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This study was conducted to reveal the perceptions of history, geography and social studies teachers giving the social studies lesson at primary schools in Turkey and Afghanistan towards the social studies lesson. The working group of the study involves history, geography and social studies teachers rendering service in Tokat and Kayseri provinces of Turkey and Cevizcan and Sar-i Pul provinces of Afghanistan in the school year of 2012 to 2013. In the study conducted using the qualitative research methodology, purposeful sampling selection was used in determining the participants, semi-structured interview form in collecting the data and descriptive analysis method in analyzing the acquired data. It could be asserted that social studies teachers that graduated from the departments of history and geography and are teaching social studies in our country still adopt the single-discipline approach and keep away from the interdisciplinary approach, which is the nature of social studies. It is concluded that social studies teachers rendering service in Afghanistan are unable to adopt the nature of social studies due to the fact that the units in books are prepared as single-discipline.

Key words: Social studies, teacher, geography teacher, social studies teacher, Turkey, Afghanistan.

INTRODUCTION

Social sciences is expressed as human sciences that focus on humans and the phenomenon created by humans (Köstüklü, 1999). Social studies lesson, on the other hand, is shortly expressed as a curriculum comprising these social sciences. Examining the literature concerning the social studies lesson, it is seen that there are various definitions. Moffat (1957) defined the social studies as the knowledge concerning humans. Doğanay (2005) defined the social studies as a study area aiming to raise democratic citizens by using the content of sciences regarding humans. Öztürk (2009) defined it as a curriculum using the social and human through integrating the scientific knowledge to raise active citizens.

According to MEB (2005), on the other hand, social studies is “a primary education lesson that reflects the subjects of social sciences and citizenship knowledge such as history, geography, economy, sociology, anthropology, psychology, philosophy, political sciences and law; combines the learning areas under a unit or theme; examines the interaction of humans with both social and physical environment in terms of past, present and future; and is formed on the basis of mass education in order to enable the individual to realize the social existence”. In this context, the social studies lesson has various
traditions by nature, which are as follows; ‘social studies teaching as a citizenship transfer’, ‘social studies teaching as social sciences’ and ‘social studies teaching as a reflective thought’. Various studies state that social studies aims to raise responsible citizens interacting with other people (Preston and Herman, 1974: 4; Naylor and Diem, 1987; Michaelis, 1988: 3; Barth and Demirtaş, 1997). Examining the definitions, it is seen that the social studies lesson mainly aims to raise individuals who are useful to society. As a consequence, it is possible to raise good, active, responsible, productive, respectful and patriotic individuals only through a good social studies education (Safran, 2011: 14). And this could only be provided by social studies teachers. Social studies teachers are required to behave according to this objective. Considering today, social studies is thought by teachers who are graduate from the departments of geography and history, which may cause a shift of objective. Because the targets of teachers graduating from different departments do not precisely correspond to the targets of teachers graduating from the department of social studies, which disables social studies teachers graduating from different departments to reflect their viewpoints of the social studies lesson in line with the objectives of the lesson.

In our country, the social studies lesson is taught 3 hours a week in 4. 5. 6 and 7. grades in both primary and secondary education. It is taught by teachers who are graduate from history, geography and social studies program. The units in social studies books were separated as history, geography and citizenship knowledge especially after the social studies curriculum of 1998 and there was no objective distribution between units. The social studies lesson became interdisciplinary after the social studies curriculum of 2005 and was involved in the primary education as a means of enabling the individual to realize his social existence (Kaymakçı, 2009:1535). 2005 social studies curriculum that was prepared according to the constructivist approach will be successful only through the contributions of social studies teachers. This condition is not different in the educational system of Afghanistan, which is examined within the scope of our study. It is seen that the social studies, which involves 2 hours in 4., 5. and 6. grades in primary education, is taught by teachers graduate from the departments of history, geography and social sciences (such as literature), since the faculties of education do not involve social studies teaching in Afghanistan (Sönmez, 2013:14).

Considering from this point of view, it could be asserted that the viewpoint of the social studies lesson is closely related with the graduation field, no matter what the country is.

**Study objective**

This study was aimed to determine the viewpoints of social studies teachers rendering service in Turkey and Afghanistan towards the social studies lesson.

**METHODOLOGY**

**Study design**

This study is in the case study design, which is among the qualitative research methods. The most distinctive feature of the qualitative case study is that it profoundly investigates one or more cases. Accordingly, the qualitative case study is a study model that investigates factors related to a case with an integrated approach and focuses on how these factors affect the related case (Yıldırım and Şimşek, 2006).

**Study group**

Study group of this study involves social studies teachers rendering service in Tokat and Kayseri provinces of Turkey and Cevizcan and Sarı Pul provinces of Afghanistan in the school year of 2012 to 2013. The study was conducted with 26 teachers in Turkey and 14 teachers in Afghanistan. The reason for selecting Tokat and Kayseri provinces in Turkey was to add richness to the study in terms of city and metropolis and also provide transportation and time saving for teachers. The reason for selecting Cevizcan and Sarı Pul provinces in Afghanistan was that the researcher was assigned in these provinces within the scope of a project and that the data could only be collected from these provinces. Besides, there was no possibility to go to other provinces due to security.

**Data collection tool**

This study used a form involving six open-ended questions in order to determine social studies teachers’ viewpoints of the social studies lesson. While generating the form, social studies programs of other countries were examined and teachers were asked about what the perception of social studies should include. Open-ended questions in the form are as follows:

1. What is the main objective of the social studies lesson?
2. What are the main disciplines constituting the social studies lesson? Can you arrange them according to the order of importance?
3. Which subjects do challenge you in teaching the social studies lesson?
4. Which values should be taught in the social studies lesson (national values-universal values)?
5. How should the disciplines constituting the social studies lesson be taught? (Should they be taught as a separate lesson or separate units within social studies or with an interdisciplinary approach)?

**Data analysis**

The study used the descriptive analysis in order to regularly present the data being obtained from open-ended questions to the reader and make interpretations. The percentage frequency distributions being given in tables were considered separately for both Turkey and Afghanistan and the results were evaluated accordingly.

**FINDINGS**

According to the findings in Table 1, the study participants
Table 1. Genders of teachers who participated in the study in Turkey and Afghanistan

<table>
<thead>
<tr>
<th>Country</th>
<th>Gender</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turkey</td>
<td>Male</td>
<td>17</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>9</td>
<td>35</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>26</td>
<td>100</td>
</tr>
<tr>
<td>Afghanistan</td>
<td>Male</td>
<td>12</td>
<td>85</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>14</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 2. Graduation fields of teachers who participated in the study in Turkey and Afghanistan

<table>
<thead>
<tr>
<th>Country</th>
<th>Graduation</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turkey</td>
<td>Social Studies</td>
<td>15</td>
<td>57</td>
</tr>
<tr>
<td></td>
<td>History</td>
<td>8</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Geography</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>26</td>
<td>100</td>
</tr>
<tr>
<td>Afghanistan</td>
<td>Geography</td>
<td>4</td>
<td>28.5</td>
</tr>
<tr>
<td></td>
<td>Social Sciences</td>
<td>2</td>
<td>14.5</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>14</td>
<td>100</td>
</tr>
</tbody>
</table>

According to the findings in Table 1, the study involved 56% male and 35% female teachers in Turkey and 85% male and 15% female teachers in Afghanistan. The reason for the lower rate of female teachers in Afghanistan could be associated with the lower rate of literacy among women. Another reason is that women are not sufficiently involved in social life.

According to the findings in Table 2, considering the graduation fields of social studies teachers in Turkey, it is seen that 57% are social studies, 30% history and 13% geography graduates. In Afghanistan, 57% are history, 28.5% geography and 14.5% social sciences graduates. The reason for the lower rate of social studies graduates in Afghanistan is associated with the lack of social studies license in the higher education structure. Even though there are faculties of education, other fields are absent. Nevertheless, those who are graduated from other fields of social studies such as literature teach the social studies lesson.

According to the findings in Table 3, it is seen that the seniority is 11 to 15 years for 43%, 6 to 10 years for 23%, 16 to 20 years for 20%, 1 to 5 years for 7% and more than 20 years in Turkey. The reason for the rate of 1 to 5 years to be lower is that the first teachers were not assigned to city centers. In Afghanistan, on the other hand, the seniority is 6 to 10 years for 64%, 11 to 15 years for 21% and 16 to 20 years for 15%. There is no seniority of 1 to 5 years and more than 20 years. The reason for the absence of teachers with a seniority of 1 to 5 years in the city centers of Cevizcan and Sar-i Pul (Afghanistan) is that while senior teachers render service in centers, the newly graduates render service in rural areas. The reason for the absence of teachers with a seniority of 20 years and above is that the Afghan people who dealt with wars in the past have just started to use the educational facilities. Even though the training manager of Cevizcan told the researcher that there was a very limited number of social studies teachers teaching for more than 20 years in the study, these teachers could never be contacted.

According to the findings in Table 4, concerning the question “what is the main objective of the social studies lesson?”, 22% of social studies teachers in Turkey answered “Raise good citizens who embrace their homeland and nation”, 14% “Raise individuals with a sense of history”, 11% “Raise the children as good and responsible citizens who are beneficial to society”, 12% “Enable students to get social and fit into society”, 12% “Raise patriotic citizens who adopt the National culture and values, show respect towards people and sensitivity to the environment, have responsibility”, 7% “Raise students as individuals who are respectful towards democracy, human rights and national values” and 3.5% and 2% “Raise individuals who are committed to Ataturk’s principles and reforms, are able to question, produce, participate, show a sensitivity to social issues and fit into society, Develop the senses of students regarding living together, taking responsibility, cooperating and making decisions”.

Table 3. Occupational seniorities of teachers who participated in the study in Turkey and Afghanistan

<table>
<thead>
<tr>
<th>Country</th>
<th>Occupational seniority</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turkey</td>
<td>1 to 5 years</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>6 to 10 years</td>
<td>6</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>11 to 15 years</td>
<td>11</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>16 to 20 years</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>20 years and above</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>26</td>
<td>100</td>
</tr>
<tr>
<td>Afghanistan</td>
<td>1 to 5 years</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>6 to 10 years</td>
<td>9</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>11 to 15 years</td>
<td>3</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>16 to 20 years</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>20 years and above</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>14</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 4. Findings and Interpretations of Social Studies teachers in Turkey concerning the Question “What is the Main Objective of the Social Studies Lesson”

<table>
<thead>
<tr>
<th>Main objective of the social studies lesson</th>
<th>Graduation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>History</td>
</tr>
<tr>
<td>Raise good citizens who embrace their homeland and nation.</td>
<td>2</td>
</tr>
<tr>
<td>Raise the children as good and responsible citizens who are beneficial to society.</td>
<td>-</td>
</tr>
<tr>
<td>Raise individuals with a sense of history.</td>
<td>3</td>
</tr>
<tr>
<td>Raise students as individuals who are respectful towards democracy, human rights and national values.</td>
<td>-</td>
</tr>
<tr>
<td>Enable students to get social and fit into society.</td>
<td>-</td>
</tr>
<tr>
<td>Raise individuals who are committed to Ataturk’s principles and reforms, are able to question, produce, participate, show a sensitivity to social issues and fit into society.</td>
<td>-</td>
</tr>
<tr>
<td>Raise patriotic citizens who adopt the National Culture and values, show respect towards people and sensitivity to the environment, have responsibility.</td>
<td>2</td>
</tr>
<tr>
<td>Develop the senses of students regarding living together, taking responsibility, cooperating and making decisions.</td>
<td>-</td>
</tr>
<tr>
<td>Enable students to comprehend the history-geography-citizenship knowledge.</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
</tr>
</tbody>
</table>

Table 5. Findings and Interpretations of Social Studies Teachers in Afghanistan concerning the Question "What is the Main Objective of the Social Studies Lesson"

<table>
<thead>
<tr>
<th>Main objective of the social studies lesson</th>
<th>Graduation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>History</td>
</tr>
<tr>
<td>Understand the past and take a lesson from the past</td>
<td>4</td>
</tr>
<tr>
<td>Know the homeland</td>
<td>1</td>
</tr>
<tr>
<td>Know the self and the environment</td>
<td>1</td>
</tr>
<tr>
<td>Socialize the human</td>
<td>1</td>
</tr>
<tr>
<td>Know the world</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
</tr>
</tbody>
</table>

1. “Raise conscious and good citizens who embrace and dignify their homeland and country, know and use their rights and responsibilities”,
2. “Raise individuals who know the world and their country, embrace and protect the nature and are sensitive to the environment”,
3. “Raise individuals with a sense of history through giving information about history”,
4. “Raise responsible citizens who adopt the National Culture and values, show respect to other people and are sensitive to the environment”.

These objectives that are mainly expressed by social studies teachers correspond to the 2, 5, 6 and 17 general objectives of the social studies program that has 17 general objectives on a large scale. It is seen that these general objectives being expressed by teachers are tried to be brought through learning areas mainly dominated by history, geography and citizenship knowledge in the social studies lesson.

Social studies lesson is taught in 4, 5 and 6. grades in Afghanistan and the subjects in books are involved as separate disciplines in units (Sönmez, 2013). In this context, according to the findings in Table 5, the answers of social studies teachers in Afghanistan to the question "What is the main objective of the social studies lesson?" are as follows; 43% “understand the past and take a lesson from the past”, 22% “know the homeland”, 14% “know the self and the environment”, 14% “know the world” and 7% "socialize the human". Examining the answers, the most remarkable answer is that of 43% “understand the past and take a lesson from the past” and 22% “know the homeland”, which are important in terms of understanding the past of a country that had
Figure 1. Disciplines constituting the social studies according to social studies teachers graduating from the departments of History, Geography and Social Studies in Turkey according to the Order of Importance.

Figure 2. Disciplines constituting the Social Studies according to Social Studies Teachers Graduating from the Departments of History, Geography and Social Studies in Afghanistan according to the Order of Importance.

always fought with other countries and taking a lesson for next generations.

Findings and interpretations of social studies teachers in Turkey concerning the Question “What are the main disciplines constituting the social studies lesson? Can you arrange them according to the order of importance?”

According to the findings in figure 1, considering the answers of preservice social studies teachers graduating from the departments of history, geography and social studies to the question “What are the main disciplines constituting the social studies lesson? Can you arrange them according to the order of importance?”, they arranged respectively as history, geography, citizenship, economy and sociology. The first three are arranged as history, geography and citizenship, which clearly indicates that the disciplines constituting the social studies are mainly prioritized by history, geography and citizenship teachers in our country. Findings and interpretations of social studies teachers in Afghanistan concerning the Question “What are the main disciplines constituting the social studies lesson? Can you arrange them according to the order of importance?”,

According to the findings in Figure 2, considering the answers of preservice social studies teachers graduating from the departments of history, geography and social studies in Afghanistan to the question “What are the main disciplines constituting the social studies lesson? Can you arrange them according to the order of importance?”, they arranged respectively as history, geography and citizenship. We have already mentioned that the units are involved as history, geography and citizenship in social studies schoolbooks in Afghanistan. In this context, it could be asserted that teachers rendering service in Afghanistan have similar thoughts with teachers in
Table 6. Findings and Interpretations of Social Studies Teachers in Turkey concerning the Question “Which Subjects Do Challenge You in Teaching the Social Studies Lesson?”

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Graduated from social studies</th>
<th>Graduated from history</th>
<th>Graduated from geography</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>%</td>
<td>f</td>
</tr>
<tr>
<td>History</td>
<td>2</td>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td>Geography</td>
<td>4</td>
<td>26</td>
<td>4</td>
</tr>
<tr>
<td>Citizenship Knowledge</td>
<td>1</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>I am not challenged</td>
<td>8</td>
<td>55</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>100</td>
<td>8</td>
</tr>
</tbody>
</table>

Table 7. Findings and interpretations of social studies teachers in Afghanistan concerning the question “Which subjects do challenge you in teaching the social studies Lesson?”

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Graduated from history</th>
<th>Graduated from geography</th>
<th>Graduated from social studies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>%</td>
<td>f</td>
</tr>
<tr>
<td>History</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Geography</td>
<td>6</td>
<td>75</td>
<td>-</td>
</tr>
<tr>
<td>Citizenship Knowledge</td>
<td>2</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>I am not challenged</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td>100</td>
<td>4</td>
</tr>
</tbody>
</table>

Turkey. However, social studies teachers rendering service in Afghanistan never mentioned other disciplines constituting other social studies. In our country, on the other hand, teachers mentioned economy, sociology and other social studies disciplines. In this context, it is possible to conclude that social studies is not adopted with an interdisciplinary approach in Afghanistan.

According to the findings in Table 6, it is seen that among social studies teachers graduate from social studies, 26% are challenged by teaching geography subjects, 13% history subjects and 6% citizenship subjects. The fact that social studies teachers are mainly challenged by history and geography subjects in the social studies lesson shows that the social studies program is still perceived as single-discipline. This perception may be caused by the fact that some acquisitions in social studies schoolbooks are still taught with a single-discipline concept. It is seen that while teachers graduating from history are challenged by teaching geography subjects with a rate of 50%, the teachers graduating from geography are challenged by teaching history subjects with a rate of 67%. In this context, it is seen that teachers have not fully comprehended the interdisciplinary approach of the social studies lesson.

According to the findings in Table 7, it is seen that among social studies teachers graduating from history in Afghanistan, 75% are challenged by teaching the geography subjects and 25% citizenship subjects. Among teachers graduates from geography, 50% are challenged by teaching history subjects and 50% citizenship subjects. Among teachers graduating from social studies, 50% are challenged by teaching history subjects and 50% citizenship subjects. From this point of view, it is seen that social studies teachers have adopted the single-discipline concepts and are challenged by teaching the citizenship, which is the philosophy of social studies. This condition may be caused by the fact that units in social studies schoolbooks are arranged as single-discipline. In our country, the reason for social studies teachers to be challenged by teaching citizenship subjects is due to the fact that social studies schoolbooks are prepared in an interdisciplinary way and due to the approach of the program.

According to the findings in Table 8, 62,5% of social studies teachers that are graduates from history, 66% from geography and 26,5% from social studies perceive the social studies lesson mainly as a lesson teaching national values. The fact that teachers graduating from social studies have the highest rate (53%) among social studies teachers supporting the education of universal values means that teachers graduating from social studies perceive the social studies lesson more differently from social studies teachers graduating from history and geography.

According to the findings in Table 9, social studies teachers have a perception about teaching national values in the social studies lesson. The rates of teachers according to graduations are as follows; 75% history,
Table 8. Findings and interpretations of social studies teachers in Turkey concerning the question "Which values should be taught in the social studies lesson?"

<table>
<thead>
<tr>
<th>Graduation Date</th>
<th>Value to be attached</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Values</td>
<td>5</td>
<td>62.5</td>
<td></td>
</tr>
<tr>
<td>Universal Values</td>
<td>2</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>National-Universal Values</td>
<td>1</td>
<td>12.5</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Graduated from Geography

| National Values | 2 | 66 |
| Universal Values | 1 | 34 |
| National-Universal Values | - | - |
| Total           | 3 | 100 |

Graduated from Social Studies

| National Values | 4 | 26.5 |
| Universal Values | 8 | 53  |
| National-Universal Values | 3 | 20.5 |
| Total           | 15 | 100 |

Table 9. Findings and interpretations of social studies teachers in Afghanistan concerning the question "Which values should be taught in the social studies lesson?"

<table>
<thead>
<tr>
<th>Graduation Date</th>
<th>Value to be attached</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Values</td>
<td>6</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Universal Values</td>
<td>1</td>
<td>12.5</td>
<td></td>
</tr>
<tr>
<td>National-Universal Values</td>
<td>1</td>
<td>12.5</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Graduated from Geography

| National Values | 3 | 75 |
| Universal Values | 1 | 25 |
| National-Universal Values | - | - |
| Total           | 4 | 100 |

Graduated from Social Studies

| National Values | 1 | 50 |
| Universal Values | 1 | 50 |
| National-Universal Values | - | - |
| Total           | 2 | 100 |

75% geography and 50% social studies. Accordingly, it could be asserted that there is a low perception about teaching universal values in the social studies lesson. This may be caused by the current conditions of Afghanistan.

According to the findings in Table 10, 26% of social studies teachers graduating from history, 75% from geography and 26% from social studies think that the social studies lesson should be taught as a separate lesson. In this context, it is seen that social studies teachers who are not graduated from social studies think that it should be taught as a separate lesson. It could be
asserted that the social studies program that was updated in 2005 is not fully comprehended even today and does not bring an interdisciplinary perception in social studies teachers who are graduated from different social studies and render service at national education. 66% of social studies teachers graduating from social studies indicated that it should be taught with an interdisciplinary approach. In this case, it could be asserted that the graduation field is important in terms of realizing the general objectives of the lesson.

According to the findings in Table 11, among social studies teachers rendering service in Afghanistan, 75% of those who were graduates from history and geography and 50% from social studies indicated that social studies should be taught as separate lessons. The rate of those who thought that it should be taught as separate units just like in the current system is 50%. It was concluded that social studies teachers graduated from history thought that it should be taught with an interdisciplinary approach.

**CONCLUSION AND DISCUSSION**

This study tried to reveal the perceptions of social studies teachers rendering service at primary education schools in Turkey and Afghanistan towards the social studies lesson. Examining the answers of social studies teachers in Turkey to the question, “What is the main objective of the social studies lesson?”, 22% answered “Raise good citizens who embrace their homeland and nation”. This result corresponds to the second general purpose of 2005 social studies curriculum, which is as follows; “Raise good citizens of the Turkish Republic who embrace their homeland and nation, know and use their rights, fulfill their responsibilities and have a national consciousness”. Considering the answers of teachers, it is seen that 3 social studies teachers graduating from social studies, 2 from history and 1 from geography. In this context, it could be asserted that the viewpoints of teachers who graduated from social studies towards the social studies lesson is in line with general objectives. In their study, Akpınar and Kaymakçı (2012; 614) concluded that the general objectives of 2005 social studies curriculum mainly concentrated on the field of citizenship. This result underlines the importance of the graduation field in realizing the objectives of the social studies lesson. Many international studies emphasize the fact that the social studies education mainly aims to raise democratic citizens who actively participate in the society (Barr et al., 1977; Boyle-Baise et al., 2009; Engle and Ochoa, 1988; Stanley, 1985; Ross, 2001).
In a similar study, Jekayinfa, (1996: 105) concluded that social studies teachers rendering service at secondary education schools in Nigeria perceived the social studies lesson as a conveyance of citizenship. Examining the answers of social studies teachers in Afghanistan to the question, "What is the main objective of the social studies lesson?", 43% of social studies teachers answered "Understand the past and take a lesson from the past". Examining the answers, it is seen that 4 social studies teachers graduating from history, 1 from geography and 1 from social studies. According to the answers, it is seen that social studies lesson who were graduates of history had a greater rate of answers. It is also seen that social studies teachers adopted the philosophy of the department of history and consequently, we could not get an answer concerning raising a productive citizen, which is the philosophy of social studies as is indicated by (NCSS,1992).

In his study, Sönmez (2013) concluded that social studies schoolbooks in Afghanistan were grounded on disciplines rather than the constructivist approach just like in Turkey and the units consisted of history units, geography units and other social sciences units, which simply supports this condition.

Examining the answers of social studies teachers in Turkey to the question, "What are the main disciplines constituting the social studies lesson? Can you arrange them according to the order of importance?", it is seen that they respectively arranged them as history, geography, citizenship, economy and sociology. This result corresponds to the objective of embracing the homeland and nation, which is the basis of the answer to the first question, and this is caused by the fact that these subjects are mainly associated with the discipline of history. As a matter of fact, Berk (2008: 76) concluded; "new curriculums and schoolbooks of social studies involve history subjects that focus on not only the military and political history, but also culture and civilization and these subjects are tried to be associated with today" in his study. In a similar study, Keçe and Merey (2011: 110) concluded; "it is seen that acquisitions of both history and geography are involved in 2005 social studies curriculums on a large scale". Examining the answers of social studies teachers in Afghanistan to the question, "What are the main disciplines constituting the social studies lesson? Can you arrange them according to the order of importance?", it is seen that they respectively arranged them as history, geography and citizenship. This condition may have been caused by the fact that social studies schoolbooks are prepared as single-discipline in Afghanistan and there is a greater number of social studies teachers graduating from history.

In a similar study, Okobia (2011: 309) revealed that social studies teachers in Nigeria perceived the social studies as absolute-discipline social sciences and indicated that this condition could be removed through in-service studies at schools. According to the answers of social studies teachers in Turkey to the question, "Which subjects do challenge you in teaching the social studies lesson?", it was seen that they were not challenged by teaching the subjects of the disciplines in the graduation field. The social studies teachers in Afghanistan stated that even though they had no problem with their own graduation field, they were challenged by teaching the subjects of citizenship, which may have been caused by the fact that schoolbooks in Afghanistan are grounded on disciplines rather than the constructivist approach.

Examining the answers of social studies teachers in Turkey to the question, "Which values should be taught in the social studies lesson?", it was concluded that 53% of social studies teachers who were graduates from social studies answered universal values. Teachers who were graduates from history and geography, on the other hand, answered national values. This condition may underline the fact that being a graduate is important in understanding the nature of social studies. On the other hand, the social studies teachers in Afghanistan answered universal values. The answer of universal values had a very low rate, which may have been caused by the fact that higher education institutions have no department of social studies teaching and those graduating from other four-year social studies departments (such as literature) take this lesson.

Examining the answers of social studies teachers in Turkey to the question, "How should the disciplines constituting the social studies lesson be taught?", 66% of teachers who are graduate from social studies answered, "They should be taught with an interdisciplinary approach", which simply supports the nature of social studies. On the other hand, teachers graduating from history and geography stated that they should be taught as a separate lesson at a rate of 75%. According to this result, it is seen that the viewpoints of social studies teachers graduating from different social studies are against the nature of social studies. 75% of social studies teachers rendering service in Afghanistan stated that they should be taught as a separate lesson. The intersection of the perception about the social studies lesson in both countries could be associated with teachers' acquisition of the discipline in the graduation field and reflection of this acquisition on education. According to these results, the following suggestions could be made:

1. Conduct a more comprehensive study through providing an in-service training for social studies teachers in Turkey and Afghanistan.
2. Make social sciences disciplines in Turkish schoolbooks more equal in schoolbooks.
3. Prepare the social studies schoolbooks in Afghanistan with an interdisciplinary constructivist approach.
4. Open the department of social studies at higher education institutions in Afghanistan.
Conflict of Interests

The author(s) have not declared any conflict of interests.

REFERENCES


Citations

Full Length Research Paper

The effects of reciprocal teaching and direct instruction approaches on knowledge map (k-map) generation skill

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The primary purpose of the present study is to investigate whether reciprocal teaching approach or direct instruction approach is more effective in the teaching of k-map generation skill. Secondary purpose of the study is to determine which of the k-map generation principles are more challenging for students to apply. The results of the study revealed that the students learning k-map generation skill through reciprocal teaching are more successful in generating k-maps than the students learning k-map generation skill through direct instruction. Hence, it can be argued that reciprocal teaching is more effective in teaching k-map generation skill than direct instruction approach. Another finding of the study is that the students experienced partial difficulties in some principles of generating a k-map such as “properly showing the relationships between the nodes with arrows”, “writing the correct tags on the arrows to show what type of relationships they exhibit”, “reflecting the main structure of the text in the k-map”, and “covering the whole text within the k-map”.

Key words: Knowledge-map, reciprocal teaching, direct instruction.

INTRODUCTION

The present study focuses on teaching of one of the organizational strategies, k-map technique, to students. For this purpose, it is investigated whether reciprocal teaching approach or direct instruction approach is more effective in teaching of k-map generation skill. Majority of the learning taking place in school environment is based on written materials. Students learn a lot of information from written materials. When we observe the students around, we can see that they employ different approaches to studying. While some of them take notes on the margins of the text, others make frequent revisions, some others underline the important parts in a text and some students organize the information presented in a text into graphs. One of the methods used to organize information in graphs is k-map.

Knowledge map technique was developed by a group from Texas Christian university (McCagg and Dansereau, 1991). Dansereau and Newbern (1997) developed k-map as an alternative to the traditional way of presenting a written text (Dees et al., 1991). K-map is a means of schematic display of the important written information and the relationships among this information in a text. In a k-map, knowledge presented in a text, is presented as node-link-node assemblies (Wiegmann, Dansereau et al., 1992). In a k-map, basic concept related to the main idea of a text, sub-concepts related to the main concept
Information (features, definitions, types, samples) concerning all these concepts are written within geometrical figures of different shapes and sizes which are called "node". Inside the nodes, together with the words, pictures, formulas etc. and other signs can also be placed (Lambiotte and Dansereau, 1992).

Another aspect of a k-map is the links showing the relationships among nodes. Links are the arrows drawn among nodes to show the connections among the pieces of knowledge within the nodes. For better indication of the relations among the pieces of knowledge in the nodes, some words or abbreviated labels are written on each link. Abbreviations are written on the link to show the type and direction of the relationship (Rewey et al., 1991; Lambiotte and Dansereau, 1992; Wiegmann et al., 1992). In this way, students can easily and holistically recognize what type of relation exists among the main concept, sub-concepts and other important knowledge at a glance.

**Generation of a knowledge map**

In light of the research focusing on the teaching of cognitive strategies to be acquired by students during the process of reading comprehension (Day, 1980; Berkowitz et al., 1989; Grant, 1993; Amer, 1994), the steps to be followed in the generation of a k-map are dealt with at three stages:

1. Preparation, introduction to text structure
2. Principles of k-map generation and their application
3. Result, revision of the k-map.

**Preparation:** While generating a k-map, great attention should be paid so that the structure of the k-map should reflect the structure of the text (Jones et al., 1989). Therefore, first text structure should be understood. Comprehension of the text and recognition of its structure require these: Reading the text. Analyzing the title of the text. If there are, analyzing the sub-titles of the text. Finding the main idea sentences expressing the important ideas in the text.

**Principles to be followed in the generation of a k-map:** Based on the studies of Amer (1994) and Pauk (1989), the principles to be followed in the generation of a k-map can be presented as follows:

1. The most important and comprehensive main concept reflecting the main topic of the text should be found and written within a node at the top of the page where the k-map will be constructed.
2. Less comprehensive sub-concepts reflecting other important information within the text should be found and written within nodes.
3. Sub-concepts of the text should be written under the main concept in a sequential manner.
4. Important ancillary information related to the main concept and sub-concepts (e.g. examples, features, types etc.) should be found and briefly written under or next to the related main or sub-concepts. They should be placed within nodes.
5. The relationships between the nodes including the main concept, sub-concepts and important ancillary information should be indicated through linking arrows. Abbreviated notes (tags) should be written on these arrows to show the type of relationship they display.

**Revision of the k-map:** While checking the k-map generated, following questions should be answered. Does the k-map reflect the actual structure of the text? Does the k-map have a general coverage of the text? Is the selected main concept correct? Are the sub-concepts correct? Was the important ancillary information found? Was all this information properly placed within the k-map? Were the relationships among the pieces of information appropriately shown with the arrows? Was the type of the information within the nodes written correctly on the related arrows? In order to be able to give satisfying answers to all these questions, the k-map and the text should be compared. In the present study, two different approaches were adopted in teaching of the stages of k-map generation. These are direct instruction and reciprocal teaching approaches.

**Direct instruction**

Direct instruction in strategy training is teacher-centered. In the organization of the activities offered to students and in their gradual presentation, the active part is the teacher. This does not mean that there is no student participation. In general, this approach can be used by teachers in the presentation of learning strategies to students (Senemoğlu, 2013). Direct instruction approach can be used while teaching how to generate and use k-maps. The principles of direct instruction are presented below (Rinehart, Stahl and Erickson 1986):

**Clear explanations:** At this stage, each skill to be specialized on is clearly explained to students. The students are explained why each strategy is useful. Moreover, the students are informed about what types of materials can be used and when they can be used.

**Formation:** It is a stage at which the required procedures are determined and applied by the teacher in order to implement a skill on a text. From the beginning to the end of the stage, lecturing is used by the teacher to form each skill. From time to time, the teacher talks to students individually.

**Practice with feedback:** At this stage, many opportunities are created for students to practice the skills and fast and instructive feedback is given.
Division of complex skills into smaller parts: First, students are taught how to summarize short paragraphs and the students are led to the target progressively.

Note-based lessons: Notes are used both to provide guidance for teachers and to ensure unity among the work groups.

Reciprocal teaching

Reciprocal teaching is an instructional procedure designed to teach students cognitive strategies that might lead to improved reading comprehension (Rosenshine and Meister, 1994). As an alternative to direct instruction in teaching of learning strategies, reciprocal teaching is used. Reciprocal Teaching is a researcher-developed instructional technique designed by Palincsar and Brown (Seymour and Osanab, 2003). In reciprocal teaching, teaching starts with the teacher conducting an activity, and then students and the teacher go on doing the activity together. Gradually, the students take more responsibility and educate each other (Schunk, 2009).

Reciprocal teaching, with an adult model guiding the student to interact with the text in more sophisticated ways, led to a significant improvement in the quality of the summaries and questions (Palinscar and Brown, 1984). Reciprocal teaching requires the teacher to be a model rather than make presentation during learning-teaching process (Senemoglu, 2013). Then the same modeling should be performed by students within groups. Senemoglu (2013) presents the stages of reciprocal learning as follows: First, through think-aloud, the teacher demonstrates how to implement the strategy. Then, the teacher shows how and what types of questions to be asked about the text by means of think-aloud. At the third stage, the teacher again by means of think-aloud finds the points to be clarified for better comprehension and elaborate on them. The teacher demonstrates the stage through modeling. After demonstrating the stages of summarizing, asking question and clarifying by means of modeling, the teacher divides students into groups.

The students in the groups assume the role of the teacher and serve as a model for their peers by implementing the strategy. The teacher gets each student to perform the role of the teacher. The purpose of the present study is to determine which teaching approach is more effective in teaching of learning strategies. In light of the findings of the present study, teachers will be provided with data about strategy instruction. For this purpose, answers to the following questions were sought: Does the use of whether reciprocal teaching approach or direct instruction approach in k-map instruction lead to significant difference between the k-map skill levels of the students? Which principles of k-map instruction are found to be difficult to apply by the students who have been trained through reciprocal teaching approach and direct instruction approach on k-maps?

MATERIALS AND METHODS

Study group

The study was conducted with the first-year university students. In this regard, the study group of the study consists of the first-year students (Class A and Class B) from the ELT department of the Education Faculty of Muğla Sıtkı Koçman University. Randomly selected students from Class A were assigned to the control group (direct instruction) and randomly selected students from Class B were assigned to the experimental group (reciprocal teaching). There are 15 students participating in the study from Class A and 16 students from Class B, so there are totally 31 participants of the study.

Data collection instruments

Study material: In the study, for students to generate k-maps, an informative text called “Maslow’s hierarchy of needs” (Şahin, 1983) was selected. The text includes 515 words and is about psychology. Lambiote and Dansereau (1992) stated that k-map technique has some characteristics which make it suitable for using in various fields such as psychology and statistics.

K-map evaluation scale: In the study, “K-map evaluation scale” was developed to evaluate the k-maps generated by the students. While developing the scale, all the characteristics emphasized during the teaching process and to be included in a k-map were considered one by one. In relation to these characteristics, opinions of the experts from the field of educational sciences were sought. Moreover, by drawing on the principles proposed by Amer (1994) to be followed to generate k-maps from texts, 10 different criteria to be included in a k-map were determined. In this way, ten-item k-map evaluation scale was developed. As shown in table 1.

Data analysis

In k-map evaluation scale, the scoring is performed as follows: “completely observed” (2), “partially observed” (1) and “not observed” (0). Each k-map generated by the students were evaluated and scored according to this scale. In this way, each student’s k-map generating skill score was calculated. For reliability concerns, each k-map generated by the students was scored by the researcher and by an independent rater separately. The possible highest score to be taken from the k-map evaluation scale is 20. After scoring each k-map generated by the students, mean scores were calculated for the experimental and control groups. In the analysis of the data, t-test and frequencies were used.

Steps of the application

The experimental group was given k-map instruction based on reciprocal teaching approach by following the steps summarized below:

Step 1: Teacher demonstrates how to generate a k-map through think-aloud protocol (preparation-rules-revision) for students.

Step 2: Then, the teacher demonstrates through think-aloud how and what kind of questions should be asked to find the main concept, sub-concepts and important information of a text and asks sample questions. Sample questions can be: Is the main concept selected correct? Does it cover the text? Do the sub-concepts covers/summarizes the information presented in the related paragraph? What is the important information effective in relaying the main concept in the text? Are the relationships between the main and sub-concepts shown with arrows?
Step 3: Through think-aloud, the rules that have not been clearly understood are determined and then they are clarified and modeled. Sample questions can be: Does the k-map reflect the actual structure of the text? Does the k-map cover the text in general?

Step 4: After demonstrating how to generate a k-map, to ask questions, to clarify the ambiguous points, the teacher puts the students into pairs. The students assume the role of the teacher and they model the rules of k-map generation and their application for each other. Sample working sheet is distributed to each group. The students are asked to generate their k-maps by thinking aloud. Group members are asked to exchange their k-maps and evaluate each other's k-map. In this way, the students are provided with an opportunity to help each other in the revision and correction process. At this stage, the teacher offers explanations encouraging the students to learn the technique. In this way, responsibility of teaching k-map technique is taken from the teacher by the students.

In the control group, on the other hand, teaching of the steps of k-map generation (preparation-rules-revision) was performed by means of direct instruction. The direct instruction was conducted in compliance with the application steps given below. The teacher performed the activities in the steps through verbal explanations and demonstrations.

Step 1: Drawing the attention and informing about the objective: The teacher draws the students' attention to the concept of k-map and informs the students about the objective by stating "In school learning, a lot of information is learned from written materials. Reading comprehension can be defined as deriving the precise and correct meaning from such materials. One of the reading comprehension techniques is k-map used to transform verbal information to visual format. Today we will learn how to generate a k-map. If we learn this skill, it helps us to comprehend complex opinions, summarize and synthesize them".

Step 2: Revision of the prior knowledge: The students are asked questions to remind the skills such as finding the main idea and summarizing they have learned before.

Step 3: Presentation of arousing materials: The teacher shows the sample text to the students with a projector and distributes it to the students. K-map generation rules are taught through verbal explanations and demonstration on the text. It is checked whether the students watch the administration of the rules on the sample text.

Step 4: The students are led to conducting independent activities: A new text is distributed to the students. They are asked to generate the k-map of this new text under teacher guidance.

Step 5: Performance evaluation and feedback provision: Student-generated k-maps are controlled by the teacher. It is determined what kind of problems they have been confronted with while generating their k-maps. Their shortcomings and mistakes are detected. Clues are provided for students to make corrections by the teacher. Then, the students are asked to correct their k-maps.

K-map teaching lasted for 3-class hours in both of the groups. Immediately after the k-map instruction was conducted, informative text called "Maslow's hierarchy of needs" was distributed to both groups. The participants were asked to generate the k-map of this text within 30 minutes. At the end of this period, the student-generated k-maps were collected and scored.

RESULTS

The first research question of the study is stated as "Does k-map teaching conducted through reciprocal and direct instruction approaches lead to significant change in the students' k-map skill levels?" The analysis conducted to find an answer to this question revealed that the mean k-map generation skill scores of the experimental group students was found to 16.062 out of 20. In the experimental group, the lowest score taken from the scale is 15 and the highest score is 19. The control group's mean k-map generation skill score was found to be 13.866. The lowest score taken from the scale is 7 and the highest score is 15 in the control group. In order to determine whether there is a significant difference between the groups independent t-test was administered. T-test results are presented in Table 2.

As can be seen in Table 2, a significant difference was found between the k-map generation skill mean scores of
In the text. While all of the experimental group students completely applied the sixth principle “Is important information taken in a node?”, 87% of the control group completely applied it and 13% partially applied it. In the experimental group, 50% of the students completely applied the seventh principle “Are the arrows used to show the relations between the nodes placed properly?” and 50% of them partially applied it. In the control group, on the other hand, 93% of the students partially applied it and 7% could not apply it.

In the experimental group, 25% of the students completely applied the eighth principle “Are the tags indicating what type of information is shown by the arrows written correctly?” and 75% of them partially applied it. In the control group, 93% of the students partially applied it and 7% could not apply it. In the experimental group, 25% of the students completely applied the ninth principle “Does the k-map reflect the main structure of the text?” and 75% of them partially applied it. On the other hand, in the control group, 87% of the students partially applied it and 13% of them could not apply it. In the experimental group, 19% of the students completely applied the tenth principle “Does the k-map generally cover the text?” and 81% of them partially applied it. In the control group, all the students partially applied this principle.

**DISCUSSION AND CONCLUSIONS**

In light of the findings of the study, it can be argued that the experimental group students learning k-map generation through reciprocal teaching approach are more successful than the control group students learning k-map generation by means of direct instruction approach. Moreover, the experimental students learning k-map generation through reciprocal teaching are better at applying the principles of k-map generation.

The effectiveness of reciprocal teaching, a reading comprehension instructional technique, has been repeatedly demonstrated (Seymoura and Osanab, 2003). These results can be interpreted as follows:

The reason for the experimental group students to be more successful may be because they learn and teach the principles through modeling and they give feedback to each other by critically evaluating each other's k-map.

**Table 2.** Descriptive statistic and independent t-test results concerning the k-map skill scores of the groups.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>DF</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group</td>
<td>15</td>
<td>13,866</td>
<td>2,356</td>
<td>-3,247</td>
<td>29</td>
<td>0,004</td>
</tr>
<tr>
<td>Experimental group</td>
<td>16</td>
<td>16,062</td>
<td>1,181</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

P< 0, 05
During this modeling process, students were observed to take more responsibility. This higher level of responsibility may have provided valuable experiences for the experimental group students in revising their k-maps and recognizing their mistakes. Experiences of the students during the learning process can be explained via Vygotsky’s concept of Zone of Proximal Development. The interaction taking place among the students might have been a reason for an increase in the achievement level of the experimental group.

In this context, Vygotsky stated that social environment is important, and social interaction positively contributes to learning experiences of the students (as cited in Schunk, 2009). Social interaction is of vital importance for learning because the information is constructed by means of interaction taking place between two or more people (Schunk, 2009). Palincsar (1986), states that reciprocal teaching refers to an instructional activity that takes place in the form of a dialogue between teachers and students regarding segments of a text.

The purpose of reciprocal teaching is to facilitate a group effort between teacher and students as well as among students in the task of bringing meaning to the text. In the current study, the students learning k-map generation through reciprocal teaching approach carried out more effective and intensive student-student and teacher-student interaction than the control group students instructed through direct instruction approach. This enabled the students to participate in learning process more actively. Through active participation and teacher and peer support, the students were able to learn k-map skill better. “Most learning takes place in a collaborative environment.

This allows the subject of learning to benefit from dialogues with peers and instructors” (Ballester, 2002, cited in Ruiz-Palonino and Martinez-Canas, 2013). One of the reasons making the approach used in the experimental group more effective is one of the steps of reciprocal teaching, asking question. While studying the text together, the students were able to ask questions to each other to analyze the text better. Both during reading and after reading, the students were able to determine the main concept, sub-concepts and relationships among pieces of information successfully by answering these questions. They also made use of questions during the revision of their k-maps. This is in compliance with the correct utilization ratio and level of the principles of k-map generation. One of the most important reasons making the use of reciprocal teaching approach more effective is thought to be the application of strategies such as asking question reported to be effective in reading comprehension literature (Güldenoğlu and Kargin, 2012).

All the students participating in the study used the second principle of k-map generation precisely and correctly. Other principles completely used at high ratios both in the experimental and the control groups are the third, fourth and sixth principles. It can be told that all these principles were used completely by the high majority of the both groups. The fifth principle “Is the important information (definition, sample, type, feature etc.) is found and written shortly next to the related main concept or sub-concepts?” could be applied by both the experimental group and the control group students partially. When the student-generated k-maps were investigated, it was observed that important information was able to be detected in general. Only the information indicating cause and effect relationship could not be

**Table 3. Application levels and ratios of k-map generation principles**

<table>
<thead>
<tr>
<th>Principles of k-map</th>
<th>Experimental Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Completely</td>
<td>Partially</td>
</tr>
<tr>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>1. Is the main concept selected appropriate (does it have the characteristics of a main concept?)</td>
<td>15</td>
<td>.94</td>
</tr>
<tr>
<td>2. Is the main concept taken in a node?</td>
<td>16</td>
<td>100</td>
</tr>
<tr>
<td>3. Are the sub-concepts/sub-heading selected properly?</td>
<td>16</td>
<td>100</td>
</tr>
<tr>
<td>4. Are the sub-concepts/sub-headings taken in nodes?</td>
<td>16</td>
<td>100</td>
</tr>
<tr>
<td>5. Is the important information (definition, sample, type, feature etc.) is found and written shortly next to the related main concept or sub-concepts?</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>6. Is important information taken in a node?</td>
<td>16</td>
<td>100</td>
</tr>
<tr>
<td>7. Are the arrows used to show the relations between the nodes placed properly?</td>
<td>8</td>
<td>.50</td>
</tr>
<tr>
<td>8. Are the tags indicating what type of information is shown by the arrows written correctly?</td>
<td>4</td>
<td>.25</td>
</tr>
<tr>
<td>9. Does the k-map reflect the main structure of the text?</td>
<td>4</td>
<td>.25</td>
</tr>
<tr>
<td>10. Does the k-map generally cover the text?</td>
<td>3</td>
<td>.19</td>
</tr>
</tbody>
</table>
determined and shown in the k-maps. Hence, the application of this principle was partially performed. While almost all of the experimental group students were able to completely apply the first principle “Is the main concept selected appropriate (does it have the characteristics of a main concept?)”, 20% of the control group students could not apply this principle.

According to the results of the study, it is clear that the application levels of the seventh, eighth, ninth and tenth principles are relatively low. None of the control group students could apply these principles completely. In the experimental group on the other hand, more than 50% of the students could apply them partially. Only less than 50% of them were able to apply them completely. Therefore, it can be argued that in the experimental groups and particularly in the control group, seventh, eighth, ninth and tenth principles were difficult to apply for the participants.

The difficulty experienced in the ninth and tenth principles “Does the k-map reflect the main structure of the text?” and “Does the k-map generally cover the text?” might have stemmed from the difficulties experienced in the application of the seventh and eighth principles “Are the arrows used to show the relations between the nodes placed properly?” and “Are the tags indicating what type of information is shown by the arrows written correctly?” because they can be seen as pre-requisites for the ninth and tenth principles. The other principles were applied at higher ratios in both groups particularly in the experimental group. More support should be provided through examples in teaching of the principles the students found difficult to apply. Moreover, the future research may focus on the applications which may improve the quality of the dialogues occurring among students.

Conflict of Interests

The author(s) have not declared any conflict of interests.

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The effects of peer teaching on the university students’ achievements in cognitive, affective, psychomotor domains and game performances in volleyball courses

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This study is related to one of the teaching models, peer teaching which is used in physical education courses. The fundamental feature of peer teaching is defined “to structure a learning environment in which some students assume and carry out many of the key operations of instruction to assist other students in the learning process”. The aim of this study was to examine the effects of peer teaching on the university students’ achievements in cognitive, affective, psychomotor domains and game performances in volleyball courses. The quasi-experimental design was used in this study. The study involved seventy second and third grade students at Abant Izzet Baysal University (AIBU), the School of physical education and sport. The sample consisted of 46 males (% 65.7) and 24 females (%34.3) from the department of teaching physical education and department of coaching education. The data was collected by means of the volleyball achievement test, volleyball skills observation forms, attitudes towards volleyball course scale and game performance assessment instrument. The 3x2 (Treatment condition: experimental I, experimental II and control x Time: Pre/Post test) repeated measure analysis of variance and one way analysis of variance were used to analyze the data. Findings indicated that there was a significant time X group interactions for cognitive domain. The same age peer teaching group improved their cognitive scores over a time more than CWPT-PE group. On the other hand, there were no significant time X group interaction effects in psychomotor, affective domains and game performances. According to the results of the study, it can be concluded that using different instructional models in volleyball classes improved students’ achievement in cognitive, psychomotor domains and game performance but not affective domain. The present findings mean that at the university level, both teacher centered and students centered teaching have similar effectiveness in domains of learning in volleyball course.

Key words: Peer teaching, cognitive domain, affective domain, psychomotor domain, game performance, volleyball.

INTRODUCTION

Physical education, which is an integral part of the general education curriculum (Pangrazi, 2007), has a wide spectrum of effects from ensuring an individual’s maintaining physical health and happiness to processing
and structuring knowledge, gaining new interests, attitudes, habits and skills. Various teaching models and methods are used in physical education courses for enhancing students' knowledge, attitudes, habits and skills which aim to build an active life style with physical continuity (Pate et al., 1998).

Traditionally, most of the physical educators use a teacher-directed style of instruction or direct instruction model in their teaching. This model is achievement based and in this model teachers have a distinct set of learning goals in mind; present a model of a desired movement, skill or concept; and then organize student learning activities into segmented blocks of time, providing high rates of augmented feedback and encouragement as learners practice each task or skill (Metzler, 2005). The direct instruction model is effective for controlling crowded classes, high injuries risk subjects, initial stage of skill acquisition like command style (Mosston and Ashworth, 2009).

Beside direct instructional model, physical educators also use other models such as peer teaching (Metzler, 2005; Rink, 2006) in their classes. The model is also called as peer assisted teaching (Siedentop and Tannehill, 2000), reciprocal teaching (Mosston and Ashworth, 2009) and peer tutoring (Ernst and Byra, 1998). Peer teaching is defined as a process in which an educated skillful student teaches a knowledge or skill to several students in the same grade level under the guidance of a teacher (Doğanay, 2007). Peer teaching is also defined as the acquisition of skill and knowledge through active help and support among status equals (Topping, 2005). In this model, a teacher student transfers knowledge to their peer in a classroom setting under the control of an adult teacher.

Peer teaching is based on Bandura’s social learning theory, Piaget’s cognitive development theory and Vygotsky’s social constructivism theory (Iserbeyt et al., 2011). This theoretically based model of instruction has positive effect on cognitive development of a student (Hogan and Tutge, 1999; Metzler, 2005). The results of Iserbeyt, Madou, Vergauwen and Behets (2011)’s study demonstrated that the peer teaching is effective for enhancing positive teaching-learning atmosphere. And, it is useful for developing the responsibility, communication, self-confidence and socialization of the students (Loke and Chow, 2007). As reported by Loke and Chow (2007) peer teaching is effective than adult teaching since students reported that peers understand their problems about teaching better than teachers. Furthermore, peer teaching makes students active participants, giving them more responsibility and promoting their level of engagement in the task (Nurmi et al., 2013). Peer teaching also improves social interaction, helps to gain a habit to trust others, and provides the fast learning possibilities (Lund, 1997).

The effectiveness of peer teaching is also investigated in psychomotor domain. There is a strong evidence to support its effectiveness. For example, peer teaching is effective for improving the percentage of correct performance of skills (Crouch et al., 1997; Johnson and Ward, 2001; Ward et al., 1998), increasing academic learning time for visually impaired students in physical education (Wiskochil et al., 2007, cited in Ayers, 2009), improving motor skills learning (2011, Virgilio, 1985.). Several factors affect the effectiveness of peer teaching such as age, the nature of task, ability level of learner and teacher students, motivation level of students for cooperation, institutional and cultural support to cooperation (Hogan and Tutge, 1999). Generally, peer teaching is suggested for 4th and 5th grade with modification, as age increase the modification requirement level is decreased (Metzler, 2005). The ability level of the teacher students is also important in peer teaching. If learners study with a more competent teacher student, they usually get higher benefits but if they study with an equivalent competent or less competent teacher student, they get benefits at a lower level (Hogan and Tutge, 1999; Longueville et al., 2002). Beside these factors, training and preparing level of peers are critical for the success of the peer teaching (Cervantes et al., 2013). Cervantes et al. (2013) reported that trained teacher student tend to have greater impact on the motor performance of the students as compared to untrained teacher student since inadequately trained teacher student may be unable to manipulate the task, or successfully manage personal interactions with the peers. The communication among peers is another important factor to contribute the effectiveness of peer teaching. Students should not be paired with students who make them feel uncomfortable. This may be having an adverse effect on their ability to interact in an honest and mutually beneficial manner (Townsend and Mohr, 2002).

Most of the previous studies on peer teaching in physical education were on the disabled students or students with developmental disability (Houston-Wilson et al., 1997; Ward and Ayvazo, 2006; Webster, 1987); elementary school (Ward and Ayvazo, 2006; Ward et al., 1998), middle school (Ayvazo and Ward, 2009; Iserbeyt et al., 2011; Mascret, 2011) and high school (Butler and Hodge, 2001; Ernst and Byra, 1998; Johnson and Ward, 2001). Within our knowledge, there are no studies on university students. Thus, in this study the effectiveness of peer teaching was tested on university students. In addition, the present study was aimed to test the effectiveness of peer teaching on three domains of learning - cognitive, affective and psychomotor-. The effectiveness of peer teaching on three domains of learning was not investigated together in the previous studies. Generally, previous studies in physical education mostly focused on motor skill learning (Ayvazo and Ward, 2009; Iserbeyt et al., 2011; Longueville et al., 2002; Ward and Ayvazo, 2006; Ward et al., 1998). In the literature there are different forms of peer teaching in physical education classes such as unidirectional (one on one)
peer tutoring, reciprocal peer tutoring, cross age peer tutoring, same age peer tutoring and class wide peer tutoring (Cervantes et al., 2013). In this study, class wide peer tutoring (CWPT-PE) and same age tutoring model were selected as an instructional strategy to compare the effectiveness of them. Because one form includes the using of task cards and the other does not and these two strategies are reported as effective. For example, CWPT-PE has a positive effect on improving cooperation in a group (Cooper et al., 1987 cited in Bollough et al., 2003), increasing academic achievement level of the students with developmental problems in physical education courses and developing appropriate class behaviors (Cohen et al., 1982; Walberg, 1990; Ward and Lee, 2005).

Furthermore, Johnson and Ward (2001) reported that CWPT was effective in increasing correct trial number in striking unit in 3rd grade students. They also found that CWPT-PE was effective in increasing motor performance in low and high skilled boys and girls. Ayvazo and Ward (2009), in their study, examined the effect of CWPT-PE on the performances of students in volleyball unit and found that it caused an improvement in 75% of total trial and correct trial of students. In this study the effectiveness CWPT-PE and same age peer teaching with and without using task cards compared to each other and also their effectiveness compared with direct instructional model. Within our literature search, there is no attempt to compare these two strategies with each other in terms of three domains of learning. Thus, the purpose of this study was to examine the effects of two different forms of peer teaching on the university students' achievements on cognitive, affective, psychomotor domains in volleyball course and volleyball game performances.

**METHODOLOGY**

**Participants**

The study involved seventy second and third grade male and female university students from the school of physical education and sport. The sample consists of 46 males (% 65.7) and 24 females (%34.3) from the department of teaching physical education and department of coaching education. Students who took the volleyball courses during 2011 to 2012 fall semester voluntarily participated to this study. Seventy participants in three different volleyball courses were assigned to three experimental groups same age peer teaching, CWPT-PE, direct instructional model. The same age peer teaching group (experimental group 1) consists of 20 third grade students (nmale=8, nfemale=12, Mage=22.58±2.23) and the experimental group 2) consists of 25 third grade students (nmale=5, nfemale=20, Mage =22.89±2.44) department of teaching physical education. The class wide peer tutoring group (experimental group 2) consists of 25 third grade students (n=22, Mage=22.89±2.44) department of teaching physical education. 25 (n=11, n=14, Mage=23.28±2.34) second and third grade students in the department of coaching training were consider as direct instructional model group (control group). Students in peer teaching groups and direct instructional group had no previous experiences with peer teaching but they had experiences with direct instructional model. The volleyball course was required course for students in the department of teaching physical education but it was an elective course for the students in the department of coaching training. Students had to attend 80% of classes.

**Data collection instruments**

In this study, four different data collection instruments were used. These instruments are explained below:

**Volleyball achievement test:** Volleyball Achievement test which was developed by researcher was used to measure the knowledge of the students on volleyball. The test consists of 30 multiple choice questions for measuring critical behaviors in volleyball. The achievement test was developed based on the table of specifications of the volleyball courses. 60 items were written preliminary and these 60 items were examined by two volleyball experts, one measurement and evaluation expert and one curriculum development expert. Afterwards, necessary corrections were made based on the feedback and the form was applied to 100 students having the course before. After the items analysis which item discrimination index were 0.30 and higher and the items with item difficulty index at medium strength (0.40-0.60) which were believed to distinct the students who know and don’t know were chosen and the final test was obtained. The final form of achievement test consisted of 30 items with five choices; of which 13 were on knowledge level, 8 on comprehension level, 7 on application level and 2 on analysis level. The average difficulty of test was 0.58 and KR-20 reliability coefficient was 0.87. Volleyball achievement test was used as an indicator of cognitive domain in this study.

**Attitudes toward volleyball course scale:** “Attitudes toward Volleyball Course Scale” (Mirzoojlu, 2000) was used to measure the volleyball attitudes of the students. The scale is a Likert type scale and scored as 1 “Certainly Disagree” and 5 “Certainly Agree”. The scale is a single dimension scale with 28 items; 14 of the items consist of positive and 14 consist of negative statements. Cronbach alpha internal consistency coefficient of test was .88. The higher scores on the scale indicated favorable attitudes toward volleyball. The scale was used as an indicator of affective domain in this study.

**Volleyball skills observation forms:** The observation forms developed by the researcher. These forms were used for assessing the basic volleyball skills (overhead pass, forearm pass, service, spike and block) and also were used as indicators of psychomotor domain in the present study. Observation forms include critical behaviors at various numbers for each skill and these behaviors were ranked as 1 “Never”, 2 “Rarely”, 3 “Sometimes”, 4 “Frequently” and 5 “Always”.

During the development stages of forms, forms were examined by two volleyball coaches and a volleyball instructor at the university and the necessary corrections were made based on the feedback. In this study, observer reliability was determined. For observing reliability, skill performances of all students participating in the study were recorded as both pretest and posttest and these performances were made by using observation forms by three experts, namely the researcher, the volleyball instructor at the university and the volleyball coach. The observer reliability among the pretest scores by the three experts for volleyball skills were examined and, as a result of the one way variance analysis (ANOVA), no significant difference was found among the observers in skills in psychomotor domain and in total score ($F(2,209) = 1.548, p=.215$). Based on the findings, the reliability among the observers can be said to be high in psychomotor domain.

**Game performance assessment instrument (GPAI):** “Game performance assessment instrument (GPAI)” developed by Oslin et al. (1998) to measure game performance behaviors that demonstrate
tactical understanding, as well as the student's ability to solve tactical problems by selecting and applying appropriate skills (Memmert and Harvey, 2008). Volleyball game performance assessment instrument measures game performances by coding the behaviors during the game. It not only shows choosing appropriate skills during the game but also tactical awareness and tactical ability to solve tactical problems. Game performance assessment instrument gives researchers the opportunity to observe and code the compatibility of behaviors in three different categories consisting of decision making, skill execution and adjustment (Pritchard et al., 2008). In the present study, decision making category consisted of criteria such as skills used in reception and the landing zone after reception, type of pass used by the setter in setting, offense type of the attacker, and block type of blocker etc.

Skill execution category consists of efficient execution of selected skills such as overhead pass, forearm pass, service, spike and block skills. The player gets a positive (effective) score for each skill in line with the game rules and gets a negative (ineffective) score for each position the ball is carried, thrown or out. Adjustment category consisted of criteria such as a player's following the ball, setter's getting prepared to set the game after reception and moving towards the ball, opening of spiker's to spike, if not spiking taking position for coverage and moving to the front of the net to block etc (Memmert and Harvey, 2008).

In order to determine the game performances of the students, teams were set pre and after study, the students played matches and the matches were recorded in camera. Afterwards, the matches were shown to three experts in volleyball and each student was given points through tally by using observation forms prepared based on the decision making, skill execution and adjustment components. Individual index was prepared for each student and the scores of the students were calculated for three categories, game performance and game involvement by use of the necessary formulas. The procedure for observer reliability was same as observation forms. Data analysis for observer reliability indicated no significant differences in components of the game performance (decision-making \(F(2,209) = .98, p=.907\); skill execution \(F(2,209) = 1.406, p=.252\); adjustment \(F(2,209) = .003, p=.997\); game performance \(F(2,209) = .496, p=.611\) and game involvement \(F(2,209) = 1.267, p=.288\) among observers.

Data collection procedure and experimental design

The quasi-experimental design, (inequivalent design with control group) was used in this study. Seventy participants who took volleyball course were assigned to same age peer teaching (Experimental Group 1), Class wide peer tutoring (Experimental Group 2), and direct instructional model group (Control Group).

Volleyball course was selected in this study. There are several reasons for choosing volleyball course in this study. First, because of the competency of the researcher, volleyball was chosen. Second, the university students who participated in this study did not take any regular volleyball course prior to this class. Third, volleyball has relatively discrete task with clear start and finish of movement, which allows students to observe clearly the presence or absence of a critical elements (Ayvazo and Ward, 2009).

In each groups, the volleyball course was given by the same instructor for 100 minutes, 4 hours a week for 12 weeks based on predetermined course syllabus (As shown in Table 1). The instructor is an experienced person who played volleyball in the different volleyball teams for many years, who also works as a volleyball referee and has been teaching at the university for 10 years. The instructor and researcher have doctoral degree for teaching physical education. At the beginning of the study, the instructor was informed about peer teaching by the researcher and short practices were made on implementation of syllabus. Also, the researcher had weekly meetings with the instructor and informed the instructor about the general course outline. The details about the groups are given below:

**Experimental group 1 (Same age peer teaching):** The same age peer teaching model was applied in the first experimental group. For the application of the model, two students taking the course were chosen for each course (100 minutes) to teach and each student was assigned to teach twice during the whole semester. After making the necessary preparation, the selected students met the researcher and instructor two days before the course. In this meeting, the instructor gave the information to teacher students about the learning objectives, expectations of them, task presentation and check for understanding, how to communicate errors to learners, how to provide praise appropriately, how to practice safely, how to assess the mastery of students as suggested by Metzler (2005). After all the information about implementation was given to the teacher students, the daily plan was done by the instructor and teacher students altogether. After that, the explanations and presentations about the exercises were provided to the teacher students in practice by the researcher and the instructor. In the classroom setting, students were divided into two groups which includes 9-10 students and the same syllabus was implemented to peers by two different teacher students. Meanwhile, the instructor observed the teacher students during the course and intervened the process by calling the teacher students to talk when necessary. The instructor definitely had no direct contact with the other students in the classroom. During the course, the teacher students were responsible for explaining and demonstrating the subject of the course, explaining and demonstrating the exercises, providing feedback, corrections and reinforcer. In this group, the task cards were not used for teaching volleyball.

**Experimental group 2 (Class wide peer tutoring):** Experimental group 2 was thought by class wide peer tutoring strategy. The class wide peer tutoring was applied with regard to suggestion of Johnson and Ward (2001). Based on the suggestion of Johnson and Ward (2001) CWP-PE consists of six components which are teams, peer dyads, practice time and task cards, partner check, posting team scores and goal setting. By considering this suggestion, the students were divided into groups of 4 students and each group named itself at the beginning of the semester. Then, in each group, 2 students in pairs gave the course using the task cards prepared by the researcher. In each course, the students in each group reviewed the task cards and set the total group points to be achieved during the exercises in the course and announced it on the board and practiced in pairs. One of the students acted as doer and the other as observer during practice and gave each other feedback/correction/reinforcer and assessed peer's performance on the task card. Then, they changed duties. After the assignments, point of each student was summed and the final group score was calculated by summing the points of all students in the group. The score in total and the score planned to be achieved before the practice were compared and the final score was written on the board (Townsend and Mohr, 2002). The same process was applied to all the subject in volleyball, and the groups getting the highest two scores in all subjects were given the opportunity to have a match over 3 sets in the final course of the semester.

**Control group (Direct instructional model):** The volleyball courses in the control group were taught by the traditional direct instruction model. During the course, the instructor explained and demonstrated the subject by use of visual-audio instruments (power point presentation, video etc.), question-answer technique and then applied the exercises from simple to difficult. The instructor point presentation, video etc., question-answer technique and then applied the exercises from simple to difficult. The instructor
Table 1. Contents of volleyball course in experimental and control groups.

<table>
<thead>
<tr>
<th>Week</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Achievement test, attitudes scale, video record of skills (pretest)</td>
</tr>
<tr>
<td>Week 2</td>
<td>Video record of tournament-match performance (pretest)</td>
</tr>
<tr>
<td>Week 3</td>
<td>Volleyball game rules, dimensions of playing area, locomotor movements in volleyball</td>
</tr>
<tr>
<td>Week 4</td>
<td>Overhead pass</td>
</tr>
<tr>
<td>Week 5</td>
<td>Overhead pass – forearm pass</td>
</tr>
<tr>
<td>Week 6</td>
<td>Forearm pass</td>
</tr>
<tr>
<td>Week 7</td>
<td>Service</td>
</tr>
<tr>
<td>Week 8 to 9</td>
<td>Spike</td>
</tr>
<tr>
<td>Week 10</td>
<td>Block</td>
</tr>
<tr>
<td>Week 11</td>
<td>Block, rolling</td>
</tr>
<tr>
<td>Week 12</td>
<td>Defense in volleyball (reception and coverage)</td>
</tr>
<tr>
<td>Week 13</td>
<td>Offense in volleyball (game systems and coverage)</td>
</tr>
<tr>
<td>Week 14</td>
<td>Match</td>
</tr>
<tr>
<td>Week 15</td>
<td>Achievement test, attitude scale, video record of skills (posttest)</td>
</tr>
<tr>
<td>Week 16</td>
<td>Video record of tournament-match performance (posttest)</td>
</tr>
</tbody>
</table>

Table 2. Comparison of attitude scores of the students in different groups towards the volleyball course.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Pretest</th>
<th>Posttest</th>
<th>Group x Time F</th>
<th>p</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental I</td>
<td>20</td>
<td>4.12</td>
<td>.306</td>
<td>3.90</td>
<td>.626</td>
<td>.271</td>
</tr>
<tr>
<td>Experimental II</td>
<td>25</td>
<td>4.20</td>
<td>.350</td>
<td>4.01</td>
<td>.489</td>
<td>.763</td>
</tr>
<tr>
<td>Control</td>
<td>25</td>
<td>4.32</td>
<td>.383</td>
<td>4.00</td>
<td>.696</td>
<td>.008</td>
</tr>
</tbody>
</table>

controlled the starting and finishing time for exercises, set the time and tempo for exercises at the beginning of teaching the new skill. Then, instructor provided different exercise drills to students and students had an opportunity to select some of them and practiced these drills independently. The students were observed during the exercises and feedback/correction and reinforcer were given by the instructor. During the semester, main skills and tactics of volleyball were given and, in the last week (4 hours), the students had a volleyball match. In this study the direct instructional model was applied based on the suggestion of Rosenshine. Rosenshine in 1986 identifies six key operations in a direct instructional lesson: 1. Review of previously learned material, 2. Presentation of new content/skills, 3. Initial student practice, 4. Feedback and corrections, 5. Independent practice and 6. Periodic review (cited in Metzler, 2005).

Data analysis

The descriptive statistics, two factor (3x2: Group: Experimental I, Experimental II and Control /Time: Pretest-Posttest) repeated measure analysis of variance and one way analysis of variance analysis (ANOVA) were used to analyze data. Tukey Post Hoc test was used as follow up test. To test the initial differences in all variables among three groups, One way analysis of variance (ANOVA) was conducted. ANOVA results indicated no significant differences in the level of knowledge on volleyball (F (2,69) =1.265, p=.289), the level of attitude towards volleyball course (F (2,69) =1.851, p=.165), the skills consisting volleyball in all and in total (F (2,69) =.828, p=.441) and all sub-dimensions consisting the game performance (decision making F (2,69) =.842, p=.436; skill execution F (2,69) =2.293, p=.110; adjustment F (2,69) =.913, p=.407; game performance F (2,69) =2.297, p=.109 and game involvement F (2,69) =2.585, p=.084) among three groups. These results indicated that groups were equal in terms of variables at the beginning of the study.

FINDINGS

Changes in attitude towards volleyball (Affective domain)

3 x 2 Repeated Measure ANOVA results indicated significant time main effect for attitudes towards the volleyball course (F (1,67) = 9.040, p=.004, η² = .119). On the other hand, the group main effect (F (2,67) = .941, p=.396, η² = .027) and the group x time interaction effect were not significant (F (2,67) = .271, p=.763, η² = .008). In all groups, attitude scores were decreased from pre to post test (Table 2), but these changes were not differ among groups.
Table 3. Comparison of levels of volleyball knowledge of the students in different groups.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Pretest M</th>
<th>Pretest SD</th>
<th>Posttest M</th>
<th>Posttest SD</th>
<th>Group x Time F</th>
<th>p</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental I</td>
<td>20</td>
<td>13.20</td>
<td>3.53</td>
<td>23.20</td>
<td>5.40</td>
<td>3.99</td>
<td>.023</td>
<td>.107</td>
</tr>
<tr>
<td>Experimental II</td>
<td>25</td>
<td>14.44</td>
<td>3.76</td>
<td>20.72</td>
<td>6.14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>25</td>
<td>12.60</td>
<td>4.92</td>
<td>21.88</td>
<td>5.23</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Table 4. Comparison of volleyball skill levels of the students in different groups.

<table>
<thead>
<tr>
<th>Skills</th>
<th>Group</th>
<th>N</th>
<th>Pretest M</th>
<th>Pretest SD</th>
<th>Posttest M</th>
<th>Posttest SD</th>
<th>Group x Time F</th>
<th>p</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overhead Pass</td>
<td>Experimental I</td>
<td>20</td>
<td>2.36</td>
<td>.56</td>
<td>3.83</td>
<td>.50</td>
<td>1.438</td>
<td>.245</td>
<td>.041</td>
</tr>
<tr>
<td></td>
<td>Experimental II</td>
<td>25</td>
<td>2.54</td>
<td>.57</td>
<td>3.79</td>
<td>.41</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>25</td>
<td>2.45</td>
<td>.66</td>
<td>3.87</td>
<td>.54</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forearm Pass</td>
<td>Experimental I</td>
<td>20</td>
<td>2.08</td>
<td>.60</td>
<td>3.89</td>
<td>.44</td>
<td>1.405</td>
<td>.253</td>
<td>.040</td>
</tr>
<tr>
<td></td>
<td>Experimental II</td>
<td>25</td>
<td>2.21</td>
<td>.61</td>
<td>3.91</td>
<td>.42</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>25</td>
<td>2.20</td>
<td>.73</td>
<td>3.79</td>
<td>.43</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service</td>
<td>Experimental I</td>
<td>20</td>
<td>2.60</td>
<td>.70</td>
<td>3.92</td>
<td>.55</td>
<td>.044</td>
<td>.957</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Experimental II</td>
<td>25</td>
<td>2.55</td>
<td>.67</td>
<td>3.87</td>
<td>.54</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>25</td>
<td>2.43</td>
<td>.72</td>
<td>3.79</td>
<td>.57</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spike</td>
<td>Experimental I</td>
<td>20</td>
<td>1.91</td>
<td>.70</td>
<td>3.43</td>
<td>.75</td>
<td>.439</td>
<td>.847</td>
<td>.013</td>
</tr>
<tr>
<td></td>
<td>Experimental II</td>
<td>25</td>
<td>2.03</td>
<td>.75</td>
<td>3.48</td>
<td>.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>25</td>
<td>1.99</td>
<td>.59</td>
<td>3.36</td>
<td>.79</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Block</td>
<td>Experimental I</td>
<td>20</td>
<td>2.03</td>
<td>.53</td>
<td>3.44</td>
<td>.80</td>
<td>2.637</td>
<td>.079</td>
<td>.073</td>
</tr>
<tr>
<td></td>
<td>Experimental II</td>
<td>25</td>
<td>1.65</td>
<td>.49</td>
<td>3.44</td>
<td>.70</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Control</td>
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<td>.73</td>
<td>3.29</td>
<td>.66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>Experimental II</td>
<td>25</td>
<td>2.20</td>
<td>.53</td>
<td>3.70</td>
<td>.46</td>
<td>.202</td>
<td>.817</td>
<td>.006</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>25</td>
<td>2.17</td>
<td>.59</td>
<td>3.62</td>
<td>.51</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Changes in volleyball achievement scores (Cognitive domain)

Analysis indicated significant difference in knowledge scores ($F_{(1,67)} = 219.49$, $p=.000$, $η² = .766$) between pre and posttest. Besides, group x time interaction effect was also significant for the knowledge scores ($F_{(2,67)} = 3.99$, $p=.023$, $η² = .107$). The change in knowledge scores over 12 week period differed among three groups (Table 3). One way analysis of variance was conducted to find out which groups had more changes over 12 week periods. Analysis indicated that Experimental Group I ($M_{gain}=10.00$) improved their knowledge scores more than Experimental Group II ($M_{gain}=6.280$).

Changes in volleyball skills (Psychomotor domain)

Results of 3 x 2 Repeated Measure Analysis of Variance indicated significant time main effect for each volleyball skills. However, group main effect and group x time interaction effects were not significant for volleyball skills. Analysis indicated that achievement scores of overhead pass ($F_{(1,67)} =625.707$, $p=.000$, $η = .903$), forearm pass ($F_{(1,67)} =1015.098$, $p=.000$, $η = .938$), service skills, ($F_{(1,67)} =385.393$, $p=.000$, $η = .852$), spike skill ($F_{(1,67)} =552.289$, $p=.000$, $η = .892$), block skill ($F_{(1,67)} =498.287$, $p=.000$, $η = .881$) improved from pretest to post test (Table 4). In addition, total scores of students ($F_{(1,67)} =1449.946$, $p=.000$, $η = .956$) improved over 12 weeks. The improvement in volleyball skills did not differ with regard to intervention groups.

Changes in game performance

Analysis indicated significant differences in decision making ($F_{(1,61)} =34.78$, $p=.000$, $η²=.363$; skill execution
DIMENSIONS

Table 5. Comparison of volleyball game performances of the students in different groups.

<table>
<thead>
<tr>
<th>Sub-dimensions</th>
<th>Group</th>
<th>N</th>
<th>Pretest</th>
<th>Posttest</th>
<th>Groupx Time F</th>
<th>p</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>SD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decision</td>
<td>Experimental I</td>
<td>20</td>
<td>2.13</td>
<td>2.37</td>
<td>6.10</td>
<td>1.448</td>
<td>.243</td>
</tr>
<tr>
<td>making</td>
<td>Experimental II</td>
<td>25</td>
<td>2.76</td>
<td>2.72</td>
<td>5.08</td>
<td>1.424</td>
<td>.243</td>
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<tr>
<td></td>
<td>Control</td>
<td>25</td>
<td>1.81</td>
<td>2.27</td>
<td>3.95</td>
<td>1.448</td>
<td>.243</td>
</tr>
<tr>
<td></td>
<td>Experimental I</td>
<td>20</td>
<td>1.20</td>
<td>2.06</td>
<td>4.00</td>
<td>1.657</td>
<td>.199</td>
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<td>Skill</td>
<td>Experimental II</td>
<td>25</td>
<td>1.65</td>
<td>1.93</td>
<td>3.54</td>
<td>1.657</td>
<td>.199</td>
</tr>
<tr>
<td>execution</td>
<td>Control</td>
<td>25</td>
<td>.58</td>
<td>.63</td>
<td>1.70</td>
<td>1.18</td>
<td>.644</td>
</tr>
<tr>
<td></td>
<td>Experimental I</td>
<td>20</td>
<td>.64</td>
<td>.48</td>
<td>3.82</td>
<td>2.090</td>
<td>.132</td>
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<tr>
<td>Adjustment</td>
<td>Experimental II</td>
<td>25</td>
<td>.75</td>
<td>.84</td>
<td>3.52</td>
<td>2.274</td>
<td>.112</td>
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<td>Control</td>
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<td>.47</td>
<td>.67</td>
<td>2.19</td>
<td>1.99</td>
<td>.644</td>
</tr>
<tr>
<td></td>
<td>Experimental I</td>
<td>20</td>
<td>1.27</td>
<td>1.46</td>
<td>4.61</td>
<td>2.274</td>
<td>.112</td>
</tr>
<tr>
<td>Game</td>
<td>Experimental II</td>
<td>25</td>
<td>1.72</td>
<td>1.42</td>
<td>4.04</td>
<td>2.274</td>
<td>.112</td>
</tr>
<tr>
<td>Performance</td>
<td>Control</td>
<td>25</td>
<td>.88</td>
<td>.95</td>
<td>2.61</td>
<td>1.63</td>
<td>.644</td>
</tr>
<tr>
<td></td>
<td>Experimental I</td>
<td>20</td>
<td>31.50</td>
<td>14.85</td>
<td>51.30</td>
<td>1.183</td>
<td>.313</td>
</tr>
<tr>
<td>Game</td>
<td>Experimental II</td>
<td>25</td>
<td>33.18</td>
<td>14.12</td>
<td>44.64</td>
<td>2.76</td>
<td>.123</td>
</tr>
<tr>
<td>Involvement</td>
<td>Control</td>
<td>25</td>
<td>23.64</td>
<td>15.42</td>
<td>38.18</td>
<td>1.79</td>
<td>.123</td>
</tr>
</tbody>
</table>

\( F_{(1,61)} = 26.43 \), \( p = .000, \eta^2 = .302 \); adjustment \( F_{(1,61)} = 73.22, p = .000, \eta^2 = .546 \); game performance \( F_{(1,61)} = 64.32, p = .000, \eta^2 = .513 \) and game involvement \( F_{(1,61)} = 47.53, p = .000, \eta^2 = .438 \) subscales of Game Performance Assessment Instruments between pretest and posttest (Table 5). In addition, analysis revealed significant differences in skill execution \( F_{(2,61)} = 5.44, p = .007, \eta^2 = .151 \), game performance \( F_{(2,61)} = 34.78, p = .000, \eta^2 = .363 \) and game involvement \( F_{(2,61)} = 3.53, p = .035, \eta^2 = .104 \) subscales among three groups favoring experimental groups. The same age peer teaching and CWPT-PE had improved their scores in three subscales of game performance more than direct instructional model group. On the other hand, the group x time interaction was not significant for any subscales of game performance assessment (Table 5).

DISCUSSION

Peer teaching is one of the learner centered approaches in modern education today. Therefore this study intended to examine the effects of two different types of peer teaching on the students’ achievement in cognitive, affective and psychomotor domain in volleyball course at the university level. In this study the effectiveness of peer teaching was tested by comparing it with direct instruction model focusing on teacher centered approach.

In consistent with expectation of this study, students’ attitudes toward volleyball decreased over 12 weeks period in all three teaching models. This result could be attributed to classroom atmosphere in which mostly focused on skill development and was mostly structured instead of fun and freedom. The lack of experiences with peer teaching and taking the responsibility of course may cause feeling of worry in experimental group I and II and this may have an influence on attitudes. Especially, having more experiences with teacher centered applications, not having much responsibility for learning, having to prepare for learner centered applications, being spending time for their responsibilities before and during the course, observing by the instructor during the course may influence the attitudes of students in a negative way. Generally students want to have a fun in physical education classes, structuring the physical education classes may decrease their enjoyment, fun and influence their attitudes.

In Loke and Chow (2007)’s study, some students reported negative opinion about peer teaching such as they reported that taking responsibility of course is stressful process for them. It is interesting to note that the changes in attitudes toward volleyball did not differ with regard to instructional model. This finding was not in line with the some of previous studies which reported an improvement in socialization and communication (Iserbyt et al., 2011; Loke and Chow, 2007; Temple and Lynnes, 2008) after peer teaching. The differences between the findings of this study and those of other studies may have stemmed from the fact that other studies were mostly carried out on disabled students, on different age groups and based on different features measuring the affective domain.

The findings on the cognitive domain revealed that volleyball knowledge of students improved over 12 week period and this improvement differed in terms of type of instructional model. Especially, students in the same age peer teaching group improved their knowledge scores more than students in CWPT-PE group. However, the
improvement in knowledge scores of learner centered groups was not different than direct instructional group. This result means that teaching volleyball either in teacher centered or learner centered approaches made no difference in terms of volleyball knowledge. Students who received instruction on volleyball by same age peer teaching model improved their knowledge about rules, techniques, and tactics of volleyball. But, the effect of same age peer teaching on knowledge about volleyball might arise from the using of task card in the course. Because, in CWPT-PE group used task cards in every lesson during the study, and most of the students met the task cards as a teaching material for the first time. So, this reason might create the difference between two groups in cognitive domain. The research on the effect of peer teaching on cognitive domain in the physical education teaching is limited. The finding of this study was not in line with the previous study of Arun et al. (2010) who reported no significant improvement in cognitive domain after teaching the volleyball course with peer model. However, Clarke and Fetham (1990) stated that peer teaching process improved learning skills which contributed higher academic achievement. (cited in Loke and Chow, 2007). According to Griffin and Griffin’s study, peer teaching has no measurable effects on academic achievement of students but they find it useful for students to learn through course materials used during peer teaching process (cited in Loke and Chow, 2007).

Another finding of this study revealed that volleyball courses given in twelve weeks were effective in students' learning the volleyball skills. This was an expected result because the drills about the skills during the course with the objective, the number of drills, repetitions and time yielded such a result in all three groups. This result is supported by the results of Arun et al. (2010) and Iserbyt et al. (2011). Arun et al. (2010) found significant time differences in overhead pass and forearm pass skills. In addition, Iserbyt et al. (2011) tested the effect of peer teaching model using task cards for teaching tennis unit in 8th grade physical education courses and they reported that the students peer teaching groups have learnt tennis motor skills as much as the students in the group with teacher centered tennis course did.

CONCLUSION

In this study, there were no differences in volleyball skills among the experimental and control groups and also changes in volleyball skills over time did not differ in terms of instructional model. This finding was not parallel with the previous studies (Ayvazo and Ward, 2009; Johnson and Ward, 2001; Longueville et al., 2002; Ward and Ayvazo, 2006). The study carried out by Longueville et.al. (2002) to teach breaststroke turning to 48 students in a high school examined the effect of peer teaching with inexperienced and experienced teaching students on the swimming performances and achievement motivations of the students.

The study revealed that teaching students with a high level of teaching skills increased the performances of male students at the highest level while teaching students with a medium level of teaching skills were effective on female students who were inexperienced in swimming. Ward and Ayvazo (2006), in the study about autistic children at preschool, used the class wide peer teaching model and found that the model increased accurate catch and total catch scores of the children. Similarly, Johnson and Ward (2001), in their studies designed on a shoot unit with the participation of 11 students in the third grade with the use of class wide peer teaching, reported a decrease in the total trial scores but an increase in the accurate trial and rate. Another study carried out by Ayvazo and Ward (2009) examined the effect of class wide peer teaching model on the volleyball performance of the 6th grade students and found that the class wide peer teaching model resulted in an increase in total trial and accurate trial performances of the three students among 4 students. Among the reasons for the differences between the study and other studies can be use of different age groups and different sport branches in the studies, attendance of disabled students in the studies and use of class wide peer teaching model as peer teaching.

In the present study, the effect of same age peer teaching and class wide peer teaching on the game performance of the students in the volleyball tournament was also examined. According to the findings obtained from the tournament, significant time differences were found in game involvement and the sub dimensions of game performance such as decision making, skill execution, adjustment and the game performance. According to the result, it is possible to state that skill exercises and tactical practices in volleyball courses given in all three groups had a positive effect on improving the performances of the students in the game. When the game performance scores of the students in the experimental and control groups in the study were compared, there was a significant difference in favor of the experimental groups in skill practice and game participation sub dimensions. The skill practice category consists of the volleyball skills and the skills included in the study. The player gets a positive (effective) score for each skill in line with the game rules and gets a negative (ineffective) score for each position the ball is carried, thrown or out. In this respect, the students in peer and class wide peer teaching groups (experimental I and II) achieved more than the students in the control group in terms of applying the volleyball skills during the match. This result is very important because students take responsibility in each other’s learning and assessment in peer teaching groups and they also learn the skills they teach while they fulfill their responsibilities. Although there was no significant difference among the groups when the volleyball skill
performances were assessed separately, high skill performance of the students in the groups where peer teaching was applied during the match is a situation intended because the skills consisting of a sport field are learnt to practice in a game setting. For this reason, display of skills in a game setting should be more valuable than displaying each skill in a controlled setting. The finding on the participation in game, which is another dimension of game performance, indicated a significant difference in favor of the peer teaching group (experimental) over the direct instructional model group. According to the result, the students who were assigned duties beforehand and whose skills were improved in the peer teaching group participated in the game more than the ones in the control group did. In peer teaching, the students learnt how to read a game, participate in the game properly and display appropriate performance in a volleyball match while they taught their classmates the volleyball knowledge and skills. This finding was an expected result because individuals learn best when they teach others. When the findings of the game performance are assessed altogether, it is possible to state that the game performances of the students in the volleyball course given in different models improved significantly compared to the beginning level and the game performance improved more in the classes where peer learning was applied.

This study has some limitations. First, the study was carried out with restricted number of university students from intact volleyball class and students were not randomly assigned to the experimental groups and control group. Future studies should be conducted on the different age groups with increasing sample size, and random assignment. The effectiveness of peer teaching should also be investigated in other fields of physical education such individual sports. Second, the sample of this study included both males and females and the study did not consider possible gender differences. The female-male balance could not be ensured since the study was carried out in a real school setting and on the students enrolled in the volleyball course. In the future studies the effectiveness of peer teaching should be examined by considering gender as a confounding variable. Third, this study did not consider the ability level of student teacher in peer teaching. The future studies may provide the suitable conditions and focus on the effect of peer teaching applied to students with different levels of teaching ability. Fourth, the study quantitative and nature of data did not provide detail information about the subjective experiences of students with different instructional models. In the future studies, both qualitative and quantitative methods could be used.

By considering the limitations of this study, it can be concluded that using different instructional models in volleyball classes improved students’ achievement in cognitive, psychomotor domains and game performance but not affective domain. In addition, the different instructional models influence the university students’ achievement in the different domains in a similar way. The present findings mean that at the university level, both teacher centered and student centered teachings have similar effectiveness in domains of learning. From practical point of view, the instructors should carefully design instructional model in their class and select the model based on the need and interest of students. The teacher should also consider the nature of task, ability level of students for choosing and application of models.

Conflict of Interests

The author(s) have not declared any conflict of interests.

REFERENCES


Citation

Full Length Research Paper

The effects of a problem based learning approach on students’ attitude levels: A meta-analysis

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This research aimed to examine the effect of a problem-based learning approach in comparison to traditional learning approaches. In this context, the question “What is the effect size of problem-based learning on students’ attitudes?” was tried to be answered. Among 190 studies made in national and international field between the years 2006 to 2013, 19 theses and 6 articles, in which pre-test and post-test experimental design was applied, were examined in this meta-analysis according to inclusion criteria. As a result of analytic evaluation, the effect size value of the problem-based learning on attitudes in relation to a random effects model was measured to be 0.7195. Thus, it can be said that this value had a medium effect size according to the classification levels of Thalheimer and Cook. It was concluded from these results that problem-based learning approaches were more effective when compared to traditional teaching techniques.

Key words: Problem-based learning, effectiveness, meta-analysis, effect size, traditional teaching.

INTRODUCTION

Problem based learning, is a learning process in which there are active students who can produce new information by using existing knowledge (Major and Palmer, 2001). It is a well-developed approach used in education and is applied extensively nowadays (Hmelo-Silver, 2004: 236). Borrow (1984) personally began the process of improving problem based learning in Canada, at McMaster University. Borrow described this approach as being student-centered, teachers’ taking lesson in small groups, in which they take a facilitative role, and organizing the lesson within the framework of various problems (cited in Graaff and Kolmos, 2003).

However, Barrett (2010) has explained problem based learning as a situation in which learners’ struggle for a solution within the framework of certain problems that have been carried out independently or as group discussions and controlled by a teacher. Problem based learning, as well as analyzing theory, model and application steps, has been especially focused upon application step. The reason for this is that there are many processes applied in universities such as Linköping, Maastricht, Roskilde and Aalborg, in the formation of related learning approaches (Graaff and Kolmos, 2003). So it can be said that a problem based learning approach is especially related to the field of application and makes students attain learning goals within the framework of several problems.

Problem based learning transforms learners into active independent learners instead of passive information receivers (Akınoğlu and Tandoğan, 2007). This is an...
approach which aims at noticing the importance of problems encountered in real life circumstances by recognizing them. This process searches for the reasons for these problems and seeks solutions and predicts other problems and aims to prevent them. So it is a question of starting off a problem by making information a major target and searching for the solution to a problem (Chin and Chia, 2004). Within the context of problem based learning the aim is not only to achieve an analysis of a specific subject but also to determine new learning targets and ensures the learners acquire problem solving, questioning, research and critical skills (Major and Palmer, 2001).

Dolmans (1994) has underlined that it is an approach which encourages independent and self-directed learning by ensuring a process in which learning targets are transferred to a problem, students analyze this problem in small group discussions. The major principles and processes emphasized in the problem are assessed, and questions of which answers can be attained are researched in group discussions described as learning subjects (cited in Davis and Harden, 1999). For this reason, we can describe problem based learning as an approach which does not simply find a solution to a problem, but also expresses it as an approach in which problems are used to ease learning (Awang and Ramly, 2008) by identifying and analyzing existing problems to find a solution as a result of collaborative studies among students (Peterson, 1997) In this way, it predicts that students will show a better learning performance and consequently more positive attitudes towards lessons (Forrester, 2004). In this regard, it is understood that problem based learning has a positive effect on students attitudes towards lessons.

Much research has been performed regarding problem based learning by assessing the students results and the increases in learners’ success (Awang and Ramly, 2008; Colliver, 2000; Yoon et al., 2014) and an improvement in attitudes towards lessons (Demirel and Turan, 2010; Selçuk, 2010). There has been an effort to examine problem based learning which has helped learners to develop more creative, critical, dispositive and problem solving skills and that supports learning activities which has to be done voluntarily.

**METHODOLOGY**

**Data collection**

In this research, a meta-analysis method was used, which is described as a way to reach a general conclusion by putting together and re-analyzing the results of different studies. These are studies carried out concerning the same subject but collected independently from each other in order to specify the level of the effect of problem based education approach on students’ attitude levels (Glass, 1976). Collected from national and international area (Google scholar, council of higher education national thesis center, ebscohost-eric, sciencedirect) 73 articles and 117 theses in total which applied pretest-posttest control group model, examining the effects of problem based learning approaches to attitude, having sample size (n), arithmetic average (X), and standard deviation (sd) values were examined and among these studies, 25 ones (6 articles and 19 theses) have been chosen for meta-analysis, by taking into account the suitability of inclusion criteria between 2006 and 2013. On the other hand, as study characteristics, the educational level of students attending the study, lessons in which the process was applied, publication type and the year of publication that study belonged to, sample size of studies, standard deviation and the mean values of samples, were determined.

**Data analysis**

In the data analysis process, the effect of the meta-analysis method which includes calculations of the average differences between the experimental group and control group was tried to be determined (Hunter and Schmidt, 1990: cited in Şahin, 2005). In this research, the effect size “d” value which is obtained as a result of the division of difference of averages between the experimental group and the control group to total standard deviation (Cohen, 1992) was calculated according to Thalheimer and Cook’s (2002) level classification. For analysis of the effect coefficient analysis calculated for each study, fixed effects model (FEM) and random effects model (REM) interpretations were made by taking these into consideration. CMA (Comprehensive meta-analysis), the MetaWin statistical program and Microsoft excel 2010 Office programs were used.

**FINDINGS**

In this research, as a result of a literature review of 18 masters’ degree, a PhD theses and 6 articles which gave their arithmetic averages and standard deviations related to problem based learning, a total of 25 studies concerning problem based learning efficiency on attitudes were found. Moreover the experimental groups comprised of 680 students and the control group 689 students. At this point a homogenous distribution value, average effect size and confidence interval for effect models regarding attitude points of studies were included in the analysis and were given in Table 1. As can be seen in Table 1, according to the fixed effect model, data from the theses included in the meta-analysis were calculated as; 0,054 standard deviation, 0,7195 upper limit and 0,4881 sub-limit of the %95 confidence interval with an effect size value of ES=0,6038. When statistical significance was calculated according to the z-test, the value was found as being 13,463 (p=0,0000). As a result of meta-analysis Q-statistics homogeneity test values were calculated as being 138, 3342.

In the chi-square table at the %95 significance level with 24 degrees of freedom, the critical value was seen to be found as 36.415. According to the fixed effects model, the Q statistics homogeneous test value of the data in 25 studies were rejected with its 24 degrees of freedom, as it exceeded a critical value, in the homogeneity of the fixed effects model which refers to the range of effect levels.

As the homogeneity test of the research included in the study was higher than expected, the model was transformed into a random effects model by calculating the
random effect component of variance. As a result of the calculations, when the data of 25 studies included in meta-analysis were examined according to random effects model, 0.163 standard deviation and 0.9999 upper limit and 0.4391 sub-lim of the %95 confidence interval with an effect size value as ES=0.7195 were found. This result therefore favored the use of a problem based approach in the learning environment. Moreover, as in many studies the effect size value was between 0.2368 and 2.5771, according to Thalheimer and Cook (2002) the results of these studies had all effects of negligible, small, medium, large, very large and huge levels.

### The efficiency of problem based learning according to teaching grades and application durations of the studies included in meta-analysis

Studies were divided into 4 different groups to determine samples' learning level effects, which were included in the meta-analysis, of the total effect size. In Table 2 the results of the homogeneity test, Q statistical value was calculated as 690 according to the analysis results. In the chi-square table at the %95 significance level with 3 degrees of freedom, the critical value was accepted to be about 7.815. As the Q statistical value calculated in the research (6.690) was smaller than the critical value 7.815, the homogeneity hypothesis belonging to effect size distribution was accepted in a fixed effect model.

In addition to the data shown in Table 2, one study at the level of primary school (ES=0.773) and four studies for the 9-18 week group (ES=0.761) were included in the analysis. When the effects of problem based learning approaches usage in learning environment on application duration were examined as a result of the homogeneity test, Q statistical value was calculated as 1,186. In the chi-square table, at the significance level of %95 with 3 degrees of freedom, the critical value was accepted as being about 7.815. As the Q statistical value (1,186) was calculated in the research as being smaller than the critical value 7.815, the homogeneity hypothesis belonging to effect sizes distribution was accepted in the fixed effect model.

### RESULTS AND DISCUSSION

In this meta-analytic study, it has been concluded that the problem based learning approach has been used frequently in teaching of different lessons and subjects in teaching environment, and that this approach has had a positive effect on the students' attitude. To identify the effect of a related approach to attitude points, the general effect size calculated according to an applied random effect model has been found as being 0.7195. This value shows that problem based learning is more efficient than traditional learning methods in terms of effects on attitude. This effect size can be said to be at a medium level according to the classification of Thalheimer and Cook (2002).

In this meta-analytic evaluation, the effect size was differentiated on the basis of whether or not the teaching levels, under which studies were performed, have been included in the analysis. In terms of teaching levels, effect sizes have taken positive values at three levels; secondary school, high school and university; and while the greatest effect has been observed in secondary school, the lowest was observed in high school. At the three teaching levels, the total efficiency level of problem based

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### Table 1. Homogeneous distribution values, average effect sizes and confidence intervals in effect models of studies included in meta-analysis

<table>
<thead>
<tr>
<th>Type of model</th>
<th>n</th>
<th>Z</th>
<th>p</th>
<th>Q</th>
<th>df</th>
<th>ES</th>
<th>% 95 Confidence Intervals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower</td>
</tr>
<tr>
<td>FEM</td>
<td>25</td>
<td>13.463</td>
<td>0.00000</td>
<td>138.3342</td>
<td>24</td>
<td>0.6038</td>
<td>0.4881</td>
</tr>
<tr>
<td>REM</td>
<td>25</td>
<td>4.563</td>
<td>0.17540</td>
<td>30.2876</td>
<td>24</td>
<td>0.7195</td>
<td>0.4391</td>
</tr>
</tbody>
</table>

### Table 2. Effect sizes of studies according to the teaching grades and application durations

<table>
<thead>
<tr>
<th>Teaching Grades</th>
<th>N</th>
<th>ES</th>
<th>% 95 Confidence Intervals</th>
<th>Application Duration</th>
<th>N</th>
<th>ES</th>
<th>% 95 Confidence Intervals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td>14</td>
<td>0.543</td>
<td>0.080</td>
<td>1.006</td>
<td>2 to 4</td>
<td>6</td>
<td>0.864</td>
</tr>
<tr>
<td>High</td>
<td>5</td>
<td>1.506</td>
<td>0.865</td>
<td>2.147</td>
<td>5 to 8</td>
<td>9</td>
<td>0.477</td>
</tr>
<tr>
<td>University</td>
<td>5</td>
<td>0.536</td>
<td>-0.008</td>
<td>1.081</td>
<td>Unspecified</td>
<td>6</td>
<td>0.991</td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>0.767</td>
<td>0.494</td>
<td>1.039</td>
<td>Total</td>
<td>21</td>
<td>0.770</td>
</tr>
</tbody>
</table>

Q=6.690 Z=5.514 df=3 p=0.082 Q=1.186 Z=6.719 df=3 p=0.756
learning (ES=0.767) takes place in a wide range according to Thalheimer and Cook’s (2002) classification. On the other hand, as for teaching levels it can be said that there isn’t a significant difference in terms of effect sizes and problem based learning’s effect in terms of attitude hasn’t changed according to teaching levels. Similar to this study, a meta-analytic study has searched whether the related approach has differed in terms of efficiency level according to teaching grades for different subjects in the past in Turkey (Şahin, 2005; Camnalbur and Erdoğan, 2008) and in related studies it has been determined that effect sizes haven’t differentiated according to the teaching level.

When application duration is examined in studies related to the effect size of the problem based learning, studies’ application durations have been separated into three groups, 2 to 4 weeks, 5 to 8 weeks and unspecified. According to this analysis, the highest effect size with 0.991 has been seen in the studies in which the application duration is unspecified and the lowest effect size was seen in 5 to 8 weeks group with 0.477. Groups’ total effect size has been found to be 0.767. This level takes place in wide range according to Thalheimer and Cook’s (2002) classification. When the homogeneity test between groups examined, a value of Qs=1,186 has been found. This result shows that there isn’t a meaningful difference according to their application duration when the studies included in the meta-analysis were grouped according to their application durations and their effect sizes were examined (Qs=1,186; p=0.756). In addition to this, save for the 9 to 18 week group, all other groups’ effect sizes showed positive values in terms of application duration. Data belonging to the 9-18 weeks group were obtained from only 4 encounters. It can be said that it isn’t acceptable to generalize this effect size to 9 to 18 week groups and that this only gives information about the current situation. Therefore it can be categorically stated that more experimental studies should be performed worldwide so as to generalize analysis results to the related groups. In Öner Armağan’s (2011) study about the efficiency of notion change text, no difference has been found in terms of the effect size in accordance with the analysis results of the application duration (Qs=2.362; p=.306). This finding can be interpreted as demonstrating that this study includes parallel results as the related groups’ study results.

When the findings of the studies were examined, it was observed that there is a meaningful difference between the experimental group in which problem based learning observed and the control group in which traditional methods were used, in terms of attitude levels towards related lesson after experimental process. This situation has been emphasized in different studies included in a meta-analysis (Karaöz, 2008; Akin, 2009). In other words, it can be said that the teaching environments which are prepared with regard to problem based learning approaches have enhanced the students' attitude in the different lessons. These findings demonstrate that there is a meaningful difference in favor of the experimental group in terms of attitude averages. These results were shown in theses domestically and in different articles internationally in a similar way (Tüysüz et al., 2010; Günbatar and Çavuş, 2011; Tsenga et al. 2012).

This meta-analysis assessed cases in which a student-centered problem based learning approach is used. In most of the studies it has been emphasized that related approaches have given rise to more positive results in terms of students’ attitude towards lessons regarding classes in which traditional learning environments were used. For this reason, to allow students to develop a positive attitude towards lessons, we suggest that a student-centered approach such as problem based learning is applied in the lessons.

**Conflict of Interests**

The author(s) have not declared any conflict of interests.

**REFERENCES**


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**Citations**

(The symbol of * refers to the studies included in the meta-analysis).


UPCOMING CONFERENCES

20th International Symposium on Society and Resource Management, Hannover, Germany Hannover, Germany

June 8-13, 2014

9th International Conference on the Arts in Society, Rome, Italy
25-27 June 2014 Sapienza University of Rome Rome, Italy
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Aug 2014

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