new meanings to these notions. In this process the experience is re-examined and all these processes result in a natural learning to occur (San, 1989).

When the creative drama method is used in teaching any subject, event or educational unit, the communication skills, group work skills and higher-order thinking skills of individuals are developed and this process helps individuals to feel self-confidence, develop their self-esteem, gain sensitivity, increase their social awareness, and to cultivate democratic attitudes and behavior in individuals, and most importantly, it helps to develop an open personality. In the application of creative drama, individuals acquire achievements in all of cognitive, affective and kinesthetic dimensions (Adiguzel, 2011; Ayacak & Adiguzel, 2011; Kaf-Hasirci, Bulut & Saban, 2008; Levent 1993; Malbelegi, 2011; Toraman and Ulubey, 2016; Tuncel and Icen, 2016; Ulubey, 2015; Ulubey and Toraman, 2015; Ustundag, 1994).

When the 2009 revision reasons for social studies curriculum are examined, these are stated to be the aim to make the curriculum one which is directed at developing various skills in children, more suitable to the age and development levels of the students, appealing to their curiosity and interests, increasing their appreciation of the social studies subject, the pronounced necessity of nurturing assertive, communicative and entrepreneurial citizens and the underachievement of the students in the national and international assessments (Yazıcı & Koca, 2011).

In the social studies curriculum revised upon these reasons, the drama can make the classroom more exciting and also help students to remember the historical and cultural notions and not forget these facts (Turner, 2004). The primary purpose of social studies is to help young people develop the ability to make informed and reasoned decisions in a culturally diverse, democratic society in an interdependent world (Sunal & Haas, 2005). In the drama method, the students can either observe or participate in the process. To use drama is highly motivating and the students work in cooperation, and learn researching, critical thinking and problem solving skills (Shoob & Stout, 2008). In light of these statements, the general purpose of the study is to determine the effect of creative drama as a teaching method on academic achievement in, attitude towards and retention in social studies subject of primary school students.

In the direction of this general purpose the following questions are dwelled upon;

1. When the academic achievement pre-test scores mean for the selected unit in social studies subject are controlled in experimental and control groups, is there a significant difference between the post-test scores mean?
2. When the attitude towards social studies subject pre-test scores are controlled in experimental and control groups, is there a significant difference between the post-test scores mean?
3. When the academic achievement post-test scores for the selected unit in social studies subject are controlled in experimental and control groups, is there a significant difference between the retention scores mean?

Methodology

The research is a quasi-experimental study designed according to two experimental, two control groups model.

Participants

The participants of the research consists of the fourth grade students from a public school in Adana, Turkey province where is the population of the research. Convenience sampling method of purposeful sampling methods was used to select the primary school to conduct the study in. Convenience sampling provides speed and convenience to the researcher. The researcher chooses a situation that is proximate, easy to reach (Yildirim and Simsek, 2005). Another reason for the selection of this sampling method beside the fact that the school administration granted permission and provided the necessary environment is that the researcher conducting the study works in a full-day primary school, which is 40 km away from the city center. Since the social studies course is only present in the fourth grade curriculum, two experimental and two control groups were formed by drawing names, i.e. by random sampling out of volunteers in four classroom groups. Thus, in the study group formed by using multistage sampling method, there are 42 students in
experimental groups and 39 students in control groups. Total numbers of 81 students constitute the study group of the research.

**Data Collection Tools**

Data collection tools are “Attitude Towards Social Studies Scale” which developed by Evin Gencel (2006) and “Social Studies Achievement Test” which developed by researchers, with the basis of one unit of social studies courses. “Attitude Towards Social Studies Scale” comprises 35 items of which 16 are negative and 19 are positive. The scale consists of five point Likert type choices; “Strongly Agree” to “Strongly Disagree” and positive items are scored from 5 to 1 and negative items are scored from 1 to 5. Minimum score on the scale is 35 whereas the maximum score is 175. When interpreting the attitude scale, scores between “35-58” are regarded as “very negative”, scores between 59-91 as “negative”, scores between 92-124 as “intermediate positive”, scores between 125-157 as “positive” and scores between 157-175 as “very positive”. As a result of the factor analysis conducted on the Attitude Towards Social Studies Scale, it was seen that the items were collected in one factor. The internal consistency coefficient of the scale has been calculated as .95. It was recalculated for this research as .88. “Social Studies Achievement Test” consists of 22 questions; 21 of which are multiple choice and 1 of which is a matching question. The Cronbach Alpha coefficient for reliability of the test has been calculated as .83. For the reliability of the matching question, expert opinions were consulted.

**Data Collection and Analysis**

Data collection tools were applied prior to the experimental procedure as pre-test. For the experimental procedure, the students in experimental groups were taught using creative drama activities of one unit. Creative drama plans consist of 9 sessions in line with the learning goals of Technology in Our Life (80 min.); We are Measuring Time (40 min.); Once upon a Time (80 min.); Our Life is Getting Faster (80 min.); Our Projects (80 min.); How Should We Use It? (80 min.) subject matters in the unit of 4th grade social studies subject were devised. The students in control groups were taught by classroom teachers as the way they do traditionally, activities in the social studies guide book for teachers for a period of 15 class hours. Following the experimental procedure, Social Studies Achievement Test and Attitude Towards Social Studies Scale were applied as post-test and the Social Studies Achievement Test was applied five weeks after the post-test as retention test.

The analysis results of the t test conducted to test if there were significant differences between the achievement and attitude test pre-test scores mean of the students in experimental and control groups are provided in Table 1.

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>X</th>
<th>S</th>
<th>df</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>42</td>
<td>69.67</td>
<td>13.26</td>
<td>79</td>
<td>2.51</td>
<td>.014</td>
</tr>
<tr>
<td>Control</td>
<td>39</td>
<td>76.41</td>
<td>10.68</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experiment</td>
<td>42</td>
<td>142.52</td>
<td>19.89</td>
<td>79</td>
<td>2.08</td>
<td>.041</td>
</tr>
<tr>
<td>Control</td>
<td>39</td>
<td>150.64</td>
<td>14.71</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The values in Table 1 show that there is a significant difference between the academic achievement ($\bar{X}_{cg} = 76.41; \bar{X}_{eg} = 69.67$) and attitude towards social studies ($\bar{X}_{cg} = 150.64; \bar{X}_{eg} = 142.52$) pre-test score averages of the students in the experimental and control groups. For this reason, covariance (ANCOVA) analysis was used to determine if there is a differentiation between academic achievement and attitude towards the subject pre-test - post-test scores mean of experimental and control groups.

**Findings / Results**

In this section, the findings regarding the effect of the creative drama method on the academic achievement, retention and attitude towards the subject for social studies in primary school are presented. The pre-test and post-test total scores mean of the experimental and control groups in terms of academic achievement and attitude towards social studies, the standard deviation and the adjusted post-test score averages are provided in Table 2.
Table 2. The Pre-Test Post-Test Total Scores Mean of the Experimental and Control Groups in terms of Academic Achievement and Attitude Towards Social Studies, the Standard Deviation and Adjusted Post-Test Scores Mean

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>X</th>
<th>S</th>
<th>X</th>
<th>S</th>
<th>Adj</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Achievement</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>42</td>
<td>69.67</td>
<td>13.26</td>
<td>84.67</td>
<td>11.97</td>
<td>86.82</td>
</tr>
<tr>
<td>Control</td>
<td>39</td>
<td>76.41</td>
<td>10.68</td>
<td>79.49</td>
<td>10.08</td>
<td>77.17</td>
</tr>
<tr>
<td><strong>Attitude</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>42</td>
<td>142.52</td>
<td>19.89</td>
<td>153.74</td>
<td>14.96</td>
<td>154.58</td>
</tr>
<tr>
<td>Control</td>
<td>39</td>
<td>150.64</td>
<td>14.71</td>
<td>146.72</td>
<td>17.40</td>
<td>145.81</td>
</tr>
</tbody>
</table>

Table 2 reveals that the pre-test scores mean of the experimental group in terms of achievement in the unit ($\bar{X}_e = 69.67 < \bar{X}_c = 76.41$) and attitude towards social studies ($\bar{X}_e = 142.52 < \bar{X}_c = 150.64$) is lower than the scores mean of the control group. The post-test and adjusted scores mean in terms of achievement in the selected unit ($\bar{X}_e = 84.67 > \bar{X}_c = 79.49$; $\bar{Adj}_e = 86.82 > \bar{Adj}_c = 77.17$) and attitude towards social studies and the adjusted scores mean ($\bar{X}_e = 153.74 > \bar{X}_c = 146.72$; $\bar{Adj}_e = 154.58 > \bar{Adj}_c = 145.81$) of the experimental group has been found to be higher than the scores mean of the control group.

The results of the covariance analysis (ANCOVA) conducted to determine whether there are statistically significant differences between adjusted achievement and attitude towards social studies post-test scores mean of the groups are provided in Table 3.

Table 3. The Covariance Analysis Results of the Adjusted Achievement and Attitude Towards Social Studies Post-Test Mean

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Achievement</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control Variable (Pre-test)</td>
<td>5063.268</td>
<td>1</td>
<td>5063.268</td>
<td>84,463</td>
<td>.000</td>
</tr>
<tr>
<td>Group (Experimental-Control)</td>
<td>1742.556</td>
<td>1</td>
<td>1742.556</td>
<td>29,069</td>
<td>.000</td>
</tr>
<tr>
<td>Error</td>
<td>4675.809</td>
<td>78</td>
<td>59,946</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>10281.580</td>
<td>80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Attitude</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control Variable (Pre-test)</td>
<td>1140.387</td>
<td>1</td>
<td>1140.387</td>
<td>4,552</td>
<td>.036</td>
</tr>
<tr>
<td>Group (Experimental-Control)</td>
<td>1476.175</td>
<td>1</td>
<td>1476.175</td>
<td>5,892</td>
<td>.018</td>
</tr>
<tr>
<td>Error</td>
<td>19541.630</td>
<td>78</td>
<td>250,534</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>21678.617</td>
<td>80</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results of covariance analysis, performed by controlling achievement and pre-test mean of the experimental and control groups regarding the attitude towards social studies provided in Table 3 indicates that main grouping effect of the groups by adjusted post-test mean is statistically significant ($F=29.069, p=.000$; $F=5.892, p=.018$).

The post-test, retention score mean of the experimental and control groups, the standard deviation and adjusted score mean are provided in Table 4.
Table 4. The Post-Test, Retention Score Mean of the Experimental and Control Groups, the Standard Deviation and Adjusted Score Mean

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Post-test X</th>
<th>S</th>
<th>Retention X</th>
<th>S</th>
<th>Adjusted Mean X_adj</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>42</td>
<td>84.67</td>
<td>11.97</td>
<td>84.48</td>
<td>9.60</td>
<td>83.07</td>
</tr>
<tr>
<td>Control</td>
<td>39</td>
<td>79.49</td>
<td>10.08</td>
<td>79.23</td>
<td>12.52</td>
<td>80.76</td>
</tr>
</tbody>
</table>

The analysis of the results in Table 4 shows that the post-test ($\bar{X}_{eg} = 84.67$), retention ($\bar{X}_{eg} = 84.67$) and adjusted score mean ($\bar{X}_{adj} = 83.07$) of the experimental group regarding achievement in the unit has been found to be higher than the control group’s post-test ($\bar{X}_{eg} = 79.49$), retention ($\bar{X}_{eg} = 79.23$) and adjusted score averages ($\bar{X}_{adj} = 80.76$). The results of the covariance analysis (ANCOVA) conducted to determine whether there are statistically significant differences between adjusted retention mean of the groups are provided in Table 5.

Table 5. The Results of the Covariance Analysis of the Adjusted Achievement Test Retention Scores of the Students in Experimental and Control Groups

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Variable (Post-test)</td>
<td>3096.205</td>
<td>1</td>
<td>3096.205</td>
<td>36.397</td>
<td>.000</td>
</tr>
<tr>
<td>Group (Experimental-Control)</td>
<td>103.548</td>
<td>1</td>
<td>103.548</td>
<td>1.217</td>
<td>.273</td>
</tr>
<tr>
<td>Error</td>
<td>6635.194</td>
<td>78</td>
<td>85.067</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>10287.802</td>
<td>80</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results of covariance analysis performed by controlling academic achievement post-test averages of the experimental and control groups, listed in Table 5, indicate that main grouping effect of the groups by adjusted retention mean is not statistically significant ($F=1.217. \ p=.273$).

Discussion and Conclusion

It was determined that the effect of the creative drama method on the students’ achievement and attitudes towards the social studies subject is statistically significant. It can be said that higher levels of progress in the achievements and attitudes towards the social studies subject was achieved in the students in the experimental group compared to those in the control group and this effect is caused by the creative drama method. The findings of this study are consistent with the findings of two meta-analysis studies which reveal that the creative drama method is effective on the achievements of students at various levels, subjects and topics (Aydin, Kasarcı and Yurt, 2012; Ulubey and Toraman, 2015). In addition to this, considered within the framework of constructivism at the roots of 2005 curriculum, the effectiveness of the creative drama method is in parallel with the cognitive learning approach, which states that the learning takes place in an active process not in a passive one. Moreover, Morris and Welch (2004) are emphasizing that the students find the creative drama method very helpful in learning social studies content and developing higher order thinking skills. There are many studies (Aykac and Adiguzel, 2011; Duatepe, 2004; Erdem Zengin, 2014; Gunaydin, 2008; Kamen, 1992; Kayhan, 2009; Kraemer, 2002; Mcnaughton, 2004; Ruzgar, 2014; Sagirli and Gurdal, 2002; Sarac, 2015; Sengul and Ekinözü, 2006; Sozer, 2006; Toraman ve Ulubey, 2016; Utkur, 2012; Zayimoglu, 2006) in the literature such as this study revealing the positive effects of creative drama method on the attitude towards the subject. Yilmaz and Seker (2011) claim that the most important variables affecting attitudes include the student’s past experiences, learning experiences; the teacher’s approach to the student and teaching, the teaching style of the teacher and the teacher’s competency; the physical and socio-psychological characteristics of the learning environment and the classroom management style. There are many studies which show that the teaching methods used by the teachers provide positive contributions to the attitudes of the students towards the lessons (Kilik and Tuncel, 2009; Caliskan and Turan, 2010; Maden and Durukan, 2010; Erdem, 2015; Bas and Beyhan, 2017). The creative drama method used by the teacher is recognized to also positively impact the attitudes of the students towards the lesson. The student’s positive attitude towards a lesson thus increases his/her success in that course. The environment that the teacher will create in the class, the participation of the students, the expectations about that class are among the factors that affect the student’s attitude towards that class (Ergin, 2006). Therefore, creative drama positively influenced attitudes towards social studies courses, as it allowed students to participate cognitively, emotionally and psychologically in the process.
In this context, the research is consistent with studies in the literature. Despite the differences between the mean scores of experimental and control groups regarding the retention (see Table 4), covariance analysis results imply that the creative drama method is not effective on the retention factor of achievement scores within the scope of this research. Considering that learning requires repetition (Selcuk, 2004; Semenoglu, 2009; Schunk, 2009), the fact that the students did not adequately repeat the lessons of the unit at the end of the process may have caused their failure to store the lessons in long term memory. Hence it can be deducted that the information is not retained at a satisfactory level. Despite this result, when the experimental and control groups’ mean scores were examined, it is noteworthy that the experimental group had a higher retention score than the control group. This shows us that the creative drama in this study has a positive effect on retention, even though it is not statistically different. The study of Simsek (2001) on social studies instruction also reveals that the creative drama method improves academic success by employing all sense organs of the students in learning process, retention is better achieved as compared to straight lecture method, it promotes positive motivation towards processed content, and learning takes place in a more enjoyable manner. As a result, it can be deducted that, as the evaluation of the findings of this study show that its effect on the achievement and attitude towards the subject in social studies is significant, the creative drama method is an effective method. Hence, long period, in-depth studies can be conducted at different grade levels and subject matters.

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References


APPENDIX

AN EXAMPLE OF CREATIVE DRAMA PLAN

Subject: Let’s Measure Time

Group: 9-10 years age group, 20-25 participants of 4th year students

Time: 40 minutes

Methods and Techniques: Creative drama, Improvisation, Role playing, Leader in Role.

Tools and Materials: Clock drawings, cardboard, paper, calendar information sheet, pencils.

Outcomes: Learns main time measuring tools and time prediction methods used by the mankind.

Secondary Outcomes: Can explain the relationship between, the day, week, month and year.

PROCEDURE:

Warm-up (5 min)

Activity 1: Leader tells the participants to form a line and they are going to play "What is the time, Mr. Wolf" (Tilki Tilki Saat Kaç?) and explains the rules of the game to participants. Leader picks a volunteer to be "Mr. Wolf". Tells the "Mr. Wolf" player to face the wall with his/her back turned to the other participants. Tells the other participants that they are going to stand in a single line far away from Mr. Wolf, ask him/her "What is the time, Mr. Wolf?" and according to the Wolf’s answer approach him/her while counting their steps out loud. Leader states that Mr. Wolf will turn to face the participants as he/she hears the last of the participants’ words and eliminate the participant(s) still moving when he/she faces them. As the game goes on the player who touches the Mr. Wolf and the other players run away from him/her. The leader tells the participants that if the person touching Mr. Wolf doesn’t get caught that player wins the game and whoever Mr. Wolf catches in the group running away becomes the next Mr. Wolf.

Improvisation: (30 min)

Activity 2: Participants stand in a single line and are divided into four groups by saying the words "twelve animals, jelali, hijri, Gregorian calendar" in turn. Those saying the same word form a group. The leader says that he/she has a sheet summarizing the calendars used up to our day together with their features and that he/she will one copy to each group. He/she gives each group the calendar information sheet and their respective calendar’s drawing. Leaders tell the participants that they are going to play act how and why this calendar was created based on the information in the sheet.

Interim Assessment: After the play acting is over, each group sticks the drawing of their group’s calendar on the wall and they brief the leader about the calendars.

Activity 3: Leader tells the participants that they should place the pillows in two rows, in a semi-circle, in the room. He/she places the clock models and information around the room. The leader enters the role and says to participants “Welcome to our auction. Today, the rare pieces of clocks used in the past are exhibited here. Before the auction I will give you a brief overview of the piece I show, and afterwards I will open the auction with a price bid.”

Sun Dial: Because it represents the first efforts to measure time, this piece has great value. This clock is constructed by erecting a rod on a flat surface as you can see in this exclusive piece. This unique clock, under the sun, tells the time by the length and location of the rod’s shadow. So, I open the bidding for this piece by 1000 TL. Any bidders?

Sandglass: This piece I am holding in my hands is a historical sandglass consisting of two separate glass compartments of the same shape and volume which are connected by a very narrow channel in the middle. The sand inside is as ancient as the sandglass itself, the time period starts when we turn it upside down and the sand starts to fall. This clock only shows the start and end of a certain time period. I open the bidding with 500 TL. Any bidders?

Fire Clock: Ladies and Gentlemen... This here is one of the simplest clocks ever made by mankind, yet it is so very useful. This clock you see is actually a candle, it is made of the time lines on it. The candle burns down and the lines show how much time has passed. I name the opening price as 400 TL. Any bidders?

Water Clock: This clock may look like an ordinary bowl, but it is another rare piece. What makes this bowl special is the time marks inside it. This was filled and the water would be emptied in 24 hours. And the attendant standing next to it would announce the time at every hour. For this piece I open the bidding with 750 TL. Any bidders?

Mechanical Clocks: Our last rare piece is the ancestor of the clocks we use today, the first mechanical clock made up of steel springs and gear wheels. What is different about this clock is that it requires periodic windings. After the 1920s this feature of the clocks went out. For this unique piece, I start with 1500 TL. Any bidders?
Leader gets out of role.

**Assessment (5 min)**

**Activity 4:** Leader tells the participants to get into 5 groups. He/she tells that each group will choose a clock and prepare an advertisement promoting the features of their clock. He/she asks them to bring it to the next session and present their advertisement.

**Activity 5:** Leader asks the participants to sit around a circle. He/she tells them that, related to the calendars and clocks, together they are going to make a drawing showing the relationship between year-month-week-day as they learned in math class.