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Full Length Research Paper

The opinions of prospective teachers on peer assessment

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This research was conducted to determine the opinions of prospective teachers on peer assessment. The study was carried out at a university in the West Black sea with forty-one prospective Turkish teachers. The prospective teachers presented a lesson on a subject they had decided on formerly, and were evaluated by their peers. The groups consisted of five members, and all the members of the class participated in peer assessment alternately. After the completion of peer assessment study, the opinions of prospective teachers were obtained by asking them to answer open-ended questions in written form. For the data obtained, content analysis was carried out. The findings of the study has indicated that peer evaluation is beneficial in providing affective and academic development, use of metacognitive strategies, and in the points of giving feedback. It has been determined that personal characteristics, personal relations, not being competent at peer assessment and the assessment forms' being overloaded with too many criteria have resulted in a couple of problems at application. Prospective teachers have made suggestions considering the role of the teacher, the features of the assessment group, the means of assessment and the assessment form and they have not welcomed the idea of using the peer assessment points as final grades. Within the frame of the findings of the study, the suggestions have been developed on how to construct peer assessment practices.

Key words: Peer assessment, student opinions, prospective Turkish teachers, education of teachers.

INTRODUCTION

New curricula have been implemented for secondary schools since 2004 in Turkey. The old curricula were the teacher centered one. Teachers were the only decision maker, information provider and the authority in the classroom, and students were the passive receiver of the information. Additionally, the old curricula had no emphasis on alternative assessment methods. Renewed curricula aim to move from a teacher-centered model to a student-centered one, to monitor student progress through formative assessment and to move away from traditional assessment, and introduce authentic assessment. Authentic assessment is related not only to the outcome but also the process. Therefore, teachers move away from the traditional understanding of assessment and evaluation in teaching and use formative assessment means and methods. Project and

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performance assignments, product files, self and peer assessment have been used as formative assessment means and methods.

Student-centered educational approach brings on the agenda of the active participation of the student in assessment and evaluation process. Assessment and evaluation in student-centered approach is not the process of the evaluation of learning but the evaluation process for learning. Peer assessment has a significant role in increasing the level of learning (Cartney, 2010). Peer assessment is the evaluation of a peer product or performance depending on certain criteria using the means of feedback, giving points or both (Falchikov, 2007). The students, who do peer assessment, both evaluate their peer objectively and internalize their field knowledge as they give feedback within the limits of the criteria of the field. Due to this, peer assessment is seen as "a way to increase learning" (Keppell and Carless, 2006). According to Race (1998) and Zariski (1996), the benefits of peer assessment are as follows (cited in Vickerman, 2009):

1. Giving a sense of autonomy and ownership of the assessment process and improving motivation.
2. Encouraging students to take responsibility for their own learning and development.
3. Treating assessment as part of learning so that mistakes are seen as opportunities rather than failures.
4. Practicing the transferable skills needed for life-long learning particularly related to evaluation skills.
5. Using external evaluation to provide a model for internal self-assessment of a student's own learning (metacognition).
6. Encouraging deep rather than surface learning.

It has been noted that the peer assessment studies done in the field of teacher training has a significant role in training teachers in a more qualified way, improving their sufficiency in their teaching profession and in acquiring the skills of peer assessment (Al-Barakat and Al-Hassan, 2009; Bay, 2011; Biri, 2014; Koç, 2011; Vickerman, 2009; Zariski, 1996). Sluijmans et al. (2004) see peer assessment as the main principal in professional development. The contribution of peer assessment in learning is not limited to field knowledge and development of assessment skills. The studies done on peer assessment have indicated that it;

1. Develops the skills of criticism (Sluijmans, 2002; Topping, 1996; Topping et al., 2000; Weaver, 1985).
2. Develops the skill of critical thinking (Biri, 2014).
3. Improves self-confidence and motivation for lessons (Biri, 2014).
4. Improves self-evaluation (Topping, 2009).
5. Increases awareness of strengths and weaknesses (Al-Barakat and Al-Hassan, 2009; Ashenafi, 2015; Bay,

2011; Koç, 2011).
6. Is effective in developing writing skills (Vickerman, 2009).
7. Improves lifelong learning and metacognitive skills, (Zariski, 1996).

Apart from the positive sides of peer assessment, there have been negative sides that are handled with doubts. The worries considering the studies of peer assessment as a result of scanning the sources are as follows:

1. İt could affect interpersonal relations and academic self-confidence negatively (Zariski, 1996).
2. The relations built upon friendship could prevent a valid evaluation (Al-Barakat and Al-Hassan, 2009; Bay, 2011; Carvalho, 2013; Cheng and Warren, 2005; Dancer, 1992; Volante and Beckett, 2011).
3. The possibility of students' making mistakes in evaluation as they are inexperienced (Al-Barakat and Al-Hassan, 2009; Bay, 2011; Sluijsmans, 2002).
4. Students' finding peer assessment stressful as a result of feeling worried about being unfair and rude (Cartney, 2010; Pope, 2005).

In addition to these points, another argument on peer assessment is to what extent peer assessment is as reliable as teacher evaluation. However, there are studies which show that peer assessment is as reliable as teachers' evaluation (Bay, 2011; Boud, 1995; Freeman, 1995; Falchikov and Goldfinch, 2000; Liu et al., 2002; Pope, 2005; Şahin, 2008; Topping, 1998; Uysal, 2008). Bulman (1998) states that carefully arranged, applied and observed peer assessment is as good as the ones carried out by teachers. To reach the benefits above and not to meet unwanted situations, forming the evaluation criteria with the students by discussing the points (Al-Barakat and Al-Hassan, 2009) and making preliminary studies to provide a reassuring environment before practices (Spiller, 2012) are necessary. Researches indicate that the criteria which are determined and well-understood by students provide high agreement between peers and teachers (Ashenafi, 2015). Educating students on peer assessment increases the quality of peer feedback and the study carried out (Min, 2006; Topping et al., 2000). To avoid errors that could be caused by friendship while giving points, the assessors could be kept secret, more than one student could take part in the evaluation process and using peer, self and teacher evaluation together are suggested (Ashenafi, 2015; Sluijsmans et al., 1998; Topping et al., 2000). For the efficiency of peer feedback, a teacher is guiding students in every stage of peer assessment, especially on the first couple of days comparing teacher and peer assessment for the quality of peer feedback, if there is a remarkable difference between the assessment of different students, enabling students to discuss the points of assessment

and reach a conclusion and also the assessment of the teacher's evaluation of peer assessment and providing students with feedback are of great importance (Topping, 2009).

The objective of the study

According to Sluijsmans and Prins (2006) peer assessment is a powerful didactical method for teaching skills which is important for the teaching domain for at least four reasons. First, teachers have to work together, learn from each other and become a member of a learning organization. Second, peer assessment fosters reflection and the development of reflection skills. Reflection skills are necessary for making reliable judgments about peers' work. Third, student teachers will become assessors in their own classroom and, therefore, they will have to design assessments as prospective teachers of children in schools. It is therefore advisable to teach student teachers how to make critical judgments about the performance of their peers, and, later on, about performances of children. The last reason for the importance of peer assessment in teacher education is that after students have left higher education, they are likely to rely heavily on the judgment of their peers to estimate how effective their performances in the school are (Sluijsmans and Prins, 2006). Additionally, the new program which was first applied in 2004 requires using the alternative evaluation tools. Prospective teachers' gaining the skills of peer assessment and using these in the future are possible through learning by doing. The opinions of prospective teachers on peer assessment could be the guidance for the studies that will be carried out in faculties of education. Due to this, the objective of this study is to determine the opinions of prospective teachers on peer assessment. The problem sentence of this study is determined as "What are the opinions of prospective teachers on peer assessment?" The topic is dealt with within the frame of the following problems:

1. What are the opinions of prospective teachers on the benefits of peer assessment?
2. What are the opinions of prospective teachers on the problems of peer assessment?
3. What are the suggestions of prospective teachers on the development of peer assessment practice?
4. What are the opinions of prospective teachers on using the peers' grades as final marks?

METHODOLOGY

Qualitative method conducted aimed to explore the students' opinions of the process in greater depth. Qualitative research provides more profound information than quantitative research methods about psychological measurements and social events.

Qualitative research is necessary for finding answers to questions which are difficult to express with traditional research methods (Büyüköztürk et al., 2010).

Participants

The study was conducted at a university in the western Black Sea in 2016. 41 third grade students in Turkish Education Department taking the lesson Special Teaching Methods II participated in the study. They all have same educational background. The gender ratio was 64% female and 36% male.

Practice

There had been preparations for two weeks to let students gain confidence for assessment, and to be assessed for evaluation in accordance with the given criteria and to enable them to rely on each other's assessment. During the stage of preparation for peer assessment;

1. The students were informed about the objective of the study and the process of peer assessment.
2. The form to be used was introduced to the students using a projector. The assessment criteria on the form were discussed.
3. A volunteer student was asked to make a presentation and a sample teacher assessment was done.
4. A new presentation given by the volunteer student was assessed by the peers and the teacher in accordance with the given criteria.
5. It was decided together with the students that no points that would be given to peers for assessment would be used as semester grades just to avoid the effect of friendship relations.

During peer assessment stage;

1. Students were asked to lecture for 10 to 15 min.
2. The form entitled as The Evaluation Form of the Lesson Observation Application which is prepared by Council of Higher Education for the lessons School Experience II and Teaching Practice was used as the peer assessment form. There are 38 evaluation criteria on the form. The students assessed their peers' lecture according to this form and gave verbal feedback.
3. Assessors were chosen randomly. Five students took part in the assessment group. All members of the class did assessment alternately.
4. Teacher feedback was given about the peer assessment.

The course Special Teaching Methods II is a four-hour-lesson in a week. In each lesson, two students and respectively, eight students a week made presentations. Practice took six weeks. After completing the peer assessment studies, the opinions of prospective teachers on peer assessment were received in written form by asking open-ended questions.

Data collection instrument

An interview form with open-ended questions was used as a data collection instrument. Field sources on peer assessment were scanned and to provide the validity of the scope of the open-ended questions formed by the researcher, they were presented to an expert to ensure their validity. The questions were examined by an expert on assessment and evaluation and an expert on Turkish education were formed according to the suggestions made. The interview form consists of four questions.

Table 1. Prospective teachers' opinions on the benefits of peer assessment practice.

Themes	Codes	f
Affective development	Being open to criticism	10
	Developing self-confidence	18
	Acquisition of building the skill of empathy	7
	Developing the sense of justice	14
	Providing motivation for presentation	15
	Assuming the responsibility of assessment	16
Academic development	Providing a more attentive and careful study	15
	Development causing gain of the use of peer assessment	27
	Becoming a more effective listener	9
	Developing critical thinking skills	15
Using metacognitive strategies	Developing strategies for preparation of each stage of lecture before the lesson	8
	Thinking on how to make a lesson more effective	7
Feedback	Offering an opportunity to benefit from criticisms made for others	37
	Enabling a person to gain skills to criticize based on objective/certain criteria	29
	Taking a matter into consideration from different views	19
	Helping to identify strengths and weaknesses	17

Data analysis

The method of content analysis was used during the analysis of the data obtained from the research. Coding, theme determination, arranging and commenting on data according to themes were carried out respectively.

Findings

The first sub-problem of the research is to determine prospective teachers' opinions on the benefits of peer assessment practice. Findings of the study are given in Table 1. As seen in Table 1, peer assessment was found beneficial considering "affective development, academic development, the use of metacognitive strategies and feedback".

Affective development

Being more open to criticism; improving self-confidence; ensuring empathy building skills, improving the sense of justice and providing motivation towards making a better study has been identified as the affective benefits of peer assessment. Prospective teachers have adopted the idea that a teacher should be open to criticism. A student states personal view on this matter as follows:

"*We, as being the teachers of the future, should be open to criticism and do studies like this to improve ourselves regarding these subjects.*"

It has been determined that the studies that have been done improve student confidence for different reasons. One reason that causes an improvement in self-confidence is teacher's taking student views into consideration:

"*Making comments and evaluation, seeing that a teacher listens to a student's view carefully increases that student's self-confidence.*"

Another reason is a study's being criticized positively by peers: "*Constructive criticism is important as it increases our self-confidence.*"

Another affective benefit of peer assessment is the skill that students gain as empathizing with others:

"*Being criticized by our peers is very exciting. I understand how excited my friends feel during a presentation. Because of this I listened to my friends' presentations carefully and focused on the positive points and need to be improved.*"

It has been identified that peer assessment is important in improving the sense of justice:

"*We tried to be fair without considering the personal relations. This will help a lot when we become teachers. There could be students we like and the ones we do not, but we must be fair to all.*"

Providing motivation to make a presentation of the peer assessment is another affective benefit identified in the research.

"*I have been a student in this department for three years and I have not developed myself as much as I have done this year and as coming to the blackboard was my fear in the former two years, now it has become a kind of pleasure. One reason for this positive development is the criticism of my friends.*"

The points and the feedback that peers give enabled them to feel a sense of assessment responsibility. And this has been noted as one of the affective benefits of peer assessment.

"*Evaluating my friend's performance was just like taking the place of my teacher, and this really is a serious responsibility.*"

Academic development

Its providing a more attentive and careful study to be done, making

a person gain the skill of using peer assessment methods, making a person become a more effective listener and causing him to develop critical thinking skills are the benefits of peer assessment within the frame of academic development theme. The basic reasons why peer assessment does a more attentive and careful study is that students try not to feel embarrassed against their peers, not to lose points and the criteria of evaluation's being a good guide for a good study.

"*Because peer assessment was going to be done and because we were going to lose points for the missing parts, we were more attentive and careful about our study.*" "*Evaluation criteria were a good guidance for a good study.*"

The study has been found useful by prospective teachers in terms of gaining the ability to use the peer assessment method. Prospective teachers have expressed that when they start their professional career, they will be able to apply and use this evaluation method:

"*We have done that kind of study for the first time. We already had ideas on this subject and we saw how we could do this during practices. When I become a teacher, I can do peer assessment with my students.*"

Another benefit that was determined related to the academic development was peer assessment's enabling a person to become a more effective listener.

"*You learn to listen more carefully not to be unfair if you are an assessor.*"

The next benefit of peer assessment in terms of academic development is its role in developing critical thinking skill.

"*While we are evaluating the sufficiency level of our peers, our critical thinking skills improve.*"

Using metacognitive strategies

Developing strategies before presenting a lesson and thinking to teach a lesson in a more effective way are the benefits stated within the frame of using metacognitive strategies theme.

"*To get positive criticisms, I continually asked myself how I can present a good lesson.*" "*I did research to prepare interesting activities.*" "*I presented the lesson that I had prepared to my family.*"

Feedback

Offering an opportunity to benefit from criticisms made for others, gaining skills to criticize based on objective/certain criteria, taking a matter into consideration from different views, helping to identify strengths and weaknesses are identified as the benefits of peer assessment related to the theme of feedback. Some examples on this theme are given.

"*In peer assessment I learned both how they are going to evaluate me and I tried to complete the missing sides of my friends within myself.*"
"*In peer assessment we develop doing positive criticism in each evaluation and we reinforce it as well. This will contribute to the objective and impartial criticism in our profession as teachers.*"
"*It is important to reach different points of view and have different*

opinions."
"*It enables one to see the right and the wrong in the studies that one makes. Peer views could be of great importance as a result of this.*"

The second sub-problem of the study regards the expressions of prospective Turkish teachers on the practice of peer assessment. Prospective teachers have mentioned that this kind of study is very useful to them. As a result of this, some of the prospective teachers have not mentioned a problem. Although, the others have mentioned some problems, they have stated the expression, "*Problems that were a matter of concern are no more a problem at the end of the practice.*" The opinions of prospective teachers considering the problems of peer assessment practice are seen in Table 2. As seen in Table 2, prospective teachers have the opinion that peer assessment practice causes problems considering the issues of "personal characteristics, interpersonal relationships, authority and evaluation form".

Personal characteristics

Problems that appear personally were identified as taking criticisms personally, not being open to criticism, the assessed experiencing anxiety, and the assessors failing to follow the study seriously.

"*The difficulty coming in the first place during peer assessment is not expressing our views where necessary just because we do not know the person well as we thought they could take the matter personally.*"
"*He criticized me in a negative way, he's going to pay for that, peers thinking like this are not few as not everybody is open to criticism.*"
"*If the assessed is shy, this causes anxiety and so the shy one is prone to making more mistakes as s/he thinks not only the teacher but also the peers are going to criticize her or him perhaps negatively.*"
"*Some assessors think that they won't be taken seriously, so they do not take their task seriously.*"

Interpersonal relationships

The problems determined related to interpersonal relations are peers' having the anxiety to hurt a friend, avoiding to do evaluation for personal reasons, failing to act in a just way to the ones they like or dislike. The opinions regarding the topic are as follows:

"*While doing peer assessment, when I have to evaluate a close friend there is the difficulty of ignoring her/his weaknesses or not expressing these weaknesses not to hurt her/him.*"
"*Due to some personal problems students may not want to evaluate each other.*"
"*A peer could make a positive comment about a friend he likes while making negative comments about the one who dislike. In this situation peers may give high or low marks according to their level and kind of friendship.*"

Perfection

The problems regarding the theme of perfectness are peers not being as knowledgeable and conscious as their teachers, having difficulty in evaluating a presentation while observing, moving away from effective listening as a result of distraction, and mercilessness of peer criticism. Examples of opinions seen related to the topic are given as follows:

"*We had difficulty in evaluation as we do not have our teachers'*

Table 2. The opinions of prospective teachers on the problems of peer assessment practice.

Themes	Codes	f
Personal characteristics	taking criticisms personally	8
	Not being open to criticism	4
	Causing anxiety in the assessed student	6
	Assessors' failing to follow the study seriously	4
Interpersonal relationships	the evaluating students having the feeling of hurting friends	6
	Avoiding doing assessment for personal reasons	7
	Not acting objectively to the those one likes or dislikes	29
Perfection	Peers not being as knowledgeable and qualified as teachers	4
	Having difficulty in observing a peer while trying to evaluate the presentation	4
	Getting away from effective listening due to distraction	3
	Merciless criticism of peers	2
Evaluation form	A very detailed evaluation form	6

knowledge and experience yet."
"Assessors have to observe a lot of features. Paying attention to the criteria was quite compelling while observing a presentation."
"I lost my concentration sometimes, after a while when I recognized this I began to observe again."
"Our teacher forgives and ignores minor mistakes while assessing. This is more supportive and encouraging than our friends, while peers trying to be objective could be merciless."

Evaluation form

It has been seen that a very detailed form makes peer assessment difficult:

"When there are too many points on the evaluation form, it is difficult to both observe the speaker and evaluate her/him according to the criteria given on the form."

The third sub-problem of this study is to identify prospective teachers' suggestions on developing the practice of peer assessment. The findings of the study are given in Table 3. Prospective teachers have presented a number of suggestions considering the role of the teacher, evaluation group, evaluation method and evaluation form for the development of peer assessment practices.

The role of the teacher

In the role of the teacher theme, the suggestions that are a teacher's demanding the reasons for evaluation and feedback, not allowing close and troubled friends to evaluate a peer, and rewarding the students who evaluate a peer much like a teacher are stated.

"A teacher's demanding the reasons of an evaluation and feedback may work for an impartial evaluation."
"A teacher must observe the relations within a class closely and should not let close friends and the ones with mutual problems evaluate."

"While we are evaluating, you are evaluating as well. You may reward a student whose evaluation is close to yours. In this way, we can evaluate a peer more carefully."

Evaluation group

About the evaluation group, choosing peers from a group of volunteers, choosing the assessors by ballot, not knowing who is going to evaluate, having a high number of assessors, having equal number of peers from each sex in the evaluating group and participation of the whole class are given as suggestions. Examples of student opinions regarding the topic are as follows:

"Assessors should be the volunteers, but not always the same students should do peer assessment."
"If possible, the students whom we believe to be objective should be chosen by ballot and they should always fill in the peer assessment form."
"If assessor's name is kept secret, assessors would act in a more comfortable way. There would be less embarrassment."
"The number of students who evaluate should be high so that the risk of biased criticism would be lower."
"The same number of students from either sex should evaluate as girls give higher points to girls and boys give higher points to boys. There would be a balance in points if the same number of either sex."
"All class members should participate in evaluation, then there won't be unfair evaluation stemming from close friendships."
"Close friends and the troubled one should not be a part of the evaluation process, to me the most problematic side of peer assessment is not treating that kind of peers in a realistic way."

Evaluation method

The suggestions made regarding evaluation method are giving feedback on paper avoiding verbal feedback, taking the peer who is going to be evaluated out of the classroom, after verbal feedback about the student waiting outside calling her/him back and giving the result of the evaluation and teacher's expressing the result and

Table 3. Suggestions of prospective teachers on the development of the application of peer assessment.

Theme	Codes	f
Role of the teacher	The teacher should ask for the reason for evaluation and feedback	11
	Not let close and or troubled friends evaluate each other	14
	Reward those who evaluate a peer very much like a teacher.	9
Evaluation group	Volunteer students should evaluate.	5
	Assessors should be chosen by classmates' ballot.	6
	Assessors should not be known.	4
	Assessor's number should be high	2
	Assessor's number should be in equal in both sexes	3
	All class should participate in evaluation	6
	Close friends and troubled ones should not participate in evaluation	22
Evaluation method	Evaluation should be done only on paper, not verbal.	6
	The peer to be evaluated should be asked to leave the classroom, after verbal evaluation should be called back to class and the result should be expressed by the teacher.	4
	Giving only one peer assessment paper to a group	3
Evaluation form	The evaluation form should involve a limited number of criteria	8

giving just one evaluation to the whole evaluating group. Examples of prospective teachers' opinions are given below:

"To me peer assessment should not be made open, when there is face to face evaluation, both sides are uneasy and more mistakes are made."
"While evaluating a peer, the peer should be sent outside. Then there is a more comfortable atmosphere for her/his peers to evaluate."
"I can suggest filling in an evaluation form as a group. In this way we can evaluate while discussing our common views. And also there will be no biased evaluation then."

Evaluation form

Having a limited number of criteria on the evaluation form

is suggested to be able to do a more careful peer evaluation.

"The criteria on the evaluation form could be decreased. In this way we can do evaluation in a more careful way."

The number four sub- problem of the study aims at determining prospective teachers' opinions on using peer assessment points as students' final grades. The findings of the research are seen on Table 4. As seen in Table 4, prospective Turkish teachers are reluctant to using peer assessment points as final grades. Thirty two prospective teachers who participate in the research do not accept the idea of using peer assessment points as final grades, and nine of the participants believe a part of the peer assessment points could be added to the final grades. None of them expressed views to support the use of peer assessment points as final grades.

"Peer feedback is necessary both to see the missing parts and to increase students' self-confidence. However, a teacher should not give a final grade according to peer assessment points."
"A teacher should consider peer assessment seriously, but not evaluate just by taking the point given at the end of it. A certain percent for peer assessment could be allocated at the beginning and this allocated percent could be added to the final grade."

RESULTS

This study aims to determine the opinions of prospective teachers on peer assessment. The finding of the research indicates that peer assessment is beneficial when providing affective

Table 4. The opinions of prospective teachers on using peer assessment points as final grades.

Should peer assessment points be used as final grades?	f
Teachers should not give points according to peer assessment.	32
Teachers should take into account the peer assessment to a certain extent.	9

and academic development, using metacognitive strategies and giving feedback. The benefits determined within the frame of affective development theme are being more open to criticism, developing self-confidence, causing one to gain the skill of empathizing with others, developing the sense of justice, providing motivation to do a better study and teachers' assuming the responsibility of evaluating. In the theme of academic development, the opinions considering the positive effect of peer assessment is stated by underlying the effect of peer assessment on the quality of the study that has been carried out, enabling one to gain evaluation skills and developing effective listening skill.

The prospective Turkish teachers have stated that they develop strategies to get prepared for each stage of a lesson before teaching and they also added that they consider what to do to make a lesson more effective in the eyes of students.

The highly emphasized characteristic of peer assessment in this research is related to giving feedback. The feedback given offers an opportunity to benefit from other criticisms aiming at others, enabling one to gain the evaluation skill based on certain criteria, helps to recognize strengths and weaknesses and these are seen as the benefits of peer assessment. When the opinions of prospective Turkish teachers are examined about the problems of the process of peer assessment, they have mentioned that personal features, interpersonal relationships, not being the authority in evaluating and the evaluation form's involving too many criteria cause problems. Depending on these reasons it has been determined that prospective teachers do not see peer assessment points as valid. In the theme personal features, taking criticism personally, not being open to criticism, the evaluated student's being prone to anxiety, and the evaluating ones' failing to follow the study seriously are identified as the elements causing problems. In the theme interpersonal relationships, the evaluating peer's having the feeling of hurting a friend, avoiding to do peer assessment due to personal relationships, not acting to the one likes or dislikes objectively are problems identified. In the authority theme peers not being as knowledgeable and conscious as teachers, having difficulty at evaluation while watching a presentation, getting away from effective listening due to distraction, and harsh criticism of peers have been noted as problems. In the evaluation form theme, there have been problems experienced as the form is very much

detailed.

DISCUSSION

Benefits of peer evaluation

This study indicates that peer evaluation improves prospective teachers in different ways. One advantage of peer evaluation is the emotional development of prospective teachers. It has been observed that peer evaluation is effective in training righteous teachers who are open to criticism, self- confident and capable of empathizing with others. This finding of the study coincides with the studies that have been made in the same field (Biri, 2014; Koç, 2011; Uysal, 2008). Another advantage of peer evaluation is its providing academic development. Peer assessment is seen as a way to increase learning (Keppell and Carless, 2006) and as a means of learning (Al-Barakat and Al-Hassan, 2009). There have been a lot of studies in literature indicating the effect of peer assessment on the increase in the quality of the task that has been carried out. The studies which state that peer assessment motivates students during presentation to do their best (Uysal, 2008), increases the sufficiency of teachers (Biri, 2014; Koç, 2011); is effective in developing writing skills (Vickerman, 2009) indicate that peer assessment can be used as a means of education.

One other advantage of peer evaluation is its supporting prospective teachers' metacognitive awareness. It is observed that prospective teachers make inner speech for an effective lesson and develop strategies to test the sufficiency of their knowledge. An individual's knowing what to do in a situation that he/she encountered is assessed as case-based information within the frame of metacognitive knowledge. In case-based information, an individual knows how to do something, whether he/she can do this or not, and what to do in what type of situation is a matter of concern (Schunk, 2012). This finding of the research indicates that peer assessment is beneficial considering the use of metacognitive strategies. In other studies of the literature, it has been observed that peer assessment has contribution to metacognitive development (Zariski, 1996). Lots of knowledge is taught in colleges of educations. Peer evaluation enables prospective teachers to recognize how they are going to use this

knowledge in practice. The criteria used during evaluation and the feedback given at the end of evaluation are remarkable elements of peer assessment study (Koç, 2011). These elements improve prospective teachers' evaluation skills. The benefit that prospective teachers emphasize most is related to gaining evaluation skill. These findings of the research are in accordance with the other studies mentioned, that is, peer assessment has an important role in gaining the skill of evaluation (Bay, 2011; Biri, 2014; Koç, 2011; Vickerman, 2009; Zariski, 1996).

Problems confronted in peer evaluation

Prospective teachers have expressed that they find the practice very useful. Due to this, some prospective teachers have not mentioned any problems. Although, the other ones have mentioned various problems, they have stated the situation as "problems that were a matter of concern are no more a problem at the end of the practice." It was found that interpersonal relationships were the most emphasized problem. In the research done by Carvalho (2013), it is stated that there is a negative relationship between interpersonal relations and fair evaluation. As it is often mentioned in the other studies done in the field (Al- Barakat and Al-Hassan, 2009; Bay, 2011; Carvalho, 2013; Cheng and Warren, 2005; Dancer, 1992; Volante and Beckett, 2011), interpersonal relationships might be expressed as an important problem that is confronted in peer evaluation. One of the problems that prospective teachers mention is that they do not see themselves as authority to do assessment. Peers not seeing themselves as authority is a problem emphasized in other studies as well (Al-Barakat and Al-Hassan, 2009; Bay, 2009; Sluijsmans, 2002).

However, at the end of the study, it is seen that prospective teachers' assessment skills have developed. This result indicates the necessity of peer evaluation to gain assessment competency. The problems aforementioned might be overcome by keeping the preparation period longer in peer evaluation studies. One of the problems stated in this research is related to the assessment form. This indicates the significance of determining evaluation criteria together with the students. As the presentations evaluated in this research are lectures, the "lesson observation application evaluation form" prepared by Council of Higher Education for School Experience II and Teaching Practice lessons, they are accepted as proper materials for the nature of the subject.. However, because of having 38 criteria on this form, students had difficulty in watching a presentation and doing evaluation while going over the criteria at the same time. This situation makes it compulsory to reconstruct the criteria together with the students and

limiting it with certain number of acts.

Development of peer evaluation studies

The suggestions of prospective teachers for peer assessment are about the role of teachers, the characteristics of peer assessment group, the way to evaluate and evaluation form. Prospective teachers have suggested that a teacher assumes a role to provide validity. The role of the teacher in peer assessment studies is to cause the development of self-confidence in students during the teaching process and the whole process and also enable them to do valid evaluation. The teacher is expected to be a good observer at planning and during the whole process. In the "role of the teacher" theme, the suggestions of prospective teachers are teacher's demand of the reasons for evaluation and feedback and in this way provide an impartial evaluation. In addition, it was suggested that a teacher should not ask close friends and troubled ones to do peer assessment. It is believed that the reasons like peers' not having confidence in each other, doing peer assessment for the first time, being used to the teacher's active role in traditional education system are effective in the light of the suggestions put forward.

Educating peers by doing more samples of peer evaluation, revealing the accordance between the points of the teacher and students during the preliminary stage may decrease the need for teacher support. Also, there is the suggestion about students' being rewarded by the teacher due to the peer assessment resembling the teacher's. Feedback and rewarding the students with good peer assessment will motivate the assessors and it will facilitate to accept peer criticism and the points given as well. Due to this, it is thought that evaluating the assessors will have a positive effect on the process. In this research all students have done evaluation alternately. However, prospective teachers have suggested that only the volunteers do evaluation. Students who know that there will be no effect of the points they give to their peers act unwillingly during evaluation. In a research carried out by McGarr (2013), it is indicated that as a result of not adding the peer points to the general average leads to not taking the process seriously. The decision on not involving the peer assessment grades in final grades is made together with the peers at the beginning of the research. However, adding some of the evaluation points to the final grade could make a peer act more willingly during the evaluation process. Not knowing who is going to evaluate a peer stems from the anxiety of hurting a friend and the fear of revenge that could be taken on them during their evaluation process. All class members' instant anonymous evaluation of a presentation and giving feedback is possible only on the Internet. Because, the

equipment of classes was not proper for this, this method was not preferred. Besides, it is believed that face to face evaluation is more suitable for peers' real life state. Nevertheless, just to provide peer assessment validity, especially regarding the groups that are going to do peer assessment for the first time, they should be supplied with technology to do their evaluation. In this new method, after feeling confidence for the self and peers, students can be made to do face to face evaluation.

In the basis of the opinions given as the peer assessment of a large number of peers, and having equal number of evaluating peers from both sexes, participation of the whole class to the evaluation process, and leaving out the peers with mutual problems, there is the thought of prevention of evaluation made from interpersonal relationships and the validity of the evaluation. On the type of evaluation, prospective teachers have made suggestions of doing criticism only on paper, not verbal, letting the student leave the classroom during evaluation and calling the students back and giving the result by the teacher, and giving the whole group only one evaluation form. These suggestions are of great importance to provide secrecy of the assessors and also for the validity of the evaluation. An issue that needs good remark is that secrecy is a factor that affects evaluation (Bay, 2011), and using technology in providing secrecy decreases peer pressure (Raes et al., 2015). In addition, giving just one evaluation form to the group is a suggestion that is worth to be considered to prevent tendentiousness. Having a limited number of criteria on the evaluation form is suggested to be able to do a more careful peer evaluation. It is a significant issue to note that the criteria form should not involve a high number of criteria as this suggestion is seen in different studies (Bay, 2011). It is emphasized in the literature that it is significant to construct evaluation criteria by discussing with students (Ashenafi, 2015; Spiller, 2012; Şahin, 2008).

Student views on evaluation points being the final grade

Prospective teachers have not leaned towards the idea of using peer evaluation points as final grades. In the research that McLaughlin and Simpson (2004) made, they found out that 43% of students prefer peer assessment to teacher evaluation. McGarr (2003) also added that students do not find it difficult to evaluate a peer avoiding personal feelings; nevertheless, these students do not want peer points to be used as final grades. In his study where Uysal (2008) mentions a high correlation between peer points and teacher points, he states that students; however, do not want to be evaluated by their peers. The acceptance of peer assessment points by peers can be said to be related to seeing their peers and themselves as authority and their

acceptance of student-centered education.

Conclusion

The suggestions of prospective teachers for peer assessment were determined as well. These suggestions are about the role of teachers, the characteristics of peer assessment group, the way to evaluate and evaluation form. In the "role of the teacher" theme, the suggestions of prospective teachers are teacher's demand of the reasons for evaluation and feedback and in this way provide an impartial evaluation. In addition, it was suggested that a teacher should not ask close friends and troubled ones to do peer assessment. Also, there is the suggestion about students' being rewarded by the teacher due to the peer assessment resembling the teacher's. Prospective teachers have made certain suggestions considering the construction of the peer assessment groups. These suggestions are choosing the volunteers as the evaluating ones, choosing these by organizing ballot, not knowing the assessors, having a lot of assessors, equal number of male and female assessors, peers' full participation in evaluation and avoiding close and troubled friends' participation during the peer assessment process.

The suggestions made regarding evaluation method are giving feedback on paper avoiding verbal feedback, taking the peer who is going to be evaluated out of the classroom, after verbal feedback about the student waiting outside calling her/him back and giving the result of the evaluation and teacher's expressing the result and giving just one evaluation to the whole evaluating group. Having a limited number of criteria on the evaluation form is suggested to be able to do a more careful peer evaluation. When the opinions of the prospective teachers on using peer assessment points as final grades were examined, it was seen that 32 students rejected the idea of using these points as final grades, and 9 of them accepted adding a part of the given point to the final grade. None of them supported the use of peer assessment points as final grades.

RECOMMENDATIONS

The suggestions that have been made in the light of the research are as follows:

By carrying out a great number of sample peer assessments, students should be made to feel themselves authority and internalize the peer assessment criteria during the preliminary stage. At this stage the accordance of peer and teacher points should be disclosed and this is important for having confidence in each other's' evaluation. Adding a certain percent of

evaluation points to the final grade may enable students to participate in the study more willingly. Rewarding the students whose feedback and evaluation are successful would not only motivate the assessors but also would make it easy for the one who have been evaluated to accept the criticism and points of her/his peers. The evaluation of the assessors should be involved in the process. Giving just one assessment form to the group or providing a discussion among the group members and getting only one form is suggested as it might eliminate tendentiousness. Assessment criteria should be constructed with students in such a way that it should involve a limited number of behaviors. For the validity of the evaluation it is suggested that students who are going to do peer assessment for the first time should learn about this method through technology and get used to it and also after the internalization of the method the new one should move on to the face to face evaluation. New approaches in teaching require more use of technology in educational environment. In order to be able to do peer assessment in secrecy, at least one of the classrooms should be provided with technological equipment.

Conflict of Interests

The authors have not declared any conflict of interests.

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Educational Research and Reviews

Full Length Research Paper

The effect of visuals on non-routine problem solving success and kinds of errors made when using visuals

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This study aims at determining to what extent visuals contribute to success in non-routine problem solving process and what types of errors are made when solving with visuals. Comparative model was utilized for identifying the effect of visuals on student achievement, and clinical interview technique was used to determine the types of errors. In the study, 370 primary fourth-grade students were applied with the four non-routine problems; first in verbal form, then in visual form by changing only the numbers without changing the operational stages that should be used when solving the question. As a result, it was seen that the use of visuals decreased the number of unanswered questions by 11%, and increased the number of correctly answered questions by 12%. It was found at the end of the study that when students utilized the visuals they drew rather than the given visuals, this contributed to the problem solving achievement more. Another finding achieved in the study is that the students made errors originating from lack of knowledge, misinterpretation, incorrect structuring, incomplete structuring, and misplacement of what is given respectively.

Key words: Primary school, mathematics, non-routine problems, use of visuals, problem solving success.

INTRODUCTION

There is a significant emphasis on the need for building a link between mathematics education and real life in today's mathematics education programs (Yağcı and Arseven, 2010). Kaur and Yeap (2009) emphasize that the most important factor that has enabled Singapore to remain among the top in international mathematics evaluation studies is its mathematics education focusing on problem solving, and the attention paid while choosing problems. Kaur and Yeap (2009) state that when the subject has first started to be taught, exercise-type problems are preferred more whereas after the subject

has been learnt, problems that have been prepared upon real-life situations are preferred more.

Altun (2005) defined exercise-type problems as routine while those requiring real-life knowledge as non-routine, and gave the sentence *"If Ali buys two pencils, paying 3 TL for one, how much does he pay total?"* as an example for routine while he gave the sentence *"If one pays 3 TL to divide an iron bar into two, how much does s/he pay to divide it into four?"* as an example for non-routine problem. When the answers for both questions were analyzed, it was seen that most of the students gave the

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answer "3x2=6" to both questions (Ulu, 2011), but in fact, it was expected that the students were going to reach the result "3x3=9" in the second question thinking that 3 cuttings would be required to divide the iron bar into 4.

In this context, while operational skills are required to solve routine problems, for non-routine problems, operational skills are also required but not sufficient. While solving non-routine problems, data should be organized, classified and adapted to real-life (Yazgan and Bintaş, 2005; Altun, 2005).

Research reveals that primary school students make a lot of errors because they solve non-routine problems like routine ones (Verschaffel et al., 1999; 2000; Xin et al., 2007; Ulu 2011; Çelik and Güler, 2013). This has caused students' solving approaches to be examined. Hegarty et al. (1995) argued there are two general approaches to understanding mathematical word problems that have been introduced by previous researchers: "a short-cut approach" and a "meaningful approach" that is based on an elaborated problem model. In the short-cut approach, which refer to as direct translation, the problem solver attempts to select the numbers in the problem and key relational terms and develops a solution plan that involves combining the numbers in the problem applying the arithmetic operations that are primed by the keywords or cues (e.g., addition if the keyword is "more" and subtraction if it is "less").

Thus, directly the problem solver attempts to translate the key propositions in the problem statement to a set of computations that will produce the answer and does not construct a qualitative representation of the situation described in the problem. In the meaningful approach, which refers to as the problem model approach, the problem solver translates the problem statement into a mental model of the situation described in the problem.

Short-cut approach is defined as how students use readily available solutions in their memories when they are confronted with a problem similar to a number of problems they have solved before (Jitendra and Hoff, 1996; Steele and Johanning, 2004; Viennot and Moreau, 2007). This theory assumes that solving different kinds of questions will enhance the problem solving achievement as it will increase the number of solution methods stored in the memory. Yet, when the schema is changed a little bit or students confront with a new schema, this theory may fail to solve the problem (Viennot and Moreau, 2007). The readily available solutions mentioned in the short-cut approach are addressed within the scope of procedural knowledge (Anderson, 2010; Brynes and Wasik, 1991; Baroody et al., 2007).

The fact that readily available solutions or procedural knowledge do not work in every situation was revealed in the studies performed by Viennot and Moreau (2007) and Soylu and Soylu (2006). In their study, Viennot and Moreau (2007) first asked the problem "*Luke comes to the school with 15 marbles with him. He plays two games, loses 7 marbles in the first one. Luke, who is a good player, earns 34 marbles at the end of the second game. If Luke has lost the second game, how many marbles has he lost; if not, how many has he earned?"*, then asked it again after changing the phrase *"Luke, who is a good player,"* into *"Luke, who is a bad player,"*

At the end of the study, they found that some students who gave the answer *"He has earned 26 marbles"* to the question with the phrase *"Luke, who is a good player"* answered the question with the phrase *"Luke, who is a good player,"* with *"He has lost 26 marbles."* These errors were also observed in the study performed by Soylu and Soylu (2006). In the study, the question *"Ali has 10 apples left after giving 5 of them to Ayşe. So, how many apples has Ali had in the first place?"* was answered "10 - 5 = 5" by most of the students. It was determined as a result of the interviews that over regularization of the phrase "apples left" caused the students to perform subtraction instead of addition. It can be said that the reason why the students made errors is the overreguralization of the schema-based theory (if you see the "more", add; if you see the "less", subtract); similar situations are observed in the studies of Panasuk and Beyranevand, (2010), Moreno and Mayer (1999) and Hegarty et al. (1995) and Marshall (1995).

In their study, Baki and Kartal (2004) concluded that the students with low levels of problem solving achievement first watched out if the problem resembled other problems they had previously solved while solving it, and they gave up solving it when they could not found any resemblance or achieve irrational results.

In the studies performed by Anderson (2010), Brynes and Wasik (1991) and Baroody et al. (2007), it was observed that the procedural knowledge may fall insufficient in the first-time situations and contextual knowledge is needed for such situations. Kieren (1993) and Baroody and Lia (2007) defined conceptual knowledge as associating recently-learned knowledge with previously-learned knowledge and real life, constructing the knowledge in accordance with individual traits and processing it through a rational sieve.

The studies conducted by Schoenfeld (1991), Verschaffel et al. (1999, 2000) and Xin et al. (2007) shows that students achieve results which are mathematically correct but do not agree with real life since they cannot associate the procedural result they find with real life. To give a reason for the case, it was explained that procedural thinking alone was not enough for sense-making and students made errors due to not thinking conceptually. Problem solving process is defined requiring multiple skills together. The constituents of this process are listed as

1. Problem comprehension
2. Choosing the required information among the data
3. Converting this information into mathematical symbols

and

4. Reaching a solution through required operations (Mayer, 1985; Artzt and Thomas, 1992; Hong, 1995; Morales, 1998).

Mayer (1985) explains the first three stages of this process under "problem representation" title and the fourth stage under "problem solution" title. According to Mayer (1985), problem representation is composed of two substages: problem translation, which relies on linguistic skills needed to comprehend what the problem is saying, and problem integration, which depends on the ability to mathematically interpret the relationships among the problem parts to form a structural representation. In representation stage, one is expected to convert the problem situation in verbal form into mathematical symbols by using problem solving strategies (Van Garderen and Montague, 2003).

Healy and Hoyles (1999) explain mathematical representation as converting a given expression into other expressions without damaging the original form and distinguishing it from other expressions that bear no resemblance to it. Moreno and Mayer (1990) explain representation as a process to convert problem sentence in verbal form into mathematical structures by using visuals and symbols separately or together.

Moreno and Mayer (1990) emphasized that it is a one-way representation when internal representation is externalized using only one technique and it is multi-way representation when it is externalized using multiple techniques, the interpretation increases when the problem solving process is diversified (symbolical, visual, verbal), and this, in parallel, increases the problem solving achievement.

In their study, they revealed that students using the multi-way representation (symbolical, visual, verbal) were more successful than students using the one-way representation technique (verbal). It can be said that when no transition is done between multi-representations, mathematics cannot be comprehended in a conceptual way (Ainsworth, 1999; Meij et al., 2006). Panasuk and Beyranevand (2010) designed the problem situation in three different ways (symbolical, visual, and verbal), and examined students' reactions to the different structures of the same problem in their study. As a result, the successful students stated that all three situations represented the same thing differently while the unsuccessful ones stated that each situation was different and each situation could be represented in one way.

Polya (1990) emphasized visual representation because it facilitates comprehending problem situation and choosing decisive procedures. Halmos (1980) advocated the opinion "to be a scholar of mathematics you must be born with the ability to visualize" and thus spread this emphasis to all fields of mathematics. Lean and Clements (1981) defined visual imagery as "imagery which occurs as a picture in 'the mind's eye'". Drawing pictures on paper while comprehending the word problem might help less successful problem solvers in the process of building effective problem representations (Bryant and Tversky, 1999). Numerous psychological studies prove that the representation of mathematical objects and pictorial representations play an important role in the learning process. Illustrations facilitate a better understanding of concepts or problem situations and they help develop mathematical reasoning. Therefore, there is a need for examining students' skills to do multi-representation and difficulties arising in the process.

Diezman (2005), Duval (2002) and Gagatsis and Demetriou (2007) emphasized the importance of visuals in the development conceptual thinking. According to them, use of visuals in problem solving process has advantages such as integrating the information given in the problem text by associating them, facilitating the realization of similarities between the problems solved before and the newly confronted problems, and contributing the mental development due to ensuring organization in the mind. Ainsworth (1999) stated that visuals used in mathematics classrooms should be used to understand and solve the problem text, and Gyamfi (1993) stated that individuals make two types of representations (internal and external) in the problem solving process and the internal representation can become tangible and observable only by using the external representation techniques.

Duval (2002) emphasized that for students to orientate towards one-way representation when understanding a problem and describing each problem in the same way should not be appropriate in terms of the structure of mathematics. In the study performed by Elia et al. (2007) with primary first-, second- and third-grade students, an achievement test composed of routine problems was asked to the students first in written and then by using visuals, and the effect of visuals on the problem solving achievement differed by each problem in the end. Pape (2004) found that the rate of benefiting from visuals in the solutions found by students with higher problem solving achievement was high.

In the studies performed by Ulu (2008) and Olkun et al. (2010), it was determined that the students tend to solve non-routine problems without using visuals by transforming the verbal situation into symbolical expressions in general. In the study conducted by Uesaka et al. (2007), it was seen that for individuals to create their own visuals rather than using the readily available ones contributed to their problem solving achievements more. Yet, it was found in the study by Altun and Arslan (2006) that majority of the students did not prefer using visuals in their solutions in spite of the education given.

Non-routine problems that needed to be solved with conceptual skills were emphasized in this study rather

than procedural skills. It is seen that the results will not coincide with the real-life conditions when the questions used in the study are solved with procedural knowledge, thus it is required that the students need to resort to their conceptual knowledge for a solution. In this context, visuals were utilized in the study to activate students' conceptual knowledge.

Elia et al. (2007) stated that problems can be solved without using visuals, but visuals may help students in the problem solving process. The studies conducted by Viennot and Moreau (2007) and Soylu and Soylu () revealed that short cut approach may fall insufficient in the problems requiring conceptual knowledge and students achieved faulty solutions by using their procedural knowledge. Diezman (2005), Duval (2002) and Elia et al. (2007) stated that visuals may help the conceptualization when solving problems, but many errors may arise while converting verbal form into visuals. In this context, this study aims to determine the effect of visuals on problem solving success and what types of errors are made when solving with visuals; therefore, answers were sought to the following questions:

1. Are there any differences between the numbers of correct answers given to the verbal form and visual form of the problem solving achievement test for primary fourth-grade students?
2. What types of errors do the primary fourth-grade students make while converting problem sentence in verbal form into visuals?

METHODOLOGY

The research model

The first research question, "Is there any differences between the numbers of correct answers given to the verbal form and visual form of the problem solving achievement test for primary fourth-grade students?" was answered with comparative survey model. The survey model aims to reveal a current situation as it is, and the researcher cannot have any manipulative influence in this model (Karasar, 2002).

The second research question, "What types of errors do the primary fourth-grade students make while converting problem sentence in verbal form into visuals?" was answered with the clinical interview method. Piaget argues that errors made by children provide important information on their nature of thinking and it is necessary to use the clinical interview method, which is a method of asking flexible questions, to explore the richness of students' thoughts and evaluate the cognitive skill (Karataş and Güven, 2004).

According to Frederiksen et al. (1990), standard tests can only determine to what extent the students solve the problem correctly or incorrectly but do not question why they do it correctly and what to do so that they achieve the right result. Karataş and Güven (2004) regard the clinical interview method as one of the measurement methods that can be used for evaluating the problem solving skill and think that the reason for the errors made by students when solving problems can be revealed as they are

solving it. Hunting (1997) stated that the clinical interview method is dynamic and the errors made by the student are identified rather by him/her. Goldin (1998) indicates that one of the purpose of using clinical interviews is to have information about individual's mathematical behaviours through problem solving.

Study group

The study group of the research was gathered in two different ways. The cluster sampling method was used for the survey model. Karasar (2002) proposes to select the whole group by using cluster sampling method when the members in the population do not have the chance to be selected one by one. In cluster sampling method, equal selection chance is not for a member but for the whole group with its members.

In this context, while deciding the study group, not individuals but classes are selected. First, the schools were divided into three groups (high, moderate, and low) based on the scores of TEOG (Transition from Primary to Secondary Education) exams, and a school of each group was chosen with the unbiased selection method. 370 fourth-grade students attending the 18 classes of the primary schools chosen were applied with the problem solving achievement test. The sample is composed of 196 female and 174 male students. The study group of clinical interview was selected using maximum variation sampling method of purposeful sampling.

According to Patton (2002), purposeful sampling enables examining deeply the cases thought to have rich information about the research question, while maximum variation sampling is used to increase variety of responses individuals give to the research question. In the study, purposeful sampling was preferred because the study group to whom clinical interview was conducted focused only on the students who made errors and maximum variation sampling was preferred because as different as possible incorrect solutions were examined among students who made errors.

When determining the study group which would be subjected to the clinical interview, first of all, the errors made in each question were encoded and then 5 students were interviewed for each code. As a result of the encoding, since 9, 7, 8, and 10 error codes were determined for the first, second, third and fourth question respectively, the interviews were performed for 170 solutions (5x(9+7+8+10)) in total. Among the students subjected to the clinical interview, interviews were conducted for only 1 question with some students, for 2 questions with some students, for 3 questions with some students and for all questions with some students. In this context, the study group for clinical interviews was composed of 58 students (36 female, 22 male) in two primary schools at Kütahya city center at moderate level according to scores in TEOG exams.

Data collection tool

First of all, a problem solving achievement test was developed to classify the errors made by the students in the research. The problem solving achievement test is composed of 4 word problems used in the studies performed by Ulu, (2011), Altun (2005) and Yazgan and Bintaş (2005). The scope validity of the questions in the scale was achieved with an expert opinion.

The validity and reliability study of the problem solving achievement test used in the study was performed on 117 fourth-grade students attending the school having the closest score to the Kütahya average based on 2014/2015 YEP (Placement Scores). Primarily, the item difficulty and item distinctiveness of each question were calculated for determining the validity.

According to Tekin (1997), items with an item difficulty index varying between 0 and 1 and difficulty indexes varying between

Table 1. Verbal form of the problem solving achievement test.

1. 2 liras are paid to cut an iron bar into 2 pieces. How many liras are paid to cut it into 4 pieces?
2. A ball dropped from high bounces the distance half of the height it has been dropped from. Now that the ball bounces 10 meters on the fourth bounce, from what height has it been dropped?
3. Trees will be planted at intervals of 10 meters on both sides of a 50-meter-long road. How many trees will it take to plant along the road?
4. A snail is put in a jar with its lid open. The height of the jar is 9 cm. If the snail which climbs up 3 cm every day slides back down 1 cm, in how many days can it get out of the jar?

0.30 and 0.70 are at the moderate difficulty level. The item difficulty indexes of items in the scale vary between 0.38 and 0.54; this indicates that all of the problems in the test have moderate difficulty. The distinctiveness index varies between -1 and +1 and this value being 0.40 and higher shows the distinctiveness of items (Tekin, 1997)**.** The distinctiveness indexes of items in the test vary between 0.41 and 0.67; this indicates that all of the items are distinctive. Secondly, KR 20 coefficient was calculated for determining the reliability and found 0.76. Kr 20 value being 0.70 and higher shows high reliability for the test, thus showing reliability of the test sufficient (Büyüköztürk, 2002). The verbal form of the scale is given in Table 1.

The visual form of the scale was obtained by changing the numbers in its valid and reliable verbal form, and drawing the illustrations right under the questions. The visual form of the scale is given in Table 2.

Collection and analysis of the data

Since 15 min were enough for solution during the pilot application of the problem solving scale, this duration was taken as reference in the real application. Firstly, the verbal form of the problem solving achievement test was applied, the questions answered correctly, incorrectly and left blank were identified. After a one month interval, the visual form of the achievement test was applied and the questions answered correctly, incorrectly and left blank were identified for this form. Each incorrect answer was encoded and clinical interviews were made with five students who had made each error. The clinical interviews were examined and categorized by three classroom teaching mathematics experts who completed PhD in problem solving skills in classroom teaching mathematics education. The types of errors are given in Table 3. The clinical interviews were classified by the error analysis inventory while the kappa coefficients were looked up to determine the correlation between the experts. The data obtained from the kappa coefficient are interpreted as "Weak Correlation=< 0.20; Acceptable Correlation=0.20-0.40; Moderate Correlation=0.40-.60; Good Correlation=0.60-0.80; Very Good Correlation=0.80-1.00" (Şencan, 2005). The kappa coefficients were found to be 0.93 for incorrect rating/proportioning, 0.91 for lack of knowledge, 0.97 for misinterpretation, 0.94 for incomplete structuring, 0.91 for incorrect structuring, and 0.92 for misplacement of what is given. These values enabled us to see that the experts exhibit very good correlation in the classification of errors. The errors were categorized in accordance with the expert opinions before the frequency and percentage analyses.

FINDINGS

Here, answers were sought to the research problems for each question and the whole test. In this context, the descriptive analyzes of the answers given to the verbal and visual forms of the problem solving achievement test are given in Table 4.

According to Table 4, blanks for question 1 decreased with the use of visuals and the number of correct answers increased 17%. This can be said to arise from the fact that reaching a solution by using visuals increased solution rate and correct solution rate. In the next phase of the study, the solutions of 175 students who gave the incorrect answer when solving the visual form of the first question are examined. The first error type determined upon clinical interview in first question arose from solution without using the illustration and can be seen in Interview 1.
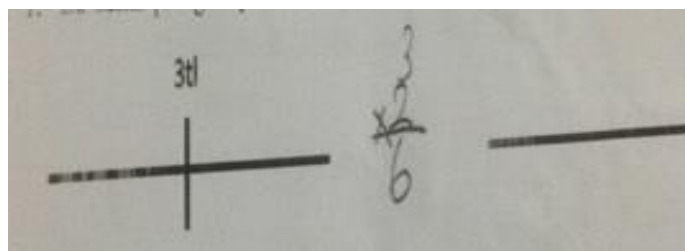
T: What is asked of us in the question?
S: 3 liras are paid to cut an iron bar into 2 pieces; it asks us to find how many liras will be paid to cut it into 4 pieces.
T: Can you explain your operation?
S: I multiplied 3 by 2 to get 6.
T: Why did you do that?
S: Because, if 3 liras are paid to cut it into 2 pieces, 2 times more money is paid to cut it into 4 pieces. That's why.
T: There is an illustration above. Why didn't you use it?
S: I didn't feel the need because I had the answer in my mind.
T: You used the illustration in some of the other questions?
S: The illustration help when I don't understand the question but I understood this question right.

As seen in Interview 1, the students who made this error rated/proportioned directly without touching the given

Table 2. Visual form of the problem solving achievement test.

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3 liras are paid to cut an iron bar into 2 pieces. How many liras are paid to cut it into 4 pieces?

3tl

A ball dropped from high bounces the distance half of the height it has been dropped from. Now that the ball bounces 5 meters on the fourth bounce, from what height has it been dropped?
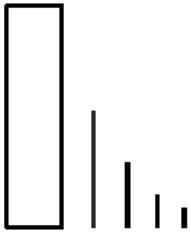
Trees will be planted at intervals of 5 meters on both sides of a 40-meter-long road. How many trees will it take to plant along the road?

A snail is put in a jar with its lid open. The height of the jar is 16 cm. If the snail which climbs up 4 cm every day slides back down 1 cm, in how many days can it get out of the jar?

16 cm

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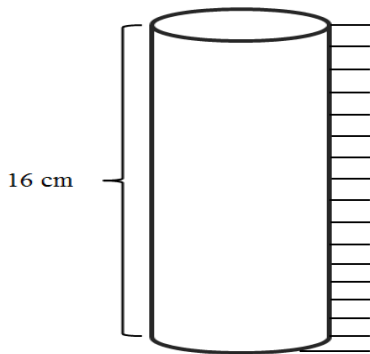
illustration but they also could not see that the rate/ proportion might contrast with the real life. The student justified not using the illustration with the fact that he/she had found the answer well in advance. There are 45 students who gave the incorrect answer to the question without using the illustration even though one was given in the visual form; the ratio of this error type to the errors made in the first question in general is 25.71% (45/175). There are 130 students who solved the visual form of the question incorrectly using the illustration. The second

error type determined upon clinical interview in first question arose from lack of knowledge despite using the illustration and can be seen in Interview 2.
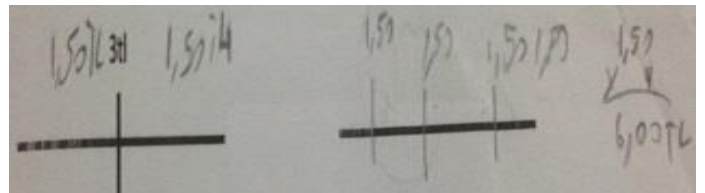
Table 3. Types of errors.

Types of error	Sample behaviors
Incorrect rating/proportioning	The students who made this error rated/proportioned directly without using the visual given in the problem
Lack of knowledge	The students who made this error drew their visuals incorrectly due to the lack of real-life or mathematical knowledge
Misinterpretation	The students who made this error structured their visuals correctly but misinterpreted them
Incomplete structuring	The students who made this error used their visuals correctly but drew them incompletely
Incorrect structuring	The students who made this error made incorrect illustrations on the given visual
Misplacement of what is given	The students who made this error used the visual correctly but could not communicate what was given in the problem question to their illustrations.

Table 4. Comparison of the numbers of correct and incorrect answers given to the verbal and visual forms of the first question.

Solution		Verbal form			Visual form		
		Correct	Wrong	Total	Correct	Wrong	Total
Blank	Frequency (f)	-	-	57	-	-	23
	Percentage (%)	-	-	15.40	-	-	6.21
Without using illustration	Frequency (f)	48	177	225	18	45	63
	Percentage (%)	21.33	78.67	60.81	28.57	71.42	17.03
By using illustration	Frequency (f)	62	26	88	154	130	284
	Percentage (%)	70.45	29.55	23.79	54.22	45.78	76.76
Total	Frequency (f)	110	203	370	172	175	370
	Percentage (%)	29.73	54.87	100.00	46.49	47.30	100

Not: There are 4 students who solved the verbal form of the question correctly without using illustration but solved its visual form incorrectly by using illustration.

T: Can you explain your solution on the illustration?
S: If 3 liras are paid to cut it into 2 pieces, 1.5 liras are paid for each piece. Then I drew 3 lines on the other illustration because it asks us to cut it into 4 pieces.
T: Has it been cut into 4 pieces now?
S: Yes. (The student counted the pieces in the second illustration.
T: What did you do next?
S: Since 4 pieces will make 6 if each piece is 1.5, I multiplied 1.5 with 4.
T: Why do you think the blacksmith will take money from us? For each piece he cut or for each cutting?

S: He will take 1.5 liras for each piece.
T: How much would we pay if he took it for each cutting?
S: We would pay 9 liras because we would cut it for 3 times (the student made the operation 3+3+3 verbally).

As seen in Interview 2, this type of error was originated not from the cutting operation applied to the iron bar but the requirement of a payment for each cut piece of the iron bar. It was seen that the first one of the incorrect solutions using the illustration originated from lack of knowledge and the ratio of this error type to the incorrect solutions using the illustration was 17.71% (31/130). The

third error type determined upon clinical interview in first question arose from the misinterpretation of the illustration and can be seen in Interview 3.

T: Can you explain your solution on the illustration?
S: It asks us to find how many liras we will pay to cut it into 4 pieces. And I cut the iron bar into 4 pieces.
T: Why did you write "3 liras" above each cutting?
S: Because we cut it once to cut into 2 pieces. It requires 3 liras.
T: How many times did the blacksmith cut it?
S: Three times.
T: How much will we pay then?
S:6 liras.
T: But it is 3+3+3=9 according to the illustration.
S: I didn't understand that because it should be 6.
T: Why?
S: If 3 liras are paid to cut it into 2 pieces, 6 liras should be paid to cut it into 4 pieces.

As seen in Interview 3, the students who made this error drew the illustration correctly but saw that the solution they structured in their mind did not coincide with the solution they found on the illustration. Consequently, they decided that the formulary answer they obtained was true despite the illustration they drew. The ratio of this error type to the incorrect solutions is 14.86% (26/130). The fourth error type determined upon clinical interview arose in first question from the drawing of incomplete illustration, and this can be seen in Interview 4.
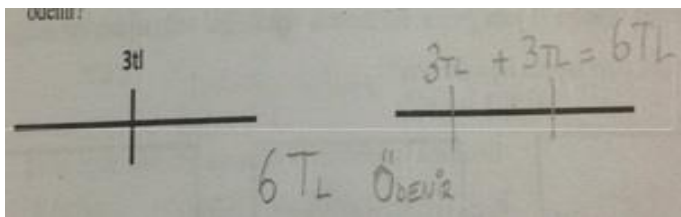
T: Can you explain your solution on the illustration?
S: 3 liras were paid in the first illustration to cut it into 2 pieces; I cut the other illustration into 2 pieces once again. And I found that 6 liras were paid.
T: Can you look at your illustration, how many pieces was the iron bar cut into?
S: 3 (The student counted it verbally).
T: The question asks us to cut it into how many pieces?
S: Cut it into 4 pieces?
T: What do we need to cut it into 4 pieces?
S: To draw another line?

T: How much would we pay, then?
S: 9 liras but the answer should be 6 liras.
T: Why?
S: Because if 3 liras are paid to cut it into 2 pieces, 6 liras should be paid to cut it into 4 pieces.

As seen in Interview 4, the student tried to transfer the solution he/she structured in his/her mind but cut the iron bar into 3 pieces rather than 4 pieces. The student remained under the influence of his/her rate/proportion, too. The ratio of this error type to the incorrect solutions is 21.14% (37/130). The fifth error type determined upon clinical interview arose in first question from the drawing of incorrect illustration, and this can be seen in Interview 5.
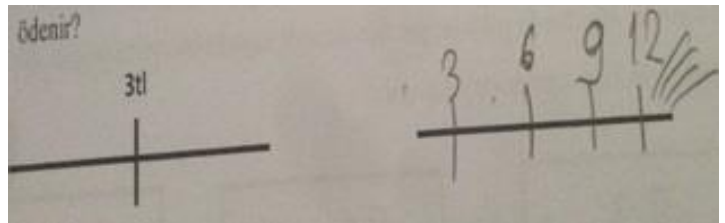
T: Can you explain your solution on the illustration?
S: 3 liras were paid to cut it into 2 pieces in the first illustration; it asks how much we will pay if we cut it into 4 pieces. I cut it into 4 pieces and find 12 liras.
T: Is your illustration cut into 4 pieces now?
S: Yes.
T: Can you count? How many pieces are there?
S: 4.
T: Can you look at the first illustration. How many pieces are there after a cut?
S: 2.
T: How many pieces are there in the second illustration? How about count again?
S: 5, now but I should've cut it into 4 pieces.
(The student counted each piece verbally)
T: How many liras would we pay, then?
S: 9. I drew an extra line.
T: Why?
S: 4...

As seen in Interview 5, the student cut the iron bar into 5 pieces rather than 4 pieces. The ratio of this error type to the incorrect solutions is 14.29% (25/130). The sixth error type determined in the first question upon clinical interview arose from the drawing of incorrect illustration, and this can be seen in Interview 6.

Table 5. Comparison of the numbers of correct and incorrect answers given to the verbal and visual forms of the second question.

Solutions		Verbal form			Visual form		
		Correct	Wrong	Total	Correct	Wrong	Total
Blank	Frequency (f)	-	-	62	-	-	26
	Percentage (%)	-	-	16.76	-	-	7.03
Without using illustration	Frequency (f)	32	246	278	12	75	87
	Percentage (%)	11.51	88.49	75.13	13.79	86.21	23.51
By using illustration	Frequency (f)	16	14	30	87	170	257
	Percentage (%)	53.33	46.67	8.11	33.85	66.15	69.46
Total	Frequency (f)	48	260	370	99	245	370
	Percentage (%)	12.97	70.27	100	26.75	66.22	100

Note: There are 8 students who solved the verbal form of the question correctly without using illustration but solved its visual form incorrectly by using illustration.

T: Can you explain your solution on the illustration?
S: 3 liras are paid to cut it into 2 pieces; it asks how many liras we will pay if we cut it into 4 pieces.
T: What did you do, then?
S: I cut it for three times to cut it into 4 pieces. And found that we should pay 6 liras.
T: How many liras does it take to cut the iron bar once?
S: 3.
T: You wrote 2 liras down in your illustration. Did you do it by accident?
S: I thought the answer should've been 6. That was why I wrote 2 liras.
T: So, you knew it was 3 liras when you were solving the problem?
S: Yes, but the answer was 9 liras, then

As seen in Interview 6, it was seen that the students who made this error structured the illustration correctly but manipulated what was given in the problem so that they could achieve the answer 6 in their minds. The ratio of this error type to the incorrect solutions is 6.29% (11/130). In the next phase of the study, the answers given to the verbal form of the second question were compared to the answers given to its visual form by the numbers of correct and incorrect answer, and the findings obtained are presented in Table 5.

According to Table 5, blanks for question 2 decreased with the use of visuals and the number of correct answers increased to 14%. This can be said to arise from the fact that reaching a solution by using visuals increased solution rate and correct solution rate. In the next phase of the study, the solutions of 245 students who gave the incorrect answer when solving the visual form of the second question and information on the clinical interviews performed with them are presented. The first error type determined upon clinical interview in second question arose from solution without using the illustration, and

this can be seen in Interview 7.
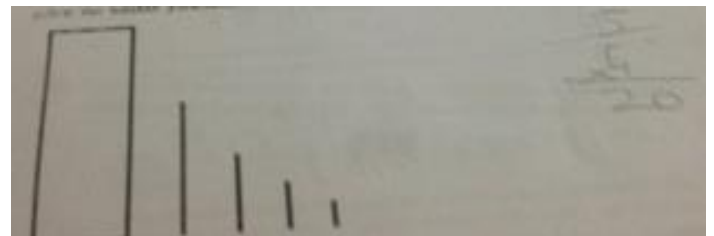
T: What is asked of you in the second problem?
S: To find the height from which the ball was dropped?
T: Can you explain the operation you did with your reasons?
S: I multiplied 4 with 5 because the ball bounces for 4 times from the height from which it's been dropped.
T: Can you explain your operation a bit more?
S: If it bounces 5 meters in the fourth bounce, it bounces four times of the height in the first bounce.
T: Why didn't you use the illustration?
S: Because it's easier to solve it in this way.
T: You didn't find it necessary, then?
S: No.
T: You didn't use it in other questions, either? Why?
S: Because those questions were very easy, I didn't want to waste time.

As seen in Interview 7, it was revealed that the students who made this error used direct rate/proportion without benefiting from the illustration. There are 75 students who gave the incorrect answer to the question without using the illustration even though one was given in the visual form; the ratio of this error type to the errors made in the second question in general is 30.61% (75/245). There are 170 students who solved the visual form of the question incorrectly with using the illustration. The second error type determined in second question upon clinical interview arose from lack of knowledge which is

presented in Interview 8.
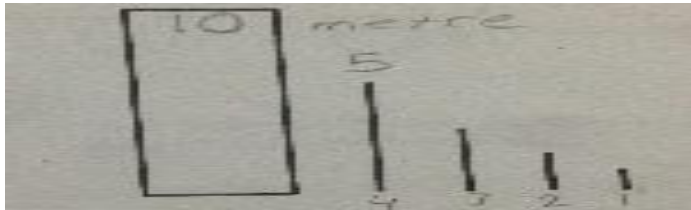
T: Can you explain your solution in the second question on the illustration?
S: It bounced 5 meters in the fourth bounce, I thought it was dropped from a height of 10 meters.
T: Where is the fourth bounce, you think?
S: There, one under which it writes four (The student pointed at the line before the rectangular shape).
T: How did you understand that?
S: I counted.
T: Can you count again and show me the fourth bounce?
S: The one before the rectangular (The student counted starting from the shortest line).

As seen in Interview 8, the students who made this type of error structured the illustration incorrectly as a result of the misperception of the concept of the fourth bounce. Actually, the fourth bounce is the shortest line, the students counted them from the end and perceived the first bounce as the fourth bounce. The ratio of this error type to the incorrect solutions is 26.12% (64/170). The third error type determined in second question upon clinical interview arose from misinterpreting illustration as seen in Interview 9.

T: Can you explain your solution in the second question on the illustration?
S: I doubled it all the way starting from the fourth bounce. Next, I added them all and found 155.
T: Why add?
S: To find from which height the ball was dropped.
T: What do you think?
S: 155 meters.
T: Can you show me the height from which it was dropped on the illustration.
S: Here (showing the rectangular shape).
T: How high is that?
S: 80 meters.
T: Do you think your result is correct?
S: Wrong. I didn't have to perform the addition.

As seen in Interview 9, the students who made this error transformed what was given into the illustration in a correct format but gave the incorrect answer because they misperceived what was asked of them as the total height to which the ball bounces rather than the height from which it is dropped. The ratio of this error type to the incorrect solutions is 11.02% (27/170). The fourth error type determined in second question upon clinical interview arose from structuring the illustration incompletely and can be seen in Interview 10.
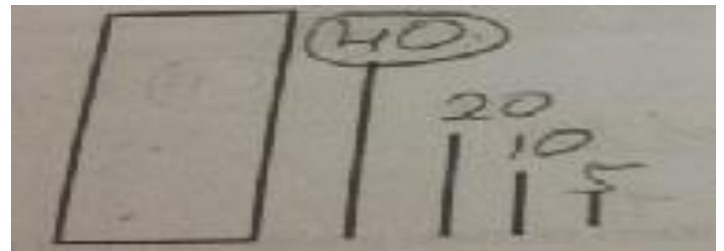
T: Can you explain your solution in the second question on the illustration?
S: The ball bounces two times less each time. It bounced 5 meters in the fourth bounce. I doubled all the way and found 40 meters.
T: What is asked of us in the question?
S: The height from which the ball was dropped.
T: Does your result shows the height from which the ball was dropped?
S: Yes.
T: From which height do you think the ball was dropped? Can you show me on the illustration?
S: From the height on which it writes 40.

As seen in Interview 10, the students who made this error doubled the height starting from the fourth bounce back to the first one but forgot calculating the height to which the ball first bounced. The ratio of this error type to the incorrect solutions is 15.51% (38/170). The fifth error type determined in second question upon clinical interview arose from misplacing what is given this can be seen in Interview 11.
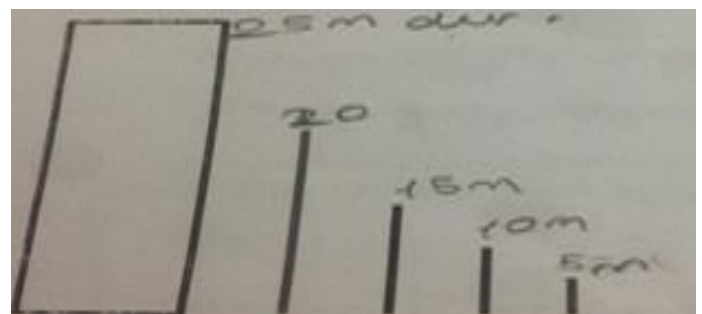
T: Can you explain your solution in the second question on the illustration?
S: The ball bounced 5 meters in its fourth bounce; I doubled all the time to find 25.
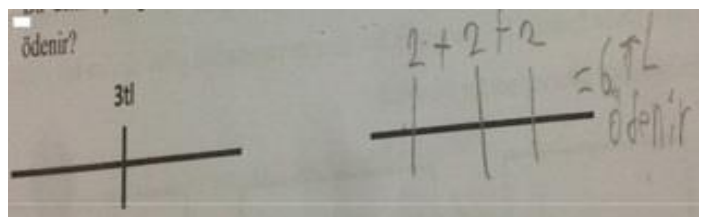T: Do you think you doubled all the time?
S: Yes.

Table 6. Comparison of the numbers of correct and incorrect answers given to the verbal and visual forms of the third question.

Solutions		Verbal form			Visual form		
		Correct	**Wrong**	**Total**	**Correct**	**Wrong**	**Total**
Blank	Frequency (f)	-	-	68	-	-	13
	Percentage (%)	-	-	18.38	-	-	3.51
Without using illustration	Frequency (f)	64	184	248	18	53	71
	Percentage (%)	25.81	74.19	67.03	25.35	74.65	19.19
By using illustration	Frequency (f)	22	32	54	130	156	286
	Percentage (%)	40.74	59.26	14.60	45.45	54.55	77.30
Total	Frequency (f)	86	216	370	148	209	370
	Percentage (%)	23.24	58.38	100	40.00	56.49	100

Note: Note: There are 8 students who solved the verbal form of the question correctly without using illustration but solved its visual form incorrectly by using illustration.

T: Shall we take a look? For example, did you double it from the fourth bounce back to the third one?
S: Yes. I increased it from 5 meters to 10 meters.
T: So, did you double it from the third bounce back to the second one?
S: No, 15 is not the doubled amount of 10.
T: How many meters should it be?
S: 20 meters.
T: Next?
S: Here should it be 40 (showing the first bounce). It should be 80 meters in the end.

As seen in Interview 11, the student who made this error were able to use the illustration correctly but misplaced what was given because s/he structured the concept of two times incorrectly. The ratio of this error type to the incorrect solutions is 16.74% (41/170). In the next phase of the study, the answers given to the verbal form of the third question were compared to the answers given to its visual form by the numbers of correct and incorrect answer, and the findings obtained are presented in Table 6.

According to Table 5, blanks for question 3 decreased with the use of visuals and the number of correct answers increased to 17%.

This can be said to arise from the fact that reaching a solution by using visuals increased solution rate and correct solution rate. In the next phase of the study, the solutions of 209 students who gave the incorrect answer when solving the visual form of the third question and information on the clinical interviews performed with them are presented.

The first error type determined upon clinical interview in third question arose from solution without using the illustration as shown in Interview 12.
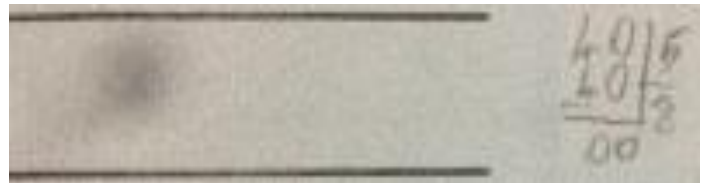
T: What is asked of us in the third problem?
S: To find the total number of trees to be planted?
T: Can you explain the operation you did with your reasons?
S: I found the number of trees to be planted by dividing 40 by 5.
T: Why didn't you use the illustration?
S: Because the question was so easy, I didn't find it necessary; I found the answer even without doing any operations.
T: Why did you use it only in the fourth question?
S: That question was a bit difficult.

As seen in Interview 12, the students who made this error used direct rate/proportion without benefiting from the illustration. There are 53 students who gave the incorrect answer to the question without using the illustration even though one was given in the visual form; the ratio of this error type to the errors made in the second question in general is 25.36% (53/209). There are 156 students who solved the visual form of the question incorrectly without using the illustration. The second error type determined in third question upon clinical interview arose from lack of knowledge as shown in Interview 13.
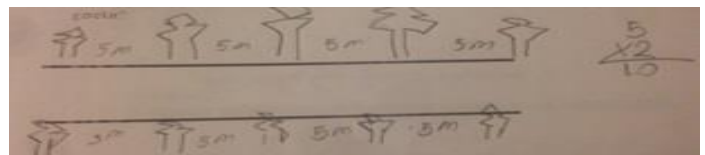
T: Can you explain your solution in the second question on the illustration?
S: I planted trees at intervals of 5 meters, then I counted, it is 10.
T: How long is the road?
S: 40 meters.
T: Is it 40 meters in your illustration? Can you show me?
S: 5-10-15-20 up the road, 5-10-15-20 down the road; it is 40 meters in total.
T: Where is the road, lines or between the lines?
S: Between the lines.
T: How long is it there?
S: I see. Both sides should be 80 meters.
T: What would it be, then?
S: The number of trees would increase.
How many would there be?
S:18 (The student solved the problem all over again).

As seen in Interview 13, the students, who made the error originating from lack of real-life knowledge, did wrong was dividing 40 meters, which is the length of the road into two lines which are 20 meters each. The ratio of this error type to the incorrect solutions is 11.00% (23/156). The fourth error type determined in third question upon clinical interview arose from misinterpretation of the illustration as shown in Interview 14.
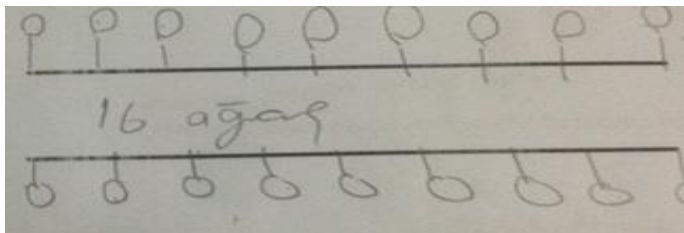
T: Can you explain your solution in the second question on the illustration?
S: There is a 40-meter-long road. Trees will be planted on both sides of it at intervals of 5 meters. I placed the trees at intervals of 5 meters. And I found the answer as 16.
T: How many trees are there in your illustration?
S: 1, 2, 3……18 trees.
T: Which one do you think is right? The number of trees in the illustration or the one you found?
S: If we divide 40 by 5, there will be 8 trees; it will be 16 trees because there are two sides. I think my illustration is incorrect because it should've been like this.

As seen in Interview 14, the students who made this error drew the illustration correctly but saw that the solution they structured in their mind did not coincide with the solution they found on the illustration. Consequently, they decided that the formulary answer they obtained was true despite the illustration they drew. The ratio of this error type to the incorrect solutions is 20.57% (43/156). The fifth error type determined in third question upon clinical

interview arose from structuring the illustration incompletely and can be seen in Interview 15.
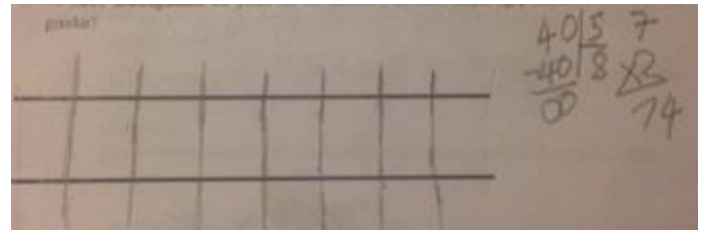
T: Can you explain your solution in the third question on the illustration?
S: I placed the trees at intervals of 5 meters along the 40-meter-long road, then I counted and found 14 trees.
T: How long is the road?
S: 40 meters.
T: T: Is it 40 meters in your illustration?
S: Yes.
T: So, were the trees planted at intervals of 5 meters?
S: Yes.
T: How many meters are there between the starting point of the road and the first tree?
S: 5 meters.
T: Shouldn't we plant a tree at the starting point, then?
S: Okay.
T: How many meters are there between the end of the road and the last tree?
S: 5 meters.
T: How about planting a tree at the end of the road?
S: Yes, we can. I already did but erased it later.
T: What is the result, then?
S: 9 tress on one side of the road, 9 on the other side; it is 18 trees.

As seen in Interview 15, the students who made this type of error did not plant a tree in the front and/or back end. The ratio of this error type to the incorrect solutions using the illustration is 13.40% (28/156). The sixth error type determined in the third question upon clinical interview arose from structuring the illustration incorrectly and can be seen in Interview 16.
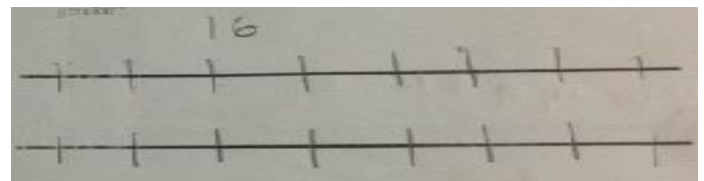
T: Can you explain your solution in the second question on the illustration?
S: I planted trees at intervals of 5 meters, then I counted, it is 16 trees.
T: How long is the road?
S: 40 meters.
T: Is it 40 meters in your illustration? Can you show me?
S: I'll calculate the length between the trees, first. It is 35

meters (the student counted in groups of five), then it is 2.5 meters here (showing the gap between the front end of the road and the first tree), it is 2.5 meters here again (showing the gap between the last tree and the back end of the road). It is 40 meters in total.
T: Why did you start drawing 2.5 meters away from the front end instead of drawing the trees in the first place?
S: Because 8 trees are required on one side.
T: How did you get that?
S: If we divide 40 by 5, there will be 8 trees on one side?
T: Will it be equal if you plant them like this?
S: The front and back ends won't be equal.
T: How about starting all over again?
S: It is 9 trees, then.
T: Which of the results is correct, 8 or 9?
S: 9 is correct because it will be equal, then.

As seen in Interview 16, the students who made this error did wrong because they thought that the trees were to be planted 2.5 meters away from the starting point rather than beginning with the front end. The ratio of this error type to the incorrect solutions is 29.67% (62/156). In the next phase of the study, the answers given to the verbal form of the fourth question were compared to the answers given to its visual form by the numbers of correct and incorrect answer, and the findings obtained are presented in Table 7.

According to Table 5, blanks for question 4 illustrations made the least increase in student achievement in the fourth question. In the next phase of the study, the solutions of 243 students who gave the incorrect answer when solving the visual form of the fourth question and information on the clinical interviews performed with them are presented. The first error type determined upon clinical interview in fourth question arose from solution without using the illustration, and this can be seen in Interview 17.
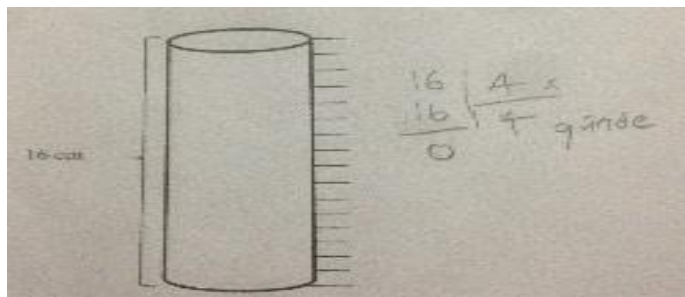
T: Can you explain your solution in the fourth question?
S: I divided 16 by 4 because if it climbs up 4 cm each day, it gets out of the jar of which height is 16 cm.
T: Why didn't you ever use the illustration?
S: Because the question was so easy.

As seen in Interview 17, the students who made this error used direct rate/proportion without benefiting from the illustration. The ratio of this error type to the errors made in the fourth question in general is 36.63% (89/243). There are 154 students who solved the visual form of the question incorrectly without using the illustration. The second error type determined in fourth question upon clinical interview arose from lack of knowledge, and this can be seen in Interview 18.
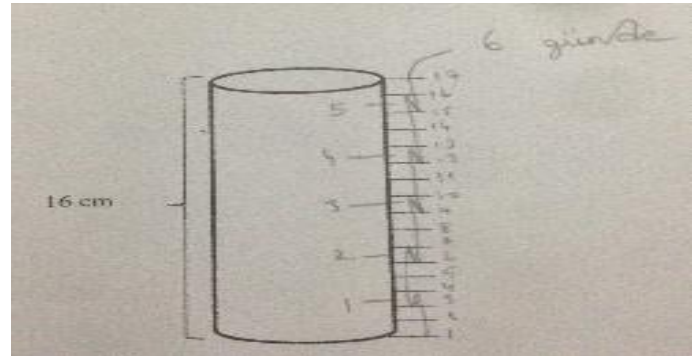
T: Can you explain your solution in the second question on the illustration?
S: The snail climbs up 4 cm on the first day, it comes to 3 at night, climbs up to 7 on the second day and comes back to 6. It climbs up to 10 on the third day, slides down to 9, climbs up to 13 on the fourth day and slides back down to 12. It climbs up to 16 on the fifth day, slides back down to 15. It gets out of the jar on the sixth day.
T: Is the height of the jar is 17 cm?
S: It says 16 but there are 17 lines.
T: Do you have a ruler with you?
S: Yes.
T: Can you look at it with your ruler to see from which number it starts?
S: It starts from 0; I started from 1.
T: Will the result change if you solve it again?
S: It will be 16 cm, then. It gets out of the jar because it won't be able to slide again on the fifth day.

As seen in Interview 18, the students who made this error lack knowledge on how to determined the starting point as 1 cm rather than 0 when measuring the length. The ratio of this error type to the incorrect solutions is 19.34% (47/154). The third error type determined in fourth question upon clinical interview arose from mis-interpretation of the illustration as presented in Interview 19.
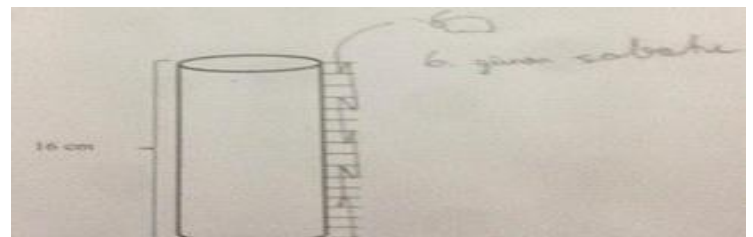
T: Can you explain your solution in the second question on the illustration?

Table 7. Comparison of the numbers of correct and incorrect answers given to the verbal and visual forms of the fourth question.

Solutions		Verbal form			Visual form		
		Correct	Wrong	Total	Correct	Wrong	Total
Blank	Frequency (f)	-	-	65	-	-	23
	Percentage (%)	-	-	17.57	-	-	6.22
Without using illustration	Frequency (f)	86	179	265	34	89	123
	Percentage (%)	32.45	67.55	71.62	27.64	72.36	33.24
By using illustration	Frequency (f)	16	24	40	70	154	224
	Percentage (%)	40.00	60.00	10.81	31.25	68.75	60.54
Total	Frequency (f)	102	203	370	104	243	370
	Percentage (%)	27.57	54.86	100	28.11	65.67	100

Note: There are 28 students who solved the verbal form of the question correctly without using illustration but solved its visual form incorrectly by using illustration.

T: Where is the exit point?
S: Top of the jar.
T: In which cm?
S: 16.
T: Has the snail ever been there before?
S: Yes. On the fifth day.
T: Why did it slide back down?
S: It shouldn't have because it gets out on the fifth day.

As seen in Interview 19, the students who made this error were not able to see that the snail got out of the jar on the fifth day. The ratio of this error type to the incorrect solutions is 26.33% (64/154). The fourth error type determined in fourth question upon clinical interview arose from structuring the illustration incorrectly as presented in Interview 20.
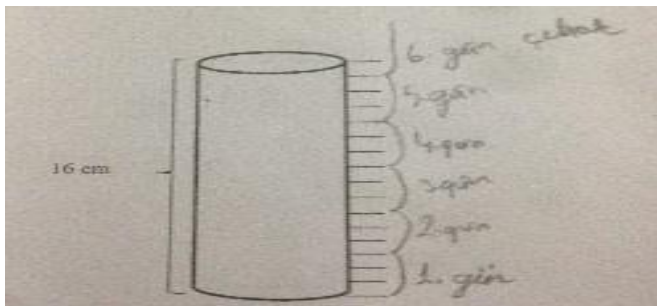
T: Can you explain your solution in the second question on the illustration?
S: If it climbs up 4 cm and slides back down 1 cm, it climbs up 3 cm a day. I advanced it 3 cm all the time and found 6.
T: Why didn't you state that it slides back?
S: Because it climbs up 3 cm, that's why.

As seen in Interview 20, the students who made this error thought, the snail climbs up 3 cm each day, and drew their illustrations accordingly to find the answer 6. The ratio of this error type to the incorrect solutions is 17.70% (43/154). After each question had been examined, the numbers of correct and incorrect answers in the test generally were reviewed, and the findings obtained are given in Table 8.

According to Table 8, 17.03% (252) of the answers were left blank in the verbal form of the test, the percentage went back to 5.75% (85) when the visual form was applied. It is seen that 68.65% (1016) of the students solved the test without using illustration while the percentage decreased down to 23.24% (344) when the visual form was asked. It was revealed that 22.64% (230/1016) of the answers given to the verbal form of the test without using illustration were correct while 74.19% (184/248) were incorrect. 14.32% (212) of the solutions in the verbal form of the test were found by using the illustrations the students drew, 54.72% (116/212) of the students gave the correct answer while 45.28% (96/212) gave the incorrect answer.

It is seen that the percentage of the solutions using the illustration in the visual form increased up to 71.01% (1051), the percentage of the solutions without using the illustration decreased down to 23.24% (344). 41.96% (441/1051) of the solutions using the illustration in the visual form of the test were correct, 58.04% (610/1051) were incorrect. It was revealed that 23.84% (82/344) of the answers given to the visual form of the test without using illustration were correct while 76.16% (262/344) were incorrect. Whereas, the verbal form of the test was answered correctly by 23.38% (346/1480), it is 35.33%

Table 8. Comparison of the numbers of correct and incorrect answers given to the verbal and visual forms of the questions in the test

Solutions		Verbal Form			Visual Form		
		Correct	Wrong	Total	Correct	Wrong	Total
Blank	Frequency (f)	-	-	252	-	-	85
	Percentage (%)	-	-	17.03	-	-	5.75
Without using illustration	Frequency (f)	230	786	1016	82	262	344
	Percentage (%)	22.64	77.36	68.65	23.84	76.16	23.24
By using illustration	Frequency (f)	116	96	212	441	610	1051
	Percentage (%)	54.72	45.28	14.32	41.96	58.04	71.01
Total	Frequency (f)	346	882	1480	523	872	1480
	Percentage (%)	23.38	59.59	100	35.33	58.92	100

Note: There are 48 students who solved the verbal form of the test correctly without using illustration but solved its visual form incorrectly by using illustration.

Table 9. Descriptive statistics regarding the errors in the visual form of the problem solving achievement test.

Types of error		Question 1	Question 2	Question 3	Question 4	Total
Without using Illustration 1	Frequency (f)	45	75	53	89	262
Incorrect rating/proportioning	Percentage (%)	25.71	30.61	25.36	36.63	30.05
Errors using Illustration 2						
Lack of knowledge	Frequency (f)	31	64	23	47	165
	Percentage (%)	17.71	26.12	11.00	19.34	18.92
Misinterpretation	Frequency (f)	26	27	43	64	160
	Percentage (%)	14.86	11.02	20.57	26.33	18.35
Incomplete structuring	Frequency (f)	37	38	28	-	103
	Percentage (%)	21.14	15.51	13.40	-	11.81
Incorrect structuring	Frequency (f)	25	-	62	43	130
	Percentage (%)	14.29	-	29.67	17.70	14.91
Misplacement of what is given	Frequency (f)	11	41	-	-	62
	Percentage (%)	6.29	16.74	-	-	7.11
Total	Frequency (f)	175	245	209	243	872
	Percentage (%)	100	100	100	100	100

(523/1480) for its visual form.

In the next phase of the study, the descriptive statistics regarding the errors in the test applied with illustrations in general were obtained, and the findings are presented in Table 9.

According to Table 9, 872 errors were observed in the visual form of the test, 30.05% (262) of these errors were made without using the illustration. The most common error using the illustration was due to lack of knowledge by 18.92% (165) which was followed by misinterpretation

by 18.35% (160), incorrect structuring by 14.91% (130), incomplete structuring 11.811% (103) and misplacement of what is given 7.11% (62), respectively.

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

According to the result of the study, 17.03% of the answers were left blank in the verbal form of the test, the

percentage went back to 5.75% when the visual form was applied. Decreasing number of the questions left blank in the visual form of the test shows that images encouraged some of the teachers to make an effort to solve the questions. Whereas, the verbal form of the test was answered correctly by 23.38%, it is 35.33% (523/35.33) with an increase by 12% for its visual form. Although images had a positive impact on the student achievement in the first three questions, the contribution was limited in the fourth one. The finding that the images obtained as a result of the research contributed to the problem solving achievement coincide with the finding obtained in the study performed by Elia et al. (2007).

While 22.64% of the students gave the correct answer to the questions in the verbal form of the test without using the illustration, the general percentage of correct answers in the visual form of the test increased to 23.84% on a limited level. Yet, the percentage of correct answers given by the students who drew their own illustrations in the verbal form of the test was 54.72% whereas, the percentage decreased to 41.96% in the visual form which was solved with readily available illustrations. This shows that using one's own images rather than readily available ones contributes to the problem solving achievement more; moreover, the finding is in parallel with the findings obtained in the study performed by Uesaka et al. (2007).

The percentage of the answers given without using the illustration in the verbal form was about 69% whereas it decreased down to about 23%, the percentage of the answers using the illustration increased from about 14% to about 71%. An increase by about 57% in the percentage of using images only by changing the item format indicates that the students adapted to the use of images quickly; and this finding obtained in the research coincides with the findings obtained in the study performed by Altun et al. (2004). It was also found that the percentage of using images in the verbal form was very low without any guidance given to the students, revealing that this finding coincides with the findings obtained in the study by Ulu (2008). Ulu (2008) revealed that the teachers benefited from images too much when solving a problem but the finding obtained as a result of the study shows that the students did not take their teachers as a model. In the study performed by Altun and Memnun (2006), it was found that the primary school students did not use the images during the exam although they had utilized them during the courses and the use of images decreased as the grade level increased. This indicates that the habit of utilizing images should be taught to the students at early ages.

882 incorrect solution observed in the visual form of the test was examined along with their reasons. The ratio of the incorrect solutions without using the illustration in the visual form to the errors in the test in general is 30.05% (262/882); it was seen that the students did not use the images and used direct rates/proportions because they thought the questions were so easy. Use of non-routine problems in the study caused solutions by direct rate/proportion to contradict with real-life conditions; this issue encountered as a result of the research has also been observed in the studies performed by Olkun (2010), Schoenfeld (1991), Verschaffel et al. (2000), Verschaffel et al. (1999) and Xin et al. (2007).

Whereas, the number of errors due to the use of images in the verbal form of the test was 96, it increased to 610 in the visual form. The increase in the number of errors due to use of images in the second test can be basically explained by the increase of the use of images; however, it is also a fact that images made the students fall into error on a remarkable level even though they increased the problem solving achievement. This finding coincides with the findings obtained in the studies by Elia et al. (2007). Panasuk and Beyranevand (2010) studied on students' skills of transforming verbal expressions into images and transforming the mathematical skills and revealed that those who could transform those expressions into each other had a higher level of problem solving achievement. A similar finding was obtained by Moreno and Mayer (1999) and Hegarty et al. (1995). Some of the students not being able to transform the verbal expressions into images in these studies coincide with the findings obtained in the earlier mentioned studies.

The multitude of the errors due to the use of images proves the necessity to investigate the reasons of the errors due to the use of images. In this context, the errors due to the use of images were categorized, and it was seen that the errors originated from lack of knowledge (18.92%), misinterpretation (18.35%), incorrect structuring (14.91%), incomplete structuring (11.81%), and misplacement of what is given (7.11%) respectively. In the studies performed by Schoenfeld, (1991), Verschaffel et al. (2000), Verschaffel et al. (1999) and Xin et al. (2007), it was emphasized that non-routine problems might require real-life knowledge and it was seen that the students who were lack of real-life knowledge might give incorrect answers. The fact that the students structured the images incorrectly due to lack of some real-life knowledge in this study shows that the case also applies to the transformation to images.

The case with the errors originating from mis-interpretation, incorrect structuring, incomplete structuring and misplacement of what is given in the problem differs from the errors due to lack of knowledge. The clinical interviews revealed that the students, who misinterpreted the illustration even though they drew it correctly, believed in the accuracy of their rates/proportions rather than of the illustrations they drew when the solutions they found in their minds did not coincide with the solutions they found using the illustrations through their rates/proportions. While it was expected from the students

to create their images independently from the formulary solution in their minds, the clinical interviews showed that the students drew their illustrations according to the rate/proportion in their minds in the errors due to incorrect structuring, incomplete structuring and misplacement of what is given. This indicates that some of the students were willing to benefit from the readily available schemas in their minds when drawing an image; however, the studies performed by Viennot and Moreau (2007) and Soylu and Soylu (2006) reveals that readily available schemas may be misleading for the problems which are encountered for the first time. Available solutions valid for the schema theory are addressed in the scope of procedural knowledge and it is recommended that students should be gravitated towards conceptual knowledge because available schemas may mostly fall insufficient in non-routine problems (Anderson, 2010; Brynes and Wasik 1991, Baroody, Feil, Johnson, 2007). The multitude of the errors due to the use of readily available schemas in this study proves that students should gravitate towards conceptual knowledge so that they can break taboos in their minds.

According to the results of the study, it was observed that the use of images decreased the number of blank answers and increased the number of correct answers; however, the students did not prefer to use the illustration much when they were not guided to use the images as they were in the verbal form of the test. Based on this finding, it is recommended that teachers should emphasize visual solutions in their problem solving activities and encourage students to use images. It is seen that the greatest reason for the errors due to the use of images is the formulary solutions in students' minds; in accordance with this finding, students should be encouraged to create their images independently from the schemas in their minds. It should be made felt that not only the solution will be fun but also the risk of error will be mitigated when the images are structured correctly.

Conflict of Interests

The authors have not declared any conflict of interests.

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Full Length Research Paper

A role model in light of values: Mahatma Gandhi[i]

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The non-violent, tolerant, pacifistic and humanistic manner of Mahatma Gandhi is a globally recognized fact. UNESCO's foundation of Mahatma Gandhi Institute of Education for Peace and Sustainable Development is one of the best examples that support this fact. In this study, it is aimed to present "Mahatma Gandhi", who is globally accepted as a role model with his personal characteristics, meaning and view of life, devotion to his beliefs, way of struggling with the problems he encountered, universal understanding of peace and tolerance, the value he attached to human beings, and his character, thus, from the values he possessed, to set forth an educational point of view. The study was conducted based on the method of document review in accordance with the qualitative approach to research. As a result of this study, it is assessed that Mahatma Gandhi accommodated in his personality many universal values such as love for his fellow humans, justice, peace, non-violence, tolerance, and freedom, and when faced with certain situations in his lifetime, exhibited an attitude that is compatible with his principles related to these values. In this context, it can be speculated that introducing and conveying Mahatma Gandhi's philosophy of life and the treasure of values he had to students via various educational activities and biographies can make the processes of education for peace and values more effective.

Key words: Universal values, values education, Mahatma Gandhi and values, peace education, social studies.

INTRODUCTION

Peace is one of the universal values humankind has failed to grasp adequately and extensively, nor has he reflected it to his own life effectively. Because of this, there are still conflicts in many areas today (Abdi and Shultz, 2008), and individuals prefer means of offense with violence and pecuniary sources, instead of listening to the opinions of the other side, or creating intellectual common grounds. Our lacking of empathy and universal values become more obvious with these sorts of approaches. It is a bitter truth known by societies that in the course of history, violence and conflict occur in certain areas in certain times like World War I and II. However, in the face of mundane issues, humankind continues to exhibit far away from peace and universal values, ignoring all these tragic events. When we look today, Syrian conflicts appear as best examples of this manner. Likewise, lots of people are dying or migrating due to conflicts worldwide. According to United Nations High Commissioner for

Refugees (2015), 65.3 million people forcibly displaced worldwide by the end of 2015. In this context, it is understood that people are prone and eager to categorize each other because of differences in attributes such as religious beliefs, sects, races, opinions, and worldviews, treating each other in ways that clash with culture of peace and universal values.

Regarding these matters, subjects of "education for values" and "education for peace", which have become apparent in the field of education, and the importance of which cannot be discarded, attracts significant attention from educators (Harris, 2004). It stands an obvious fact that peace cannot prevail over the world in an instant, and cannot maintain its presence in the world. Therefore, prospective planning processes and educational activities are thought to be effective tools in relation to upbringing of world citizens who will contribute to continuity and prevalence of universal values. At this point, it should not be missed that education for values and education for peace are two important learning domains. Fountain (1999) describes education for peace as a process that makes children, youngsters, and adults prepared to prevent conflicts, and that requires knowledge, skills, attitudes, and values that provides development of understandings towards peace and peaceful solutions to conflicts.

Education for peace is both a strategy that achieves peace and an important method to prevent violence-based conflicts (Castro and Galace, 2010). Education for values, on the other hand, is the expression for conveying required values to contribute to universal peace and to exhibit moral behaviors through the moral context at schools and emphases in curricula (Yel and Aladağ, 2012).

In supporting the development of individuals who have universal values and who are suited to attitudes required by culture of peace, it is needed of educators who will provide the education for values and peace to have the skills of reconciliation at an efficient level, and to convey these skills to individuals through the strategies and methods he/she thinks best. Especially, educators provide to teach building consensus way, instead of imposing (Johnson, 2006). Harris (2004) points out that peace educators must teach students peaceful processes such as negotiation, reconciliation, non-violent struggle, and agreements and laws that minimize violence. In support to this view, Demir (2011) states that "along with the importance of teachers' creating an awareness of peace in students, it is also vital that they make them grasp human rights, the ability to make positive interpersonal relationships, and the dangers of war." One of the most important aspects in inoculating students with universal values and culture of peace is using biographies as a tool in educational processes. According to Kaymakçı and Er (2012) biographies are defined as such: "A biography is a literary genre, which is written objectively, basing upon documents, with the purpose of revealing the history of lives of people who have become popular and prominent with their works and behaviors in domains such as science, arts, literature, politics, and sports."

It is predicted that, with the usage of biographies, both educational settings and the attitudes of students towards life will be enriched. It is speculated that, with the usage of biographies in educational processes, motivation of students will be enhanced, processes of taking popular people as models will emerge, and individuals will have the opportunity to acquire universal values and to shape their own values (Kaymakçı and Er, 2012). In the international arena, it is seen as a necessary and effective approach for attainability of the goals of education for values and peace and for creating a more livable world to use figures as role models, who have been appreciated and accepted by authorities, who have been embraced by peoples of the world, and who have obtained a permanent status in the history (Thakkar and Mehta, 2011). In this context, Mohandas Karamchand Gandhi, who is also known as Mahatma Gandhi, is seen as one of the important leaders who can set an example for societies, and can contribute to human life socially and politically. With his superior humanistic values, which he internalized and wished to become widespread, such as tolerance, respect, justice, non-violence, freedom, equality, and peace, Gandhi has contributed to world peace and drew the attention of the nations with his stance throughout his life. In this study, a brief section of Gandhi's life has been touched upon, his opinions on education have been mentioned, and the values he promoted for peace and his opinions on these values have been included.

The purpose of this study

In this study, we aimed to present "Mahatma Gandhi", who is globally accepted as a role model with his personal characteristics, meaning and view of life, devotion to his beliefs, way of struggling with the problems he encountered, universal understanding of peace and tolerance, the value he attached to human beings, and his character, thus, from the values he possessed, to set forth an educational point of view. In light of this aim, we search for answer to these questions:

1. What are the non-violent methods used by Gandhi to struggle against external forces?
2. Which implications for peace and values can be found in Mahatma Gandhi's educational remarks?
3. What kind of values can be found on Mahatma Gandhi's personality?
4. How can educators benefit from Gandhi in the fields of education for peace and values?

METHODOLOGY

The study was conducted based on the method of document review in accordance with the qualitative approach to research. Qualitative research is a realistic and integrated research process, which comprises qualitative data collection methods such as document analysis, observation, and interviews, and which aims to depict the existing facts without generalization (Büyüköztürk et al., 2013). When the related literature is reviewed, it is advised to perform a qualitative research especially when it is necessary to conduct an in-depth study (Creswell, 2014).

The process of data collection and analysis

Patton (2014) indicates that qualitative findings consist of three ways of data collection, namely open-ended interviews, direct observation, and written documents. In this context, the qualitative data collection method which was benefited from was document review. With document analysis method, it is aimed to examine the written materials on the subject matter. Besides, Ulutaş (2015) points out that the approach of the researcher has a special importance in usage of documents as a primary or secondary material in research. In this study, Mahatma Gandhi's life, character, and opinions on various subject matters have been related to education for values and peace, and it was aimed to make certain educational deductions from this point on. For that, some documents which are related to Gandhi's life used by researchers. This process completed about a month. The each document' contents are examined in detail by three researchers with regards to values and peace training.

Gandhi and independent non-violent education

Who could have known that a person who was born in India in 1869 was to re-write the history of India? Born in Porbandar, Gandhi, after his death, has left an India who has its rights, and has set an example for other colonial states. As a result of this struggle, he received appreciation and praise from politicians, scientists, and sections of society with high influence at the time. His unassuming attitude in the face of all these was one of the important pieces of his character. Especially his understanding of "non-violent struggle", thanks to his emphasis on his unwillingness against situations like war, which clash with human dignity, has drawn a huge amount of attention. Having gone to London to study Law in 1888, Gandhi returned to India in 1891, after his proficiency exam. Trying to work as a lawyer for two years after he had arrived to his country, Gandhi made one of the most radical decisions in his life and went to South Africa. The racist mentality he encountered here was very influential on the shaping of Gandhi's personality. The effect of the environment on the shaping of character, which is also elaborated in educational

processes, was observed with Gandhi pretty explicitly, as well. Following these circumstances, Gandhi organized the Natal Indian Congress in order to defend the rights of Indians (Carter, 1995). Returning to India in 1915 after 21 years of struggle in South Africa, with his character and values shaped back in South Africa, Gandhi started his struggle in his own country. This struggle, indeed, was to be based on the principles of Satyagraha and Ahimsa.

The understanding of Satyagraha and Ahimsa, which was going to leave its trace on history, meant reaching the truth without violence, and a passive resistance without fight and violence in the process. According to Gandhi's understanding of Ahimsa, violence was not a phenomenon that can be considered within the measurements of retaliation. Violence could not be responded with violence, and cruelty, with cruelty, and this mentality constituted Gandhi's philosophy of passive resistance. As Malik et al. (2011) states, Gandhi had a strong belief in passive resistance (Ahimsa), and it was his decision to neutralize the motives for violence. The philosophy of Satyagraha, on the other hand, involves an approach strongly tied with the understanding of Ahimsa. In this context, the philosophy of Satyagraha can be defined as a philosophical view that represents a non-violent stance without waging a war, yet with love and determination against evil and cruelty, by holding on to the fact of truth. At this point, it can be said that definitions attributed to the understanding of Ahimsa are derived from the philosophy of Satyagraha. Faithful to this understanding, Gandhi stood against imperialism with non-violent actions such as hunger strikes and the Salt March, being a light of hope for other nations on the intellectual basis. As a result of these actions, Gandhi managed to be backed by the Indian people, proceeding on his way to remove the colonial mentality in his country with a massive support. The impact of his hunger strike increased day by day; the British took a step back, reckoning that Gandhi could die in consequence of this strike, leading the people of India towards a rebellion. These events are only one example of that his character was framed with the value of determination.

Mahatma Gandhi struggled against the colonial mentality not only in politics, but also in the areas of education and culture. One of the points he stood against in the field of education was the educational activities of the British in their Indian colonies. Gandhi considered the educational system established by the British in India as an assimilating activity and a psychological assault. Even though he respected the language and works of art of the British, he explicitly criticized the educational system and activities of them in India. Envisioning that the United Kingdom aimed for cultural assimilation in India, Gandhi stated that especially that the individuals being raised in accordance with the British educational system, and that speaking English is considered an honoring behavior is one of the most apparent signs of this (URL1). Having

become his basic philosophy, Satyagraha and Ahimsa approaches also shaped his thoughts and attitudes on the field of education. At this point, it is seen that he placed emphasis on the violence-based mentality at schools. Gandhi stated that even in schools where there was no apparent violence setting or a violent output, there were or could be various kinds of violence. He pointed out that, especially with the authority to grade in hand, teachers could suppress, embarrass, and threaten students. Gandhi criticized the formal educational process from a standpoint expressing that teachers could do violence-oriented acts with body language (Allen, 2007).

Gandhi pointed out that the purpose of education was not only to create informed minds, but it should also reveal enlightened souls (URL1). This opinion finds place for itself in contemporary educational systems. In many educational systems, students are still seen as an information storage device, and raised destitute as to both having universal values and daily life and social life competencies, beside cognitive skills. In countries with this mentality, the only goal of individuals are defined as achieving criteria of success in various examinations and having a status in society by using their knowledge. It is predicted that the continuance of this mentality will improve individuals from the aspect of knowledge, but come short of values and character development, thus, according to Gandhi, causing education to fail to reach one of its fundamental goals.

It is seen that, in Gandhi's understanding of education, there is more to societal highlight rather than individuality. In this mentality, one of the most important goals of education is to provide not only individual development, but also an elevation for society. Social elevation shall abolish the distinction of social classes in the country, therefore, neither shall the number of millionaires distant to society increase, nor shall people at hunger threshold appear (Bala, 2005).

In a sense, education shall fulfill the task of a tool that approximates social classes to one another, and that ensures equality. This approach shows us the significance of social equality in the process of construction of bright individuals, thus, of bright societies. As a yield of political fluctuations in India, and with Gandhi's contribution, Wardha Scheme of Education was held in 1937. One of the fundamental reasons of the gathering of the Scheme was that the British educational system in India did not respond to the country's needs. For this reason, in order to create a new reform in education within the framework of Gandhi's ideals as to education, one of the main goals of the Scheme came to be determining the basic areas for change.

The decisions made at the resolution can be listed as (Singla, 2013);

1. Country-wide compulsory and free education.

2. Productive education, suitable to territorial needs.
3. The native language as the language of education.[1]

Turning out to be a hand of India reaching towards its episode of independence, Gandhi became a guiding factor with his ideas in educational transition processes. Remarking that national independence could not be won with struggle only in the field of politics, Gandhi pointed out that cultural preservation and freedom were only two of the stages that could bring about independence. Beside advocating the non-violent paradigm in educational processes, he also underlined the necessity of employing and internalizing fundamental universal values. In the next chapter of the study, it is aimed to depict universal values, which Gandhi had in his character, and tried to impose people around him in every chance.

Gandhi's treasure of values

In an era when fundamental changes in technological developments, political reforms, social developments, and social life forms have serious indications, the change and development of individual, who is the building block of society, is inevitable. In this process, informal areas do not seem to be sufficient in order for individuals to achieve a universal world view, to structure his own principles and values sturdily and protect them, to gain the skill to question, criticize, and evaluate the values and mentality of his nation, to have a basis for personality and identity, and to see himself as a world citizen. In this context, it is vital for educators, educational settings, and the content of curricula presented to students in these settings to be qualified as to the formation of moral values, identity and development of personality, and acquisition of values. From this point of view, it is of great importance for nations that aim to raise citizens of world who have a universal understanding of peace, who adopt democratic values and approaches, who can avoid egocentric ideas, who take behaviors with libertarian, true, and honest, who are sensitive and respectful to differences, who love and value people as they are instead of categorizing them according to their religions, languages, or races, to perform applications that are thought to be different and with a higher value of efficiency in processes of education for values and in formal educational activities related to it. One of these applications is, beyond doubt, the usage of biographies in educational setting and in the acquisition of skills related to education for values and peace.

When the matter is Mahatma Gandhi, the first one of those universal values to occur is "humanity." Gandhi

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[1] It was thought that cultural assimilation could be prevented by giving up on English language in educational processes.

stated that all his life and struggles was focused on humanity (Prabhu and Rao, 1967). On this subject, Gandhi expressed that love was the subtlest force in the world, and it is seen that this person, who was a treasure of values on his own, and who, with his statement, "*Where there is love, there is life,*" is recognized to have equal level of love for every human being in the world, would be a precious example as to love prevailing over the world, people of different nations loving each other, and a love-based mentality being adopted. Thus, when approaches in accordance with the "Gandhi's Philosophy" are employed in educational settings and approaches, it is considered more likely to raise individuals who love the people of the world, and himself, indeed. In this process, Gandhi is thought to be an effective role-model in educational processes. Right along with his universal humanity, it is seen that another value in Gandhi's treasure of values is "justice." As a person with a motive as, "Rather than swerving to injustice and being followed by all people, stay with justice and be alone," Gandhi, who always acted with the philosophy of seeing it necessary to demonstrate a just attitude in the face of situations and conditions encountered, is thought to be an appropriate role-model in raising righteous individuals who have internalized a sense of justice. With activities performed in schools and classrooms, and with processes of education for values, it can become possible to create schools shaped in the axis of culture of justice. We can understand the weight Gandhi put on the value of justice from this text he used to repeat every morning Reca, 2013):

"*I promise myself this when I wake up every morning: I shall fear no one on earth, but conscience. I shall acquiesce injustice from no one. I shall demolish injustice with justice, and if it persists on resistance, I shall respond to it with my whole existence.*"

Gandhi supported his thoughts kneaded with humanity and sense of justice with his manner against war and violence, and his attitude towards universal peace (Biswas, 2015). Placing human dignity into the core, Gandhi stated, "*Every murder or other sorts of damage left to someone else is a crime against humanity, no matter with what reason,*" expressing that violence is a non-human behavior (Kripalani, 1969). Gandhi, who has made a global fame with his peaceful approach to events and problems, and his reconciliatory understanding of solution, is obviously an effective role model in processes related to education for peace and in conveying to individuals the approaches related to the universal value of peace, especially with his remark, "*The power produced by non-violence is certainly superior to all of the weapons produced by human skills.*" Moreover, Gandhi did not only act with the thought of non-violence, he also expressed that violence was multi-dimensional, and that

individuals encounter violence without even noticing it. Whereas, many people who have studied as to defining and occurring of violence generally concentrated on the physical aspect, Gandhi also revealed the implicit violent behaviors in schools (Allen, 2007).

Another important value that comes to mind alongside Gandhi is "tolerance." Adopting a tolerance-centered manner with both religion and thought, and demonstrating this in every opportunity, Gandhi stated that tolerance is the greatest of powers. Gandhi emphasized that tolerance, which he thought was a factor gaining individuals spiritual intuition, was as far away from fanaticism as the south and the north poles (Gandhi, 1955). In this context, Gandhi is predicted to be a guide on tolerance when it comes to raising individuals who have an understanding of tolerance and who adopt and universally internalize this culture, designing the activities to be performed in educational settings, and determining the content and goals related to the processes of education for values. Gandhi predicated that, on one hand, with the establishment of values such as peace, love, and respect in the society, the culture of coexistence would develop, while on the other hand with system of values being upside down and values themselves corroded, social disasters would occur. He thus, codified this situation under "the seven deadly sins" that would ruin individuals and societies. These seven deadly sins are as follows (Tarhan, 2012):

1. Wealth without work.
2. Pleasure without conscience.
3. Knowledge without character.
4. Commerce without morality.
5. Science without humanity.
6. Worship without sacrifice.
7. Politics without principle.

Having struggled for freedom of people of India, Gandhi had a character identified with freedom. Gandhi put a respect-based emphasis on other livings and their lives with his statement, "*Freedom has never meant 'doing everything one wishes',*" towards the value of freedom. He related his understanding of democracy with the value of freedom, opining, "*Democracy is established with non-violence, providing equal freedom for everyone*" (Gandhi, 1955). At this point, it is assumed that Gandhi and experiences in his sort would be significant guides in raising individuals who acquired the value of respecting other livings and their rights, and in generating educational settings where respect is predominant, and gaining students this value. Mahatma Gandhi was a performer of the understanding of non-violence in every aspect of life (Biswas, 2015). He was criticized even by his supporters because of this mentality. Longing to alienate humankind from the violence-based mentality, Gandhi became one of the defenders of the value of

peace, expressing this publicly with his manners and thoughts. One of the most important examples of this can be seen in his attitude towards the developments between Hindus and Muslims. Gandhi did not abandon his mentality formed with peace in center in Hindu-Muslim conflicts, supporting Muslims intensely and struggling for peace without violence (Barnabas and Clifford, 2012). Compromising nothing with his thought system and character against all of the attempts of outer factors, Gandhi shaped and even changed the intellectual structure of many people.

Conclusion

In this study, based on the importance of usage of biographies in education for values, it was aimed to explain Mahatma Gandhi and his views, who was a role-model in education for peace and values. Perhaps the most important goals of education for values is providing society with a culture of coexistence. This goal being met depends heavily on popularizing the democracy culture and internalizing fundamental democratic values. Education for values is about the ethical qualities a person needs to have in order to be a virtuous human. Therefore, qualities of a virtuous person can be con-sidered as the values that need to be taught individuals in family and educational institutions (İmamoğlu and Bayraktar, 2014). Education for values has become one of the building blocks of contemporary educational systems. By means of education for values, the minds, hearts, and hands of individuals will grow mature and independent. This process of maturation and independence is vital to both the society and individuals. One first needs to realize and analyze his own values, admit that others, too, do not have to share these values, see the differences and similarities between values of his own and of others, and understand the roots of these values (sociological, cultural, political, economic, historical, religious, etc.). Only this way can freedom, peace, justice, diversity, and solidarity, which are the foundations of a democratic society, be possible (Doğanay et al., 2012).

One of the discussion topics in education for values is which values are to be taught, and how. The first values to come to mind in teaching individual and universal values related to education for values are love, respect, and peace. Another two questions concern by whom these values are to be taught, and how they are to be taught. It is vital and highly effective for everyone to teach values formally through approaches of teaching values at school, usage of role-models being in the first place. Gandhi is a person who can be employed as a role-model, and who can be followed with biographies and case studies in school settings for formal education for values. Mahatma Gandhi defines education as "the

expression of the best things in the soul, mind, and body of a human and a child." Thus, education is the basis of the development of personality from all moral, mental, and emotional dimensions, and this basis solidifies with the values acquired (Kumar, 2015). Gandhi states, "If we want to achieve real peace in this world, we need to start with children," and connects the structuring and preserving permanent peace with integration of behaviors, skills, and values of the posterity with peace (Johnson and Johnson, 2012; Asija, 2013).

Gandhi and his discourse and behaviors can be benefited from in activities and lessons on teaching of values such as love, respect, tolerance, and justice, and mainly, peace at schools. In values analysis and explicit teaching of values, Gandhi's discourse can be used as activities and worksheets. Students can be given project papers, covering Gandhi and universal value of peace as a course subject. In the Research Project of Citizenship Education Policies (Cogan and Derricott, 2000; Doğanay et al., 2012), 182 experts from nine countries were asked about the global tendencies of the 21st century, and which qualities these tendencies require citizens to have. Participants listed the virtues and values a 21st century citizen should have under nine headings:

1. Approaching problems as a member of the global society.
2. Working in collaboration with others, and taking responsibility for the roles and responsibilities of others in society.
3. Understanding, accepting, and tolerating cultural differences.
4. Systematical and critical thinking.
5. Solving conflicts in amicable means.
6. Adopting an environment-friendly way of life.
7. Respecting and defending human rights.
8. Attending actively in each and every aspect of life.
9. Using information technologies.

In addition to that these properties listed above are the shared goals of contemporary educational systems, their correct and active usage constitutes the fundamental goal of education for citizenship and values. Gandhi's life story and the thought system he presented shall be efficient in forming these properties sturdily in individuals. To that end, it should be conformable to present parts of Gandhi's life and discourse to students with activities, as well as that teachers and educational program managers make use of Gandhi's discourse in educational planning activities in order to create a positive school climate. In this study, it has been aimed to sample values and education for values with the focus on Gandhi. However, in teaching values, along with the usage of both biographies and literary products, figures raised in World and in Turkish territory, such as Mevlana Celaladin-I Rumi, Yunus Emre, Dalai Lama, Martin Luther King,

Hodja Ahmet Yesevi, Lao Tzu, can be used as examples in order to reflect a connection with culture.

Conflict of Interests

The authors have not declared any conflict of interests.

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[i] This research was presented as verbal statement in 2nd National Value Education Congress (5-7 November, 2015), Kırıkkale,Turkey.

Full Length Research Paper

Effectiveness of active learning strategy in improving the acoustic awareness skills and understanding what is heard by the basic stage students in Jordan

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This research aims to get acquainted with the effectiveness of the active learning strategy in improving the acoustic awareness skills and understanding what is heard by the basic stage students in Jordan by answering the two following questions: This research has been applied to a sample of 60 students from the basic third grade in Al-Ahnaf Ben Qais school in Amman, this school is purposefully selected because of the location being close to the researcher, and its administration and teachers cooperation with the researcher. Two branches were randomly selected, one experimental and the other is control, each branch consisted of 30 students. Referring to the theoretical literature and previous studies and the researcher experience, the researcher developed two tests to measure the acoustic awareness skills and understanding what heard skill is. It is clear from Table 1 that the mean of the experimental group individuals was up to 16.27 with standard deviation of 1.84, and for the control group, the mean was up to 12.23 with standard deviation of 2.58, to determine whether the difference between the means with statistically significance, t-test is performed for two independent samples, the results were presented in Table 2. It is clear from Table 2 that (t) statistical value was up to 4.04 which was significant at 0.05 level and less, and when reviewing the means, it became clear that the mean of the experimental group was up to16.27, while the mean of the control group individuals was up to 12.23, this indicates that there is an effect on the experimental treatment in developing the level of understanding of what is heard.

Key words: Active learning, acoustic awareness skill, basic stage students, learning strategies.

INTRODUCTION

Education aims at the first place to help the learners in integrating comprehensive growth through the learning system in all of its components - the teacher, the learner, curriculum, the surrounding environment, teaching strategies, and through the functional interaction between

the teacher as a leader and the counselor; the simplifier in the learning teaching situation, and the learner as the beneficiary, the participant and the targeted from the educational process, and the curriculum - in its wide meaning - as the mirror that reflects the society`s goals

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and conditions, and interpret its systems, trends, and its political and economic attitudes under which the generation shadowed. Education in the present contemporary societies considers an organized and meaningful process and active instrument in preparing the qualified human for life, through developing the individual`s personality from all sides, and correcting his behavior to achieve his interest and happiness, and contributes to the development and progress of the society. Education in this meaning considers effective human activity since the society greatly depends on education, it is the means for his survival, continuity, development and advancement, since development and progress are deeply rooted in the individual`s life (Rozon, 2007).

Lorenzen (2006) found out that the active learning is a way of students teaching allowing them to effectively participate in the activities that takes place inside the classroom. This participation takes them beyond the role of the passive listener individual who basically writes the notes, to a person who makes the initiative in the different activities with his peers through the learning teaching process inside the classroom. The teacher role here in lecturing is less, and directs the students to discover the educational materials that leads to more understanding in the scholastic curriculum, since active learning activities include a set of different teaching methods and techniques, such as the use of small group discussion, roles playing, making different research projects and asking multi-level questions, the first and basic goal of all these activities encourage the students to be self-learners under the teacher`s supervision. The importance of the active learning emerges as showed by Abu-Ra`yash (2006) in its ability to form the learners previous knowledge through the active learning when learning new knowledge, this agrees with the perception that inducing the knowledge is the necessary condition for the learning. Learners through the active learning reach meaningful solutions to the problems, because they link the new knowledge or solutions to their familiar ideas and procedures. Without using the solutions of other persons, learners through the active learning receive enough enforcement about their understanding of the new knowledge and the need to reach an output to express an idea through the active learning, this forces the learners to get information from previous knowledge may be from more than one topic, then connecting them.

Active learning shows the learners their ability to learn without the help from authority, and this enhances their self-confidence and independence, and most of the learners prefer to be active during the learning process. Sa`adeh et al. (2006) study on active learning goals are: Encouraging the students to acquire many critical thinking skills when those students experience different educational experiences individually or in group, or in under their teacher`s supervision and direction. This will make them acquire the inference and distinguish skills, which are the critical thinking skills, and encouraging the students to use critical reading, since the many activities they perform may direct them carefully to investigate what they are reading, understanding its meaning very well, and asking many questions about it, and also to increase their understanding and build on it new ideas and opinions with the cooperation of their colleagues, and under their teacher`s supervision.

Diversifying the relevant educational activities for the students to achieve the desired educational goals

The nature of the active learning gives way for the diversification in the activities relevant to the students` needs, interests, abilities and attitudes, these cannot be met except with the presence of many activities from different sources and origins. All languages including English language are voices, and voice is the heard effect results from the vibration of the vocal cords, and the passage of air through the mouth and nose. Voice is characterized by being high, low, wide and narrow, and by voice the human is able to express himself and to determine his psychological attitudes towards the things and persons. The voice is also use to influence others by controlling the voice degree according to the meaning and the receptions status. The process of generating acoustics stimulates different situations like reading, speaking, singing and employing it in a relevant way (Al-Hazemi, 2002). Also, the acoustic stimulates have semantic function, through them it is possible to explain the speech`s different meanings and semantics, and clarifying them, and these two functions are integrated. Language scientists see the rhythm as a mode of controlling modes in the voice layer (Al-Sayed, 2003).

Ability to read depends on two basic processes for the child to be a good reader, these processes are the ability to distinguish the voice and the ability to make formative distinguishing, since the words meanings and sounds link together because the sound is the smallest acoustic unit able to change the meaning (Al-Amayreh and Hamdan, 2006). The term awareness of the linguistic sounds also contains knowledge about the letters sounds individually and collectively which means the ability of the student to make the fit between the sound and the letter, this should be taken into account when teaching. Also, the teacher should perceive that children come to the first grade or before it with different levels of awareness about the sounds, while others are unaware of any acoustic part in the word and others may have awareness about the syllabus (Aw`ad and Babli, 2010). Listening as mentioned by many language experts is a mental activity that enables the students at the different stages especially in the first three grades to practice the deliberate listening, and also to pay attention to the heard material, focusing

on it to be able to understand it through the received message.

Madkoor (2007) mentioned that listening is an art that consists of complex processes and are interrelated, it is not only a receiving process since it is a process through which the listener pays intentional interests and care to what his ears are receiving being it sounds and linguistic symbols. Repetition will not become useful without training on sound practices to implant these correct responses and fixing them (AL-Dosari, 2000). Since teaching the learners is not a one way thing because of the individual difference, this represents the biggest obstacle for achieving the desired goals, the issue requires the necessity for making new educational strategies and approaches far away from the traditional approaches, and based on educational theories and methods (Rosset, 2002). The huge development in information and communication technology, and its multi capabilities in developing and creating educational strategies and approaches are consider as an issue imposing great importance (Fox et al., 2003). From these considerations, this research comes to get acquainted with the effectiveness of active learning in improving the acoustic awareness skills and understanding the heard by the basic grade students in Jordan.

Research problem

Research problem stems from the suffering of some students in the basic education stage from weakness in their listening skills, and weakness in their abilities to distinguish between the sounds of close letters in the text, or distinguishing between the words` sounds, and distinguishing between the acoustic pictures of the linguistic modes such as the command, prohibition, astonishment calling, negation and other modes which leads to weakness in communication with other speakers, and misunderstanding the receivable acoustic message. The researcher noticed the weak interest from the first grades teachers` part in these skills which has led to their weakness in linguistic communication from one side, and attaining the understanding and the interaction from the other side. So, the natural reaction to this problem represents in achievement weakness the scholastic and educational materials. Although, the idea of the active learning initial appearance in its early form, appeared in the beginning of the 1980s of the 20th century. The educators focused on it at greater degree during the 1990s, but its application in the educational fields remained limited. Sa`adeh et al. (2006) stated that the active learning expresses a way of learning and teaching at the same time, in which the students participate very actively in the activities and the exercises through diverse and rich educational environment which enables them to listen positively and think rationally, and deep

contemplation about everything they write between each other with the presence of the teacher who encourages them to hold the responsibility for their self-teaching under his precise supervision. The researcher tried the active learning to know its effect in improving the acoustic awareness skills and understanding what is heard by the basic stage students in Jordan.

Significance of the research

The significance of the present research emerges from the topic's importance that it deals with, so it is hopeful to contribute to the following advantages:

1). Benefiting the teachers by adopting the active learning strategies and principles in teaching.
2). This research might contribute to reduce the students weakness in the acoustic awareness skills and understanding what is heard.
3). Making the educational institutions in Jordan aware of the importance of the active learning and its components.
4). Encouraging the researchers to conduct more studies that address the active learning strategy in the teaching process.

Research objective

This research aims to get acquainted with the effectiveness of the active learning strategy in improving the acoustic awareness skills and understanding what is heard by the basic stage students in Jordan by answering the two following questions:

Research questions

1). What is the effect of the active learning strategy in improving the acoustic awareness skills of the basic third grade students in Jordan?
2). What is the effect of active learning strategy in improving the listening comprehension skills of the basic third stage students in Jordan?

Research hypothesis

This research attempted to test the validity of the following two hypothesis:

1). There is no difference with statistically significance at level a=0.05 between the means of the research samples between individuals in the third grade students in the acoustic awareness skills test attributes to the type of the teaching strategy (active learning / normal).

2). There is no difference with the statistically significance at level a=0.05 between the means of the research sample`s between individuals in the basic third grade students in understanding what is heard test attributes to the kind of the teaching strategy (active learning / normal).

Research determinants and limits

The research is limited to:

Human limits - third grade students in Amman Directorate of Education.
Spatial limits - Amman Directorate of Education.
Temporal limits Scholastic term 2016.

Generalization of the research`s results is determines by its human, spatial and temporal limits and by the degree of the research instrument of validity, stability and objectivity of the research sample of individuals` response.

Procedural definitions

Active learning strategy: it is an organized process for teaching the basic third grade students in a form that enables them to effectively participate in the activities conducted inside the classroom, this participation takes them beyond the role of the passive listener person who writes down the notes to a person who starts the initiative in the different activities made with his peers during the learning teaching process inside the classroom , and practices the thinking , analyzing and inference. The role of the teacher directs the students to explore the educational materials that lead to understanding the introduced topic.
Acoustic awareness skills: The ability of the basic third grade students to perceive the voices of the linguistic units, letters words sentences , the linguistics modes , and to know their semantics through this awareness of the voices of these units , as measured by the test prepared by the researcher.
Skills of understanding what is heard: It is the ability of the basic third grade students to perform linguistic mental performance in understanding what the heard material contains that represents the basic and secondary ideas, and identifying the beginnings and the ends, and evaluating what is heard . This skill is measured by the test prepared by the researcher.

Literature review

The illustration of the related literature review with the present research variables are:

Mestree (2006) conducted a study which aims to build a strategy based program on meta-cognitive and measuring its effectiveness to develop the critical listening skills, and the literature testing of the basic ninth grade students. The semi-experimental method is used in applying the educational program, the study individuals number reached 120 male and female students, the results showed the presence of differences with statistical significance at level a=0.05 in the students` performance on the critical listening skills test (total degree) and on each skill of these skills. Also, the results showed the presence of differences with statistical significance at level a=0.05 in the critical listening skills test on the total degree attribute to the interaction between the method and gender, in favor of the females. Farfoara (2008) conducted a study which aims to determine the effectiveness of an educational strategy based on the active learning in achieving the critical concepts of the secondary stage students in Jordan. Study individuals consisted of 130 male and female students of the first secondary students, the branches were distributed randomly into two groups to achieve the study goals. The researcher prepared a test for literature critique and grammar test, the study concluded that there is an effect on the educational strategy based on the active learning in the achievement of the individuals who were taught by this strategy and in favor of the experimental group.

In a study conducted by Al-Astal (2010), the study aimed to investigate the effect of applying two strategies for the active learning in the basic ninth grade students achievements in the history subject and in developing their critical thinking. Study sample is limited to three groups, using the random method results revealed the superiority of the active discussion strategy over the directed (modified) lecture strategy, and the normal method in the achievement and critical thinking, and the superiority of the directed (modified) lecture strategy over the normal method in the achievement and critical thinking of the basic ninth grade students. Awad and Babeli (2010) aimed to investigate the effectiveness of a cognitive training program in developing the acoustic awareness skills of a sample of children suffering from learning difficulties in reading, and the effect of the program in increasing their reading speed, study sample consisted of 31 students from the fourth grade at Bilad Al-Rabah school in Qatar. The study used the acoustic awareness test for the children, and testing the reading speed and a training program to develop the acoustic awareness skill. The study recorded the differences with statistical significance at post-performance on the acoustic awareness test and in favor of the experimental group, and differences with statistically significance in the post-performance on reading speed test in favor of the experimental group.

Al Odwan (2012) investigated the effect of the directed reading thinking activity through using cooperative

learning on English secondary stage students' reading comprehension in Jordan. This study answered the following research question: What is the effect of the directed reading thinking activity through cooperative learning on English secondary stage students' reading comprehension in Jordan? The subjects of the study were chosen purposefully from public schools in Amman Second Directorate of Education. It consisted of 42 students who were enrolled in two sections in one school. The experimental group encompassed 22 students and the control group encompassed 20 students. The teaching program was based on a strategy which included the direct reading thinking activity through using cooperative learning designed to teach four units to the experimental group. The units were taken from the English course textbook "Jordan Opportunities" prescribed for the Eleventh Grade in Jordanian public schools during the second semester of the scholastic year 2007/2008. The same units were taught to the control group through the traditional strategy. For the purpose of the current study the researcher used: A reading comprehension test. Means, standard deviations and analysis of Covariance (ANCOVA) were used to reveal the findings of the study which were as follows: There is a statistically significant difference at α=0.05 in reading comprehension in favor of the experimental group among English secondary stage students in Jordan due to the instructional strategy. At the end of this study, the researcher proposed several recommendations and suggestions.

This study was carried out to investigate the level of students' awareness of the self-monitoring strategy of reading comprehension skills in Jordan and its relationship with the desire to learn. The sample of the study was selected purposefully and consisted of 523 students from the eighth, ninth, and tenth grades for the second semester 2011/2012. The researchers had developed two questionnaires; one for the self-monitoring and the other one for the desire to learn. The results of this study showed that the level of the desire to learn was high among the students while self-monitoring strategy for learning to read was moderate. Also, there were statistically significant differences between self-monitoring strategy and the desire to learn due to sex variable in favor of females. Also, the results indicated that there was a positive correlation between self-monitoring and the desire to learn while there was no difference in the strength of the relation due to grade or the educational level of parents, lubbad (2013) investigated the effectiveness of a multimedia based learning program on developing seventh graders' listening comprehension skills and attitudes in Gaza governorate. The target skills were four listening sub skills (understanding the main idea, pointing out specific details, deducing meaning of an unfamiliar lexical item from the listening text and inferring the moral lesson of

the listening text). To achieve this aim, the researcher selected a representative sample of 86 EFL female students studying at Al Mamounja Prep girls school which is run by UNRWA in the Gaza strip. The participants were divided into two equal groups: a control group, 43 students and an experimental one, 43 students. The instruments were, an achievement test, an attitude scale and an interview. The achievement test was used as a pre test to prove groups equivalence. Moreover, it was used as a post test to measure any possible differences between the target groups. The collected data were analyzed and treated statistically through the use of SPSS. The attitude scale was used to measure students attitudes toward listening skill before and after conducting the multimedia program.

In addition, the interview was used for low achievers whose writing ability was weak at the end of each English listening class to be sure from their understanding to the listening comprehension text. The findings indicated that there were statistically significant differences between both groups, in favor of the experimental one, in understanding the main idea, pointing out specific details, deducing meaning of unfamiliar lexical items from the listening text and inferring the moral lesson of the listening text due to the program implemented. In addition, implementing the effect size equation, the results revealed that the program had a large effect size in favor of the experimental group. In the light of those findings, the researcher recommended the necessity of implementing multimedia program in teaching English listening comprehension. Also, the researcher suggested that further researches should be conducted on the effects of multimedia program on developing different English language Skills and in other fields of educational activities. Jawarneh et al. (2014) investigated the effect of the Monro and Slater strategy and the McFarland strategy in developing the critical thinking skills of eighth-grade students in Jordan. The sample consisted of 209 eighth-grade students, divided into three groups: two experimental and one control. The California Achievement Test was used to measure critical thinking skills. The results of the study indicated significant differences between the control and experimental groups in favor of students in the experimental groups who studied via distinguishing between reality and opinion. The study concludes by offering a number of theoretical and practical implications for the field of study. Such implications include incorporating critical thinking skills in courses and providing training for teachers on how to use such strategies when teaching courses.

METHODS AND PROCEDURES

The researcher depended on the semi-experimental method through selecting the experimental and control group to test the research hypothesis which aimed to get acquainted with the

Table 1. Means and standard deviations of the scores of the experimental and control group individuals on understanding what is heard test.

The group	Number	Mean	Standard deviation
Experimental	30	16.27	1.84
Control	30	12.23	2.58

effectiveness of the active learning strategy in improving the acoustic awareness skills and understanding what is heard of the basic stage students in Jordan .

Research individuals

This research has been applied to a sample of 60 students from the basic third grade in Al-Ahnaf Ben Qais school in Amman, the school is purposefully selected because of the location near to the researcher, and its administration and teachers cooperation with the researcher. Two branches were randomly selected, one experimental and the other is control, each branch consisted of 30 students.

Research instruments

Referring to the theoretical literature and previous studies and the researcher experience, researcher developed two tests to measure the acoustic awareness skills and understanding what is heard skills.

Statistical treatment

The researcher used the relevant descriptive and analytical statistical methods available in (SPSS) program statistical package for social sciences to answer the research`s questions and testing its hypotheses which are:

1). Frequencies and percentages.
2). Means and standard deviations.
3). One way ANOVA.
4). Pearson correlation coefficient.
5). t-test.

RESULTS AND DISCUSSION

Results of each hypothesis

First hypothesis which states

There is no difference with statistically significance at level a=0.05 between the means of the study sample individuals in acoustic awareness skills attribute to the type of teaching strategy (Active learning / Normal). To answer this hypothesis, means and standard deviations were calculated for the individuals in the control and experimental group as shown in Table 1. It is clear from Table 1 that the mean of the experimental group

individuals reached 16.27 with standard deviation (1.84) and for the control group the mean reached 12.23 with standard deviation (2.58), to determine the difference between the means with statistically significance, t-test is performed for two independent samples as presented in Table 2. It is clear from Table 2 that (t) statistical value reached 4.04 which was significant at 0.05 level and less, and when reviewing the means, it became clear that the mean of the experimental group reached 16.27, while the mean of the control group individuals reached 12.23, this indicates that there is an effect of the experimental treatment in developing the level of understanding what is happened.

This can be explained that the students in the experimental group benefited from the new teaching strategy (active learning) which was considered as one of the newest strategies through employing a number of skills that help the students progress in the learning and transferring the effect of learning and acquiring the concepts facts and instructions. In a relevant way, this confirms the importance of employing new strategies which aim to help the students in increasing their achievement, and acquiring the ability to adjust with the science requirements, and developing their thinking to enable them to move to higher levels of learning compared to the individuals in the control group taught by the traditional method which did not improve their ability to increase achievement and developing their acoustic awareness skills. This result agrees with the result obtained by Farfoara (2008) study which showed the presence of effect of the educational strategy based on the active learning in the achievement of the individuals taught by this strategy and in favor of the experimental group, and differ with the results of Tuckman (2001) study that showed that the students statistically significance reduced regarding the active learning and the achievements they made.

Second hypothesis which states

There is no difference with statistically significance at significance (a=0.05) between the means of the research sample individuals in understanding what is heard test attributes to the teaching strategy(Active learning / Normal). To answer this hypothesis, means an standard deviations of the experimental and control groups

Table 2. T-test results of two independent samples for the difference between the control and experimental group individuals in the level of understanding what is heard.

T-value	Degree of freedom	Significance	Critical value
4.04	58	0.00	1.97

Table 3. Means and standard deviations of the scores of the individuals in the experimental and control groups on understanding what is heard test.

The group	Number	Mean	Standard deviation
Experimental	30	16.85	1.81
Control	30	11.43	1.49

Table 4. T-test results for two independent samples of the differences between the experimental and control group individuals in understanding what is heard.

T-value	Freedom degree	Significance	Critical value
11.20	58	0.00	1.97

individuals were calculated as shown in Table 3. Table 3 shows that the mean of the control group individuals reached 11.43 with standard deviation of 1.49, and the means of the experimental group individuals reached 16.85 and standard deviation (1.81), and to determine whether the difference between the means with statistically significance, t-test is performed for two independent samples, the results are shown in Table 4. It is clear from Table 4 that (t) statistical value reached 11.20 which is significant at level 0.05 and less, and when reviewing the means, it became clear that the mean of the experimental group is 16.84, while the mean of the control group reached 11.43, this indicates the presence of effect of the experimental treatment in developing understanding what is heard.

It is possible to explain that the students in the experimental group taught by the active learning strategy allowed them the active participation in the activities with the teacher directing them , and by active learning the students acquired new knowledge, this agrees with the concept inducing the knowledge as a necessary condition for learning, and by the active learning the learners reach meaningful resolutions to the problems and it is possible that the strategy help the students interact with all activities introduced inside the classroom compared to the traditional method based on dictation , and the role of the teacher will be limited . So, the effect of this strategy appeared to improve the level of understanding of what is heard in the experimental group compared to the control group. This result agrees with the result from Farfoara (2008) study which showed the presence of effect of the teaching strategy based on the active learning in achievement of the students who were taught by this

strategy and in favor of the experimental group, and differ from the result of Tuckman (2001) study that showed that the students statistical significance reduced regarding the active learning and the achievements they made.

RECOMMENDATIONS

In light of the research results, the researcher recommends the following:

1). Conducting workshops and training courses for the teachers to train them on the active learning strategies and on the other modern teaching strategies.
2). Motivating the teachers to increase the students participation in the educational process, and the need for the field visits by the supervisors.
3). Increasing the classroom interactions to develop the active learning in an active classroom environment.
4). Conducting other similar studies to investigate the effect of learning strategy in improving other linguistic skills.

Conflict of Interests

The author has not declared any conflict of interests.

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Appendix 1

Test of Understanding what is heard:
Name: **Time:**
School: **Date:**
Grade: Sixth Grade

Dear Student
Peace be upon you and God's mercy and Blessing
The test consists of five clauses; you are required to listen carefully to the text, and after that:
1. Reading the test clauses thoughtfully and deeply.
2. Answering the questions within the determinants of each question.
3. Reviewing the answer and be sure about its accuracy.

Thank you for cooperation

Researcher

Dear Student:

Listen to the text carefully then answer the following questions
"Mohammad and Samiya went to the zoo, they saw there the lions and the tigers, and another number of animals, an a group of birds, they were happy to see the animals and the birds, they gave the bird and the animals some food"
1. During the presence of Mohammad and Samiya in front of the lion cage, one of the children jumped to the cage what is the appropriate action?
2. Mohammad made his hand very close to the wild animals, what is your opinion about the behavior?
3. The writer described a number of wild animals, and he did not mention the names of other animals, in your opinion, what is the reason?
4. If you have the choice to go to the zoo or to the swimming pool what will you choose, why?
5. Try to find three relevant titles to the text?

Appendix 2

Acoustic Awareness Test
Name: **Time:**
School: **Date:**
Grade: Sixth Grade

Dear Student
Peace be upon you and God's mercy and Blessing

The test presented to you consists of five clauses; you are required to understand the text acoustically, then
1. Listen to the test clauses deeply and thoughtfully.
2. Answer the questions according to the determinants in each question.
3. Reviewing the answer and makes sure about it correctness.

Thank you for your cooperation

Researcher

Test Clauses

Dear Student:

Read the following text then select the correct answer:
Samira wrote: Dear teacher, we send you love and respect gratitude (   ) for your great and honest efforts, you have plated in us love of science and faith, honestly and order.

1- One of the following words forms a verb
a- wrote   b- Sameera   c- love

2- The relevant punctuation sign in the Bracket (   ) is:
a- Dot   b- Comma   c- Question mark   d- Dash

3- One of the following words is adjective
a- Trustworthy   b- Science   c- Planted

4- One of the following words indicates to the Ethics
a- teacher   b- Honesty   c- Running

5- One of the Following verbs is in the past tense
a- go   b- is going   c- went

Full Length Research Paper

Effect of Jigsaw II, reading-writing-presentation, and computer animations on the teaching of "Light" Unit

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The aim of this study is to determine the effect of Jigsaw II technique, reading-writing-presentation method, and computer animation on students' academic achievements, epistemological beliefs, attitudes towards science lesson, and the retention of knowledge in the "Light" unit covered in the 7th grade. The sample of the study consists of 71 seventh-grade students from two different middle schools located in Erzurum City (Turkey) in the 2013-2014 academic year. One of these schools was randomly determined as the Jigsaw II Group (JIIG) (n = 24). In this group, the Jigsaw II technique was used during the cooperative learning. Another school was taken as the Reading-Writing-Presentation Group (RWPG) (n=22). In this group, the reading-writing-presentation method was employed. The other school was appointed as the Animation Group (AG) (25). In this group, computer animations were used. Academic Achievement Test (AAT), Science Lesson Attitude Scale (SLAS), and Epistemological Belief Questionnaire (EBQ) were used for data collection. The data were evaluated by using descriptive statistics, ANOVA, and ANCOVA. According to the analyses results, the Jigsaw II technique and the reading-writing-presentation method are more effective than animations in terms of academic success and retention of knowledge, but the difference between the effectiveness of the reading-writing-presentation method and that of animations is not significant. The results also indicate that Jigsaw II and animations have more positive influences on epistemological beliefs when compared to the reading-writing-presentation method. Finally, they show that all the three methods and techniques used in the study are effective in creating positive attitudes towards the lesson among students, and the use of animations has more positive influences than others.

Key words: Cooperative learning model, Jigsaw II technique, reading-writing-presentation, computer animations, light unit, science and technology attitudes, epistemological belief.

INTRODUCTION

In this age, education is the only means of equipping people with competences that are compatible with the drastic changes and developments in the field of technology. Education is a phenomenon accompanying

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people throughout their lives and leads them to be productive and responsible. It is a factor directing the lives of societies (Gürdal et al., 1995). Science education plays an important role in education due to its contribution to the development of societies. Currently, science education aims at not only offering knowledge to students but also providing the society with individuals who interpret this knowledge, produce, explore, construct, think, criticize, create, are open to innovations, and constantly change themselves as social beings (Şimşek, 2005).

In this sense, we should not aim at making students memorize the scientific concepts in the science lesson. Instead, the abstract concepts covered in the lesson should be concretized via technological developments; students should be encouraged to conduct studies in basic research; attitudes towards science lessons should be improved positively; thinking skills should be developed by teaching how to learn; and active participation of students in the educational environment should be supported (Gök et al., 2012). Such an educational process is possible only after educators determine the teaching method that will raise the learning process at the highest level and undertake the responsibility to employ this method (Şimşek, 2005).

At the present study, the science lessons are taught through the methods and techniques that are familiar to teachers in most educational institutions. The methods and techniques employed by teachers are rather teacher-centered as it is the case with the traditional learning model. This learning model is a delicately-planned and ordered transfer process of the knowledge from the teacher to the students in a ready-to-take way. This model is widely used in schools for transferring knowledge, concepts, and principles and explaining generalizations. It requires teachers to be active while students are passive listeners (Bayrakçeken et al., 2012). In order to eliminate this problem and conduct an effective teaching process, it is necessary to select appropriate methods and techniques that fit the purpose of the lesson (Turgut and Gürbüz, 2011). These methods and techniques, putting a distance between educators and traditional sense of education, have an important role in providing students with permanent knowledge. Releasing the students from being passive and attributing active roles to them in the learning process will ensure this permanency. In other words, it requires preferring the practices which prioritize learning by doing and experience (Yiğit and Akdeniz, 2003). In addition, multiple learning environments should be created to benefit from the information technology, which can be quite useful for educational activities (Yılmaz, 2005).

Student-centered teaching methods allow students to make sense of new situations by using their experiences. Individuals actively participating in the learning process construct knowledge themselves (Çalışkan, 2005). In the active learning approach, students access the sources themselves while doing research, learn how to access information through different sources, organize and present pieces of information they collect, take and share responsibility individually and in group project works, and cooperate with each other through interaction to produce knowledge (Akar, 2012). In this learning approach, the methods and techniques that are in use are project-based learning, problem-based learning, inquiry-based learning, computer animation techniques, and cooperative learning model (Colburn, 2004; Doymuş, 2008).

One commonly used model of active learning approach to cooperative learning model is known as "Cooperative Learning, Work Group, Collaborative Learning, Peer Learning, Peer Teaching, Team Learning, Team Work, Collective Learning, Learning Communities, Reciprocal Learning, Study Circles and Study Group" (Kardaş, 2015). Cooperative learning is not just a group of students sitting together and studying separately or a student's doing the whole work unaided. It is clear that splitting students into groups and expecting them to study together will not improve learning or collaboration. It is necessary for the sake of effective implication of the technique that students are motivated to study together (Gelici and Bilgin, 2011).

Being one of the methods and techniques of cooperative learning model, the Jigsaw method is used frequently. Employment of this method initially started with a study in which many educators from various branches participated (Aronson, 1978). Afterwards, the forms of practice of the Jigsaw method gained variety following the studies conducted by researchers. Literature contains techniques such as Jigsaw II, III, IV, reverse Jigsaw, and subject Jigsaw (Doymuş, 2008; Slavin, 1986; Hedeen, 2003; Doymuş, 2007). The fundamentals of Jigsaw techniques are the same, but it is possible to come across certain varieties in terms of practice.

The Jigsaw method has four main phases in practice. The introduction phase involves making heterogeneous groups in the class by the researcher. Afterwards, the researcher introduces the material or unit that is going to be studied by the students. She helps them understand what they are going to engage in. Later, the researcher assigns a piece of the material or unit to each of the students in the original groups. Expert group formation process involves bringing the students taking the same part of the material or unit into a single group. These are called expert Jigsaw groups. These expert groups prepare for their subjects with their peers that study the same subject as a group. In the reformation and report phase, the students from the expert groups return to their original groups and try to teach the part of the unit they have studied to their peers. The completion and evaluation phase may involve designing an activity to combine the learning process conducted by the students either individually or in groups. The evaluation phase involves employing assessments that are used for

cooperative learning model, which is followed by the completion of the process (Doymuş, 2008; Artut, Tarim, 2007; Eilks, 2005; Lai, Wu, 2006; Tamah, 2007; Shaaban, 2006). The difference in the implementation process of the Jigsaw II technique, which is one of the Jigsaw methods and employed in this study, is that expert groups take a proficiency exam before returning to their original groups in relation to the subject they have studied. As mentioned before, the Jigsaw II technique was employed to teach many units and yielded positive results (Şimşek, 2012; Doymuş, 2007). However, though there are studies on how this technique influences the epistemological beliefs of students in the field of social studies, there are only few studies dwelling on the practice of this technique in the science lessons in Turkey.

Another method employed in this study is the reading-writing-presentation method, which has been frequently employed in recent years and is one of the methods of cooperative learning model. This method aims at making students read individually and in group from various sources, have positive dependence, construct new knowledge over their existing knowledge, and improve their social and psychological skills. The method consists of three main phases. The reading phase is for students to increase their skills of constructing new knowledge through reading. The task assigned to the students in the reading phase (that is, reading the given texts) is for prolonging the duration students spend in thinking (White and Gustone, 1989; Yıldız, 2008; Cited in: Aksoy, 2011). The writing phase is a very important phase for students to understand, organize, and express what they have learnt. The main purpose of the writing phase is to make group members create a common group product by writing what they have learnt altogether, reach a consensus, and learn to listen to each other. The implementation process should involve creation of appropriate environments for students to conduct activities in all the classes and allow group members to carry out their own works. During the classes, teachers should systematically observe all the elements from small group skills and inter-personal communication to academic progress and inter-group communication. Students' behaviors such as contributions to each other's ideas, encouraging their friends, checking their learning, and contributions to group management should be monitored, and group performances should be determined (Goltz et al., 2008).

The third instruction technique employed in this study is the computer animations technique. This technique undertakes various roles in instruction. Certain studies point to three characteristics of animations. These are pictures, demonstration of certain movements, and simulation (similarity-animation). According to another definition, it refers to the demonstration of a series of images and pictures rapidly on the screen; demonstration of motionless and different pictures that are drawn either

manually or with computer assistance in a certain order through a mechanical device; and animation of the reality and imaginary with motion (Kurt, 2006; Pekdağ, 2005). Computer animation refers to the creation of visual effects by means of graphical tools, the demonstration of a series of images and pictures rapidly on the screen, and the creation of motion graphics, pictures, or images through various computer software (Arıcı and Dalkılıç, 2006; Emrahoğlu and Bülbül; 2010; Tezcan and Yılmaz, 2003). Thanks to these characteristics, animation use has many benefits such as embellishment, getting attention, ensuring motivation, classification of complex information and events, increasing permanency, offering an effective learning by addressing to both the eye and the ear, and so on (Tezcan and Yılmaz, 2003; Arıcı and Dalkılıç, 2006). In addition, the use of computer animations is an effective method to eliminate the misconceptions of students (Yakışan et al., 2009). Worksheets that are prepared in computers are important because they reduce the cost, save time, and prevent potential accidents by offering a reliable environment of experimentation (Saka and Yılmaz, 2005). Animations help students develop creative ideas, pay attention to possibilities, and make attempts regarding various issues. Thus, they both provide interactive learning environment and offer individual instruction (Arıcı et al., 2006; Powell et al., 2003). Animations can be useful tools for science-technology education because some of the events covered in the science lessons are impossible to observe and hard to imagine (Burke et al., 1998; Sanger and Greenbowe, 1999). It is stated that the methods and techniques that are used to equip students with terminal behaviors in learning-teaching environments are extensively influential on epistemological beliefs, which are considered an area of individual differences, as well as learning and teaching processes (Cevizci, 2005; Öngen, 2003; Deryakulu and Büyüköztürk, 2005; Deryakulu, 2006; Muis, 2004). Based on the assumption that attitudes can be changed, making students more effective "learners" may give birth to more qualified learning processes. In this way, students' academic achievements may be influenced positively, and more importantly, students may become more competent in life-long learning, which may bring success in various phases of their lives (Karhan, 2007). In this sense, this study focuses on how the epistemological beliefs of middle school students, the adults of the future, are influenced and changed by the active learning methods and techniques that are employed in the education-teaching process.

The purpose of this study is to reveal the influence of the Jigsaw II technique, reading-writing-presentation method, and computer animations technique, which are among active learning methods and techniques, on students' academic achievements, epistemological beliefs, attitudes towards the science lessons, and the permanence of their academic achievements within the

Table 1. The research design.

Groups	Pretests	Experiments	Posttests
JIIG	AAT, SLAS, EBQ	Jigsaw II techniques	AAT, SLAS, EBQ, AAT -permanence
RWPG	AAT, SLAS, EBQ	Reading-Writing-Presentation method	AAT, SLAS, EBQ, AAT - permanence
AG	AAT, SLAS, EBQ	Computer Animations	AAT, SLAS, EBQ, AAT - permanence

framework of the "Light" unit covered in the seventh grade. To this end, the sub-problems below were tried to be answered in this study.

1. Is there a statistically significant difference between the academic achievements of the students who were instructed via the Jigsaw II technique, the reading-writing-presentation method, and the computer animations technique?

2. Is there a statistically significant difference between the epistemological beliefs of the students who were instructed via the Jigsaw II technique, the reading-writing-presentation method, and the computer animations technique?

3. Is there a statistically significant difference between the attitudes towards the science lesson of the students who were instructed via the Jigsaw II technique, the reading-writing-presentation method, and the computer animations technique?

4. Is there a statistically significant difference between the permanence of knowledge of the students who were instructed via the Jigsaw II technique, the reading-writing-presentation method, and the computer animations technique?

METHODS

This section deals with the research model employed, research sample, the data collection tools used, and the instructional processes implemented.

Research model

This study employed the reading-writing-presentation method, Jigsaw II technique, and computer animations, which are among the methods of cooperative learning model, to reveal their influences on the students' academic achievements, permanence of knowledge, epistemological beliefs, and attitudes towards the science lesson. Quasi-experimental design with randomly selected pretest posttest comparison groups was employed. In this design, the classes are included in the research as they are for an educational purpose. This design is used when the sample cannot be selected equally (Karasar 2005; McMillan and Schumacher, 2010). The research design is given in Table 1.

Study group

The study group includes 71 seventh grade students attending 3 different middle schools affiliated with the Ministry of National Education of the Republic of Turkey in the 2013-2014 academic year. Randomly, one of the schools was selected for the Jigsaw II

technique (JIIG) (n=24); another was selected for the reading-writing-presentation method (RWPG) (n=22); and the last one was selected for computer animations (AG) (n=25).

Data collection tools

Data collection tools are as follows:

1. Academic Achievement Test (AAT)
2. Epistemological Beliefs Questionnaire (EBQ)
3. Science Lesson Attitude Scale (SLAS)

Academic achievement test *(AAT)*

AAT was prepared by the researchers in a way covering all the acquisitions of the "Light" Unit for the seventh graders. The table of specifications was prepared to ensure the validity of the test. This table was submitted to the faculty members of the Department of Primary Education Division of Science Education. Taking into account experts' views, necessary corrections that were made on the questions of AAT. For reliability calculations, the test was administered to 152 eighth grade students who had studied this unit before. Based on the obtained data, the questions decreasing the reliability of the test were excluded. The test containing 40 multiple choice questions was finalized. Reliability coefficient (Cronbach's alpha) of AAT was found to be α=0.78. The test was rated in such a way that each correct answer gets 2.5 points while incorrect or blank answers get 0 point.

Epistemological belief questionnaire (EBQ)

EBQ was developed by Conley et al. (2004). It is a self-reporting questionnaire. Students' answers are taken in a five-point Likert-type scale. The original questionnaire consists of 26 items. After being translated into Turkish language by Özkan (2008), it was administered to a group of primary school students to test the clarity and meaningfulness of the items. Following this implementation process, 2 items having negative correlations were excluded from the questionnaire. In the end, the questionnaire became ready to be used in Turkey. The final EBQ includes 15 positive and 9 negative items (that is, a total of 24 items). The Cronbach's alpha coefficient of the questionnaire was found to be 0.76. The students responded to the items marking the rates "I strongly agree", "I agree", "I am neutral", "I disagree", and "I strongly disagree". The analysis of the questionnaire statements is based on the following scoring: "I strongly agree" corresponds to 5 points and "I agree" corresponds to 4 points for positive statements in a descending order whereas "I strongly agree" corresponds to 1 point and "I agree" corresponds to 2 points for negative statements in an ascending order. The statement "I am neutral" corresponds to 3 points for both positive and negative statements.

Science lesson attitude scale (SLAS)

SLAS was developed by Geban et al. (1994). It is a 5-point Likert

type scale with a Cronbach's alpha reliability coefficient of 0.83. This scale consists of 15 items, 10 of which are positive while 5 are negative. These items are for revealing the attitudes towards the science lesson. The students responded to these items by marking the options I strongly agree, I agree, I am neutral, I disagree, and I strongly disagree. The analysis of the questionnaire statements is based on the following scoring: "I strongly agree" corresponds to 5 points and "I agree" corresponds to 4 points for positive statements in a descending order whereas "I strongly agree" corresponds to 1 point and "I agree" corresponds to 2 points for negative statements in an ascending order. The statement "I am neutral" corresponds to 3 points for both positive and negative statements (Balcı, 2009).

Experiment

The study was conducted with three groups. One of the groups was instructed via the Jigsaw II technique (JIIG). Another group was instructed via the reading-writing-presentation method (RWPG). The last group was instructed via computer animations (AG). Prior to the experiments, AAT, EBQ, and SLAS were administered to these groups as pretest to reveal their prior knowledge of the "Light" unit, epistemological beliefs, and attitudes towards the science lesson. Following the pretests, the instruction was completed in 5 weeks with 4 h per week as planned by the researchers. After the completion of the instruction, the same tests were administered to the groups as posttest. Apart from these, AAT-permanence was administered to the groups two months later following the completion of the instruction in order to reveal the permanence of the knowledge regarding the "Light" unit.

Instruction via the Jigsaw II technique

Before starting the implementation of the Jigsaw II technique, the students were informed by the researcher about the way the technique would be applied. The "Light" unit, which was intended to be taught, was divided into four sub-titles: Absorption of Light, Seeing Objects Colorful, Refraction of Light, and Lenses. Taking pretest scores and gender into account, groups were formed in such a way that they would be heterogeneous within themselves and homogeneity would be ensured between them in general as they had the same structure. The class was divided into 5 original groups (4 groups consisting of 4 members and another group consisting of 5 members). The groups were asked to elect a group leader within themselves. They were also requested to assign a name to themselves.

Each group member was assigned a subject with a sub-title to do research about their original groups. After a week of research and study about their subjects, expert Jigsaw groups, consisting of the students who had been assigned the same subject from all groups, were formed. The students continued their studies in the expert Jigsaw groups for another week and prepared a report to bring back to their original groups. After the completion of the studies in the expert groups, the students took an exam and returned to their original groups. Every student returning to their original groups explained their area of expertise to their peers in their original group for two weeks. Then they prepared a common group report. In the last week, the groups made their presentations. In this way, the instruction of the unit was completed.

Instruction via the reading-writing-presentation method

Before starting the implementation of the reading-writing-presentation method, the students were informed by the researcher about the way the method would be applied. Taking pretest scores and gender into account, groups were formed in such a way that

they would be heterogeneous within themselves and homogeneity would be ensured between them in general as they had the same structure. The class was divided into 3 original groups (1group consisting of 4 members and 2 groups consisting of 5 members). The groups were asked to elect a group leader within themselves. They were also requested to assign a name to themselves. For 2 h, the students in the groups read various sources brought by each student regarding the first sub-title of the "Light" unit, which had been divided into four sub-titles. Afterwards, the groups that completed reading phase put away all the sources they read and prepared a report of what they learnt in 2 h. After the reports were evaluated by the researcher, the groups that got low scores were re-directed to the reading phase while those who got high scores passed on to the next phase: presentation. During the presentation, which took 1 h, the presenting group was asked questions by the other groups. As a result, the deficiencies detected by the researcher and peers were eliminated, and the necessary corrections were made. At this point, when there was not enough time to allocate for the presentation of each group, the groups to present was selected by drawing. This was repeated for the other sub-titles of the unit as well. In this way, the implementation process was completed.

Instruction via computer animations

In the class where computer animations were employed, the teacher initially asked the students to do research about the acquisitions of the unit by using relevant sources and their books and be prepared for the lesson. The teacher asked questions to the students regarding these acquisitions and created a discussion environment. Afterwards, the teacher employed 40 animations obtained from http://www.vitaminegitim.com website regarding the activities to be conducted while instructing the unit. In the beginning, the animations were played for 5 min without any students' or teachers' comments. Then these animations were played twice for the students. The students were asked to express their opinions about these animations. After the students expressed their views, the animations were played for a third time with the relevant explanations made by the teacher. After the explanations were made, animations were re-played when necessary and when certain deficiencies were detected among the students. Also, relevant explanations were repeated.

FINDINGS

Table 2 shows descriptive statistics results of the data obtained from AAT administered as a pretest before the instruction in order to reveal the students' prior knowledge.

Table 2 shows that the JIIG students got a higher mean score from pre-AAT compared to the RWPG students while the RWPG students got a higher mean score compared to the AG students. One-way analysis of variance (ANOVA) was carried out to see whether the difference was statistically significant. Analysis results are shown in Table 3.

Table 3 shows that ANOVA results regarding pre-AAT indicate no statistically significant difference between the groups in terms of prior knowledge [$F_{(2, 68)}$ =0,996; p>0, 05]. These values show that all the groups had similar prior knowledge regarding the "Light" unit. Table 4 shows descriptive statistics results of the data obtained from

Table 2. preAAT Descriptive statistics results.

Groups	N	X	SS
JIIG	24	39.0	11.48
RWPG	22	37.0	5.14
AG	25	35.2	10.26

Table 3. ANOVA results regarding pre-AAT.

Groups	Sum of squares	SD	Mean square	F	p
Inter-groups	179.038	2	89.519	0.996	0.375
Intra-groups	6112.737	68	89.893		
Total	6291.775	70			

Table 4. post-AAT descriptive statistics results.

Groups	N	X	SS
JIIG	24	78.0	11.34
RWPG	22	71.9	11.25
AG	25	67.4	9.31

Table 5. ANOVA Results of post-AAT.

Groups	Sum of squares	SD	Mean square	F	p	LSD
Inter-groups	1371.871	2	685.936	6.057	0.004	JIIG-AG
Intra-groups	7700.227	68	113.239			
Total	9072.099	70				

AAT administered as a posttest in order to reveal the influences of the methods on academic achievement.

Table 4 shows that the mean scores of the RWPG and AG students were lower than the JIIG students in post-AAT. One-way analysis of variance (ANOVA) was carried out to see whether the difference was statistically significant. Table 5 shows the analysis results.

ANOVA results regarding post-AAT shown in Table 5 indicate statistically significant differences between the academic achievements of the JIIG, RWPG, and AG students in terms of the "Light" unit covered in the science lesson [$F_{(2,68)}$ =6.057; p<0.05]. LSD, which is a multiple comparison test, was employed to reveal the groups such differences were in favor of. The results obtained from this test indicate that the academic achievements of the JIIG students were significantly higher than those of the AG students within the scope of the "Light" unit while the academic achievements of the RWPG students were lower than those of the JIIG students and higher than those of the AG students. However, these differences were not significant.

Table 6 shows the descriptive statistics results of the data obtained from EBQ administered as a pretest to reveal the students' levels of epistemological beliefs.

Table 6 shows that the JIIG students got lower mean score from pre-EBQ compared to the RWPG and AG students. One-way analysis of variance (ANOVA) was carried out to see whether the difference was statistically significant. The analysis results are given in Table 7.

ANOVA results regarding pre-EBQ shown in Table 7 indicate statistically significant differences between the epistemological beliefs of the JIIG, RWPG, and AG students prior to the instruction [$F_{(2, 68)}$ =5.516; p<0.05]. Games-Howell, which is a multiple comparison test, was employed to reveal to the groups these differences were in favor of. The relevant results indicate that there was no difference between the epistemological beliefs of the RWPG and AG students while the JIIG students clearly had more negative epistemological beliefs compared to these groups.

Posttests were subjected to ANCOVA through covariation of the effect of the pretest on the posttest in

Table 6. Descriptive statistics results of pre-EBQ.

Groups	N	X	SS
JIIG	24	60.4	18.38
RWPG	22	72.4	8.51
AG	25	71.5	12.68

Table 7. ANOVA Results of pre-EBQ.

Groups	Sum of squares	SD	Mean square	F	p	Games-Howell
Inter-groups	2132.760	2	1066.380	5.516	0.006	OYUG-JIIG, AG-JIIG
Intra-groups	13147.183	68	193.341			
Total	15279.944	70				

Table 8. Descriptive statistics results of post-EBQ.

Groups	N	X	SS
JIIG	24	88.2	13.92
RWPG	22	70.5	9.58
AG	25	85.6	13.27

Table 9. The ANCOVA results of post-EBQ.

Source	Sum of squares	SD	Mean square	F	p	LSD
Pre-EBQ	1824.704	1	1824.704	13.916	0.001	
Groups	5427.767	2	2713.884	20.698	0.001	JIIG-OYUG, AG-OYUG
Error	8785.056	67	131.120			
CORRECTED Total	14785.972	70				

order to reveal which one among the RWA method, Jigsaw II technique, and computer animations was more influential on the students' epistemological beliefs. Descriptive statistics regarding the posttest scores were calculated. The results are given in Tables 8 and 9.

Table 8 shows that the mean scores of the JIIG and AG students got from post-EBQ were higher than the mean score got by the RWPG students.

Analysis results in Table 9 show that there are significant differences between the mean scores of the JIIG, RWPG, and AG students obtained from post-EBQ [$F_{(2,67)}$= 20.698; p<0.05]. LSD was employed to reveal the groups between which such differences existed. LSD results indicate that there was no difference between the epistemological beliefs of the JIIG and AG students. However, significant differences were detected between these groups of students and the RWPG students in terms of epistemological beliefs. These differences were in favor of the JIIG and AG students. Table 10 shows descriptive statistics results of the data obtained from

SLAS administered as a pretest to reveal the students' attitudes towards the science lesson. Table 10 shows that the mean scores of the JIIG and RWPG students got from pre-SLAS were higher than the mean score of the AG students. One-way analysis of variance (ANOVA) was carried out to see whether the difference was statistically significant. The analysis results are given in Table 11. ANOVA results regarding pre-SLAS shown in the Table 11 indicate that there are significant differences between the attitudes of the JIIG, RWPG, and AG students towards the science lesson [$F_{(2, 68)}$ =4.121; p<0.05]. Games-Howell, which is a multiple comparison test, was employed to reveal the groups such differences were in favor of. The results indicate that there was a significant difference between the attitudes of the JIIG students and RWPG students towards the science lesson on behalf of the JIIG students while no significant difference was detected with the AG students. In addition, no significant difference was detected between the AG students and the other two groups' students in that matter.

Table 10. Descriptive statistics results of pre-SLAS.

Groups	N	X	SS
JIIG	24	55.6	5.21
RWPG	22	48.5	10.16
AG	25	53.4	9.61

Table 11. ANOVA results of pre-SLAS.

Source	Sum of squares	SD	Mean Square	F	p	Games-Howell
Inter-groups	606.912	2	303.456	4.121	0.020	JIIG-OYUG
Intra-groups	5007.285	68	73.637			
Total	5614.197	70				

Table 12. Descriptive statistics results of post-SLAS.

Groups	N	X	SS
JIIG	24	61.0	7.79
RWPG	22	56.4	6.56
AG	25	67.7	4.64

Table 13. ANCOVA results of post-SLAS.

Source	Sum of squares	SD	Mean square	F	P	LSD
Pre-SLAS	45.610	1	45.610	1.103	0.297	
Groups	1362.417	2	681.209	16.475	0.001	AG-JIIG, AG-OYUG
Error	2770.243	67	41.347			
Corrected total	4320,873	70				

Posttests were subjected to ANCOVA through covariation of the effect of the pretest on the posttest in order to reveal which one among the RWA method, Jigsaw II technique, and computer animations was more influential on the students' attitudes towards the science lesson. Descriptive statistics regarding the posttest scores were calculated. The results are given in Tables 12 and 13.

Table 12 shows that the mean score of the RWPG students got from post-SLAS were lower than those of the JIIG and AG students. The results from Table 13 indicate significant differences between the mean scores of the JIIG, RWPG, and AG students in post-SLAS [$F_{(2, 67)}$ = 16.475; p<0.05]. LSD was employed to reveal the groups between which such differences existed. The relevant results show that more statistically significant positive developments occurred in the attitudes of the AG students towards the science lesson compared to both the JIIG students and RWPG students.

Table 14 shows that the mean score of the JIIG students got from AAT-permanence of knowledge was higher than the RWPG and AG students' mean scores. One-way analysis of variance (ANOVA) was carried out to see whether the difference was statistically significant. The analysis results are given in Table 15.

ANOVA results shown in the Table 15 indicate that there were statistically significant differences between the achievements of the JIIG, RWPG, and AG students in AAT-permanence [$F_{(2, 68)}$=19.093; p<0.05]. LSD, which is a multiple comparison test, was employed to reveal the groups between which such differences were in favor of. The results obtained from this test indicate that the JIIG students were statistically significantly more successful than both the AG students and the RWPG students.

CONCLUSION AND RECOMMENDATIONS

This section presents the results of the study conducted to reveal the influence of the Jigsaw II technique, reading-writing-presentation method, and computer animations on students' academic achievements,

Table 14. Descriptive Statistics Results of AAT-permanence.

Groups	N	X	SS
JIIG	24	76.2	9.32
RWPG	22	65.5	7.44
AG	25	61.7	10.22

Table 15. ANOVA results regarding AAT-permanence.

Groups	Sum of squares	SD	Mean square	F	p	LSD
Inter-groups	3181,239	2	1590,619	19.093	0.001	JIIG-OYUG, JIIG-AG
Intra-groups	5664,958	68	83,308			
Total	8846,197	70				

epistemological beliefs, attitudes towards the science lesson, and permanence of knowledge within the scope of the "Light" unit covered in the 7th grade science lesson and recommendations for future studies. Among the methods and techniques employed in the study, Jigsaw II and reading-writing-presentation were seen to be more influential on academic achievement and permanence of knowledge compared to computer animations. However, the difference between the influences of reading-writing-presentation and computer animations was not significant (Tables 4 and 5). It is possible to say that all the methods and techniques employed in the study ensured the permanence of knowledge. However, Jigsaw II technique was more influential than others (Tables 14 and 15).The reason underlying this result may be students teach the topics they specialize each other, the Jigsaw method direct them to cooperation, they explain their ideas in a relaxed atmosphere while application of Jigsaw method, so learning process are more productive. These results are consistent with the results of the previous studies asserting that cooperative learning model plays an effective role in transforming knowledge into terminal behaviors, improving students' motivations and skills, facilitating the comprehension of subjects that are difficult to understand, and making the knowledge permanent by keeping students active, ensuring personal participation of students in the activities, and making students understand subjects better (Ghaith and El-Malak, 2004; Aladejana and Aderibigbe, 2007; Artut and Tarim, 2007; Doymuş, 2007; McKee et al. ,2007, Maceiras et al., 2009; Aksoy and Doymuş, 2011; Sancı and Kılıç, 2011; Zacharia et al., 2011; Akçay et al., 2012; Demir, 2012; Akkuş, 2013; Aksoy, 2013; Aksoy and Gürbüz, 2013; Evcim and İpek, 2013; Fırat, 2014; Çalıklar, 2015; Kardaş and Cemal, 2015; Şahin, 2011; Kardaş, 2013 b; Kardaş, 2015 a; Kardaş, 2014; Kardaş, 2013a; Kardaş, 2013c; Şahin et al., 2011; Kardaş, 2013 d; Maden et al., 2011). The effectiveness of the Jigsaw technique is supported by other studies as well (Özdilek et al., 2010; Koç, 2013;

Kılınç and GüvenYıldırım, 2015; Aydın and Kömürkaraoğlu, 2016; Şahin, 2011 a; Maden, 2011a; Şahin, 2010 a; Maden, 2010; Avşar and Alkış, 2007; Yapıcı et al., 2010).

There were differences between the results of the Epistemological Beliefs Questionnaire administered before and after the instruction in the group instructed via the Jigsaw II technique and the group instructed via computer animations. However, no difference was detected in the group instructed via the reading-writing-presentation method. Hence, it is possible to say that the Jigsaw II technique and the use of animations had a more positive influence than the reading-writing-presentation method (Tables 8 and 9). It is obvious that thanks to the contribution of the Jigsaw II technique and use of animations, the students realized that the only source of knowledge is not the teacher or the book. They became aware of the fact that it is possible to access knowledge through various sources. They also recognized that the correctness of knowledge is testable. All of these made a positive influence on their epistemological beliefs. There are studies in the literature reporting that active learning methods and techniques have significant influences on the epistemological beliefs of students (Conley et al., 2004; Özkan, 2008; Kaynar et al., 2009; Kızılgüneş et al., 2009; Boz et al., 2011; Fırat, 2014; Çalıklar, 2015). It is possible that the reading-writing-presentation method was not influential on the students' epistemological beliefs because they had difficulty in working in group in the reading and writing phases and had a tendency to work individually. There were differences between the results of the Science Lesson Attitude Scale administered before and after the instruction in all the three groups. Hence, it is possible to say that all the methods were effective in creating positive attitudes towards the science lesson among the students. However, the use of animations was seen to be more effective in this matter (Tables 12 and 13). This may be because animations addressed both visual and

auditory senses, created pleasure among the students to follow the instruction, enhanced motivation, and increase the interest in the lesson. Taking the results into account, it is possible to say that active learning methods and techniques can be employed for other subjects and units as well. In this way, learning can become more effective and permanent. In addition, students' epistemological beliefs and attitudes towards lessons can be improved. Moreover, if other active learning methods and techniques are applied for other units and subjects of the science lesson in future studies, beneficial results may be obtained.

Conflict of Interests

The authors have not declared any conflict of interests.

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Educational Research and Reviews

Full Length Research Paper

Opinions and perceptions of physical education students about value education

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Values make people live together and have common grounds. Value education, which starts in the family are, shaped by the environment that children live in. After children start school, they being to learn value education. School inculcates the values adopted by the community to the children. The most important executor of value is the teacher. If teachers have good values and are well informed about values, they can teach children in a better way. Children see their teachers as a role model and they behave like them. To students, teachers are excellent and qualified people. This study was performed to obtain the viewpoint of Physical Education Department students studying value education. This research is screening model and thus descriptive. The sample of the research is composed of 158 Physical Education Department students. In the result of the research, the students stated that they have enough information about values education. Teachers should be the role model in value education, and it should be taught as a course in universities

Key words: Education of values, physical education, physical education and values.

INTRODUCTION

The purpose of education and teaching is to raise people that can adapt to the society and who have quality that others can trust. In the globalized world, it is necessary to move round the world, and grown individuals should be able to live anywhere in the world. "In the globalization process and its resultant economic, social, technological changes and development, the major goal is to create individuals who can cooperate with others; citizens who are active, participative, responsible and outgoing " (Narin, 2007). Based on this, the most important factor should be giving of values in the upbringing of individuals. According to Çengelci (2010), values are the principle,

standard and thoughts that symbolize desired qualities such as good, right, beauty that are guide to human behaviours. According to Halstead and Taylor (1996), values are the standard of principle, belief, idea and living that create our personal integrity; guide our assessments related to various beliefs and actions; affect our decisions on any issue; and shape our behaviours. If education priority is to prepare individuals in the society to have values, this purpose can be reached. Generally, our aims, expectations and beliefs constitute values (Raths et al., 1987). "Value education covers all of the activities applied in order to raise people with good behaviours

such as understanding of other persons, tolerating them and developing social sensibility" (Ekşi and Katılmış, 2011).

The peace of mind of a given people who live in a society is directly proportional to the importance they given value education. "In parallel with ignoring or preserving values in individuals, either values will get lost with time or they will continue to the next generation" (Akbaba, 2003). Unfortunately, the third page news lately in our country has shown that we lose our values day by day. According to Fitcher (1990), as a sociological mean, values are the means used to measure the importance of other socio-cultural elements and aims, behaviour models of group or society. "Today, while all things are in the rapid and periodic change, Turkish values have also taken this condition being a very critical situation" (Yel and Aladağ, 2012). Our attitudes and behaviours towards values have lost their sensitivity compared to the past. "Values affect the attitudes and behaviours of people; they play a significant role in determining their attitudes and behaviours" (Dilmaç, 2012).

Although learning starts from our mothers' womb, people cannot take the natural values that they have got. "Values that individuals have are developed in life because they are not natal features" (Gömleksiz and Cüro, 2011). People create their own sense of values based on the environment they live in and create their attitude of life accordingly. The family has a great impact in the formation of personality; thus family provides a particular value to children. After children start school, it replaces many works of the family. The first learning experiences that occur in the house provide support to learning attempts in the school, and it raises the chances of teachers to becoming successful in classroom applications" (Çelenk, 2003). Students consider their teachers as their idol by seeing them as a role model. Due to the nature and structure of physical education lessons, students are enchanted by physical education teachers. The physical education teachers who children see as role models show required model behaviour to children and provide attribution to their development.

Although education and training are the responsibility of teachers and the school, the family has more function and role to play in this matter than anyone else, because all kinds of education and training are acquired first from the family. First values are learnt from the family, and other values are acquired from institutions like school, peer group and society (Sapasağlam and Ömeroğlu, 2016). The values that are learnt from family are transferred by children to their social lives and school environment. Since education is continuous, values education continues in schools. Every course actually has national and global values in its own curriculum. The duty of teachers is to convey these completely and make sure that they are permanent in children. Values education constitutes a part of curriculum in different educational environments worldwide (Singh, 2011).

Values education can be considered as part of education. In this respect, all teachers must play their role and contribute their quota, because value education constitutes a significant part of life and this education should start at early age. It deals with many aspects such as honesty, mercy, loyalty, respect, trust and responsibility along with the character education of early childhood (Mei-Ju et al., 2014). Children who acquire these values at early age will become more healthy individuals. They will not experience difficulties in solving problems at their later age. Character education must meet the needs of early adolescence (8th and 9th grades) to strengthen social skills. Also, it will serve as a complementary factor for adolescents to embrace character education (Cheung and Lee, 2010). Youths should have skills in future, such as the ability to solve conflicts. Today's problems and living conditions are getting more difficult and require having sound personalities. The youths are increasingly under the impact of bullying, social problems, violence, disrespect and the world around them, while their parents and teachers are affected by new problems and pressures (Tillman, 2000). In order not to be overwhelmed by problems and to stay strong, behavioral and value education should be taken care of starting from early childhood.

Game is very important in all stages of education for children. A child is in his game age when he first starts school. Therefore, it is not true to convey the curriculum only to a child who is just in his game age. While game has such importance in the lives of children, physical education teachers and game classes are also of great importance. It is a big mistake to see game class as a means of keeping children busy and making use of spare time. Studies show that children learn a subject more easily and permanently when such subject is combined with game. Accordingly, physical education teachers should avoid seeing game as a sports activity only. Big contributions can be made for the development of children with activities and values that will be included in the game at every opportunity. Value education represents an ancient tradition known best for its focus on education as a moral enterprise, and hence requiring that it should be characterized by ethically positive relationships and discourse (Lovat, 2011).

METHODOLOGY

The purpose of the research

This study aims to determine the opinions of physical education department students about value education.

The research model

This research that determines the opinions of physical education

Table 1. Distributions of the personal information of the physical education students in the research.

Variable		Frequency (f)	Percentage
Gender	Male	73	46.2
	Female	85	53.8
Place of birth	Village	22	13.9
	County Town	37	23,4
	City Centre	99	62.7
General Academic grade point averages	2.50 and under	28	17.9
	2.51-3.00	52	33.3
	3.01-4.00	76	48.7

teacher candidates about value education of values is a screening model. Screening models are the research approaches used to describe a situation that exists in the past or currently (Karasar, 2009).

The universe and sample

Physical education teaching department students constitute the universe of the research. 158 physical education teaching department students studying in Fırat University Physical Education and Sports College constitute the sample of the research.

Data collection and analysis

The data were obtained applying the survey scale developed by Merter and Bozkurt (2014). Statistical package for social sciences (SPSS) is used for the analysis of data. "Arithmetic mean", "percentage" and "frequency" were used for the analysis of data obtained by the researcher. Students' opinions were tested to describe their response level from the variables based on the demographic data with the t-test independent groups.

RESULTS

Results and comments concerning the personal information of physical education students

Table 1 shows the personal information of the physical education students used in this study.

Distributions of the opinions of the physical education students about value education

In Table 2, the physical education teacher candidates "agree" with the following items thus:

"I have enough information about value education" (=3.85), "I have enough information about the methods and techniques used in value education" (=3.61), "The determinant of value education is the family " (=3.94), "The cooperation of school and family should be included in value education " (=4.00), "Value education should be seen as schools' main duty" (=3.71), "Value education is

important for academic achievement" (=4.02), "Teachers should be the role model in value education" (=3.94), "The most important issue is value education " (=3.81), "The media has a major impact on value education" (=3.79), "Value education should be done within the framework of certain plan and program in the schools" (=3.94), "Teachers should be models of value education " (=3.98), "Value education requires the cooperation of all units in the school" (=3.93), " Many of the social problems originate from insufficient implementation of value education " (=3.89), "Value education should be programmed and performed in parallel to today's technological developments" (=3.91), "Democratic class environment should primarily be created for value education " (=3.86), "Value education course should be included in the training faculties of undergraduate programs" (3.84), "Value education remains in the background according to the academic achievements of the schools" (=3.81), " The activities related to value education can be exercised to students in the physical education lesson." (=3.80), "Value education can be taught better with games in gym class." (=3.78), "I think that in schools, value education is not beneficial "(=3.60), "I am not good at value education" (=3.50). The students "partially agree" with the item, "sufficient study is done on value education in universities" (=3.31).

The earlier mentioned findings show that the physical education teachers stated that value education is not taught efficiently at schools. Also, prospective teachers said that graduate courses should be available in relevant universities on value education. Value education can be offered in a more effective and efficient way with the co-operation of the school, family and social environment. Therefore, teachers should be informed and have command of values at schools.

According to gender variable, comparison of opinions of physical education students who participated in the research

In Table 3, there is significant distinction in the analysis

Table 2. The opinions of physical education students concerning the education of values.

M	Opinions for education of values	N.	Participation rate (%)					$\overline{X}$	ss
			TA	IA	PA	DA	NA		
1	I have enough information about value education	158	3.8	0.6	27.2	43.0	25.3	3.85	0.93
2	Sufficient education on value education is given in universities	157	9.5	7.6	37.3	31.6	13.3	3.31	1.10
3	I have enough information about the methods and techniques used in value education	155	3.8	7.6	26.6	44.9	15.2	3.61	0.96
4	The determinant of value education is the family	155	1.9	5.1	19.0	43.0	29.1	3.94	0.93
5	The cooperation of school and family is needed in value education	155	1.3	3.8	16.5	47.5	27.8	4.00	0.85
6	Value education should be seen as the schools' main duty	153	2.5	10.1	22.8	41.8	22.2	3.71	1.00
7	Value education of values is important for academic achievement	157	2.5	5.1	15.8	38.6	36.1	4.02	0.98
8	Teachers should be the sample persons in value education	155	3.2	6.3	13.3	45.6	30.4	3.94	0.99
9	The most important issue is to value education	156	1.9	9.5	22.2	34.8	28.5	3.81	1.03
10	The media has a major impact on the value education	153	3.8	7.6	19.6	39.9	25.9	3.79	1.04
11	Value education should be done within the framework of certain plan and program in schools	153	1.3	4.4	20.3	46.2	27.2	3.94	0.87
12	Teachers should be model in value education	157	3.2	3.8	18.4	38.0	33.5	3.98	0.99
13	Value education requires the cooperation of all units in school	153	2.5	4.4	18.4	46.2	28.5	3.93	0.93
14	Many of social problems have been originated from insufficient implementation of value education	158	1.9	5.7	25.9	32.9	32.9	3.89	0.99
15	Value education should be programmed and performed in parallel to today's technological developments	157	2.5	4.4	17.7	48.7	25.9	3.91	0.91
16	Democratic class environment should primarily be created for value education	157	1.9	8.9	17.1	42.4	27,2	3.86	0.99
17	The lesson about value education should be included in the training faculties of undergraduate programs	154	1.3	7.6	17.7	46.8	22.2	3.84	0.91
18	Value education remains in the background according to the academic achievements in schools	151	1.9	7.6	22.8	43.0	24.7	3.81	0.95
19	The activities related to value education can be exercised to students in physical education lesson	158	1.3	9.5	20.3	44.3	23.4	3.80	0.95
20	Value education can be taught better with games in gym class	156	3.2	5.1	27.2	36.7	25.9	3.78	0.99
21	I think that in schools, value education is not beneficial	155	4.4	10.1	27.2	34.8	22.2	3.60	1.08
22	I know much about value education	156	5.1	12.0	27.2	39.2	16.5	3.50	1.06

TA: I Totally Agree, IA: I Agree, PA: Partially Agree, DA: I Disagree, NA: I never agree.

Table 3. According to gender variable, comparison of opinions of physical education students who participated in the research.

MN	Female			Male			t	p
	n	$\overline{X}$	ss	n	$\overline{X}$	ss		
2	72	3.20	1.22	85	3.41	0.99	1.152	0.251
13	73	3.86	1.03	85	4.00	0.84	0.917	0.360
17	70	3.81	1.06	81	3.87	0.76	0.416	0.678

*P<0.05.

Table 4. According to Academic Average, Comparison of Opinions of Physical Education Students who participated in the research.

MN	2.50 and under (a)		2.51-3.00 (b)		3.01-4.00 (c)		Variance		Difference groups (Scheffe)
	$\overline{X}$	S	$\overline{X}$	S	$\overline{X}$	S	F	p	
5	28	0.92	50	1.00	73	0.65	4.935	0.008	a-c, b-c
8	27	1.07	52	1.13	75	0.78	3.339	0.038	b-c

*P<0.05.

result based on gender variable on, "There is sufficient study on value education given in universities" (t=1,152; p<0.05). This opinion is accepted by the male teacher candidates (=3.41) more than the female teacher candidates (=3.20). There is significant distinction in the analysis result based on gender variable on "Value education requires the cooperation of all the units in school" (t=0,917; p<0.05). This opinion is accepted by the male teacher candidates (=4.00) more than the female teacher candidates (=3.86).

In Table 3, there is significant distinction in the analysis result based on gender variable on, "Value education should be included in the training faculties of undergraduate programs" (t=0,416; p<0.05). This opinion is accepted by the male teacher candidates (=3.87) more than the female teacher candidates (=3.81).

The findings shown above indicate that female teachers think that values education is not offered enough in universities. However, results show that male teachers state that such education is offered much in universities but think that a value education course must be made available in universities. From the results, it can be concluded that male candidate teachers are not sensitive, and do not care about value education.

According to academic average, comparison of opinions of physical education students who participated in the research

In the paired comparison, the scheffe test was applied primarily. In Table 4, there is significant distinction in the variance analysis based on academic average variables

on "The cooperation of school and family should be included in value education" (F=4,935; p<.05). It has been shown that the people whose academic average is 2.50 and under (=0.92) accepted more than the people whose academic average is between 3.01 to 4.00 (=0.65) that "Teachers should be the role models of value education." It has been shown that the people whose academic average is 2.51 to 3.00 (=1.00) accepted more than the people whose academic average is between 3.01 to 4.00 (=0.65) that "Teachers should be the sample persons in value education." There is significant distinction in the variance analysis result based on academic average variables on, "Teachers should be the sample persons of value education" (F=3,339; p<0.05). It has been shown that the people whose academic average is 2.51 to 3.00 (=41.13) accepted more than the people whose academic average is between 3.01 to 4.00 (=0.78) that "Teachers should be the sample persons in value education."

According to birthplace variable, comparison of opinions of physical education students who participated in the research

In the paired comparison, the scheffe test was applied primarily. In Table 5, there is significant distinction in the variance analysis result based on birth place variable on, "The most important issue is value education" (F=3,384; p<0.05). It has been shown that the people whose birthplace is town (=1.15) accepted more than the people whose birth place is village (=0.94) and city centre (=0.97) that "The most important issue is value education."

Table 5. According to birthplace variable, comparison of opinions of physical education students who participated in the research.

MN	Village (a)		County town (b)		City centre (c)		Variance		Difference groups (Scheffe)
	$\overline{X}$	S	$\overline{X}$	S	$\overline{X}$	S	F	p	
9	21	0.94	36	1.15	96	0.97	3.384	0.037	a-b, b-c
10	21	1.04	35	1.09	97	1.00	3.351	0.038	a-b, b-c
16	22	0.95	35	1.19	97	0.88	3.474	0.034	a-b, b-c

*P<0.05.

In Table 5, there is significant distinction in the variance analysis result based on birth place variable on, "The media has a major impact on value education" (F=3,351; p<0.05). It has been shown that the people whose birthplace is town (=1.09) accepted more than the people whose birth place is village (=1.04) and city (=1.00) that "The media has a major impact on value education."

In Table 5, there is significant distinction in the variance analysis result based on birth place variable on, "Democratic class environment should primarily be created for value education" (F=3,474; p<0.05). It has been shown that the people whose birthplace is county town (=1.19) accepted more than the people whose birth place is village (=0.95) and city (=0.88) that "Democratic class environment should primarily be created for value education."

Findings in Table 5 show that candidate teachers who were born in a town stated that the media has more influence on value education, compared to those who were born in a city and village. In fact, media is the most important factor in values education. With the development of technology, people are now acting and growing under the influence of media. The fact that such influence is accepted by candidates who were born in town is an indicator of that.

CONCLUSIONS AND RECOMMENDATIONS

In the study, the participants stated that they have enough information about value education. The researchers stated that the school should see value education as its main duty. They stated that teachers should be the role models in value education. The female researchers have argued that "Value education is not sufficiently taught in the universities" more than male researchers. The male teacher candidates have accepted that "value education lesson should be included in the universities" more than female teacher candidates. The participants whose academic average is high have accepted that "Teachers should be the sample person in value" more than the other participants whose academic average is low. The male teachers have accepted that "Value education requires the cooperation of all units in the school." more than female teachers.

SUGGESTIONS

1. Information on how to teach value education should be included in all of the academic programs.
2. Informative studies on the importance and role of teachers should be done in value education.
3. Excluding the education of national values strategy, value education should be planned and organised.
4. Researchers can do studies on the role of school in value education. Researchers can do studies on value education with games.

Conflict of interests

The authors have not declared any conflict of interests.

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Full Length Research Paper

Teaching rhetoric today: Ancient exercises for contemporary citizens

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Since July 2013, our research team has been working on a project that aims at re-introducing rhetorical exercises in Belgian secondary (high) schools and at studying their effects on the pupils. Our hypothesis is that the regular practice of rhetorical exercises, inspired by those practised in Antiquity, could stimulate skills like open-mindedness, flexibility, creativity, empathy, tolerance, and proudness, in a multicultural context. The experimental course is based on the principle of the "*dissoi logoi*" (twofold arguments), an exercise probably invented by the first Sophists, in order to suspend personal opinion during the exercise and to focus on technique and performance. The results of the experiments are very encouraging. After a couple of lessons the pupils were able to apply rhetorical notions in their compositions; they developed richer argumentations, by taking other points of view into account, and skills that, according to the teachers, improve their everyday life at school.

Key words: Rhetoric, practical reason, education, writing, citizenship.

INTRODUCTION

Three years ago, our research team, the GRAL (Groupe de recherche en Rhétorique et Argumentation Linguistique, led by Emmanuelle Danblon at the Université libre de Bruxelles), started an innovative project in Brussels, involving rhetorical exercises similar to those practiced during Antiquity. The aim is to test our fundamental hypothesis: a regular practice of rhetorical exercises such as those used in Antiquity can stimulate several skills like open-mindedness, curiosity, creativity, empathy, tolerance or proudness. In this paper, we would like to expose the roots of this project, its progress and our first promising results that seem to confirm this preliminary hypothesis. In the first part of this paper, we will expose the historical and societal background of

those exercises, and the reasons why they were reintegrated into classrooms. In the second part, the experimental procedure, the technical and theoretical framework of the exercises will be explained. Finally, in the third part, the first results and perspectives for the future will be shown.

METHODS

Historical background

The exercises we chose are inspired by the Greek and Latin rhetorical theories developed during Antiquity. They take their roots in the classical Athens (around the fifth century BC). During this

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period, the Greek city began one of the most important political upheavals in the occidental world: the establishment of democracy (Hansen, 1999). It is important to say that there were neither professional politicians nor professional lawyers at the time: every citizen (in other words, every free man born from Athenian parents) had to take part in the political and forensic assemblies. Not only had they to vote, but they also had to argue for their positions and to convince the assembly. In such a context, mastering speech and public speaking was crucial for the good execution of the institutions. Some specialists in these fields began to propose remunerated trainings. These specialists were called the Sophists, and the discipline they taught, rhetoric (Jaeger, 1944, vol. I; de Romilly, 1988; Kerferd, 1981; Hansen, 1999; Pernot, 2000: 21-45; 2014).

The context of its birth shows the strong links that bind rhetoric and equality. Unfortunately, we only have little information about the Sophists' practice but rhetoric quickly spread all over the Greek and Roman world. Many theoretical treatises were written and rhetoric was taught to every well-born man. The oldest and most important treatise was Aristotle's *Rhetoric* (for an introduction to Aristotle's *Rhetoric*, see Kennedy 1991), which had and still has an important influence on other rhetorical theories. Basically, Aristotelian rhetoric relies on a system of proofs: the extrinsic proofs are those that exist beyond the speech and that are not created by the orator (the testimonies or the laws, for example). The technical proofs are constructed through the speech:

1. The *ethos* is the proof based on the portrayal that the orator gives of himself or of another person.
2. The *pathos* is the proof based on emotions.
3. The *logos* is the proof based on logical reasoning and on the choice of relevant arguments.

This theoretical framework will guide us through the description of the experiment. Our information about the teaching of rhetoric in Classical Greece is deficient, but we have a good knowledge of the rhetorical training during the beginning of the Roman Empire (first centuries AD) from several and reliable sources. The rhetorical formation was based on both theory and practice. In addition to theoretical treatises, there are more practical manuals and indirect sources (letters, biographies, quotations, and so on). Also, there is some papyrological evidence (Cribiore, 2005; Sans and Vanthieghem, 2017), which shows us the everyday practice in rhetorical schools.

Rhetorical training in Greek and Roman antiquity

In the Greco-Roman world, rhetoric was the last step of the ancient educational system, except for students who chose to study a more specific course, like philosophy or medicine. Concretely speaking, the great majority of men from the higher parts of the society were trained by the rhetoric teacher, called the *rhetor*. This training prepared them for the public life. The first step was the so-called "*progymnamata*" (the preparatory exercises). This relatively homogenous set of exercises was organized so that the complexity would gradually increase, from small writing tasks to complex argumentative developments. Students began with imitating famous models and then, in a second time, gradually started to create their own compositions. Each exercise aimed at practicing a particular rhetorical skill. The complete list is too long to be exhaustively described here (for more details on *progymnasmata*, Pernot, 2000; Webb, 2001; Kennedy, 2003; for concrete examples of *progymnasmata*, also Gibson, 2008), so only two examples are given:

1. The *ethopoeia* is an exercise that involves imagining the speech that would pronounce a person in a specific context. *E. g.*: what would a mother say to her son who goes to war?
2. The *ekphrasis* is a vivid depiction that could provoke a specific emotion. *E.g.*: the description of a luxurious garden that could provoke a relieving emotion.

Due to these exercises, students were ready to go to the second step of their training: the declamations. Technically speaking, declamations were fictive speeches imagined by learners or professional rhetors (Bonner, 1949; Winterbottom, 1974, 1980; Russell, 1983), either for training or for entertaining (Pernot, 2000: 200-202; Sans, 2015). There were two kinds of declamations: the *suasoria*, in which an action is either recommended or misadvised and the *controversy*, a trial simulation based on the application of a given law to a specific case, in which the student had to imagine a speech either to accuse or to defend a person. Here is an example wrongly attributed to the Latin rhetor Quintilian:

"Cold water given to a stepson"

A man had a son. When he lost the boy's mother, he married another wife. The son fell gravely ill. Doctors were called and they said that he would die if he drank cold water. The stepmother gave him cold water. The youth died. The stepmother is accused of poisoning by her husband. (Ps-Quint., *Lesser Decl.*, 350; translated by Shachleton Bailey).

Even if it has often been ill conceived, this kind of exercise offers many advantages for rhetorical teaching. First, it represents a typical situation in which argumentation and rhetorical abilities are needed, and which immediately seems interesting and relevant to learners and stimulate them to produce arguments. Secondly, it can be interestingly adapted to a contemporary audience. Indeed, in Ancient treatises, this exercise was often used to illustrate and train the theory of "issues" (Russel, 1983; Berry and Heath, 1997; Heath, 1994; 1995, 1997; Sans, 2015): a theoretical system which permits the recognition of each type of issue and the main arguments available; the example quoted earlier, for instance, falls under the "definition" or "assimilation" issue, because the deed (giving water) does not exactly correspond to the charge (poisoning). New exercises, more appropriate for modern pupils, can then be created by applying the same principle.

Finally, if controversia was the crowning of the rhetorical *curriculum*, and the most complicated exercise of the training, it is still relevant from a pedagogical point of view to take it as a starting point. On the one hand, pupils feel more interested in the task, because it is a bigger challenge and on the other hand, as they have to accomplish the same kind of task through the year, their progression and the technical skills they acquire can be easily brought to light. This is because pupils have the feeling to progress and they get even more motivated. It is also interesting for the teacher; the complexity of the task allows him or her to approach various aspects of argumentation theories through one single exercise. Such exercise was taught during centuries in European universities and high schools. Still at the end of the nineteenth century, they disappeared from the teaching *curricula* (the word *Rhétorique* was erased from the French official teaching *curricula* in 1902; Douay-Soublin, 1999). Today, in Belgium, a formation to argumentation is proposed to pupils in the context of the French class at the end of the secondary school (Scheepers, 2013). But the content of this formation is not clearly defined and is often quite superficial. The bet of our research team is to reintegrate rhetorical exercises in the present day Belgian schools. We will now explain the reasons of this choice.

Why teaching rhetoric today?

Our teaching is based on quite a simple principle: learning rhetoric and casting a technical eye on argumentation neutralize the

opinions during the exercise. To do so, we take inspiration from the *dissoi logoi* (twofold arguments) invented by the first sophists, which consisted in arguing successively for two opposite points of view. In order to do so, the learner needs to leave aside his personal opinions in the frame of the exercise, to feel the plurality of possibilities and emotions connected to each point of view. Then, he has to find good solutions and arguments for each side. Besides, by composing their opponents' argumentation, the learners realise the reasonableness of the adverse position (Pearce, 1994; Levine Gera, 2000; Ferry and Sans 2015a: 98-100). We decided to combine this principle, which can potentially be applied to other ancient exercises, with the practice of the controversies.

Recent research in pedagogy and cognitive sciences show that practicing such exercises may be useful to develop some faculties, like open-mindedness, flexibility, creativity or empathy (Berthoz, 2004, 2010; Ferry, 2014; Ferry and Sans, 2015a). These abilities are important factors that can be used to develop tolerance towards others and in the conflict reduction (Tuller et al., 2015). This could be particularly helpful in a multicultural city like Brussels; where around 200 000 inhabitants of 163 different nationalities (Brussels authorities' official data's https://www.bruxelles.be/artdet.cfm/4389) live together. Still, even though the rhetorical exercises had already been studied from a theoretical point of view, in a university context, in order to achieve a better understanding of the theoretical treatises (especially Heath, 2007), the benefits of such a training on the cognitive and societal skills of teenagers, especially in a secondary school context, had never been concretely studied. That is why our research team decided three years ago to revive the practice of rhetorical exercises in secondary schools and university, in collaboration with schools, teachers and official authorities.

Rhetorical exercises in classrooms

In order to put our hypotheses to the test, we adapted different exercises based on the *controversies* and the *dissoi logoi* principle, and proposed them to pupils and students. These exercises allowed us to study the effects on the pupils' abilities from different points of view. Following the structure and the theoretical principles adopted by the ancient rhetors, it is possible to create new exercises based on actual trials or everyday life, school-related or not (Kock, 2012), like in the following examples:

"Bull's eye"

Rule: any aggression against another pupil or staff member may warrant expulsion

It was about 10:40 am when the young history teacher, who was hired this year, came to the schoolyard for surveillance. The pupils were playing basketball and the game seemed very tight. When the teacher turned his back, he was suddenly hit at the head by the ball, and lightly wounded. He easily identified the shooter: a gifted, but unruly pupil that he had punished many times for misbehaviour during his class. This time, the teacher accused him of aggression and demanded his expulsion.

"Superstitions"

Rule: I have the right to be respected by the other pupils and the pedagogical staff.

Elodie is a gifted and joyful girl, but she is also superstitious: never would she forget to check the horoscope, never would she stroke a black cat. Today, the horoscope is bad: Elodie has to pass an

important geometry test and has a bad feeling about it. On her way to the mathematics class, she discovers that a worker is repainting above the door and has put a ladder in front of it. All the pupils positioned their heads down and entered the class, but Elodie refused to move despite the teacher's repeated orders. The teacher expelled her from the class and gave her 0 for the test.

The data presented here are taken from the experiment led this year (2015 to 2016) with a group of twenty-five pupils aged fifteen in a Brussels school practicing positive discrimination, in the frame of the French class. Each exercise is written and filmed, so we can analyse the results very precisely. Our teaching program is built around two kinds of lessons or sessions (1h30, once a month). In the first session type, which was dedicated to the controversia, pupils were asked to work individually and argue freely, as good as they can, for both sides (prosecution and defence). The pupils presented their speeches before their classmates; we formed random pairs of pupils who took side by casting lot. Their classmates played the role of an audience but instead of voting with their own opinion, they were asked to evaluate the performance and strategy of both orators. This was possible due to the technical criteria they learned (for instance, does the orator seem truthful? Does his speech raise emotions? Are his arguments clear, original, relevant? How does he do that?). This creates a very dynamic and positive atmosphere where only performance counts.

This practical exercise constitutes the starting point of a more theoretical kind of lesson, where we draw pupils' attention on various technical aspects of argumentation from to their own compositions. More technical or problematic points are illustrated and practised through more specific exercises. In this way we follow the program of many ancient treaties, especially Aristotle's *Rhetoric*, and respect what the Ancients called the "orator's tasks" (Pernot, 2000: 89-92). The first step, *inventio*, is the knowledge of the various kinds of proofs and the ability to properly select them in a given situation. The second step, called *dispositio*, is the organization of the speech in different parts or developments (such as introduction, narrative, description, argumentation, refutation, and conclusion). The next step, *elocutio*, is the expression of the arguments in appropriate style. The pupils will then choose which of the techniques to use in the following practical sessions and will test their efficiency.

Here is an example of a more theoretical session: the treatment of emotions. Even though they are often disregarded, emotions surround us and play an essential part in our ability to make good decisions (Ortony et al., 1988; Damasio, 1994; Plantin, 1998; Micheli, 2010). The marginalization of emotions is thus, not only unreasonable, because we cannot avoid them, but also dangerous, because ignoring emotions prevents us from properly managing them. Like we already saw when approaching the Aristotelian rhetorical system, in ancient times, the importance of the emotional ability and the necessity to develop a rhetorical framework to manage it in a society was understood. Though this awareness is clear in theoretical treatises, no practical exercise devoted to this aspect has been conserved. At this juncture we had to create an exercise, to make learners practice this aspect of the social life. Pupils were asked to work on the following event:

"Marc and Veronica"

Around 8am, Marc, 45, salesperson in an appliance store, hit Veronica, a 35-year-old promising CEO. Veronica was not crossing on the crosswalk. She was having a phone conversation with a colleague at the moment of impact; she was not looking and did not see the car. She died before rescuers arrived. Marc was eager to take his children to school; he was driving at a speed of 47 km/h;

the traffic light near the crossroad had just turned yellow.

Following the *dissoi logoi* principle, they had to write two reports: one that induces sympathy for the victim (Veronica) and one that induces sympathy for the driver (Marc). The aim of the exercise is to make them feel the appropriateness of emotions.

Unfortunately, it will not be possible in the frame of this article to give an extensive description of all the exercises we tested. We made several other specific exercises, like *ethopoiia* and *ekphrasis* mentioned earlier. These were carried out in order to teach other notions and techniques like *ethos*, arguments' types, rhetorical narrative or description, so that the pupils got a larger set of knowledge to tackle the free sessions devoted to a *controversy* exercise. We can now move to the results of this year's experiment.

RESULTS

In this section, we will expose the first results of the experiment, and show its benefits. As mentioned previously, different points of view were taken into account. But before going deeper into this discussion, it is worth noticing that pupils are clearly involved into the task. Indeed, when pupils are confronted for the first time to an exercise such as those we saw earlier, they are generally enthusiastic and excited to try this new activity. They really seem to enjoy it, even though these sessions take place at a bad time (Friday afternoon, just before the week-end) and the exercise was not graded. These two elements could have prejudiced the success of the experiment, because pupils are tired and less focused, especially if they are not motivated by a final mark. Still, during a whole year, the pupils' interest did not decrease. They were eager to show what they found and this stimulated them to look for increasingly creative arguments. This involvement is positive for both the pupils, who are working and learning abstract concepts and are still having fun; and for the teacher, whose task is made considerably easier.

Technical point of view

Rhetoric presents several technical difficulties, and pupils have to learn how to manage them. We clearly saw an evolution in their abilities. In the beginning of the experiment, they often focused on one aspect of the problem and fell into irrelevant discussions. For instance, we submitted to them the case of a fool who committed murder. For such case, it was not enough to show that the fool was guilty, but it was also important to question his accountability for his crime. In their accusation speeches, most of the pupils focused on the material evidences that proved guiltiness and simply missed the other, and most important, aspect. As a result, the defence, which systematically argued that the fool was not fully conscious of his deed, always had a better evaluation, because pupils thought that their speeches

were more complete and relevant. This also means that although they had to argue for both sides, the accusation did not anticipate the arguments of the defence. More generally, they were successful in adopting another point of view and did show some kind of empathy (for instance, in the cases involving a teacher), but they made no links between both points of view (Ferry and Sans, 2015a). Most of the time, they affirmed and enumerated arguments without consistence or order.

But after only a few sessions, we observed some sensible progresses. First, they did not miss the problem anymore and went deeper into the discussion. Secondly, they spontaneously used the techniques they had learned. On the level of *logos*: their argumentations were richer, more convincing and tackled several relevant aspects. Sometimes, they even treated both sides with the same argument type (that means, for instance, arguing from the consequences of the judgement in each case). On the level of *pathos*, they managed to create and master emotions, like pity or shame. The *Marc and Veronica* exercise is a good indication of their progression. At first, they did not realize that some emotional strategies could not be used. For example, in order to induce sympathy for Marc, some of them simply blamed Veronica saying that she should have been more careful while crossing the street. Still, blaming the victim is not *appropriate*, partly because of the legitimate sadness of her relatives. Pointing out Marc's sadness and feeling of guilt is a more appropriate strategy, because it does induce sympathy for Marc, but without denying the severity of the situation and the feelings of Veronica's family (for a more detailed review of the exercise, Ferry and Sans, 2015b).

After practicing rhetorical exercises for several weeks, pupils were able to feel the appropriateness of emotions in a given context and avoid aggressive strategies. Finally, and accordingly, pupils also understood the notion of *ethos* and paid attention to their own image as well as the portrayal of the different character's involved in the case. For instance, playing teachers or accusers, their *ethos* was at first severely a caricature, overbearing, and they seemed unpleasant. They later became more benevolent, self-confident, showing humanity and respect to commonly shared values. On the level of *disposition*, even if the composition of the arguments sometimes lacked of organization, pupils began to add some words of introduction or conclusion and to support their argumentation or evoke emotions, thanks to narrative or vivid depiction (*ekphrasis*). But the most important point to notice is that pupils did all of that consciously and were able to name and explain the techniques or strategies they used, which shows that the theoretical notions have been deeply integrated. They began to enjoy using the capacities they master, feel pleasured and proud when they are recognized. On the other hand, they also quickly learned the technical vocabulary, used it in their

comments; and in so doing so, they developed their critical mind. Another important point is that pupils progressively acquired new skills that they had not learned in the previous theoretical sessions. After a few months, we saw that concessions and *prolepsis* appeared in their copies, with their typical linguistic marks (like "even if", "although", "I am well aware that…, but nevertheless…" and so on). This indicates that from then on they were not only able to adopt another point of view, but also to take it in account and to make links between both sides. They were able to produce all the relevant and qualified argumentations since they consider other possible points of view, to which they recognize some qualities, even if they do not adhere to it. This result is particularly important, because it shows that rhetorical exercises may well be useful to improve our living together, for, as was mentioned before, respecting others' point of view is the first step to peacefully manage conflict.

Teacher's point of view

Finally, these kinds of exercises offer many advantages from the teacher's point of view: it increases pupils' motivation and provides a concrete theoretical and practical framework for the learning of argumentation. Indeed, this subject is in the official *curriculum* and teachers have to train pupils to argumentation, but no indications are given to know how to actually do it. We know from teachers' testimonies, and even from pupils themselves, that the skills learned during the rhetoric class are used in other contexts, outside the specific sessions. For instance, they take benefit from them and apply them in their class meetings, or even in their everyday relations and discussions at school. They can support their own opinion better, convince the others or find better solutions by considering and respecting others' opinions. They are also able to take some distance on touchy topics and to argue like they are trained to in the exercises.

Perspectives for the future: Rhetoric tools for tomorrow citizens

The experiment is still in progress but the first results are really positive and encouraging. In the future, we will continue the rhetorical class of our main group of pupils, and also try to extend this research project to other classrooms in other schools, in order to give accurate tools to critically face the world that they are living in and to properly respond to it. To that end, since 2015, we have also been proposing trainings to teachers, to enable them transmit the rhetorical tools themselves and take benefit from our experience. Of course, developing such

abilities takes time and regularity and may be difficult. Our hope is then to propose a long time training, in order to develop not only technical but also ethical and relational abilities. Indeed, we are convinced that rhetoric could help teenagers in their societal relations and to fulfil their role as future citizens of a democratic society.

First, in order to succeed in the realization of the exercise, pupils have to use what they consider as common values of our society. That question of the common values, but also of the pupils' feelings about the society is often too delicate to be directly questioned, for both pedagogical and psychological reasons. Teenagers often mistrust adults, in the school environment in particular, making it difficult to talk about these essential points (Larrigue, 2001: 73-75; Duru-Bellat and Van Zanten, 2012: 224-226). Rhetorical exercises provide an interesting indirect approach and may give us a good indication on the values they share (Dainville, 2016) and that they have actually integrated. Indeed, in the frame of the exercise, they spontaneously express them and discuss their application in concrete cases, without prior ethical recommendations from the teacher. This also leads them to think about their visions of the world, to question it, without feeling oppressed or condemned by an authority. Students need to have opportunities to think about sensitive issues by themselves to really integrate them (Verdelhan-Bourgade, 2001: 176).

Secondly, a theoretical awareness of argumentation helps pupils to distinguish an argument from the person who puts it forwards. In the framework of the exercise, they have to *suspend their judgement* by defending opinions they do not share.

This technical ability allows them to better understand other opinions and to train their minds' flexibility (Danblon, 2013). Research in cognitive sciences tend to show that, thanks to that, they can develop their critical mind towards fanaticism, and be more respectful towards each other. Rhetoric is not a magical tool. Still, considering the situation of the world today, considering the situation in Belgium and Europe, we truly believe that our bet is worth trying, and that rhetoric could help future citizens in their tasks.

Conflict of Interests

The authors have not declared any conflict of interests.

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Educational Research and Reviews

Full Length Research Paper

Validity and Reliability of the Reactive-Proactive Aggression Questionnaire in Turkish Adolescents

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The aim of this study was to adapt the Reactive-Proactive Aggression Questionnaire (RPQ), developed to measure two dimensions of aggression which are reactive and proactive, to Turkish and test the validity and reliability of the Turkish form. The study group consisted of 278 students in four junior high schools in Adana, Turkey, and 485 students in four high schools in Hatay, Turkey. One-factor and two-factor models were compared in the study of Confirmatory Factor Analysis conducted to examine the construct validity of the scale and the two-factor model was found to have better fit values for both junior high school and high school students, as well as the general study group as a whole. It was found that reactive and proactive aggressions have significant relations with attitude towards violence, trait anger, delinquency, deviant peers, anxiety, depression and hostility. Furthermore, it was determined that the scale has high internal consistency and item-total correlation. The results obtained in this study are consistent with the results of the original form of the scale. Findings of the study demonstrate that the Turkish version of RPQ has adequate reliability and validity values.

Key words: Reactive aggression, proactive aggression, adolescents, scale adaptation.

INTRODUCTION

Aggression, which is a serious and common problem in childhood and adolescence (Flannery et al., 2003), is an important risk factor for various antisocial behaviors such as delinquency and behavioral problems (Cima and Raine, 2009). Numerous studies in the literature indicate the relationship between childhood aggression and depression, anxiety, suicide and substance use in later

years (Fite et al., 2008a; Zahn-Waxler et al., 2005). Considering crucial social, psychological, health and economic consequences of violence and aggression behaviors (Gentile and Gilling, 2012), it is essential to make efforts in order to understand, treat and prevent aggressive behaviors in children and adolescents. Aggression is a heterogeneous structure with different

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sub-dimensions. Whilst aggression has fairly different classifications, many researchers indicate two different forms of aggression, they are reactive and proactive (Baron and Richardson, 1994; Mayberry and Espelage, 2007; Fite et al., 2012). Reactive aggression is defensive and retaliatory in nature and describes the form of aggression as a response to hostile behaviors or behaviors perceived as intentionally provocative. On the other hand, proactive aggression is a relaxed, deliberate, self-serving and goal-oriented form of aggression (Hubbard et al., 2010).

Marsee and Frick (2007) emphasize that reactive and proactive aggression forms have different structures, which are cognitive and emotional. Reactive aggression contains reactions of defense and retaliation towards threat or provocation (Dodge, 1991; Dodge and Schwarthz, 1997), which includes actions carried out with negative emotions such as anger or frustration (Miller and Lynam, 2006). Usually this form of aggression starts with a feeling of anger. A child hitting or pushing another child who had previously hit him can be given as an example of reactive aggression. Berkowitz (1989) explains this form of aggression using the model of frustration. According to this model, frustration leads to aggressive behavior. Frustrations are displeasing situations and these situations lead to the emergence of negative emotions and aggressive actions. An unexpected failure experienced in achieving a desired purpose is of more discomfort than an expected failure and therefore stimulate aggression more (Crick and Dodge, 1996). These increased negative emotions may lead to an increase in aggressive behaviors for the purpose of self-defense or damaging the source that forms frustration (Polman et al., 2007).

According to the social information progressing approach, reactive and proactive aggression stems from deficiencies and distortions in different stages of information processing. Reactive aggressors tend to misunderstand social stimulus and non-obvious behaviors of their peers and attribute hostile intentions to these behaviors. A kid who understands someone's behavior to be performed intentionally to harm himself reacts aggressively as a reprisal. Here perception of the kid for intention of the person determines whether s/he acts aggressively or not, instead of intention of the person (Crick and Dodge, 1996; Dodge and Coie, 1987). Indeed, research indicates that reactive aggressive individuals display high levels of anger and impulsivity (Miller and Lynam, 2006), weak psychological accord (Card and Little, 2006; Dodge et al., 1997), weak to encode and process information (Dodge et al., 1997) and are prone to predicted hostility (Walters, 2007).

Proactive aggression is the form of aggression that is unprovoked, deliberately exhibited, goal-oriented and motivated by an expected reward (Dodge, 1991); which, unlike reactive aggression, is not emotionally attributed (Hubbard et al., 2001; Scarpa et al., 2010). For instance, a child hitting a friend to get something he wants can be given as an example of proactive aggression. This form of aggression can be explained by social learning theory (Bandura, 1973, 1983).

According to Bandura's theory, proactive aggression is controlled through reinforcement. Individuals who demonstrate this form of aggression have learned to use violence to achieve the desired purpose or an object. According to the social information processing theory, proactive aggression stems from deficiencies and distortions in decision-making to react stage of information processing. Proactive aggressors expect more positive outcomes from aggressive behaviors than their non-aggressive peers and they feel themselves more component and sufficient in displaying aggressive behaviors. Aggression for these individuals serves as a proper means of achieving their objectives without punishment expectations (Crick and Dodge, 1994). Indeed, research indicates that proactive aggressive individuals have high expectations of positive results (Walters, 2007), and a weak spiritual/moral sense (Cima et al., 2007). Research conducted on children and adolescents indicates that proactive and reactive aggressions are associated with different behavioral outputs. According to research results, reactive aggression is associated with internal symptoms such as negative emotions, anxiety and depression (Card and Little, 2006; Raine et al., 2006; Fite et al., 2009; Vitaro et al., 2002). It was stated that reactive aggression in children and adolescents has a positive relationship with depressive symptoms (McAuliffe et al., 2006) and anxiety (Marsee et al., 2008). Similarly, Dodge et al. (1997) reported that depression of reactive aggressive children is higher than proactive aggressive children. Card and Little (2006) determine in a meta-analytic study that while reactive aggression has a relation with internalizing problems and emotional dysregulation, proactive aggression does not. These overall findings indicate that while emotional difficulties are associated with reactive aggression, they are not associated with proactive aggression.

According to some research results, proactive aggression is associated with delinquent and antisocial behaviors (Fite et al., 2008b; Raine et al., 2006; Scarpa et al., 2010; Vitaro et al., 2006), and psychopathic tendencies (Cornel et al., 1996; Porter et al., 2003; Woodworth and Porter, 2002). Some research indicates that reactive aggression is not directly associated with delinquency (Raine et al., 2006; Vitaro et al., 2006). Card and Little (2006) found in their meta-analytic study that delinquency is associated with both reactive and proactive aggression. Similarly, Conner et al. (2004) identified that disruptive behavior disorders is associated with both reactive and proactive aggression. As a result, the relationship of reactive aggression with internalizing

problems is clear. However, it is difficult to reveal difference of reactive and proactive aggression in terms of behavior problems. Various studies indicate that peer guilt is associated with aggression (Fite and Colder, 2007; Fite et al., 2011).

Research results are not consistent when the relationship of aggression forms with peer guilt. In the literature, there are studies indicating that peer guilt is only associated with proactive aggression (Fite et al., 2007; Fite et al., 2011) or only with reactive aggression (Fite and Colder, 2007; Fite et al., 2010)

Fite and Colder (2007) reported in the study carried out in early adolescence, that delinquent behaviors of their peers increase reactive aggression and vice versa. Similarly, in a longitudinal study, a moderated role was seen in the crime of the perceived best friend among reactive aggression of children with disciplinary offenses (Fite and Rathert et al., 2011). As a result, researches have shown that reactive and proactive aggressions have different properties in children and adolescents. Examining gender and age relationships with reactive and proactive aggression are essential to understand reactive and proactive aggression. A great numbers of studies in the literature indicate that males are more aggressive than girls. However, gender differences in the reactive and proactive aggression are not clear enough. In some studies, it was determined that proactive aggression scores of males are higher than scores of girls, yet no significant gender difference was observed in reactive aggression (Andreu et al., 2009; Fung et al., 2009; Li and Fung, 2015). In other studies, it was determined that both proactive and reactive aggression scores of male are higher than scores of girls (Salmivalli and Nieminen, 2002; Uz Baş and Yurdabakan, 2012). Similar situation is also seen in findings concerning the relationship of reactive and proactive aggression with age. Fung et al. (2009) determined that both proactive and reactive aggression increased with age. However, there are different findings. For instance, Wimsatt et al. (2011) reached the conclusion that while reactive aggression increased with age, proactive aggression is not age-related.

It is crucial to understand aggressive behavior in children and adolescents to know the different forms of aggressive behavior in order to demonstrate effective approaches for prevention and intervention, and to provide specific approaches to different forms of aggression (Raine et al., 2006). Indeed, clinical research indicates that different intervention programs are effective with different forms of aggression (Antonius et al., 2013; Swanson et al., 2008; Walters, et al., 2007). Anger management and social cognitive reconstruction especially with regard to self-attribution biases can be used in studies with reactive aggression. Proactive aggressors can benefit from social cognitive reconstruction progressed for especially negative

outcomes of aggressive behaviors (Vitaro et al., 2006).

There are various instruments to measure these two forms of aggression (Dodge and Coie, 1987; Little et al., 2003). One of these is the Reactive-Proactive Aggression Questionnaire (RPQ) developed by Raine et al. (2006). This self-report featured scale can be used with children, adolescents, and young adults. One of the major advantages of this scale is asking individuals questions in general without being limited to a few months. Being a short scale can also be considered as a further advantage. The sum of the two forms of aggression on the scale can be used as a general aggression point at the same time. Psychometric properties of RPQ have been demonstrated by several validity studies. Raine et al. (2006) determined the mean item-total correlations between 0.45 and 0.58 for the reactive scale, and between 0.41 and 0.57 for the proactive scale. Cronbach's alpha values are 0.84 for the reactive scale and 0.86 for the proactive scale. Similar reliability results were obtained in different studies. For instance, Cima et al. (2013) identified Cronbach's alpha 0.83 and 0.87 respectively for reactive and proactive scales and Pechorro et al. (2015) identified Cronbach's alphas as 0.86 and 0.91. The two-factor model has better fit values than the one-factor model, despite the high correlation between the two scales of RPQ (Andreu et al., 2009; Baker et al., 2008; Cima et al., 2013; Pechorro et al., 2015; Raine et al., 2006).

When the importance of cultural influence on aggression is considered (Bergeron and Schneider, 2005; Forbes et al., 2009), achieving the validity of reactive and proactive aggression in different cultural populations would provide further support for this diatomic structure of aggression. There are studies in favor of two-factor model comparing one-factor model of RPQ in many cultures (Cima et al., 2013; Fossati et al., 2009; Fung et al., 2009; Seah and Ang, 2008; Pechorro et al., 2015; Raine et al., 2006). Although, there are studies supporting cross-cultural generalizability of RPQ, there is limited available evidence for the validity of RPQ for the Turkish sample. Only one research (Uz-Baş and Yurdabakan, 2012) conducted in Turkey supports the two-factor structure of RPQ. There have been no studies conducted with a limited age range for convergent or discriminant validity of Turkish RPQ. Further evidence is needed for the validity of RPQ in the Turkish culture.

Therefore, in this current study, translation of RPQ into Turkish was conducted using the translation-back-translation method in order to examine cross-cultural generalizability of RPQ. The scale was conducted with 763 children and adolescents, including both genders. The study intend to identify whether or not the Turkish version of RPQ has the two-factor structure as with other cultures, as well as to examine the relationship with different variables. Also, the study aim to examine the effects of age and gender upon reactive and proactive

aggression.

First, we hypothesized that the two-factor model (reactive-proactive) would indicate a better fit than the one-factor model (general aggression) did in other cultures (Cima et al., 2013; Fossati et al., 2009; Fung et al., 2009; Seah and Ang, 2008; Pechorro et al., 2015; Raine et al., 2006). Second we hypothesized that while reactive aggression is positively associated with trait anger, anxiety, depression and hostility, proactive aggression is not as consistent with earlier studies (Card and Little, 2006; Raine et al., 2006; Fite et al., 2009; Vitaro et al., 2002). Third, we hypothesized that subscales of RPQ are positively associated with delinquent behaviors (Card and Little, 2006), deviant peers (Fite et al., 2010) and attitudes towards violence. Fourth, we hypothesized that males would score higher than females, both in the reactive and proactive forms of aggression (Salmivalli and Nieminen, 2002). Last, we hypothesized that reactive and proactive aggression are greater in higher age adolescents when compared to children and early adolescents (Fung et al., 2009).

METHODS

Participants

The junior high school study group of the research comprised 278 students, with 164 (59%) females and 114 (41%) males aged from 10 to 15 (M = 12.52 Sd = 1.38) from four junior high schools in Adana, Turkey. 67 (21.2%) students of secondary education are fifth grade, 66 (23.7%) students are sixth grade, 74 (26.5%) students are seventh grade and 71 (25.4%) are eighth grade. Annual family income of the students ranged from $4,000 to $40,000 and average income is $6,400. The study group of high school students comprised of 485 students, with 274 (56.5%) females and 211 (43.5%) males aged 12 to 19 (M = 15.94, Sd = 1.17) from four high schools in Antakya, Turkey. When the distribution of students with their class is examined, it can be seen that 120 (24.7%) students are ninth grade, 127 (26.2%) students are 10th grade, 124 (25.6) students are 11th grade and 114 (23.5%) students are 12th grade. Annual family income of the high school study group ranged from $2,000 to $48,000 and average income is $7,500. The combined general study group therefore comprised of 763 students, with 438 (57.4%) females and 325 (42.6%) males aged 10 to 19 (M = 14.69 Sd = 2.08).

Measures

Reactive-proactive aggression (RPQ)

The scale, as developed by Raine et al. (2006), aims to measure reactive and proactive aggression among male adolescents. The 23-item scale calculates a total aggression score, of which 12 items was to calculate reactive aggression (e.g., yelling at others when they have annoyed you), and 11 items to calculate proactive aggression (e.g., had fights with others to show who was on top). Each item is rated using a 3-point Likert-type scale (0=Never, 1=Sometimes, 2=Often). Higher scores obtained from the scale indicate higher levels of aggression. Confirmatory factor analysis was carried out to examine construct validity in the original form of

the scale. In this context, both one-factor and two-factor structures of the scale were compared, and the two-factor structure was found to produce better fit values.

Attitudes towards violence scale (ATVS)

This scale was developed by Blevins (2001), and is used to measure the attitudes of students towards violence. It is a one-factor scale that consists of 11 items. Each item is rated on a 4-point Likert-type scale (from 1= strongly disagree, through to 4 = strongly agree). The total scores are obtained by adding up the responses of students to all the items. High scores obtained from the scale indicate high levels of attitudes toward violence The Turkish adaptation of the scale was carried out by Balkıs, Duru and Buluş (2004). The results of the factor analysis conducted to examine construct validity of the ATVS scale indicated that items grouped in one factor were consistent with the original work and explained 36.8% of the variance. The Cronbach's alpha internal consistency coefficient of the scale was found to be 0.74 in the scope of this study.

Deviant peers scale (DPS)

The scale proposed by Galambos and Maggs (1991) was developed in order to determine whether or not adolescents have peers with negative or problematic behaviors. The original form is a 4-item, 4-point Likert-type scale (e.g., "My friends often get in trouble with adults"; with possible answers ranging from 1 = does not suit me at all, through to 4 = suits me completely). The Turkish adaptation of the scale was carried out by Kındap et al. (2008). In addition to the original form of the scale, three more items to measure negative behaviors often mentioned in the literature were added. High scores obtained from the 4-item scale indicate adolescents with deviant peers. Higher scores obtained from the 7-item scale indicate that adolescents have friends with negative or problematic behaviors.

Trait anger and anger expression style scale

The original scale was developed by Spielberger (1983), and the Turkish adaptation was later carried out by Özer (1994). The 34-item scale determines degree of aggression and anger expression styles in adolescents and adults. Each item ranges on a 4-point Likert-type scale (ranging from, 1 = It does not define at all, through to, 4 = It defines entirely). There are four subscales including trait anger, internal anger, external anger, and anger control. A total score cannot be obtained from the scale, yet scores can be calculated for the subscales. The Trait Anger Subscale (TAS, 10 items) of the scale was used in this current study. High scores obtained from the TAS subscale indicate a high degree of anger. Criterion-related validity and factor analysis were performed in the study of the scale adaptation by Özer (1994). The item-total correlations ranged from 0.14 to 0.56 (Özer, 1994). Also, the TAS subscale was applied to a high school study group and the Cronbach's alpha internal consistency coefficient was determined as 0.86.

Delinquency scale (DS)

This scale was developed by Kaner (2002) in order to determine behaviors not recognized by official institutions, yet it would be treated as a crime with adolescents facing criminal charges in court.

The 38-item DS includes nine subscales. Adolescents divide delinquent behaviors into four options on a 4-point Likert-type scale (ranging from 1= never, through to 4 = five or more) regarding frequency of performing such behaviors during the previous six months. Total scores can be obtained from the scale and higher scores indicates higher criminal tendency of adolescents (Delikara, 2002). Construct validity of the scale was examined by factor analysis. The items were grouped into nine factors, with factor loadings ranging from 0.41 to 0.82, which explained 63.7% of the variance. Correlations of subscale scores of the DS with each other ranged from 0.37 to 0.73 and correlations with total score ranged from 0.38 to 0.62. The internal consistency coefficient for the whole scale was determined as 0.92 in this study.

Brief symptom inventory (BSI)

This 53-item self-report inventory was developed by Derogatis (1992) in order to make an overall assessment of psychopathology. The BSI Likert-type scale is the short form of the SCL-90, with items ranged on a 5-point Likert-type scale (from 0 = none, through to 4 = a lot). The Turkish form of BSI was adapted by Şahin and Durak (1994) in three different studies. The Turkish version of BSI includes five subscales and they are anxiety, depression, negative ego, somatization, and hostility. Turkish adaptation of the adolescent form of the scale was later carried out by Şahin et al. (2002) and the five-factor-structure scale was determined. The relationship of trait anxiety, depression, life satisfaction and social comparison scales with subscales of BSI was examined and significant correlation coefficients were determined which ranged from 0.45 to 0.71. Both studies indicate that BSI is a reliable and valid instrument for adolescents and adults. The anxiety, depression and hostility subscales were selected for use in this current study. The internal consistency coefficients of the selected subscales are 0.87, 0.90 and 0.77, respectively.

Procedure

Necessary permissions were obtained from Adrian Raine, the lead author of the original RPQ scale development (Raine, et al., 2006), in order to create the Turkish version. The original English language version of the scale was independently translated into Turkish by five teaching staff fluent in English, of whom three were experts in the area of counseling and two were experts in translation. The translations were examined and compared by the researchers and the most appropriate expressions that represent each item were selected. These expressions were then re-translated back into English by a bilingual member of teaching staff from the area of psychological counseling. Finally, the original form and the obtained form were compared and the scale was finalized. Practices were carried out in the classes identified by the researcher and school psychological counselors after obtaining necessary permissions from the school administration. An average practice took between 15 to 20 min.

Data analysis

The construct validity of the new Turkish RPQ was examined using the confirmatory factor analysis (CFA). CFA was made for categorical variables since the data was scored as 0-1-2. In this context, the analysis of data was conducted through the correlation matrix and the asymptotic covariance matrix. Robust Diagonally Weighted Least Squares (DWLS) were used as the estimation method Finney and Distefano (2013) suggest using robust DWLS estimator method in the cases where number of categories in variables is 5 or below. Furthermore, the eligibility of the number of samples for robust method was calculated by k (k+1)/2 (k= number of variables) formula and the sample was determined to be sufficient for the analysis (Şimşek, 2007). CFA was carried out in LISREL 8.70 statistical program. Also, the one-factor model (general aggression) and two-factor model (reactive and proactive aggression) were compared as regards fit values consistency with the original work (Raine, et al., 2006). In CFA investigation χ²/sd value, The Akaike Information Criterion (AIC), The Root Mean Square Error of Approximation (RMSEA), Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Normed Fit Index (NFI), Non-normed Fit Index (NNFI) and Incremental Fit Index (IFI) indices were used for the comparison of fit values of the models. It is stated that 0.90 and higher indices of GFI, NFI, NNFI, AGFI and IFI indicate a good fit (Byrne, 1998; Tabachnick and Fidell, 2001; Sumer, 2000) as well as 0.06 and lesser indices of RMSEA indicate a good fit (HU and Bentler, 1999). Furthermore, chi-square values were examined in fit values comparison of the models. It is stated that the model indicates a perfect fit in cases where the value of χ²/sd is less than 2 or 3 (Kline, 2005; Sumer, 2000; Tabachnick and Fidell, 2001).

Paired samples t-test was used to determine whether there is a significant difference between reactive aggression and proactive aggression scores independent sample t test was used to determine the differences between the gender. Correlation values were examined between Attitudes Towards Violence Scale, Deviant Peers Scale, Delinquency Scale, Trait Anger Scale, Brief Symptom Inventory-Depression, Brief Symptom Inventory-Anxiety, Brief Symptom Inventory-Hostility, RPQ total scores and RPQ' subscales for criterion-related validity. In addition, regression analysis was carried out to determine whether RPQ scores were predicted by gender and age. Item-total test score correlation values, Spearman-Brown split-half test reliability, and Cronbach's Alpha internal consistency coefficients were calculated in the context of the reliability of the scale. SPSS 17 package program and LISREL 8.70 program were used for the analyses.

RESULTS

Construct validity

One-factor structure (general aggression) and two-factor structure (reactive and proactive) were compared regarding fit values in the confirmatory factor analysis conducted to examine construct validity; the results of which are shown in Table 1. As can be seen in Table 1, when values from each study group and the general study group were examined, the one-factor model decline was observed in χ²/sd rate and RMSEA value was found above 0.05. In this case, it can be said that the model produces a perfect fit (Sümer, 2000). Similarly, lower AIC (Akaike's Information Criterion) value was observed in the two-factor model (Table 1). In addition, when other fit indices were investigated, the two-factor model produces better fit values. Therefore, the two-factor model was found to provide better fit values.

When standardized coefficients of the items related to reactive aggression factor were examined, they were found to range from 0.59 to 0.81 for the junior high school, from 0.55 to 0.75 for high school, and from 0.56

Table 1. Fit values for one-factor and two-factor models.

Variables	Model	χ^2	df	AIC	GFI	AGFI	NFI	NNFI	IFI	RMSEA
Junior High School Study Group (N=278)	One-factor (General Aggression)	456.39	230	548.39	0.97	0.97	0.97	0.98	0.99	0.060
	Two-factor (Reactive & Proactive)	356.23	229	450.23	0.98	0.98	0.98	0.99	0.99	0.045
High School Study Group (N=485)	One-factor (General Aggression)	755.75	230	847.75	0.96	0.95	0.97	0.97	0.98	0.069
	Two-factor (Reactive & Proactive)	408.32	229	502.32	0.97	0.96	0.98	0.99	0.99	0.040
General Study Group (N=763)	One-factor (General Aggression)	905.70	230	997.70	0.97	0.96	0.98	0.98	0.98	0.062
	Two-factor (Reactive & Proactive)	599.64	229	693.64	0.97	0.97	0.98	0.99	0.99	0.046

to 0.75 for the general study group (Figure 1). Coefficients of items related to proactive aggression factor were found to range from 0.57 to 0.93 for the junior high school, from 0.63 to 0.83 for high school, and from 0.62 to 0.82 for the general study group (Figure 1). Furthermore, correlation values between reactive and proactive subscale scores were determined as 0.79 for junior high school, as 0.72 for high school, and 0.72 for the general study group. These findings suggest that the two-factor model is consistent with the original work, and is therefore valid for the Turkish sample.

Gender and age relations

A set of regression analyses were carried out in order to determine the extent to which age and gender predicted reactive aggression, proactive aggression and total aggression. According to the results of regression analysis, both variables explain 3% of total aggression ($F_{(2,762)}=11.25$, p<0.001), 4% of proactive aggression ($F_{(2,762)}=17.88$, p<0.001), and 2% of reactive aggression ($F_{(2,762)})=9.71$, p<0.001). Gender (ß=.13, t=3.39, p<0.001) and age (ß=0.13, t=3.09, p<0.01) are significant predictors of total aggression. However, while gender is a significant predictor of proactive aggression (ß=0.21, t=5.96, p<0.001), it is not the significant predictor of reactive aggression (ß=0.05, t=1.41, p>0.05). Age is a significant predictor of reactive aggression (ß=0.15, t=4.18, p<0.001), but it cannot predict proactive aggression (ß=0.02, t=0.46, p>0.05). In addition, t test was performed in order to examine whether there are differences in terms of gender and it was determined that proactive [t $_{(470.05)}$

=5.514; p<0.001] and total aggression [t $_{(561.63)}$ =3.41; p<0.01] scores of males are significantly higher than scores of females. No significant difference was observed between genders in terms of reactive aggression [t $_{(761)}$ =1.397; p>0.05]. These results indicate that males have higher scores of proactive and total aggression than females, and advancing age increases reactive and total aggression. However, when results are evaluated, it ought to be considered that these variables have low correlation with aggression and its forms.

Criterion-related validity

Correlations between Attitudes Toward Violence Scale (ATVS) and Deviant Peers Scale (DPS) of RPQ were investigated to examine junior high
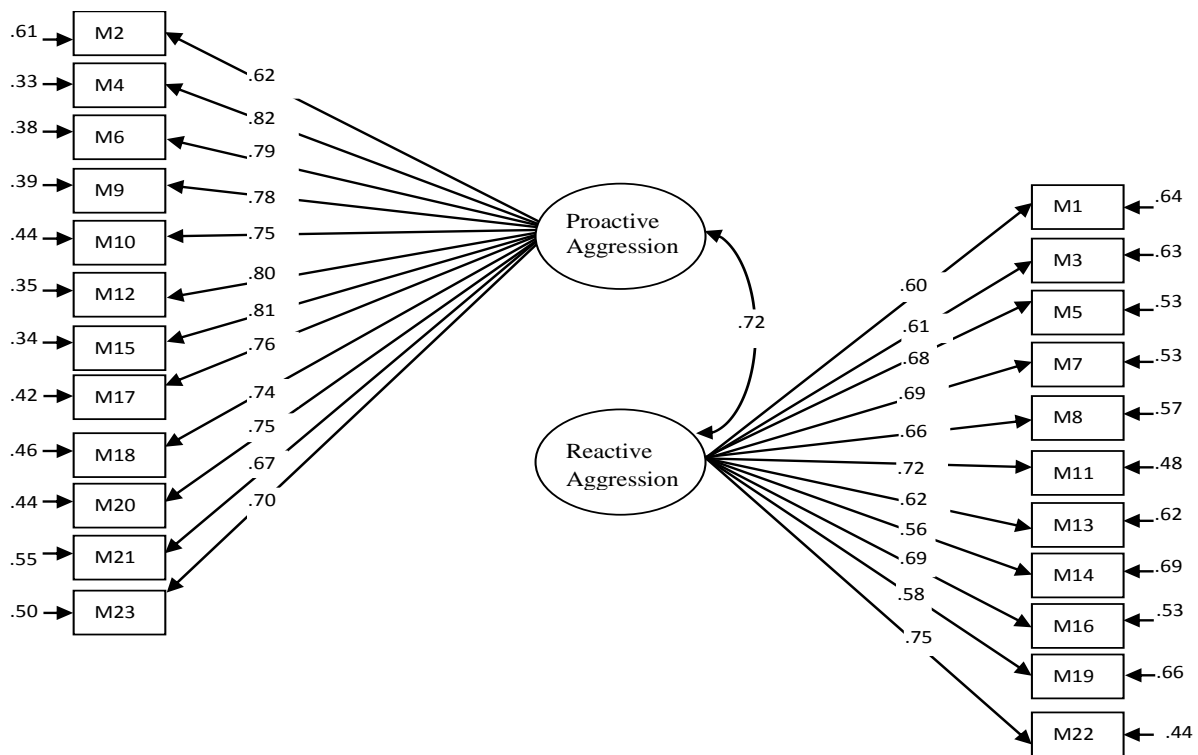
Figure 1. Reactive and Proactive Aggression Scale Standardized Path Coefficients for the General Study Group.

school study group criterion-related validity. In addition, partial correlations between variables of criteria and reactive or proactive aggression scale were examined. This examination of the relationship between criterion variables and one variable from RPQ's subscales examined by other RPQ subscale is calculated using as control variables. A positive moderate statistically significant bivariate and partial correlation, in the expected direction, was determined between reactive aggression subscale and the ATVS (r= 0.60, r= 0.41, p<0.001 respectively) and DPS (r= 0.46, r= 0.26, p<0.001, respectively). Also a positive moderate statistically significant bivariate correlation, still in the expected direction, was determined between proactive aggression and the ATVS (r=.54, p<.001) and DPS (r=.47, p<.001). Low level significant partial correlations were found between ATVS and proactive aggression (r=.28, p<.001) and DS and proactive aggression (r=.26, p<.001). In addition, a positive moderate correlation was determined between RPQ total score and the ATVS (r=0.64, p<0.001) and DPS (r=0.52, p<0.001).

Bivariate and partial correlations were investigated between RPQ and TAS, DS, Anxiety, Depression and Hostility subscales of BSI for the high school study group. A high bivariate and partial correlations in the expected direction was determined between Trait Anger subscale and reactive aggression subscale (r= 0.70, r= 0.64,

p<0.001, respectively), as well as a moderate correlation between proactive aggression subscale (r= 0.35, p<0.001) but there is no significant relation in terms of partial correlation and total aggression (r= 0.65, p<0.001). A positive moderate significant correlation was found between Delinquent Behavior Scale and reactive aggression (r= 0.54, p<0.001), proactive aggression (r= 0.48, p<0.001) and total aggression (r=0.57, p<0.001). Low level significant correlation between DS and reactive aggression (r=0.27, p<0.001) and moderate significant correlation between DS and proactive aggression (r =0.39, p<0.001) was observed in terms of partial correlation. A positive moderate correlation was determined between anxiety and depression subscales, reactive aggression (r= 0.42 p<0.001, r =0.45, p<0.001 respectively) and total aggression (r= 0.41, p<0.001; r =0.40, p<0.001 respectively) and a positive low correlation was determined with proactive aggression (r=0.24, p<0.001; r=0.19, p<0.001 respectively).

A positive moderate correlation was found between hostility subscale and proactive aggression (r =0.35 p<0.001), reactive aggression (r =0.63, p<0.001) and total aggression (r =0.60, p<0.001). Besides, while there were moderate significant correlations between reactive aggression and anxiety (r =0.36 p<0.001), depression (r= 0.41 p<0.001) and hostility (r= 0.56 p<0.001), no significant correlation was determined between these

Table 2. Convergent validity of RPQ with ATVS, DPS, TAS, DS, BSI-A, BSI-D and BSI-H.

Variables	RPQ Total	RPQ Reactive	RPQ Proactive
ATVS	0.64***	0.60*** (0.41***)	0.54***(0.28***)
DPS	0.52***	0.48*** (0.27***)	0.47***(0.26***)
TAS	0.65***	0.70*** (0.64***)	0.35***(0.00^{ns})
DS	0.57***	0.54***(0.29***)	0.48***(0.39**)
BSI-A	0.41***	0.42***(0.36***)	0.24***(0.03^{ns})
BSI-D	0.40***	0.45***(0.41***)	0.19***(-0.04^{ns})
BSI-H	0.60***	0.63***(0.56***)	0.35***(0.06^{ns})

Partial correlations are shown in parentheses. RPQ: Reactive-Proactive Aggression Questionnaire; ATVS: Attitudes Towards Violence Scale; DPS: Deviant Peers Scale; TAS: Trait Anger Subscale; DS: Delinquency Scale; BIS-A: Brief Symptom Inventory-Anxiety Subscale; BSI-D: Brief Symptom Inventory-Depression Subscale; BSI-H: Brief Symptom Inventory-Hostility Subscale. ***p<.001; Values ≥ .05 are n.s.

Table 3. Median, standard deviation Cronbach's Alpha values and correlations for Reactive-Proactive Aggression Scale.

Variables	Scales	X	Median	Sd	Alpha	Reactive r	Proactive r	RPQ Total r
Junior High School Group (N=278)	Reactive	6.59	6	4.47	0.86	-		-
	Proactive	1.77	1	3.14	0.86	0.59***	-	-
	RPQ Total	8.36	7	6.82	0.90	0.93***	0.85***	-
High School Group (N=485)	Reactive	6.97	6	4.10	0.83	-		-
	Proactive	1.27	0	2.42	0.81	0.50***	-	-
	RPQ Total	8.23	7	5.71	0.86	0.93***	0.78***	-
General Study Group (N=763)	Reactive	6.83	6	4.24	0.84	-	-	-
	Proactive	1.45	0	2.72	0.84	0.53***	-	-
	RPQ Total	8.28	7	8.28	0.88	0.93***	0.81***	-

***p<0.001.

variables and proactive aggression (r= 0.03 p>0.05; r=0.04 p>0.05; r=0.06 p>0.05, respectively) in terms of partial correlations. These results prove the validity of RPQ (Table 2).

Reliability and mean scores

In order to determine the reliability of RPQ, internal consistency coefficients (Cronbach's alpha) were examined. As seen in the Table 3, internal consistency coefficients were obtained as 0.86 for reactive and proactive aggression and 0.90 for RPQ total score in the junior high school student study group.
The general aggression score was 0.86, while 0.81 for proactive aggression subscale and 0.81 for reactive aggression subscale in the high school study group.

When assessing the reliability coefficients for the general study group, it was determined as 0.88 for general aggression, 0.84 for reactive aggression, and 0.84 for proactive aggression. Furthermore, Spearman-Brown split-half reliability coefficients of the scale were found as 0.87 for the junior high school study group, 0.78 for the high school study group, and 0.80 for the general study group in the proactive aggression subscale. For the junior high study group 0.82 was found, 0.78 for the high school study group, and 0.83 for the general study group in reactive aggression subscale. When Pearson's product-moment correlation coefficients were examined between total score of RPQ and subscales, it was determined to range from 0.59 to 0.93 for the Junior High School Group, from 0.50 to 0.93 for the high School Group, and from 0.53 to 0.93 for the General Study Group (Table 3).

Items of RPQ to predict a total score, that is,

correlations were investigated between scores by scale items and total scores of the scale in the scope of this study. Correlation value ought to be 0.30 or higher to have adequate representation of the scale (Büyüköztürk, 2004). It was determined to range from 0.50 to 0.70 for the reactive aggression subscale, and from 0.40 to 0.74 for the proactive aggression subscale in the junior high school study group. When the high school study group was examined, it ranged from 0.48 to 0.70 for the proactive aggression scale, and from 0.47 to 0.69 for the proactive aggression scale. In the general study group, the proactive aggression scale was ranged from 0.54 to 0.68, and 0.48 to 0.67 for the reactive aggression scale. A moderate or high correlation was determined between all items and total scale score (p<0.001). In addition, proactive aggression scores obtained from junior high school, high school and general groups were determined to be significantly lower than reactive aggression scores [related sample respectively, $t(277) = 22.131$; $p<0.001$; $t(484) = 35.129$; $p<0.001$; $t(762) = 41.079$; $p<0.001$]. The results prove that RPQ is a reliable instrument.

DISCUSSION

The aim of this study was to examine the psychometric properties of RPQ in the sample of Turkish children and adolescents. In the study, the two-factor model was determined to produce better fit values than the one-factor model in both the junior high school and high school samples. A high correlation between two factors was observed. All factor coefficients were high. The lowest factor loading was 0.55. Other studies conducted in different cultures also support two-dimensional structure of RPQ and a high correlation between these two dimensions (Andreu et al., 2009; Baker et al., 2008; Cima et al., 2013; Pechorro et al., 2015; Raine et al., 2006).

In the study, significant correlations ranging from 0.70 to 0.78 were determined between proactive aggression and reactive aggression for junior high school, high school, and the general samples. These values are quite similar to previous studies such as Cima et al. (2013); Crick and Dodge (1996); Fung et al. (2009); Miller and Lynam (2006); Pechorro et al. (2015); Raine et al. (2006); Uz-Baş and Yurdabakan (2012). Even identified with different cognitive and emotional factors, significant positive correlations determined in many studies between these two aggressions suggest that these two forms of aggression can be seen in many children and adolescents and an individual prone to either forms of aggression cannot be excluded in terms of another aggression form.

Results of internal consistency were quite high for both reactive and proactive aggression scales in all groups. The lowest Cronbach's alpha value was 0.81. Similar results were reported in previous studies example Fung et al. (2009); Pechorro et al. (2015). When inter-item correlations were examined, item-total correlations ranged from 0.40 to 0.74 with both RPQ and reactive and proactive dimensions in all groups. The values obtained indicated the homogeneity of the items. One hypothesis of our research is that reactive aggression is positively associated with trait anger, anxiety and depression and is not associated with proactive aggression. Partial correlation results of our research confirm this hypothesis. Previous studies indicate that reactive aggression is associated with internalization symptoms such as negative emotions, anxiety, and depression (Card and Little, 2006; Fite et al., 2009; Raine et al., 2006; Marsee and Frick, 2007; Miller and Lynam 2006; Scarpa et al., 2010; Xu et al., 2009). To Raine et al. (2006), adolescents with high reactive aggression have more social anxiety. Furthermore, Card and Little (2006) reported in their meta-analytic study that while internalization problems and emotion regulation difficulties are correlated with reactive aggression, they are not correlated with proactive aggression. Results obtained in this study are quite consistent with previous studies. Stronger correlation of negative emotions such as anger, hostility and anxiety and depression with reactive aggression than proactive aggression is also consistent with the frustration-aggression model (Berkowitz and Harmon-Jones 2004).

Another hypothesis of our research is that reactive and proactive aggression and total PRQ is positively associated with delinquent behaviors, having deviant peer and attitudes towards violence. Correlation analysis results confirm this hypothesis. The results of studies indicating relationships between delinquency and reactive and proactive aggression are not consistent. Some studies determined that delinquent behaviors are particularly associated with proactive aggression (Fite et al., 2008b; Raine, et al., 2006; Vitaro et al., 2006; Scarpa et al., 2010). For instance, Vitaro et al., (1998), in the middle adolescent period, and Scarpa et al. (2010), in childhood period, determined that while delinquent behaviors predict proactive aggression, it cannot predict reactive aggression. However, some studies (Little et al., 2003; Fite et al., 2008) indicate that while there is a relation between delinquency and reactive aggression, there is no relation with proactive aggression. However, Card and Little (2006) reported that delinquency is related to both reactive and proactive aggression in their meta-analytic study. Results obtained in this study are consistent with results reported by Card and Little (2006). Impulsivity is one of the salient features of reactive aggression (Miller and Lynam, 2006). Considering that impulsivity is a risk factor for delinquency (White et al., 1994), significant correlations can be expected between reactive aggression and delinquent behaviors.

A positive moderate correlation was determined

between reactive and proactive aggression dimensions of RPQ and having deviant peers. Laird et al. (1999) determined that those who define their best friends as those with high antisocial behaviors define themselves in a similar way. Some researchers indicated that peer guilt is associated with aggression (Fite and Colder, 2007; Fite et al., 2011; Fite et al. 2010). Fite et al. (2010) reported that peer guilt is correlated with both reactive and proactive aggression, but has a stronger relationship with reactive aggression than proactive aggression. Fite et al. (2007) and Fite et al. (2011) determined that peer guilt is associated with reactive aggression. Fite and Colder (2007) reported that delinquent behavior of peer's increases reactive aggression and vice versa. In another study, moderated role of the crime of perceived best friend was determined between reactive aggressions of children and disciplinary offenses (Fite et al., 2011). Some studies indicate that peer guilt is associated with proactive aggression rather than reactive aggression (Fite et al., 2007; Fite et al., 2011), yet other studies indicate its relation with reactive aggression (Fite and Colder, 2007; Fite et al., 2010). Considering that peer with guilt and aggression behavior might be taken as a model (Warr, 1996) or that peers might reinforce their aggression behaviors either directly or indirectly, peer guilt can be expected to be associated with both reactive and proactive aggression.

Avcı and Güçray (2013) opine that there is a relationship between having a positive attitude towards violence and demonstrating aggression in adolescents. In this study, a positive relation was determined between attitudes towards violence, and reactive and proactive aggression dimensions of RPQ. Considering that having a positive attitude towards violence is one of the determinants of violence (Gellman and Waack-Delucia, 2006), it is not surprising that it is associated with both reactive and proactive aggression.

In this paper, relationships were also examined between gender, age, and aggression forms. One of our hypotheses is that males would receive higher scores than girls in both forms of aggression. In the study, males were determined to have higher proactive aggression and total aggression than females, and no correlation was determined between reactive aggression and gender. Similarly, Fung et al. (2009) suggested that as regard gender, there was no significant difference in reactive aggression scores and found males to have higher proactive and total aggression scores than females. Li and Fung (2015) opined that there is higher proactive aggression in males and no differentiation in reactive aggression in the study of Chinese adolescents as Andreu et al. (2009) found in the study of Spanish adolescents. There are studies such as Salmivalli and Nieminen (2002); Uz-Baş and Yurdabakan (2012) indicating that males have higher reactive and proactive aggression than females, yet some studies are of the

opinion that there is no significant differentiation by gender in both aggression forms (Fite et al., 2008; Fite et al., 2011). These differences can be explained by cultural factors.

Culture has an important impact on perceptions and behaviors of people (Harrison and Turner, 2011). Thus, cultural factors may have different effects on aggression (Bergeron and Schneider, 2005; Forbes et al., 2009). In Turkish culture, adolescents are expected to adhere to traditional female and male gender roles. The reason of higher level of proactive aggression by male may be that male are considered more to exhibit aggressive behaviors, qualifying these behaviors as power indicators, providing prestige and strengthening males. The reason of observing no differences between females and males in terms of reactive aggressions tendencies may be that females, same as males, display impulsive and instant reactive aggressive reactions with hormonal and physical changes seen in the adolescence period in the case of frustration and provocation (Graber et al., 2006).

In this study, a positive low correlation was determined between age, reactive aggression and proactive aggression, as well as there being no correlation determined between proactive aggression and age. We hypothesized that both proactive and reactive aggression would increase when the age increased. Different results regarding the correlation between age and aggression forms can be seen in the literature. No significant correlation was determined between age and both aggression forms in many studies for instance Fite et al. (2008); Little et al. (2003); Scarpa et al. (2010). However, giving the study conducted by Fung et al. (2009), both reactive and proactive aggression correlates to age. According to this study, the increase in proactive aggression with age is higher than the increase in reactive aggression.

In addition, Uz-Baş and Yurdabakan (2012) determined that reactive aggression, proactive aggression, and total aggression increased from 4th grade to 7th grade in their study on Turkish culture. Fite et al. (2011) reached the conclusion that while reactive aggression increased with age, proactive aggression was not age-related in their study on American children. Results of previous studies are partly in line with results obtained in this study. In the literature, there are studies supporting findings of a relationship between reactive aggression and age (Fite et al., 2011; Fung et al., 2009; Uz-Baş and Yurdabakan, 2012), and no relationship between proactive aggression and age (Fite et al., 2011; Scarpa et al., 2010). Studies indicate that there is a positive relation between aggression and exhibiting risky behaviors in the adolescence period (Michael and BenZur, 2007; Silver et al., 2000). Studies related to age differences in risk-taking behaviors indicate that teenagers usually exhibit a higher proportion of risky behaviors due to increased

autonomy in later-adolescence years by mid-adolescence period (Byrnes et al., 1999). Therefore, higher aggression can be expected in the later years of adolescence by the first years of adolescence.

As a result, one-factor and two-factor models were compared in the study to determine psychometric properties of the Turkish version of RPQ and two-factor model were determine to produce better fit values for junior high school and high school study groups. Internal consistency coefficients and item-total correlations are high for both subscales. Furthermore, it was found that reactive and proactive aggressions have significant relations with the attitude towards violence, trait anger, delinquency, deviant peers, anxiety, depression, and hostility. In summary, it can be said that the Turkish version of RPQ is a reliable and valid instrument to measure two dimensions of aggression. Therefore, both researchers and practitioners working in this area can make use of this scale. The sample of the study is based on schools. Particular samples such as criminal or vulnerable children and adolescents would be required in order to ensure generalizability of these findings. Furthermore, the sample in this study is from urban areas of southern Turkey, and so, efforts to include rural areas would contribute to a better understanding of aggression behavior of Turkish adolescents and therefore develop more effective solutions or methods of prevention. In this study, the convergent validity of Turkish RPQ was examined, yet the discriminant validity was not investigated. For instance, relationships can be examined between Turkish RPQ and concepts such as self-esteem and empathy. Finally, longitudinal studies are needed in order to examine the development of aggression in the socialization process, especially for age differences in Turkish children and adolescents.

Conflict of Interests

The author has not declared any conflict of interests.

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Full Length Research Paper

Pre-service teachers' personal value orientations and attitudes toward the teaching profession in Turkey

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This study examined the relationship between pre-service teachers' personal value orientations and their attitudes toward the teaching profession. The study was conducted with the participation of 612 students at DEU's Buca Faculty of Education during the 2014/2015 academic year. Data were collected using the Portrait Values Questionnaire (PVQ) and the Attitudes toward the Teaching Profession Questionnaire (ATPQ). The main findings of the study are as follows: Personal value pre-service teachers' professed the most was self-direction, followed by universalism, and thirdly security. Value was the attitude toward the teaching profession calculated the most by the same teachers. Additionally, a significant relationship was indicated between pre-service teachers' personal value orientations and their attitudes toward the teaching profession. Pre-service teachers' personal value orientations explained 17.4% of the variation in their attitudes toward the teaching profession.

Key words: Schwartz's value theory, personal value orientations, attitudes toward the teaching profession, pre-service teachers, students in the faculty of education.

INTRODUCTION

Teachers are the most important component of an education system because they have a greater ability to influence students and curriculum than other actors do (Çetin, 2006). Likewise, teachers are the key actors in schools who can shape pupils' behaviors. With their enthusiasm, personality, attitudes, and knowledge, teachers can influence their students to adopt positive or negative behaviors. In this process, a teacher should have certain qualities including general knowledge, specific field knowledge, and pedagogical knowledge. However, teachers' affective responses, their attitudes toward the teaching profession in particular, are just as

important as those qualifications (Semerci and Semerci, 2004). It is of paramount importance that teachers should do their jobs willingly and be committed to the profession if they want to become successful in this profession. In addition, without a doubt, this relates directly to teachers' positive attitudes toward their profession (Kaya and Büyükkasap, 2005).

Teachers are also key bearers of values (Schwartz, 1992), as they pass on their own values to future generations through a hidden curriculum. Margolis and Romero (1998) studied the effects of the hidden curriculum on female graduate students of different races

in a sociology department. Their interviews showed that the hidden curriculum had many components, including "stereotypes" and "blaming the victim," which had a negative impact on the participants. In addition, Bakioğlu and Tokmak (2009) opined that teachers' values not only influence their students, but also have implications on educational processes. They discovered that teachers made different value judgments regarding educational processes, and these differences sometimes resulted in conflicts between teachers. The authors also found that differing value judgments among teachers regarding discipline and student assessment processes had an even more adverse effect on students.

For these reasons, pre-service teachers' value systems and attitudes toward the teaching profession have drawn much scholarly interest. In what follows, the concept of value, Schwartz's Value Theory, attitudes toward the teaching profession, and the relationship between values and attitudes will be discussed.

Values

People's behaviors are largely shaped by their values. In this respect, values affect individuals' level of cooperation, selective perception, and the ability to interpret information; determine their field of vision; and play an important role when choosing between alternatives, making judgments, and resolving conflicts (Russel, 2001).

Lewis (2012) defines value as a strong belief about a certain behavior or a lifestyle. Values are synonymous to personal beliefs about what is "good," "just," and "beautiful," concepts that direct us toward certain behaviors and lifestyles. According to Rokeach (1973), everything we do reflects our values, whether we are aware of it or not. Schwartz (1999) describes values as conceptions of the desirable that influence the way social actors (for example, organizational leaders, policy makers) select an action, evaluate people and events, and explain their own actions and assessments. In this respect, values are criteria or goals, prioritized based on their importance, that guide one's life regardless of circumstances.

According to Hodgkinson (1996), values tend to work as motivators of behavior. Hitlin (2003) argues that values constitute the core of our personal identity and lead to the formation of a social identity. In addition, values are cognitive structures that are not present at birth. They are later acquired through interpersonal interactions in immediate or larger social contexts into which an individual is born, such as cultural worldviews, belief systems, ideologies, social norms, rules, and attitudes (Demirutku, 2007).

The term value has various definitions. However, these varying definitions also agree on a number of key points.

Values are abstract concepts that cannot be thought of as passing feelings or impromptu choices that pop into our heads. It is safe to argue that values are permanent in a given period of time because they take a long time to change. They also involve comprehension and is not necessarily visible all the time. It is possible to act on one's values without being aware of them. Values are reflected in action. A value that is not acted upon in practice is impossible to detect. Finally, the distinguishing characteristic of values is that they are conceptions of the desirable.

Schwartz's theory of basic values

According to the fundamental assumption in Schwartz's Theory of Basic Values, the most important feature separating values at the individual level is the difference in the motivational purpose they convey. The values most likely to be encountered in every culture are those that express the universal needs of human nature as conscious drives (Barnea and Schwartz, 1998; Caprara et al., 2006; Kuşdil and Kağıtçıbaşı, 2000). Schwartz categorizes the values he uses in his inventory into 10 different value dimensions in terms of motivation. The relationships between the value dimensions in the model are presented in Figure 1.

Value dimensions opposite to one another on the circumference contradict each other, whereas dimensions positioned next to each other are compatible. In addition, Schwartz argues that value dimensions in his theory display motivational continuity, and value dimensions closer to each other in this structure would have similar relationships with external variables (attitudes, behaviors, etc.). For example, "Conservation" as an external variable can be expected to have lower correlations with "Self-direction," "Stimulation," and "Hedonism" value dimensions, and higher correlations with "Security," "Tradition," and "Conformity" dimensions.

Therefore, we should expect that when one moves away, in either direction, from the value dimension that has the strongest relationship with an external variable toward the dimension that has the weakest relationship, the strength of the relationship between the variable and value dimensions will gradually diminish. For instance, given that the variable "Conservation" would have the strongest relationship with the value dimension "Tradition" and the weakest relationship with "Hedonism," we would expect the strength of the relationship to decline from "Benevolence" to "Stimulation" in one direction, and from "Security" to "Achievement" in the other (Kuşdil and Kağıtçıbaşı, 2000).

The value dimensions "Benevolence" and "Universalism" define the area of "Self-transcendence". Values on the opposite side of this axis, "Power" and "Achievement," are in the area of "Self-enhancement".
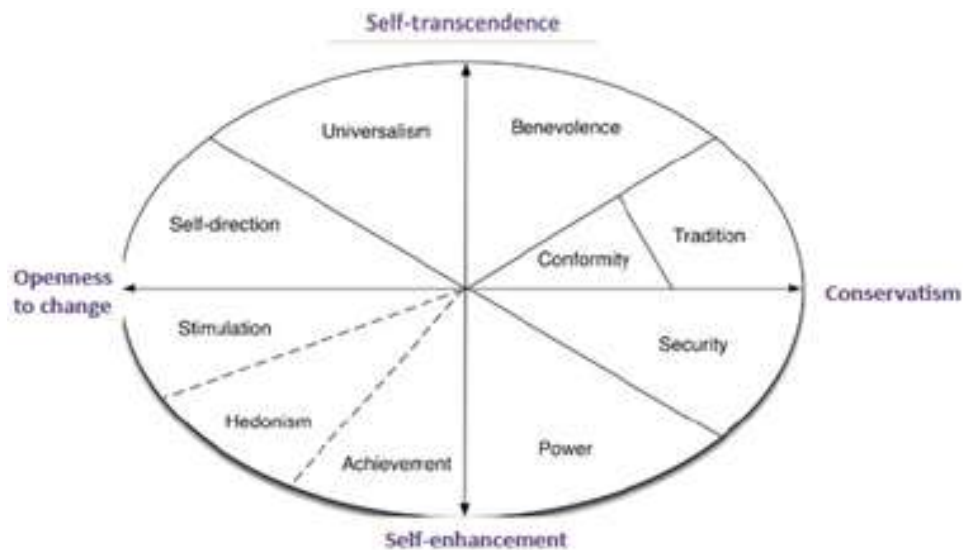
Figure 1. The structural relationship between the ten motivational value types in Schwartz's theory of basic values (Source: Barnea and Schwartz, (1998), "values and voting," political psychology, 19 (1): 17–40).

The values of "Stimulation" and "Self-direction," which have a motivational infrastructure compatible with these value dimensions, are on the "Openness to Change" end of the second axis, located opposite to the "Conservation" end, which includes the values of "Conformity," "Tradition," and "Security". The value type "Hedonism," which has a motivational infrastructure that is compatible with both the "Openness to Change" and "Self-transcendence" areas, is right in the middle of those two areas (Demirutku, 2007).

Attitudes toward the teaching profession

Papanastasiou (2002) defines attitude as a favorable or unfavorable emotional orientation an individual has toward objects, people, places, events, and ideas. According to Smith (1968), attitude is an orientation that is attributed to an individual and that shapes his/her thoughts, feelings and behaviors toward a psychological object (Kağıtçıbaşı, 1996).

The quality of teachers is closely related to the way pre-service teachers are recruited, the pre-service education they receive, and the attitudes they have toward the teaching profession (Şimşek, 2005). Developing a positive attitude toward the profession during the pre-service education is very important. According to Gök (2003), the most important task of teacher training programs is to identify the attitudes pre-service teachers should possess toward the teaching profession, find ways to instill these attitudes in pre-

service teachers and assess how successful the effort has been.

According to Çeliköz and Çetin (2004), if pre-service teachers are trained to develop positive attitudes toward their profession, they will discharge their duties properly when they become teachers, treat their students better, have enthusiasm for conducting research, be creative thinkers, would be able to bring new ideas to the learning environment and eventually their positive attitudes will motivate students. Such teachers would be sincere, make effective use of time, and not be strict with students. In addition, they would love their job, enjoy teaching, and consequently, they would be in a better position to take on the duties and responsibilities of being a teacher.

Previous studies show that teachers with different personality traits and attitudes influence students in different ways (Gömleksiz, 2004). For example, Geçer and Deryakulu (2004) found that teacher proximity to students influences the students' attitudes, motivation, and achievements and it is a significant predictor of attitudes and motivation in three levels of education (primary, secondary, and higher education). According to Thompson (1993) (cited by Başar, 2001), a teacher's personal orientation is an important factor affecting students' personal orientations. More specifically, there is a positive relationship between a teacher's commitment to the profession and a student taking his/her teacher as a model based on this trait. A positive relationship has been observed between a teacher's commitment to teaching and a student's commitment to learning.

Similarly, if a teacher thinks highly of his/her students, the students' behaviors change.

The relationship between values and attitudes

The concept of value has an ethical dimension as it includes an individual's ideas about what is good or what is to be desired. Value systems consist of values that are ordered by relative importance. In other words, everyone has a range of values that constitute their value system. This system is defined by the relative importance given to different values such as freedom, pleasure, self-respect, honesty, obedience, and equality. Everyone has values, and these values affect our attitudes and behavior (Robbins, 1998). An internalized value system provides criteria or standards that guide action, regardless of whether they are recognized as such (Gibson et al., 1997).

Balcı (2008) argues that the concepts of value and attitude are co-dependent and coexistent. Value judgments, which are among the factors that shape behavior, can be used as indicators of values and attitudes, and in turn, can be defined as "value orientations that guide individual behavior." Our attitudes toward events provide answers to many questions about our behavior. These attitudes, in turn, are formed based on the values an individual has or acquires (Balcı, 2008). In line with this, studies conducted by Th°gersen and Grunert-Beckmann (1997) confirmed the importance of values in shaping attitudes.

What is important for the purposes of the present study is that values help shape attitudes. As Lussier (1996) argues, we develop positive attitudes when something has value and negative attitudes when it lacks value. Likewise, according to McDonald (1993), values are the key elements of an individual's personality from a psychological perspective, and they are important determinants of attitudes and behavior. In addition, values are used to influence and to persuade (Bilgin, 1995).

The Purpose and significance of the study

Values are known to play an important part in shaping attitudes (Bektaş and Nalçacı, 2012; Balcı, 2008; Th°gersen and Grunert-Beckmann, 1997). Therefore, identifying the value orientations of pre-service teachers would generate important data. Analysis of this data within the framework of Schwartz's Value Theory will show if the theory in question applies to pre-service teachers in Turkey and could also provide some interesting findings. To Nuhoğlu (2008), measuring the attitudes involved in the teaching/learning process gives us information about the current preferences of the learner and helps predict future behavior, changes in attitudes, or formation of new attitudes.

Many studies have examined the value preferences of pre-service teachers in Turkey in the context of various personal variables (Altunay and Yalçınkaya, 2011; Dilmaç et al., 2008; Özkan and Soylu, 2014; Yalmancı, 2009; Yapıcı et al., 2012; Yılmaz et al., 2010). Previous studies have also examined the relationship between pre-service teachers' value preferences on the one hand and their self-understanding (Dilmaç et al., 2009), democratic attitudes (Saraloğlu et al., 2013), epistemological beliefs (Başçiftçi et al., 2011), self-respect (Yıldız et al., 2013; Er, 2013), and values they would like students to have (Özdemir and Sezgin, 2011), on the other.

Some studies conducted in Turkey about the teaching profession focus on various traits of the participants (Akkaya et al., 2007; Terzi and Tezci, 2007), whereas other studies focus on self-efficacy (Demirtaş et al., 2011), professional self-respect, confidence in professional competence (Girgin et al., 2010), alienation (Çağlar, 2013), level of concern (Doğan and Çoban, 2009), and physical self-perception (Pehlivan, 2010). However, the number of studies about the relationship between pre-service teachers' personal value orientations and their attitudes toward the teaching profession is limited (Bektaş & Nalçacı, 2012). This study aims to fill an important gap in the literature by first describing pre-service teachers' value orientations using the conceptual framework of Schwartz's Value Theory and the scale developed by Schwartz et al. (2001), and then examining the relationship of those value orientations with attitudes toward the profession. Findings of this study can serve as an important reference for policy makers and practitioners interested in the subject.

This study aims to identify pre-service teachers' personal values and attitudes toward the teaching profession and determine whether there is a significant relationship between these two variables and whether the value orientations of the participants can predict their attitudes toward the teaching profession. To this end, the following questions are addressed:

1. What are pre-service teachers' personal value orientations?
2. What attitudes do pre-service teachers have toward the teaching profession?
3. Is there a significant relationship between pre-service teachers' personal value orientations and their attitudes toward the teaching profession?
4. Can pre-service teachers' personal value orientations predict attitudes toward the teaching profession?

METHODOLOGY

In this quantitative study, descriptive statistics was used to answer the first two research questions and correlational and regression

Table 1. Participants' democraphic characteristic.

Groups		n	Percentage (%)
Gender	Female	330	53.92
	Male	282	46.08
Grade	1st	148	24.18
	2nd	150	24.51
	3rd	152	24.84
	4th	162	26.47
Department	Social Sciences	190	31.05
	Science-Mathematic	150	24.51
	Arts	100	16.34
	Foreign Language	172	28.10

analysis were used for the third and fourth questions respectively.

Participants

The population was made up of 7114 students in the Buca Faculty of Education of DEU during the 2014 to 2015 academic year. Cluster sampling was used to identify the number of departments, classrooms, and students needed to obtain a representative sample of the population. A total of 624 students, randomly selected from every department of the aforementioned faculty, participated in the study. Of the 624 questionnaires filled out, 612 were fit for further analysis. The participants' demographic characteristics are presented in Table 1. As sees in Table 1, 53% of participants are female, 46.08% are male. 24.18% of participants are first graders. 24.51% are second graders, 24.84% are third graders and 26.47% are forth graders. While 31.05 % of the students study social sciences, 24.51% science, 16.34% arts and 28.10% foreign languages.

Data collection tools

Data for the study were collected using the Portrait Values Questionnaire (PVQ) that was developed by Schwartz et al. (2001) and adapted into Turkish by Demirutku (2007), and the Attitudes toward the Teaching Profession Questionnaire (ATPQ) developed by Çetin (2006).

The portrait values questionnaire (PVQ)

The PVQ has the following dimensions:

1. Power
2. Achievement
3. Hedonism
4. Stimulation
5. Self-direction
6. Universalism
7. Benevolence
8. Tradition
9. Conformity, and
10. Security.

The scale comprises 40 items made up of two sentences each, and

a short verbal portrait of a fictional person is provided in each item, describing goals or desires associated with one of the ten value types (Demirutku, 2007; Schwartz, 2004). As part of his Turkish adaptation, Demirutku (2007) administered the scale to 381 college students. Three social psychologists translated the scale into Turkish. After which, two instructors of English translation and a professional clinical psychologist who was an expert in values translated the form back into English. The questionnaire asks participants to rate how much the person described in each item is similar to them, choosing from among options ranging from "Very Much Like Me" to "Not Like Me At All." Both the internal consistency and the test-retest reliability coefficients were measured for the ten value types. Internal consistency coefficients varied between 0.58 and 0.82 in the first application, and between 0.61 and 0.84 in the second application, and test-retest reliability coefficients varied between 0.65 and 0.82 (Demirutku, 2007).

The PVQ is a 6-point Likert-type scale, and arithmetic means of the scores are interpreted as follows: 1.00 to 1.83, Not Like Me At All; 1.84 to 2.67, Not Like Me; 2.67 to 3.50, A Little Like Me; 3.50 to 4.33, Somewhat Like Me; 4.33 to 5.17, Like Me; and 5.16 to 6.00, Very Much Like Me. Because the relative importance of each value differs among people (Rokeach, 1973), the total score for the PVQ is not taken into consideration. Some of the items on the PVQ are as follows:

1. Tradition is important to her. She tries to follow the customs handed down by her religion or her family.
2. It is important to him to make his own decisions about what he does. He likes to be free and not depend on others.

Attitudes toward the Teaching Profession Questionnaire (ATPQ)

The ATPQ is comprised of Love, Value, and Adaptation dimensions. Participants express their level of agreement with statements about attitudes toward the teaching profession by selecting one of the five options ranging from "Strongly Agree" to "Strongly Disagree." Cronbach's Alpha reliability coefficient was found to be 0.95 for the Love dimension of the ATPQ, 0.81 for the Value dimension, 0.76 for the Adaptation dimension, and 0.95 overall (Çetin, 2006). The ATPQ is a 5-point Likert-type scale, and arithmetic means are interpreted as follows: 1.00 to 1.80, strongly disagree; 1.81 to 2.60, disagree; 2.61 to 3.40, neither agree nor disagree; 3.41 to 4.20, agree; and 4.21 to 5.00, strongly agree. Some of the ATPQ items were as follows:

Table 2. The distribution of pre-service teachers' value orientation scores (Means and Standard Deviations).

Scales	$\bar{x}$	SD
Power	3.95	1.05
Achievement	4.53	0.90
Hedonism	4.70	1.04
Stimulation	4.72	0.83
Self-direction	5.41	0.84
Universalism	5.22	0.76
Benevolence	4.50	1.34
Tradition	4.14	0.92
Conformity	4.74	0.80
Security	5.05	0.93

1. Teaching is a passion for me.
2. Teaching is a profession that requires self-sacrifice.

Analysis

In order to examine participants' value orientations and attitudes toward the teaching profession, arithmetic means and standard deviations were calculated. To examine the relationship between PVQ and ATPQ scores, Pearson's Product-Moment Correlation Analysis was used. Regression analysis was carried out to probe the relational structure. Prior to the analysis, data were checked for multivariate normal distribution, simultaneous covariance, multicollinearity, linearity, and autocorrelation (Küçüksille, 2014) to test the assumptions of the regression analysis. If one independent variable is not considered more important than others, use of the ENTER method is advised for multiple regression analysis (Küçüksille, 2014). Therefore, the data have been analyzed using the ENTER method. This analysis aimed to examine the extent to which scores received for "Security," "Power," "Benevolence," "Hedonism," "Tradition," "Self-direction," "Universalism," "Achievement," "Stimulation," and "Conformity", dimensions of the PVQ and independent variables in the model, are able to predict the scores received for the ATPQ, which is the dependent variable.

FINDINGS

This section presents the main findings of the study.

1. To identify pre-service teachers' personal value orientations, arithmetic means, and standard deviations were calculated, as seen in Table 2. Table 2, based on participants' ratings of how similar they are to people described in the PVQ dimensions, shows that "Self-direction" ($\bar{x}$=5.41; Very Much Like Me) was the value dimension embraced most by the pre-service teachers, followed, in descending order, by "Universalism" ($\bar{x}$.=5.22, Very Much Like Me), "Security" ($\bar{x}$=5.05, Like Me),

Table 3. The distribution of scores received by pre-service teachers for attitudes toward the teaching profession (Means and Standard Deviations).

Scales	$\bar{x}$	SD
Love	3.68	0.84
Value	4.38	0.58
Adaptation	3.63	0.94
Overall ATPQ	3.83	0.71

"Conformity" ($\bar{x}$=4.74, Like Me), "Stimulation" ($\bar{x}$=4.72, Like Me), "Hedonism" ($\bar{x}$=4.70, Like Me), "Achievement" ($\bar{x}$=4.53, Like Me), "Benevolence" ($\bar{x}$=4.50, Like Me), "Tradition" ($\bar{x}$=4.14, Somewhat Like Me), and "Power" ($\bar{x}$=3.95, Somewhat Like Me). Table 1 also shows that pre-service teachers profess "Self-direction" values the most and assign the lowest scores to the "Power" dimension.

2. To identify the pre-service teachers' attitudes toward the teaching profession, arithmetic means, and standard deviations were calculated, as reported in Table 3. Table 3 shows that overall, pre-service teachers "agree" ($\bar{x}$=3.83) with the statements about attitudes toward the teaching profession. Pre-service teachers agreed most strongly with the "Value" ($\bar{x}$.=4.38; Strongly Agree) dimension, followed by the "Love" ($\bar{x}$=3.68; Agree) and "Adaptation" ($\bar{x}$=3.63; Agree) dimensions.

3. To examine the relationship between pre-service teachers' personal value orientations and their attitudes toward the teaching profession, Pearson's Product-Moment Correlation Analysis was performed. The results are presented in Table 4. These results show a negative relationship between the PVQ's "Power" dimension on the one hand and the "Love" and "Adaptation" dimensions of the ATPQ and overall ATPQ on the other. There are positive relationships between the "Achievement" and "Hedonism" dimensions of the PVQ; the "Value" dimension of the ATPQ; the "Stimulation" dimension of the PVQ; and the "Value" and "Adaptation" dimensions of and overall score for the ATPQ. The "Self-direction," "Universalism," "Benevolence," "conformity," and "tradition" dimensions of the PVQ was on one hand, and overall ATPQ and each of its dimensions on the other. Finally, a positive relationship is found between the "tradition" dimension of the PVQ on the one hand, and the "love" dimension of the ATPQ and overall ATPQ on the other.

4. Table 5 reports the results of the multilinear regression analysis conducted to find the regression equation for

Table 4. The relationship between pre-service teachers' personal value orientations and attitudes toward the teaching profession (Pearson's product-moment correlation analysis).

PVQ dimensions	ATPQ Dimensions			
	ATPQ (Overall)	Value	Love	Adaptation
Power	-0.17**	-0.04	-0.17**	-0.19**
Achievement	0.00	0.14**	-0.015	-0.08
Hedonism	-0.02	0.12**	-0.04	-0.06
Stimulation	0.09*	0.21**	0.06	0.04
Self-direction	0.18**	0.29**	0.14**	0.11**
Universalism	0.28**	0.39**	0.23**	0.21**
Benevolence	0.18**	0.19**	0.17**	0.14**
Tradition	0.17**	0.07	0.20**	0.06
Conformity	0.25 **	0.24**	0.24**	0.14**
Security	0.28**	0.28**	0.27**	0.16**

**P< 0.01; *P< 0.05.

Table 5. Multilinear regression analysis for predicting pre-service teachers' attitudes toward the teaching profession using their personal value orientations.

Independent variable	B	Standard error	β	t	p
Constant	67.97	9.56	-	7.11	0.00
Power	-1.63	0.37	-0.21	-4.37	0.00
Achievement	0.015	0.33	0.00	0.05	0.96
Hedonism	-0.41	0.36	-0.05	-1.15	0.25
Stimulation	0.36	0.49	0.04	0.74	0.46
Self-direction	1.02	0.48	0.11	2.14	0.03
Universalism	0.37	0.26	0.07	1.43	0.15
Benevolence	0.48	0.26	0.08	1.86	0.07
Tradition	-0.09	0.32	-0.01	-0.29	0.78
Conformity	1.22	0.39	0.16	3.15	0.00
Security	0.87	0.23	0.16	3.73	0.00

R= 0.42; R^2 = 0.17; Durbin-Watson= 1.75; F= 12.60; p <0.05.

predicting the scores pre-service teachers received for attitudes toward the teaching profession, using dimensions of the PVQ as predictor variables. Table 5 shows that dimensions of the PVQ are significant predictors of ATPQ scores (F= 12.60 p<0.05). The R^2 value shows that 17.4% of the variation in the dependent variable—attitude scores—is explained by the variables included in the model ("security," "power," "benevolence," "hedonism," "tradition," "self-direction," "universalism," "achievement," "stimulation," and "conformity").

The *t* values reported in Table 4 show that "power" (p=0.00), "self-direction" (p=0.03), "conformity" (p=0.00), and "security" (p=0.00) are significant predictors of attitudes toward the teaching profession, whereas "achievement" (p=0.96), "hedonism" (p=0.25), "stimulation"

(p=0.46), "universalism" (p=0.15), "benevolence" (p=0.07), and "tradition" (p=0.78) are not significant predictors. Standardized regression coefficients (β) reported in the table show that the independent variable with the largest effect on attitudes toward the teaching profession is "Power" (-0.21), followed by "security" (0.16), "conformity" (0.16), and "self-direction" (0.11).

The constant term in Table 4 shows that if all value variables were set to zero, the attitude variable would be 67.97. A one-unit increase in the "Power" variable will decrease the attitude variable by 1.63 units, a one-unit increase in the "Self-direction" variable increases the attitude variable by 1.02 units, a one-unit increase in the "Conformity" variable increases the attitude variable by 1.22 units, and a one-unit increase in the "Security" variable increases the attitude variable by 0.87 units. In

mathematical terms, the model is expressed as follows:

The attitudes toward teaching profession = 67.967 - 1.62 power + 1.02 self-direction + 1.22 conformity + 0.87 security

This equation explains the relationship between ATPQ and PVQ scores. Scores for "self-direction," "conformity," and "Security" have a positive effect on attitudes toward the teaching profession, whereas the "power" score has a negative effect. This mathematical equation can be used to predict ATPQ scores based on scores received for the "Power," "Self-direction," "conformity," and "security" dimensions of the PVQ.

DISCUSSION

Pre-service teachers attach the most importance to the "self-direction" value dimension, followed by "universalism" and "security." According to Schwartz's Value Theory, the "self-direction" value dimension is in the "openness to change" value group; the "universalism" value dimension is in the "Self-transcendence" value group; and the "security" value dimension is in the "conservation" value group. The "self-transcendence" value group involves an individual's values concerning giving up self-interest for the good of humanity and nature. The "openness to change" value group contains values that guide individuals to follow their emotional and intellectual interests in unpredictable ways. The "conservation" value group contains values that help individuals maintain predictability in their relationships with people in their immediate social environment, with organizations they are involved in, and with traditions that they follow (Schwartz, 1992).

"Self-direction" and "universalism" top the list of value dimensions to which pre-service teachers assign the most importance. Although they are associated with different value groups, "Self-direction" and "Universalism" are neighboring value dimensions (Figure 1). Thus, the finding that these two value dimensions have been assigned similar levels of importance is in accordance with the theory. The finding that the third place on this list is occupied by the "Security" value dimension is not consistent with the theory. This is because the "Conservation" value group, to which the "security" value dimension belongs, is directly opposite the "Openness to Change" value group, even though it is close to the "Self-Transcendence" value group. One conclusion from this observation is that pre-service teachers are confused about the values that they profess to have. Adopting contrasting values can result in adaptation problems. A study conducted by İkiz and Mete-Otlu (2015) shows that college students indeed have various adaptation issues.

Based on these findings, the following can be said about pre-service teachers' value systems: pre-service

teachers think collectively rather than in terms of self-interest, they possess values emphasizing individual autonomy, and they prefer openness to change over conservation. However, it should be pointed out that they can get conservative when it comes to security. Pre-service teachers prefer "Universalism," which stands for protecting and being kind to people regardless of who they are, and for making an effort to listen to and understand people with opposing views (Anbarcı and Kirmanoğlu, 2006), over "self-enhancement" values, which exclusively focus on self-interest (Schwartz, 1994). Pre-service teachers also prefer "self-direction" (Schwartz, 1992, 1994), which emphasizes autonomy, self-respect, choosing one's own purpose, and being independent, over "Tradition," which emphasizes respect and commitment to cultural and religious morals and ideas.

Yet, pre-service teachers do not reject "security," which is seen as a prerequisite for the welfare and continuity of the self, the society, and relationships (Schwartz, 1994). The finding that "universalism" is the second preferred value dimension shows parallels with the findings of Sağnak (2003) and Kuşdil and Kağıtçıbaşı (2000). Sağnak (2003) found that the top three value systems the teachers chose were universal values such as "fairness," "ethical consistency," and "openness". Kuşdil and Kağıtçıbaşı (2000) also found that the value dimension teachers cared most about were "universalism," "security" and "benevolence." Two of the three values least preferred by teachers were "power" and "tradition."

Given that the Turkish culture has a collectivist character (Duran, 2002; Erdem, 1996; Sargut, 2001), it can be argued that pre-service teachers are influenced by the national culture. Indeed, Sargut (2001) argues that in countries where pluralistic values are dominant, like Turkey, organizations are heavily influenced by the national culture. The findings of Bacanlı (1999) in a study titled *Value Preferences of College Students* have parallels with the findings of the present study, but "Universalism" was ranked fourth in importance in that study. Findings of the present study also partially overlap with the findings of Yalmancı (2009), who found "Security" to be the most-preferred value dimension, which is inconsistent with the findings of the present study, but found "Power" to be the least preferred value dimension, a finding shared by the present study.

The finding that pre-service teachers, overall, "agree" with the statements about attitudes toward the teaching profession should be considered a positive finding. Given that the teaching profession suffers from a loss of reputation (Tok, 1997; Demir and Arı, 2013), it can be argued that instructors in the faculty of education fulfill their duty of instilling in their students a positive attitude toward the teaching profession. This finding overlaps with those of Terzi and Tezci (2007) and Bulut (2009), but conflicts with the findings of Kahyaoğlu et al. (2013) and

Gülsoy (2010), who found from their studies that pre-service teachers' attitudes toward the teaching profession, overall, were negative.

Of all the dimensions of the ATPQ, "value" received the highest average score. Pre-service teachers "strongly agreed" with the items associated with this value dimension. Therefore, it is safe to say that pre-service teachers value the teaching profession highly. However, research findings show that the reputation of the teaching profession is declining. For instance, from Tok (1997) studies, only 36% of teachers considered teaching a respectable job, and nearly all think that the pay and benefits are too low. Demir and Arı (2013) found that one of the problems teachers face most is the loss of respect their profession endure in the eyes of the society. In yet another study, almost half of the pre-service teachers attending DEU's Buca Faculty of Education said that they did not like their majors (Şahin, 2011). The present study, conducted by the same faculty of education, found the profession to be highly valued, which indicates that pre-service education can help improve attitudes toward the profession.

Pre-service teachers "agreed" with the statements about the "love" dimension, which should be considered a positive result. In a similar finding, the majority (86%) of the teachers who participated in the study by Tok (1997) agreed that the teaching profession is not a boring profession. A study conducted by Hacıömeroğlu and Şahin-Taşkın (2009) found that pre-service teachers preferred the teaching profession for emotional reasons such as loving the profession and the students. Another study focused on the role played by self-seeking, external, internal, and altruistic factors in pre-service teachers' choice of profession, and found that as they got closer to graduation, their external factors looses their influence, and internal and altruistic factors becomes more dominant (Çermik et al., 2010). This finding indicates that pre-service education can succeed in developing positive attitudes toward the teaching profession. Loving the profession and the students seems to be a prerequisite for succeeding in this profession, which is an encouraging.

Pre-service teachers also "agreed" with the statements about the "Adaptation" dimension of the ATPQ. In a similar finding, nearly all of the teachers who participated in the study by Tok (1997) disagreed with the statement that "the purpose, influence and results of teaching is of no concern for the teacher" and indicated that they cared about the purpose, influence, and results of teaching.

Every change in human life is accompanied by a need for adaptation. Knowing about potential changes on the horizon helps individuals succeed in the adaptation process. When the teaching profession is considered in this respect, it is of paramount importance that pre-service teachers be taught about the requirements, working conditions, and duties of the profession (Çetin,

2003). Pre-service teachers who participated in this study were found to be knowledgeable about these issues.

There is a negative relationship between pre-service teachers' perceptions of the "Power" dimension of the PVQ on the one hand, and the "love" and "adaptation" dimensions of and the overall score for the ATPQ on the other. In other words, participants with higher scores for the "Power" value dimension have lower levels of love for the profession and experience adaptation issues more frequently. In Schwartz's Theory of Basic Values, "Power" values reflect a concern with social status and control over people and resources through social power, authority, wealth, and good reputation.

"Power" values belong in the "Self-enhancement" value group (Barnea and Schwartz, 1998), which makes it possible for an individual to act in his/her own self-interest, even at the expense of others (Schwartz, 1992). Given that teaching is not a well-paid job and does not make teachers powerful (Akyüz, 2001), the finding that pre-service teachers with a strong "power" value orientation have negative attitudes toward teaching is in line with theoretical expectations. The "achievement" dimension of the PVQ was found to be positively related to the "value" dimension of the ATPQ, and not related to the ATPQ in general or any of its other dimensions. Since "Achievement" belongs to the same value group as "Power", the "Self-enhancement" value group, a similar result was expected, but the finding was not consistent with the theory. The "Hedonism" dimension of the PVQ was found to be positively related only to the "Value" dimension of the ATPQ. "Hedonism," which is about pleasure and enjoying life, connotes a more colorful and optimistic personality.

Pre-service teachers might think of teaching as an enjoyable profession because they are trying to see the good things about life, which might explain the observed positive relationship with the ATPQ "Value" dimension. The other dimensions of the PVQ were found to have a positive relationship with the overall score for the ATPQ. That is to say, with the exception of participants who adopt the "Self-enhancement" value group and aim to act in their own self-interest (Schwartz, 1994), a positive relationship was observed between the attitudes toward the teaching profession and the "Conservation" value group, which emphasizes ties to in-groups and organizational and traditional continuity; the "Self-transcendence" value group, which emphasizes putting familiar/unfamiliar groups' interests before one's own, and the "Openness to Change" value group, which enables individuals to follow their emotional and intellectual interests in unpredictable ways (Schwartz, 1992).

Pre-service teachers' personal value orientations were found to be important predictors of their attitudes toward the profession. This finding is supported by Bektaş and Nalçacı (2012). The standardized regression coefficients shows that, among the predictor variables, "power" had

the strongest effect on attitudes toward the teaching profession, after that "security," "conformity," and "self-direction." Of these variables, only the "Power" variable is negatively related to attitudes toward the teaching profession. This indicates that pre-service teachers who adopt the "Power" value dimension, which refers to having social power, being rich, having authority, being respected in society, and preserving a good reputation (Struch et al., 2002), will have more negative attitudes toward the teaching profession. Indeed, according to the OECD indexes, teachers' salaries in Turkey are lower than the OECD average (Süngü, 2012), indicating that the teaching profession does not bring wealth. Similarly, teaching is not a highly regarded profession in the society (Gök and Okçabal, 1998).

Therefore, it is expected that people who care a lot about having "power" will have negative attitudes toward the teaching profession. Pre-service teachers who attribute high levels of importance to the "security" and "conformity" values, that belongs to the "Conservation" value group, are predicted to have positive attitudes toward the teaching profession. The "Security" value dimension refers to the security and stability of the individual and his/her relationship (Barnea and Schwartz, 1998).

Therefore, this finding shows that pre-service teachers see teaching as a profession that can fulfill their needs of security. The "conformity" value dimension refers to limiting drives and actions that could violate social norms and expectations, and harm or upset others (Schwartz, 1994). Participants who adopted the "conformity" value also shunned "hedonism," which is the exact opposite of "conformity" in Schwartz's Theory of Basic Values and represents enthusiasm, being competitive in life, and searching for new ideas (Schwartz, 1992). By so doing, they might have avoided violating social expectations, and the same desire might have led them to express positive attitudes toward the profession.

Finally, the "Self-direction" value dimension, which belongs in the "Openness to Change" value group, proved to be an important predictor of attitudes toward the teaching profession. "Self-direction" means being independent in mind and in action, and caring about creativity and exploration (Struch et al., 2002). Most schools are organizations with loose structures (Weick, 1982), are tolerant, and allow a certain level of autonomy. Teachers plan and carry out in-class activities under the general supervision of the school administration (Aydın, 1994). As a result, teachers in schools have more auto-nomy than employees in other organizations. Pre-service teachers who participated in this study were aware of this aspect of the profession, and they cherished it.

CONCLUSION AND RECOMMENDATION

Based on these findings, the following recommendations

are made: In pre-service teachers' pre-service education, as much as the lessons, affective issues should be dealt in order to develop positive attitude towards teaching profession. In addition, effective psychological counseling and guidance should be provided in Faculties of Education and to resolve any value conflicts that students may have. Also, qualitative studies should be conducted on pre-service teachers' value orientations and attitudes toward the teaching profession.

Conflict of interests

The authors have not declared any conflict of interests.

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Full Length Research Paper

The cognitive coaching-supported reflective teaching approach in English language teaching: Academic and permanence success

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This study aimed at investigating the effect of the cognitive coaching-supported reflective teaching approach in English language teaching on the academic success of students and on the permanence of success. It was conducted during the spring semester of 2013/2014 academic year at the School of Foreign Languages, Fırat University, Elazığ, Turkey. The study was conducted using pre-test/post-test control group design, which is one of the true score models, and it lasted 7 weeks. During this process, lectures were taught using some activities based on the cognitive coaching-supported reflective teaching approach in the experimental group, and the traditional approach was used in the control group. As a data collection method, a test developed by the researcher was applied. Three weeks after the ending of the experimental study, a permanence test was applied. According to the results obtained from this study, it can be stated that the cognitive coaching-supported reflective teaching approach in teaching of the English language is an effective method for increasing students' academic success and permanence of success compared to the current program.

Key words: Reflective teaching, cognitive coaching.

INTRODUCTION

Globalization inevitably brings constant change and development with it, resulting in swift changes and developments in the field of education and several other fields. Genç and Eryaman (2008) opine that education is the fundamental tool for change, and development occurs as a result of the acquisition and spreading of knowledge. Change in the field of education means more than applying change in a class. Contrary to this, actual change is a multidimensional phenomenon which is hard to complete, requires practice and aims to achieve an educational purpose (Fullan, 2001). Today's learners' and future learners' needs to be different from one another. Learners' needs have increased to such an extent that traditional methods alone cannot be sufficient. Therefore, today's educators face a completely different learning group (Çiçek, 2012). It is an indisputable fact that this new learner group, differentiated with the effects of changes and developments in the education system,

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needs to speak foreign languages more than ever (Gömleksiz, 2014, 2010; Najeeb, 2013). It has become a necessity to teach and learn English because of the global spread of it in science, technology, trade and education. English that is highly important for the socio-economic development of countries, has also become a key to success for individuals (El-Fiki, 2012). English "has become the central language of communication in business, politics, administration, science and academia, as well as being the dominant language of globalized advertising and popular culture." (Held et al., 1999) English proficiency is also a key factor in the globalization process of nations. Revolution of information technologies has shortened the distances between different nations and destroyed the borders between them and the English Language has played an undeniable role in that process (Al-Jadidi, 2009). Since English is acceptable all around the world for being understood by everyone (Sarica and Cavus, 2009).

Learning English then has become a need in order to access information easily, share acquired information, improved communication on every aspect and, most importantly, make life easier and broaden one's horizons. English has a significant status in Turkey as well. With regard to importance of English in Turkey, students have English lessons from second class in Primary Education through to the end of university. Nevertheless, students' English proficiency level and their communication ability is quite low. There are many factors that can affect learners' English education negatively such as grammar based teaching process, learning styles and strategies, motivation of the teacher and the students, exam based education and so on. According to Lei and Qin (2009) that failure factors in ELT are lack of confidence and effort, test oriented learning and lack of practice and external elements. Batstone also indicate that if there are little external stimuli like in the countries where English is not spoken, instructors will have more responsibility to encourage students on English and increase their exposure to the language (1996). When viewed from this aspect language education in Turkey needs to be improved, the problems about this field have to be overcome and alternative approaches should be utilized to make language learning more practical. Therefore, in today's world where learning English is getting increasingly important, some changes and developments are inevitable in the framework of teaching the English language. Hence, Çiçek (2012) hypothesizes that current systems of education should abandon uniform teaching methods and comply with the evolving conditions by taking changing and different needs and interests of learners into account. Fullan (2001) states that teachers should understand non-traditional, modern students who are the voices of this change, observe in-class practices and include more students in the process. Thus, students would learn better as they become integrated with their

own learning processes by structuring what they have gained.

At this point reflective teaching occupies an important position for monitoring students' own learning processes. During the reflection process, individuals need a safe harbor where their mistakes would be accepted and they could request help. In that harbor, the inconsistencies in practices and irrationalities in mentalities could be revealed without hesitation. While individuals recognize themselves by becoming integrated with their own learning processes, they could also help others to do the same (Larrivee, 2010). In this regard, it is important to address the concept of cognitive coaching. Asta (2009) theorizes that the most effective reflection is achieved through talking to a counsellor. Cognitive coaching, which is also seen as a counseling process, has an important position in the reflection process. Lin (2012), Bjerken (2013), Eger (2006) put forth the theory that cognitive coaching activities improve the power of reflective thinking and increase the reflection capacity. A cognitive coach encourages the ones whom he or she instructs to think. This person aims to improve the comprehension and awareness of individuals by using reflection and meta-cognitive processes (Diaz, 2013). Cognitive coaching models deepen reflection and support the professional development of individuals (Bjerken, 2013). Cognitive coaching practices also help break the ice in the education system and save it from traditionalism (Cochran and Dcehesere, 1995).

As we infer from the statements mentioned above language teaching in Turkey needs to be saved from traditional practices. In line with this purpose reflective teaching and cognitive coaching should be utilized in language teaching. Since the main paradigm of new learning models in the modern education-teaching process are putting students in the center, focus on raising individuals with creativity, reflective, analytical, high level thinking and problem solving abilities who learn by themselves, by practice and experience. In this sense, it is believed that it would be beneficial to apply new methods and activities rather than previously recommended and applied ones. Savignon indicated that language learning is a complex and varied context so learners need to go beyond the methods (2007). Thus, the traditional language teaching methods should give place to the new ones that supported by the researches. According to the researches a successful language learner should have a great repertoire of cognitive and meta-cognitive learning strategies (Oxford and Crookall, 1989). At this point cognitive coaching which is an 'interactive strategy' (Costa and Garmston, 2002) should be used to produce self-directed language learners. In addition to these reflection is required in a successful language learning process (Farrel, 1999). Cognitive coaches believe that "*human beings construct their own meaning through reflecting on experience and through*

interactions with others" (Costa and Garmston, 2002: 7). Analyzing the studies in language learning and teaching fields it can be observed that there is still a need for a better method or approach for attainment. By taking advantage of the cognitive aspect of coaching, which is one of the new concepts as a result of the swiftly changing world, it is anticipated that reflective teaching activities would help individuals achieve success in their foreign language learning process by giving them the chance to get to know themselves. Starting from this point we tried to find the answers of the research questions below so that the study results can form a new alternative for approaches in the literature.

Research question

What is the effect of the cognitive coaching-supported reflective teaching approach in the teaching of English language on the academic success of students and on the permanence of success?

Sub research questions

1) Are there any significant differences between the experimental group, to which the approach was applied, and the control group, to which the current program was applied in regards to the scores in the success test?
2) Are there any significant differences between the experimental group, to which approach was applied, and the control group, to which the current program was applied in regards to the scores in the permanence test?

METHODOLOGY

Research design

This study was conducted using the 'pre-test/post-test control group' design, which is one of the most accurate score models. In this design, measurements are made before and after the experimental procedure on the groups (Karasar, 2003). In this study, the experimental and control groups, consisting of thirty people each, were determined according to specific criteria so as to objectively form these groups. The criterion scores of objectivity for the groups were in normal range. As a result of the required calculations and pre-test application of the success test before the experimental procedure, it was concluded that the experimental and control groups were assigned objectively and were equivalent. Throughout the seven-week experimental application, the reflective teaching practices were applied to the experimental group, while the students in that group were also coached by the researcher during their break, before the process until the end of the experiment. The control group's lectures were taught within the scope of the current program. The experimental procedure was conducted by the researcher and another instructor gave lectures voluntarily to one of the classes which consisted of the control group. After the process, the post-test, which is the success test, was applied to the experimental and control groups in order to

determine the changes in the academic levels of the students. After 3 weeks from the end of the study, the permanence test, as the success test, was applied to the groups.

Study group

The study group comprised a total of 94 preparatory class students from four different branches at the School of Foreign Languages, Fırat University, Elazığ, Turkey during spring semester of the 2013/2014 academic year. Students were assigned to study groups objectively so as to conduct an experimental study. Objective criteria for this study are as follows: the pre-test scores of the students, their grade point averages for the I. Term Grammar lecture, their total average points in the I. Term Main Course, Grammar and Reading lectures and, their YGS (Transition to Higher Education Exam) scores. First, the data was classified using the clustering analysis and then, the data obtained was evaluated using computer package software (SPSS 17). Clustering analysis gives researchers summarized information by classifying the unclassified data according to its similarities (Kalaycı, 2010). K-means technique was used in the study, which is among the non-hierarchical clustering methods, since it was known at the beginning that the study would be conducted on two groups (experimental + control). Therefore, 30 students among 47, which was the total number of two classes, were selected for the experimental group, and 30 students from 47, the total number of the other two classes, were selected as the control group for the study. As a result, the total number of the students in the experimental and control groups were 60. The number of the students in both groups was equal, which is a positive fact. After it was understood that the test scores used to determine the groups were in normal range, statistical procedures were initiated so as to ensure objectivity. It was seen that there were no statistically significant differences between the students' scores in the experimental and control groups and hence, it was understood that the groups determined for the study were equal in the sense of the identified criteria.

Data collection procedure

The process steps in this study conducted with the experimental and control groups within the English grammar lecture in the preparatory classes are as follows:

1) Cognitive coaching-supported reflective teaching techniques were prepared regarding the topics which would be taught during the seven week-practice period. These techniques were prepared based on the opinion of experts. They were put into final form with the necessary revisions after receiving the expert opinion. The success test was similarly prepared by the researcher for the pre-trial application with the help of expert opinions. Afterwards, it was put into final form depending on the results of the preliminary trial.
2) Before the process was initiated, meetings were conducted with the school administration, required permissions were obtained, and the process was discussed in detail with the administration. Additionally, during the same period, the first meeting was held with the two classes in the experimental group so as to build a mutual trust in line with Costa's and Garmston's (2002) cognitive coaching process. The instructor who would be teaching the control group was assigned on a voluntary basis. The study details were given to the voluntary instructor and the lectures were carried out meticulously during the process, which had a high importance for the study. Thus, the planning was completed.
3) The achievement test was applied to the classes as the pre-test

prior to the process, and the groups were objectively dedicated as the experimental and control groups by comparing the means of classes according to the results. As no significant difference was observed between the groups the process was initiated.

4) Throughout the seven weeks, reflective teaching activities during lectures, and cognitive coaching discussions during break continued correspondingly in the experimental group. An application under the teacher's book prepared by the administration of the School of Foreign Languages was performed in the control group.

5) After the applications in the experimental and control groups, the achievement test prepared by the investigator was applied to both groups as the post-test, and three weeks later, the same test was applied as the permanence test. The final meeting of the cognitive coaching was held, and students were given the chance to express their opinions about the process. The data obtained from those procedures was transferred into a computer program.

Data collection instruments

In order to determine the effect of the cognitive coaching-supported reflective teaching approach in English language lecture on student success, an academic achievement test was prepared by the researcher in line with the course book that would be used during the term. The purpose of the achievement test is to determine the preliminary knowledge of the students, observe the achievement after the application and, measure the permanence of student knowledge 3 weeks after the application. Bearing in mind that the practice would last seven weeks and the levels of classes are B 2, in line with the Common European Framework of Reference for Languages, and appropriate acquisitions and topics were determined. The achievement test was prepared as 55 questions at the beginning. Then it was submitted to experts, one is associate the other is assistant professors at Educational Science Faculty and four instructors at the School of Foreign Languages in Fırat University, for their opinions to check its content validity.

The test was reformed according to their opinions, and was applied to 300 students who were in the preparatory class last year to determine the reliability. The item analysis of the test was conducted with the TAP (version2007a) program after the pilot application. The item analysis, item difficulty indices and item discrimination indices were used and the items whose measurement ability was low were omitted from the test. Accordingly, 5 items were excluded and 4 items were revised. The achievement test comprised 50 items in its final version. The KR 20 reliability coefficient of the composed test was calculated as 0.88. The reliability test scored a coefficient of 0.70 which is higher and accepted as adequate (Büyüköztürk, 2011). In conclusion, the reliability of the test prepared to measure the students' academic success and the permanence of what they had learned was considered as adequate; the test was applied to the students as the pretest, post-test and permanence test.

Analysis of data

The T test for dependent and independent sample was used to analyze the data obtained within the study. Whereas t test for independent group was used to compare the pre-test, post-test and permanence test scores of the experimental group to which the cognitive coaching-supported reflective teaching approach was applied, and the control group to which the current teaching program was applied. The t test for dependent groups was used for the comparison of the individual pre-test, post-test and permanence test scores for each group. The main reason behind this is that t

test for independent group is used to test whether the differences in the scores between two independent groups are significant or not ;whereas t test for dependent group is used to test whether the differences between the same groups before and after the applied program are significant or not (Büyüköztürk, 2011).

RESULTS

Research First Sub Question: Are there any significant differences between the experimental group, to which the cognitive coaching-supported reflective teaching approach was applied, and the control group, to which the current program was applied in regards to the scores in the success test?

This sub question was aimed at determining the effect of the practices applied to the experiment and control groups on the students' academic development, and also to compare student achievement. In line with this purpose, the English language success test prepared by the researcher was applied to the groups before and after the process, and the results were compared. At the first stage, after it was understood that the students' pre-test and post-test scores were in normal range, t test for the dependent group was used to examine the differences between the scores. Table 1 displays the results obtained.

If Table 1 is examined, the arithmetic mean of the pre-test and post-test scores of the control group can be seen as ($\overline{X}_{pretest}$= 24.46; $\overline{X}_{posttest}$=35.70). There is no significant difference between the pre-test and post-test scores of the control group [$t_{(29)}$=17.67; $p<0.05$]. The total post-test score increases and the difference occurred is calculated as $\overline{X}_{post} - \overline{X}_{pre}$= 10.54. As it can be clearly seen, this difference is on behalf of the post-test scores.

The pre-test and post-test scores of the students in the experimental group were also examined in regard to normal range, and after observing that they were in normal range, the t test for dependent group was used to determine the difference. Table 2 displays the results of that statistical procedure.

Table 2 displays the arithmetic mean of the pre-test and post-test scores of the experimental group ($\overline{X}_{pretest}$=23.96; $\overline{X}_{posttest}$=40.16) as the success test. There is no statistically significant difference between the pre-test and post-test scores of the experimental group [$t_{(29)}$=-19,33; $p<0,05$]. The total post-test score increases and the occurred difference is calculated as $\overline{X}_{post} - \overline{X}_{pre}$= 16.2. It was discovered that this difference is for the post-test scores. This finding clearly demonstrates that the cognitive coaching-supported reflective teaching approach is effective for increasing the success of students. The nonparametric Mann Whitney U test was used, which is one of the t tests for independent groups,

Table 1. The Results of t-Test for dependent group for the pre-test and post-test scores of the control group.

Experimental group	n	$\overline{X}$	S	r	t	p
Pre-test	30	24.46	2.59	0.326	-17.67	0.000
Post-test	30	35.70	3.31			

*p<0.05.

Table 2. The Results of t-Test for dependent group for the pre-test and post-test scores of the experimental group.

Experimental group	n	$\overline{X}$	S	r	t	p
Pre-test	30	23.96	2.72	0.607	-19.33*	0.000
Post-test	30	40.16	5.69			

*p<0.05.

so as to reveal the significance of the difference between the English language success scores of the students in the experimental and control groups, following the experimental procedures. The reason for using this test is the fact that the post-test scores of the groups were not in normal range with the data obtained after the Levene test was applied. Table 3 displays the success of the post-test results of the students in the experimental and control groups.

The statistical procedures demonstrate that there is a significant difference between the groups' scores regarding the post-test practice as the success test (MWU=219,000; p=0.001). The significance level is lower than p= 0.05 value, which demonstrates a significant difference between the means of the success post-test scores of the students participating in the study according to the groups. This finding demonstrates that the cognitive coaching-supported reflective teaching approach has a positive effect on the academic success of students in the experimental group when compared to the traditional practice.

Findings regarding the Second Sub Research Questions

The second sub question of the study has been put forth as "are there any significant differences between the experimental group, to which the cognitive coaching-supported reflective teaching approach was applied, and the control group, to which the current program was applied in regards to the scores in the permanence test?" This sub problem was aimed at determining if there was a difference between the experimental group, to which the cognitive coaching-supported reflective teaching

approach was applied, and the control group, to which the current teaching program was applied, regarding the permanence of what had been learned. In line with this purpose, after the experimental procedures, the groups' scores were examined with the Levene test at the first stage so as to determine whether there was any significant difference between the experimental and control groups regarding the permanence. The scores were found not to be in normal range. After this procedure, the Mann Whitney U test was applied, which is one of the nonparametric tests. Table 4 displays the results obtained after those statistical procedures.

The statistical procedures demonstrate that there is a significant difference between the groups' scores regarding the permanence test as the success test [MWU=111.000; p=0.000]. The significance level is lower than p= 0.05 which demonstrates that there is a significant difference between the means of the success test permanence scores of the students participating in the study for the experimental group. This finding demonstrates that the cognitive coaching-supported reflective teaching approach has a significant effect on the permanence of the academic success of the students in the experimental group when compared to the traditional practice.

CONCLUSION

To achieve success in the education system, each subject participating in the process should contribute to it. The main purpose is to succeed in all levels of the system. However, success means failure unless it is achieved at the student level (Fullan, 2001). In Turkey traditional language teaching methods are not functional

Table 3. The results of Mann Whitney U and t-Test regarding the experimental and control groups' post-test practice success.

Group	n	x̄	S	SD	Levene		T	p	M.W.U		Mean Rank	Total Rank
					F	p			M.W.U	p		
Experimental	30	40.16	5.69								38.20	1146.00
Control	30	35.70	3.31	58	7.61	0.008	3.711	0.000	219,000	0.001		
Total	60										22.80	684.00

*p<0.05.

Table 4. The results of Mann Whitney U and t-Test regarding the experimental and control groups' success test permanence practice.

Group	n	x̄	S	SD	Levene		T	p	M.W.U		Mean rank	Total rank
					F	p			M.W.U	p		
Experimental	30	39.10	5.16								41.80	1254.00
Control	30	31.80	3.16	58	6.64	0.012	6.596	0.000	111,000	0.000		
Total	60										19.20	576.00

any more in terms of students' English learning levels. In this regard it should be gone beyond the previously recommended and applied methods and activities. With new methods and activities, individuals can succeed in the foreign language learning process by getting to know themselves with the help of reflective teaching activities which can be of benefit from the cognitive aspect of coaching. Within the context of the study, to determine the effect of the cognitive coaching-supported reflective teaching practices in English language learning on the academic success of the preparatory class students, statistical procedures were used. First, it was discovered that the experimental and control groups' total scores ofthe pre-test, post-test and permanence test as the English language success test were not in normal range. Then the results of the analysis demonstrated that the post-test scores were significant on behalf of the experimental group. It was discovered that the method used in the study is more effective to increase the students' academic success than the current teaching method used on the control group. Students who familiarize themselves with learning tactics showed a higher success rate of mastering and retaining information and as they evaluated themselves during the process with reflections. Their success also increased when they got support with a cognitive coach. Indeed, the results of the study regarding the success supported these comments. Students whose teachers getting cognitive coaching training and approach are more successful compared to the ones whose teachers do not apply this method (Rennick, 2002). Demir (2009) proved that the cognitive coaching method creates significant differences on the success of the experimental group students. Ceylan (2011) also proved that the cognitive coaching method increases student success. Rinaldi (2013) used the cognitive coaching method in mathematics which helped in student success. Diaz (2013) opines that cognitive coaching has a positive effect on the success of students with the support of reflection. All these results demonstrate that cognitive coaching-supported reflective teaching practices increase students' academic success. After examining the effect of the cognitive coaching-supported reflective teaching approach in English language learning on the permanence of success, it was observed that the permanence test results of two study groups were significantly in favor of the experimental group. Based on this, it was

concluded that the new approach applied in the study had relatively positive results regarding the permanence when compared to the current teaching method. In other words, learning in the education system based on current teaching methods did not demonstrate permanence, whereas the permanence of learning in the experimental group receiving lectures based on the cognitive coaching-supported reflective teaching approach increased. The success of this research may be due to the fact that lectures were taught within the non-traditional constructivist program framework. In this framework, several different learning activities were performed in the courses, including reflective ones, increasing the students' attention to lectures. Cognitive coaching process also played an important role in students' educational improvement in terms of language learning.

Since cognitive coaching practices in general helps melting the ice in the system of education and spare it from traditionalism (Cochran and Dcehesere, 1995). Teachers as cognitive coaches and mentors to learners in each step of the learning process contribute to increasing students' academic success and to the permanence of what they have learned. As a result, there was a significant difference regarding the total permanence test scores of the students in the experimental and control groups as the English language success test. Learning is based on individual, and what make learners autonomous are the practices applied. This study aimed to give individuals independence and increase their success by teaching them to play the leading role in their learning process and to draw new paths to foreign language learning. It would be fair to state that those aims were achieved. Also by this study, students in experimental group were enabled to acquire more experience in language learning and the permanence of their knowledge in this field was ensured through these experience.

RECOMMENDATIONS

The recommendations put forth in accordance to the results of the study are as follows:

1. Alternative methods and techniques for the teaching of English language have been researched for a long time. The approach in the present study has been practiced on an academic level in English teaching. More experimental studies can be conducted to find out whether the approach is suitable or not to use in the other teaching stages.
2. When the efficiency of the cognitive coaching method on student success and on permanence of what has been learned is taken into consideration, cognitive coaching can be beneficial for education by informing instructors and teachers in other stages about this

method, and by institutionalizing cognitive coaching in some schools so as to give students autonomy in their learning process.
3. In this study, the cognitive coaching method has been used to support reflective teaching practices. More experimental studies can be conducted to examine cognitive coaching with other constructive teaching practices.
4. The cognitive coaching-supported reflective teaching approach was applied. It can be examined to what the extent to which studies that bring cognitive coaching and different methods together that increase students' success and permanence of success.
5. More experimental studies can be conducted to examine the efficiency of the cognitive coaching-supported reflective teaching approach applied to English learning in this study on different lectures. In future studies, findings can be made stronger with a longer experimental process or with a larger study group.

Conflict of Interests

The authors have not declared any conflict of interests.

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Educational Research and Reviews

Full Length Research Paper

An investigation of the class management profiles of students of physical education and sports teaching departments

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The objective of this research is to examine and analyze the class management profiles of 3rd and 4th grade students of Physical Education and SportsTeaching Departments of universities in Turkey based on gender, grade level and university. The research population comprised 375 students (170 females and 205 males) of Physical Education and Sports Teaching departments in Gazi University, Abant Izzet Baysal University, Kocaeli University, Sakarya University, and AnadoluUniversity. The "Class Management Profile Scale (CMPS)", which was developed by Kris (1996) and adapted into Turkish by Ekici, was used as the data collection tool. In the data analysis, the T test and One-Way analysis of variance were performed on the independent groups for determining whether or not the scale in general and its sub-dimensions showed any significant difference according to gender, class level, and the university. According to the results of the research, it was determined that the average of the idle class management profiles of the male students proved to be significantly higher than those of the female students, and that 3rd grade students had a more authoritative class management profile than 4th grade students.

INTRODUCTION

The investment made on information as well as acquiring it is one of the prerequisites for the transition to a knowledge-based society. For this reason, in order for nations to be able to turn into knowledge-based (information) societies, they need to make investments on information and human resources and to improve particularly educational institutions as soon as possible.

The success of education will only be assessed by the power of being able to raise the individuals that are capable of competing in the international arena. Hence, to raise individuals who fit into the worldly standards and who are capable of existing within the global arena can be possible with the development of all the educational institutions, starting from primary school to higher

education level (Ercoşkun, 2011). In this context, it is of great importance to make school environments appropriate for today's conditions.

One of the most important factors that affect education within the school environment is the class management profile of the teacher. The teacher, along with the class management profiles he/she exhibits and practices within the classroom, wishes to create behavioral changes in his/her students and tries to provide an adequate level of motivation in them, as well. The behavioral patterns exhibited by teachers in the process of communication shape their class management profiles (Aluçdibi and Ekici, 2012). Class management involves educational program and planning, creating a suitable atmosphere for learning in the classroom, physical arrangements, the flow of the teaching and educational process as well as time management, organizing relationships within the classroom environment within the framework of certain rules, providing an effective coordination between the instructor and the student, and ensuring students' motivation (Sarıtaş, 2003). In other words, class management ensures the participation of all the students for an effective teaching and education as well as allowing the learning process to take place on a high-quality level and creating environments that promote the learning process (Weinstein, 1996). Since it is the teacher him/herself who is responsible for organizing and conducting the educational processes necessary for an effective class management, the most strategic variable, in this case, is the teacher. Therefore, a teacher is supposed to provide the physical and psychological environment and atmosphere necessary for class education (Aydın, 2004).

Since the objective of all learning activities carried out within classroom environment is to enable students to learn effectively, the teacher should have a positive influence on the students with the behaviors he/she exhibits within the classroom. Leaving positive impressions on the students will be possible through a positive communicative process established between the teacher and his/her students (Ekici, 2004). An effective communication is important for the development of a mutual respect in class management. The more the students have a harmonious communication with their teachers within the classroom, the more they will get motivated during the learning process (Brown, 2005). Within this context, today's teachers must have the skills to be able to exhibit a good management so as to become successful in class management (Glasser, 1999). In this research, the class management profiles of the students were dealt in four dimensions: Authoritative, Appreciated, Idle, and Unconcerned Profiles. According to Kris (1996), in the Authoritative Class Management Profile, the teacher's control and restrictions over the students become prominent, through which the teacher's authority over the classroom is clearly observed. In the

Appreciated Class Management Profile, the teacher's control and restrictions over the students are based on sensible reasons, and the student is encouraged independently and by him/herself. In the Idle Class Management Profile; however, the teacher fails to have control over the students and prefers to stay as a viewer/watcher. On the other hand, in the Unconcerned Class Management Profile, the teacher acts rather insensitively towards the students and never engages in the class (Ekici, 2004).

When the studies conducted as to how an efficient educational process should be were reviewed, it was ascertained that an effective class management skill was the most important factor that determined the educational success (Erden, 2001). In line with the targets and acquisitions determined as parts of the educational system, the teachers who take the responsibility for creating the desired behaviors in individuals have quite significant tasks. The elements regarding the increase ordecreasein students' academic success, which stem from teachers in particular, are among the major issues mentioned in the studies carried out in the field of teaching and education. Within this context, determining what sort of class management profiles the teacher candidates have should not be ignored, either. Thus, this research is thought to make a contribution to this field. The objective of this study is to determine the class management profiles of the students of the department of physical education and sports teaching based on variables such as gender, class level and the university they attend.

METHODS

Survey Research Method was used in this study. The Survey Research Method aims to determine the certain traits/characteristics of a given group (Büyüköztürk et al., 2013).

Research population

The research population consisted of a total of 375 participants in the Departments of Physical Education and Sports Teaching Departments of Abant Izzet Baysal University (n = 43; 11.5%), Anadolu University (n=50; 13.3%), Gazi University (n=102; 27.2%), Kocaeli University (n =73; 19.5%), and Sakarya University (n = 107; 28.5%) in 2015 to 2016 academic year. 54.7% of the students who participated in the study were males (n= 205), whereas 45.3% of them were females (n =170). When the distribution of the participants according to classes was examined, 41.6% of them were in 3rd Grade, while 54.7% of them were in 4th Grade. On the other hand, when the distribution of their ages was examined, it was observed that 48.3% (n = 181) of the individuals were aged between 20 to 22, while 33.6% of them (n = 126) were aged between 23 to 25, and 18.1% of them (n = 68) were over 24.

Data collection tools

In the research, a personal information form consisting of 4 items,

which aimed to determine the personal information of the students in question, and also the "Class Management Profile Scale (CMPS)", which was developed by Kris (1996) and adapted into Turkish by Ekici (2004), were used. The data were collected directly from students after an interview. Personal information form included data on the age, gender, grade level and university name. The scale arranged in a total of 12 items for four types of class management profiles allows for a personal evaluation. There are a total of 3 items each for class management profile. The participants can mark each item by rating them between 1 and 5. Accordingly, the highest score that the participants can get from each class management profile group is 15, while the lowest score to be obtained is 3. Since CMPS in general consists of 12 items, the highest score to be obtained is 60, whereas the lowest score can be 12. The scale has 4 different class management profiles. Authoritative Class Management Profile, Appreciated Class Management Profile, Idle Class Management Profile and Unconcerned Class Management Profile.

In the scale arranged as a five-point Likert scale, the items are graded as "I absolutely agree" (5 points), "I agree" (4 points), "I amhesitant" (3 points), "I disagree" (2 points), and "I absolutely disagree" (1 point). While the Cronbach's Alpha reliability value of CMPS in general was calculated as 0.87, it was calculated as 0.82 for the Authoritative Class Management Profile (1st, 3rd, 9th items), 0.80 for the Appreciated Class Management Profile (4th, 8th, 11th items), .84, for the Idle Class Management Profile (6th, 10th, 12th items); and 0.78 for the Unconcerned Class Management Profile (2nd, 5th, 7th items). To determine the reliability level of the class management scale used in the research, the Cronbach's Alpha coefficient was calculated as 79.4%.

Data analysis

For the purpose of determining whether or not CMPS in general and its sub-dimensions showed any significant difference according to gender, class level and the universities attended, the SPSS program was used, and the T-test and One-Way Analysis of Variance were performed in independent groups.

FINDINGS

The distribution of the answers given to the questions in each item of CMPS is given in Table 1. When Table 2 is examined; for all of the participants, the mean of Authoritative Class Management Profile is x= 10.54; the mean of Appreciated Class Management Profile is x=11.73; whereas the mean of Idle Class Management Profile is x=10.62; and the mean of Unconcerned Class Management Profile is 9.35. The mean CMPS General Score, on the other hand, is x=42.24.

The Comparison between the class management profile scale and Its Sub-Dimensions according to gender

The T test results are given in Table 3 in the independent groups, performed to determine the averages of CMPS and its sub-dimensions according to gender and also to find out whether the difference between these averages

was significant or not. According to the results in Table 3, the average of the male individuals for the sub-dimension of the Authoritative Class Management Profile is x=10.58, whereas the average for the female ones is x=10.49. There is no significant difference between male and female students in terms of the Authoritative Class Management Profile (t (372)=0.435; p<0.05).The average of the male individuals for the sub-dimension of the Appreciated Class Management Profile is x=11.87, whereas the average for the female ones is x=11.56.There is no significant difference between male and female students in terms of the Appreciated Class Management Profile (t (372)=1.43; p<0.05). On the other hand, the average of the male individuals for the sub-dimension of the Idle Class Management Profile is x=10.81; whereas the average for the female ones is x=10.38. There is a significant difference between male and female students in terms of Idle Class Management Profile (t (372)=1.979; p<0.05). The mean of Idle Class Management Profile of the male students is significantly higher than that of the female ones (p<0.05). The average of the male individuals for the sub-dimension of the Unconcerned Class Management Profile; however, is x= 9.30; whereas the average for the female ones is x=9.40. There is no significant difference between male and female students in terms of the Unconcerned Class Management Profile (t(372)=0.427; p<0.05). When CMPS general score is examined, the average of the male students is x=42.55; whereas the average of the female students is x=41.83.There is no significant difference between male and female students in terms of the general score of the Class Management Profile Inventory (t(372)=1.22; p<0.05).

The comparison between the class management profile scale and its sub-dimensions according to class level

The T test results are given in Table 4 for the independent groups. The tests were performed to determine the averages of CMPS and its sub-dimensions according to class level and also to find out whether the difference between these averages was significant or not. According to the results in Table 4, the average of the 3rd Grade students for the sub-dimension of the Authoritative Class Management Profile is x=10.90; whereas the average of the 4th Grade students is x=10.25. There is a significant difference (p<0.05) between 3rd Grade and 4th Grade students in terms of the mean value of Authoritative Class Management Profiles. The mean value of Authoritative Class Management Profile of the 3rd Grade students is significantly higher than that of 4th Grade students (t (372) =3.390; p<0.05). While the average of the 3rd Grade students for the sub-dimension of the Appreciated Class Management Profile isx=11.86; the average of 4th Grade students is x=11.63. There is

Table 1. The Distribution of the Answers Given to the Questions in the Items of the Class Management Profile Scale.

Parameter	I absolutely disagree		I disagree		I am hesitant		I agree		I absolutely agree	
	n	%	n	%	n	%	n	%	n	%
1. If a student ruins the class order, I unquestionably stand in his/her way	8	2.1	24	6.4	42	11.2	146	39.0	154	41.2
2. I do not want to impose the rules upon my students	8	2.2	45	12.1	56	15.1	155	41.7	108	29.0
3. The classroom must be silent to allow my students to learn	3	0.8	21	5.7	35	9.5	156	42.2	155	41.9
4. I am interested in both the subject the students learn and how they learn it	4	1.1	9	2.4	33	8.9	142	38.2	184	49.5
5. If a student brings his/her homework late, it is not my problem.	39	10.6	102	27.6	95	25.7	85	23.0	48	13.0
6. I do not want to scold the student, because I may hurt his/her feelings.	5	1.4	29	7.9	71	19.3	131	35.6	132	35.9
7. Class preparations are not worthwhile for teaching activities.	122	32.9	85	22.9	58	15.6	61	16.4	45	12.1
8. I always try to explain the reasons for my decisions and principles to my students.	10	2.7	25	6.9	40	11.0	153	42.0	136	37.4
9. I do not accept the "excuses or apologies" of a student who is late for class.	123	33.1	121	32.5	59	15.9	47	12.6	22	5.9
10. The good emotional state of the student is more important to me than the class control.	14	3.9	40	11.1	119	33.0	117	32.4	71	19.7
11. My students, if they have any questions about the subject, have already understood the fact that they can ask their questions by interrupting my presentation.	27	7.3	63	17.1	87	23.6	116	31.5	75	20.4
12. If a student asks for permission, I always give permission.	23	6.2	94	25.3	107	28.8	93	25.1	54	14.6

Table 2. Mean Scores of the Class Management Profile Scale.

Parameter	$\mathfrak{R}$	S	Min.	Max.
Authoritative class management profile	10.54	1.86	5.00	15.00
Appreciated class management profile	11.73	2.10	4.00	15.00
Idle class management profile	10.62	2.07	3.00	15.00
Unconcerned class management profile	9.35	2.36	3.00	15.00
CMPS general score	42.24	5.62	18.00	57.00

no significant difference between 3rd Grade and 4th Grade students in terms of the mean value of Appreciated Class Management Profiles ($t(372)=1.056$; $p<0.05$). The average of 3rd Grade students for the sub-dimension of the Idle Class Management Profile is $x=10.78$; whereas the average of 4th Grade students is $x=10.50$.

There is no significant difference between 3rd Grade and 4th Grade students in terms of the

Table 3. Comparison between the Class Management Profile Scale and Its Sub-Dimensions According to Gender.

Parameter		N	☐	S	t	p
Authoritative class management profile	Male	205	10.58	1.83	0.435	0.664
	Female	169	10.49	1.91		
Appreciated class management profile	Male	205	11.87	2.16	1.430	0.154
	Female	169	11.56	2.02		
Idle class management profile	Male	205	10.81	1.98	1.979	0.049*
	Female	169	10.38	2.17		
Unconcerned class management profile	Male	205	9.30	2.39	0.427	0.670
	Female	169	9.40	2.33		
CMPS general score	Male	205	42.55	5.22	1.228	0.220
	Female	169	41.83	6.07		

*p<0.05.

Table 4. Comparison between the Class Management Profile Scale and Its Sub-Dimensions According to Class Level.

Parameter		N	☐	S	t	p
Authoritative Class Management Profile	3rd Grade	164	10.90	1.66	3.390	0.001*
	4th Grade	210	10.25	1.96		
Appreciated Class Management Profile	3rd Grade	164	11.86	1.82	1.056	0.292
	4th Grade	210	11.63	2.30		
Idle Class Management Profile	3rd Grade	164	10.78	1.71	1.276	0.203
	4th Grade	210	10.50	2.32		
Unconcerned Class Management Profile	3rd Grade	164	9.52	2.47	1.279	0.202
	4th Grade	210	9.20	2.26		
CMPS General Score	3rd Grade	164	43.05	5.04	2.524	0.012*
	4th Grade	210	41.59	5.98		

*p<0.05

mean value of Idle Class Management Profiles (t(372)=1.276; p<0.05). On the other hand, the average of 3rd Grade students for the sub-dimension of the Unconcerned Class Management Profile is x=9.52; whereas the average of 4th Grade students is x=9.20. There is no significant difference between 3rd Grade and 4th Grade students in terms of the mean value of Unconcerned Class Management Profiles (t(372)=1.279; p<0.05). As for CMPS General Score, the average of 3rd Grade students is x=43.05; while the average of 4th Grade students is x=41,59. There is a significant difference (p<0,05) between 3rd Grade and 4th Grade students in terms of the mean value of CMPS General Scores. The mean of CMPS General Score of 3rd Grade students is significantly higher than that of 4th Grade students (t(372)=2.524; p<0.05).

The comparison between the class management profile scale and its sub-dimensions according to the universities attended

The results of One-Way Analysis of Variance (One Way ANOVA) are given in Table 5. The test was performed to

Table 5. Comparison between the Class Management Profile Scale and Its Sub-Dimensions According to the Universities Attended.

Parameter		N	□	S	F	p
Authoritative class management profile	Abant Izzet Baysal University	43	10.40	1.55		
	Anadolu University	50	10.56	1.20		
	Gazi University	102	10.30	1.80	2.048	0.087
	Kocaeli University	73	10.33	1.88		
	Sakarya University	107	10.95	2.21		
	Total	375	10.54	1.86		
Appreciated class management profile	Abant Izzet Baysal University	43	11.47	1.92		
	Anadolu University	50	11.00	1.60		
	Gazi University	102	12.38	1.71	6.515	0.000*
	Kocaeli University	73	12.14	2,03		
	Sakarya University	107	11.26	2.51		
	Total	375	11.73	2.10		
Idle class management profile	Abant Izzet Baysal University	43	10.30	2.02		
	Anadolu University	50	9.84	1.15		
	Gazi University	102	10.75	1.83	3.600	0.007*
	Kocaeli University	73	11.19	2.32		
	Sakarya University	107	10.61	2.35		
	Total	375	10.62	2.07		
Unconcerned class management profile	Abant Izzet Baysal University	43	8.98	2.50		
	Anadolu University	50	8.90	1.98		
	Gazi University	102	8.49	1.88	9.272	0.000*
	Kocaeli University	73	9.81	2.17		
	Sakarya University	107	10.23	2.66		
	Total	375	9.35	2.36		
CMPS general score	Abant Izzet Baysal University	43	41.14	4.09		
	Anadolu University	50	40.30	2.87		
	Gazi University	102	43.92	4.05	3.506	0.008*
	Kocaeli University	73	43.47	4.82		
	Sakarya University	107	41.36	8.10		
	Total	375	42.24	5.62		

*$p < 0.05$.

determine the averages of CMPS and its sub-dimensions according to the universities attended and also to find out whether the difference between these averages was significant or not.

According to the results in Table 5, the sub-dimension of the Authoritative Class Management Profile does not show any significant difference according to the universities attended, whereas the Appreciated Class Management Profile, Idle Class Management Profile, Unconcerned Class Management Profile and the general CMPS score show significant difference according to the universities attended. According to the results of Tukey's

HSD (Honest Significant Difference) test, performed to determine which group that difference stemmed from; the average of the students of Gazi University (x=12.38) proved to be significantly different from and higher ($p<0.05$) than that of the students of Abant Izzet Baysal University (x=11.47), Sakarya University (x=11.26) and Anadolu University (x=11.00) in terms of the sub-dimension of the Appreciated Class Management Profile; whereas, there is no significant difference as far as the average of Kocaeli University (x=12.14) is concerned ($p<0.05$).

The average of the students of Anadolu University

(x=9.84) proved to be significantly different from and lower (p<0.05) than that of the students of Gazi University (x=10.75), Kocaeli University (x=11.19) and Sakarya University (x=10.61) in terms of the sub-dimension of the Idle Class Management Profile; whereas, there is no significant difference when compared with the students of Abant Izzet Baysal University (x=10.30) (p<0.05). T*he average of the students of* Sakarya University (x=10.23) proved to be significantly different from and higher (p<0.05) than that of the students of Abant Izzet Baysal University (x=8.98), Anadolu University (x=8.90) and Gazi University (x=8.49) in terms of the sub-dimension of the Unconcerned Class Management Profile; whereas, there is no significant difference when compared with the average of the students of Kocaeli University (x=9.81) (p<0.05). On the other hand, as for the CMPS in general, the averages of the students of Gazi University (x=43.92) and Kocaeli University (x=43.47) were determined to be significantly different from and higher than the average of the students of Sakarya University (x=41.36),and also, the average of the students of Sakarya University (x=41.36) proved to be significantly different from and higher than the average of the students of Abant Izzet Baysal University (x=41.14) and Anadolu University (x=40.30) (p<0.05).

RESULTS AND DISCUSSION

According to the results of the research, the mean value of Idle Class Management Profile of the male students is significantly higher than that of the female students. In accordance with this result, it can be stated that male physical education teacher candidates are less prescriptive and strict than the female candidates in terms of class management due to the fact that women are more principled and tolerant in life. Ünlü (2008) conducted a study on physical education teachers, and Ayar and Arslan (2008), Taflan (2007), and Kars (2007) conducted a study on other teachers, and determined a significant difference in favor of women in terms of class management according to gender. Çelik (2014) conducted a study and determined that female physical education teachers had more positive behaviors than the males in class management. It shows that these results support our findings. But Yaşar (2008) and Tortu (2012) conducted a study and found that there was no significant difference in class management according to the gender variable. Ekici et al. (2012) conducted a study and discovered that female teachers had preferred to apply the Appreciated Class Management Profile at most, while the male teachers had preferred to use the Authoritative Class Management Profile at most. Çiftçi (2015) conducted a study and reported that female teachers had exhibited a more authoritative class management profile when compared with the males, and that gender was not

a prominent factor in Idle, Unconcerned and Appreciated class management styles. In the research carried out by Aluçdibi (2010), it was determined that female teachers had demonstrated Appreciated, Idle and Unconcerned teacher attitudes more than male teachers did, whereas, male teachers had shown an Authoritative class management profile more than female teachers did. In a research conducted by Kaya (2013), on the other hand, it was found that female teachers had exhibited more democratic behaviors in class management than the males. There are different results about class management for teacher candidates. These differences occur due to different population.

When the comparison of CMPS and its sub-dimensions according to class level was examined, there was a significant difference between 3rd and 4th Grade students in terms of the mean value of authoritative class management profiles, and the mean value of authoritative class management profile of 3rd Grade students proved to be significantly higher than that of 4th Grade students. This shows that 3rd Grade physical education teacher candidates prefer a more authoritative class management. In accordance with this result, it can be stated that 4th Grade students may have more experiences than 3rd Grade students. Yılmaz (2013) conducted a study on physical education teacher candidates, and Döşyılmaz and Karşit (2005) conducted a study on physical education teachers, and determined that the participants had preferred the authoritative class management profile. Kurt (2013), Terzi (2001), and Kapusuzoğlu (2004) conducted a study and found out that teachers had applied the authoritative class management profile at most. Grasha (1994) and McGowan (2008) conducted a study and determined that instructors had applied the authoritative learning styles. In the literature, other results in contrast with the results of this study were found. Inan and Dervent (2013) conducted a study and ascertained that physical education teacher candidates had exhibited democratic tendencies, while Özçakır (2007) and Güven (2004) found that physical education teachers had exhibited democratic tendencies in class management. Lewis et al. (2005) conducted a study in which they examined class-discipline strategies that were being performed in Australia, China and Israel, and determined that the cause of the false behaviors of students was associated with the increasing strict discipline strategies of teachers.

As for CMPS general score, the mean of CMPS general score of 3rd Grade students is significantly higher than that of 4th Grade students. This shows that 3rd Grade physical education teacher candidates behave more inconsistently/precariously than 4th Grade candidates in terms of class management profiles. When the comparison of CMPS and its sub-dimensions according to the universities attended was examined, the average of the students of Gazi University was found to

be significantly different from and higher than that of the students of Abant Izzet Baysal University, Sakarya University, and Anadolu University in terms of the appreciated class management profile. Aluçdibi and Ekici (2012) as well as Ekici et al. (2012) conducted a study and determined that teachers had preferred the Appreciated Class Management Profile on quite high levels. The average of the students of Anadolu University was found to be significantly different from and lower than that of the students of Gazi University, Kocaeli University, and Sakarya University in terms of the Idle Class Management Profile. The average of the students of Sakarya University was found to be significantly different from and higher than that of the students of Abant Izzet Baysal University, Anadolu University, and Gazi University in terms of the Unconcerned Class Management Profile. In his research, Aluçdibi (2010) found that teachers had exhibited Authoritative, Idle, and Unconcerned Class Management Profiles on a moderate level.

As for the CMPS in general, the averages of the students of Gazi University and Kocaeli University were found to be significantly different from and higher than those of the students of Sakarya University, while the averages of the students of Sakarya University were found to be significantly different from and higher than those of the students of Abant Izzet Baysal University and Anadolu University. Yüksel (2013) conducted a study and came to the conclusion that there was no significant difference between teachers according to the universities they graduated from. On the other hand, Stoughton (2007) conducted a study and concluded that the majority of teacher candidates had developed different perspectives in line with the courses they had taken in their universities, and that they had also internalized, in wide-ranging learning environments, the ideas developed in teacher training such as maintaining social justice and treating all children equally. In Foxworthy's (2006) research, teachers stated that their in-class experiences had shaped their beliefs as well as the strategies they applied in the classrooms, and they also added that their beliefs and strategies regarding class management had begun to change from the moment they started their teaching profession. Rockey (2008) conducted a study on candidate teachers, and came to the conclusion that the rules and principles established by students in terms of class management as well as the studies and tasks performed by them had to be focused on. Little et al. (2007), on the other hand, stated in their research that teachers had applied positive class management profiles. It is recommended that further studies should be conducted by applying qualitative research techniques.

Conflict of Interests

The authors have not declared any conflict of interests.

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