The Effect of Co- and Peer Assessment Training on Self-Assessment Skills of Teacher Trainees

Ortak ve Akran Değerlendirme Eğitiminin Öğretmen Adaylarının Özdeğerlendirme Becerileri Üzerine Etkisi

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Abstract

Since the structural changes that occured in the curricula in Turkey, there has been an increase in the interest towards constructivist theory, active learning, and alternative assessment. Various ideas have been suggested to improve self-assessment by focusing the attention on the relationship between metacognitive knowledge and self-assessment in the international literature. One of the suggestions is that "co- and peer assessment practices can influence self-assessment skills". The aim of this study is to identify the influence of co and peer assessment training on self-assessment skills. In this study, there were 33 participants in the experimental group and 37 participants in the control group. The results of the study revealed that the correlations between peer and self-assessment scores of experimental group were significant and high as compared to those in the control group; it was also observed that the peer assessment in the experimental group was a good predictor of self-assessment.

Keywords: Co-assessment, peer assessment, self- assessment, cooperative learning, teacher trainee

Öz

Türkiye'de eğitim programlarında yapısal bir değişime gidilmesi, yapılandırmacı kuram, aktif öğrenme ve alternatif değerlendirme uygulamalarına ilgiyi artırmıştır. Uluslararası alanyazında, özellikle bilişüstü bilgi ve özdeğerlendirme arasındaki ilişkiye dikkat çekilerek, özdeğerlendirmenin geliştirilmesi için çeşitli düşünceler önerilmektedir. Bu önerilerden birisi de "ortak ve akran değerlendirme etkinlikleri özdeğerlendirme becerisini etkileyebileceği" düşüncesidir. Bu araştırmanın amacı, ortak ve akran değerlendirme eğitiminin özdeğerlendirme üzerindeki etkisini araştırmaktır. Çalışma, deney grubunda 33, kontrol grubunda 37 olmak üzere toplam 70 öğrenci ile gerçekleştirilmiştir. Araştırmanın sonunda, deney grubunun akran ve özdeğerlendirme puanları arasındaki korelasyonları, kontrol grubundakilere oranla daha yüksek ve deney grubu lehine anlamlı bulunmuş, ayrıca deney grubunda akran değerlendirmenin özdeğerlendirmenin iyi bir kestiricisi olduğu gözlenmiştir.

Anahtar Sözcükler: Ortak değerlendirme, akran değerlendirme, özdeğerlendirme, işbirlikli öğrenme, öğretmen adayı.

Introduction

The fact that the curricula of the primary schools and high schools were structurally modified in Turkey caused the interest in such subjects like constructivist knowledge philosophy, constructivist theory and active learning to rise among the people in the field of education and science. Unfortunately, it is not easy to say that the same interest has been given to alternative assessment methods in education. Nevertheless, it can be said that higher education institutions that train those prospective teachers have started to include alternative assessment methods into

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the related area of courses (Yurdabakan, 2011).

There are countless studies abroad on alternative assessment methods. Those studies largely cover topics like student perceptions towards new methods (Struyven, Dochy, and Janssens 2005; Johnston and Miles 2004; Van Zundert, Sluijsmans, and Van Merrienboer 2010), their effects on teaching and learning process (Van den Berg, Admiral, and Pilot 2006), the relationship with different assessment results, and reliability and validity of those new methods (Hargreaves 2007; Lejk and Wyvill 2001; Lourdusamy and Divaharan, 2000; Orsmond, Merry and Reiling, 1996; Purchase 2000; Zhang, Johnston and Kilic, 2008).

The main reason of a need for alternative assessment methods during the learning process is to improve students' debriefing skills of their metacognitive knowledge (Boud 1990). Metacognitive knowledge embraces self-assessment and at the same time self-assessment is one of the basic skills that is required and aimed to be developed in active learning environments (Anderson and Krathwohl 2002). This relation between metacognitive knowledge and self-assessment has caused the assessment practices in active learning environments to be considered as part of teaching and learning process. Many educators and authors have stated suggestions towards improving self-assessment (Adams and King 1995; Somervell 1993; Oldfield and Macalpine 1995). One of the suggestions is that self-assessment can be improved by starting with co- and peer assessment practices first (Somervell 1993, Topping 1998, Vickerman 2009; Oldfield and Macalpine 1995 and Hall 1995). This suggestion abides by the idea that co- and peer assessment practices can have an influence on self-assessment skills. On the other hand, authors like Ackerman, Beier, and Bowen, 2002; Eva, Cunnington, Reiter, Keane and Norman, 2004; Fox and Dinur, 1988; Kruger and Dunning, 1999 have put forward that accuracy of assessment would increase when the ability becomes easier and it would decrease when it becomes difficult. In line with those ideas, the current study aims to identify the effects of co- and peer assessment training given to primary school mathematics teacher trainees at undergraduate level on their self-assessment skills and also to determine how those effects change according to easy and difficult behaviors.

With the changes in primary education curriculums in Turkey, alternative assessment practices like self-, peer and portfolio assessment have found a place in science, mathematic and social sciences curricula (Education Reform Initiative 2005). This study was carried out on primary education mathematics teacher trainees both to fulfill the purpose of this research and to assist the trainees to gain some experience on such alternative assessment practices during their training.

Background

Constructivism has presented a new, wide, authentic, more practice-oriented conceptual framework to organization of learning applications and structuring assessment processes (Gipps, 1999). Collins (1991) stated that this conceptual framework caused learning environments to move from traditional to student-centered, and it called for the assessment processes to involve some changes so that they could be used as tools for individuals to question their own learning in addition to their customary use as exam practices. With the change in learning environments towards being student-centered, there is a requirement for the learners to take an active role during learning process. This requirement led the way to the birth of active learning methods like cooperative learning, problem-based learning, constructivist learning, and creative learning (Açıkgöz, 2003). By incorporating different viewpoints, some authors have tried to describe the learning process which they define as active learning or effective learning. For example, Perkins (1999) stresses that active learning could occur not only with reading and listening, but also with practices like defending ideas and sharing, setting hypotheses and questioning. De Corte (2000) defines active learning environments as settings where students are given meaningful, authentic and open-ended problems or learning materials; where interest is raised towards lessons, knowledge that was acquired before is updated and activated, meanings are made clear, and also effective learning techniques and reflective processes are made use of.

The most commonly emphasized point on active learning is the active participation of students to the learning process. Active participation to learning process is closely related to students making decisions, reflecting about the learning process and self-regulation skills because such settings require such learners who are aware of their competencies, who are aware of the topics they should improve and know how to fix their deficiencies, and who can question their own learning (Açıkgöz, 2003).

Assessment practices in active learning environments should change into a place where students solve their problems, express their comments and assessments, and reveal their own ideas because a learner's knowledge and skill acquisition cannot be restricted to certain stages of education (Arter, 1997). In modern societies the need for life-long learning is gradually increasing and it has changed into a practice that lasts for a lifetime. A practice that last for a lifetime necessitates individuals with self-assessment skills (Dochy, Segers & Sluijsmans 1999). Dochy and Moerkerke (1997) state that traditional testing methods do not abide by improving skills like life-long learning, careful thinking, critical thinking, problem solving and self-assessment.

Many authors advocating alternative assessment methods (Boud 1995; Elliott & Higgins 2005; Hargreaves 2007) stress that assessment process is not only an instrument to give students their diplomas, but it should also be a process that leads to the development of students, and it directs the students to better learning activities. In another article Boud (1990) highlights that, in order to reach the objectives, learning and assessment activities must be used together in learning environments.

Many authors (Ernest 1995; Honebein 1996; Jonassen 1994; Wilson and Cole 1991) stress that metacognitive knowledge has an important place in controlling and mediating learning. On the other hand, with the new arrangement of Bloom's taxonomy of objectives under the leadership of Anderson and Krathwohl (2002), the cognitive domain has changed into a two-domain structure as cognitive process and knowledge. While these two dimensions of cognitive domain still have traces of the original, the cognitive domain carries creativity and the knowledge domain carries metacognitive knowledge, which can be counted as new stages. Metacognitive knowledge can be defined as an individual's knowledge or awareness level of his/her thinking or cognition (Pickard 2007). One way of increasing an individual's level of cognition or awareness depends on developing cognitive knowledge. It is possible to see metacognitive knowledge as a strategy necessary for life-long learning or as a tool for learning to learn. In their article, Edwards, Ranson and Strain (2002) take metacognitive knowledge as an important element for the development of the notion of life-long learning and assert that compared to others, those students whose metacognitive knowledge levels are developed can be more successful in their future life.

There are various explanations concerning metacognitive knowledge (Sperling, Howard, Staley, & DuBois 2004). In short, metacognitive knowledge is a learner's management of his/her thinking of what s/he knows and questioning his/her own learning (Dirkes 1985). Metacognitive knowledge includes self-knowledge. Students' beliefs on their success show their levels of motivation. Students' judgment of their ability to succeed means judgment of their self-knowledge (Anderson and Krathwohl 2002) and if an individual makes judgments and evaluations concerning his/her self-knowledge, he makes self-assessment (Shrauger & Osberg 1981). On the other hand, according to Flavell (1979), in the development of metacognitive knowledge, strategies like talking about thinking, keeping a thinking journal, planning and self-regulation, debriefing the thinking process and self-assessment are considered important. These definitions and explanations made so far show that there is a strong link between metacognitive knowledge and self-assessment skill.

As a result, it can be said that effective learning settings require individuals who can debrief their metacognitive knowledge (Eva et al. 2004). This requirement gave way to the organization of learning settings in a way to develop the skill of debriefing metacognitive knowledge. For this reason, there has been a transition towards alternative assessment methods in the assessment practices used in effective learning environments.

It is possible to list the alternative assessment methods primarily used in education as self-assessment, peer assessment, co-assessment and portfolio assessment as it shows student development through the process and it creates opportunities for self-, peer, and co-assessment. One of the important things to notice in this list is that, besides their other benefits, other alternative assessment practices are used to serve to the development of self-assessment skill in general. Some authors, who have done studies on self-, peer and co-assessment, highlight that peer and co-assessment used during learning process contributes to the development of students' self-assessment skill. Especially Somervell (1993), Topping (1998) and Vickerman (2009) state that the assessment results of other students (peer assessments) can be thought of as part of self-assessment and they can contribute to the development of self-assessment skill. Oldfield and Macalpine (1995) stress that alternative assessment procedures should start with general assessment practices, continue with peer assessment practices, and later move to self-assessment practices. On the other hand, in the studies searching for the effectiveness of alternative assessment practices, the effectiveness of using co-, peer and self-assessment together has been probed. Authors like Falchikov (1995), Strachan and Wilcox (1996) point that the process of establishing criteria by the cooperation of teachers and students should be perceived as a success factor in peer assessments and especially self-assessments. Hall (1995) puts forward the idea that co-assessment is a valuable stage in the development of student self-assessment. Kruger and Dunning (1999) state that the performance of other participants (peers) should be viewed to improve self-assessment skills. Shrauger and Osberg (1981) worked on easing the self-assessment process and stated that it was important for individuals to know as clearly as possible in which ways their behaviors would be assessed.

The Purpose of the Study

In some research concerning alternative assessment (Falchikov 1986; Hanrahan and Isaacs 2001; Johnston and Miles 2004; Struyven et al. 2005), student perceptions of such assessments were studied. Generally, positive aspects of such assessments were depicted; however, a few of the student perceptions included some negative aspects. Especially studies on peer assessment are either about assessing individual contributions to group work (Divaharan & Atputhasamy 2002) or about to what extent it is valid to use such scores for assessment (Hanrahan & Isaacs 2001). In several researches on relationships among self-, peer and co-assessment, it is highlighted that co-, peer and self-assessment practices should be used together for the effectiveness of alternative assessment practices (Dochy et al. 1999).

On the other hand, authors like Falchikov (1995), Flavell (1987) and Freeman (1995) discuss positive effects of co-assessment on peer assessment and peer assessment on self-assessment skills. As it is highlighted above, when the literature is analyzed, it is possible to find studies investigating the relationships among the results of co, peer and self-assessments. Moreover, there are various thoughts concerning the requirement for the students to pass through a training process in order to make accurate assessments (Kruger and Dunning 1999; Adams and King 1995; Falchikov and Boud 1989). However, there is no research studying the effect of peer and co-assessment training during group work on students' self-assessment skills. For this reason, the current study aims to identify the effect(s) of peer and co-assessment training during higher education level cooperative learning group work on students' self-assessment skills. The peer and co-assessment training was designed in accordance with two methods stated by Webb (1997). According to the first approach, the participants were given peer assessment training for their "group work skills" like taking responsibility, carrying out their assignments, contributing to the learning of others, attending to discussions, fulfilling the requirements of their roles; and according to the second approach they were given peer assessment training for their "cognitive learning levels" that comes from group cooperation and are congruent with the objectives of the learning process.

Co-assessment is the instructor and the students assessing in cooperation during the learning process (Somervell, 1993). Co-assessment is gradually the responsibility of the instructor, but the

students develop some skills about what is going to be assessed and how is it going to happen (Valencia, 1990). Co-assessment is used for three different purposes. First, co-assessment is seen as summative assessment because it includes the instructor (Dochy, Segers, & Sluijsmans, 1999). Second, co-assessment has an effect on the development skills of peer and self-assessment (Flavell, 1987; Falchikov, 1995). Third, co-assessment raises the quality of assessment by ensuring control over peer and self-assessment (Oldfield & Macalpine, 1995). In this research, co-assessment was thought and executed as part of peer assessment training since it created opportunities for the teachers and students to make assessments cooperatively.

The hypotheses of this study are as follows:

1) The correlations between peer assessment and self-assessment in experimental group are higher than those in control group.

2) "Group working skills" oriented peer assessment and self-assessment correlations are higher than "cognitive learning levels" oriented peer assessment and self-assessment correlations.

3) The training on co and peer-assessment has a stronger effect on the self-assessment of simple behaviors/tasks like "group work skills" when compared to the complex/difficult behaviors like "cognitive learning levels".

4) The training on co and peer assessment affects the skill of self-assessment.

Method and Participants

The method of the current study is experimental and "control group post-test model" was utilized. The reason for this selection was that students had had no prior experience on alternative assessment practices and the effect(s) of peer and co-assessment training on self-assessment would be investigated through post-tests. The research was conducted in Dokuz Eylül University Education Faculty Primary School Mathematics Department, second grade course "Educational Planning and Assessment". To prevent any interference, the "alternative assessment" unit of this course was studied after the experimental process. In total, there were in 70 participants in the study, 33 students (m=18, f=15) in the experimental group, and 37 students (m=20, f=17) in the control group. The experiment and control groups were identified and the students were assigned to those groups randomly (random sampling).

The study lasted for 8 weeks. Both in the experimental group and control group, the lessons were conducted according to learning together and expertise group techniques (Johnson, Johnson & Smith, 1998) of cooperative learning method. With this purpose in mind, the students were put into heterogeneous groups of 4-6 (experimental= 7 groups, control= 7 groups) by taking their previous semester grade averages, genders and social communication skills into account. 14 objectives were defined for the Educational Planning and Assessment Course (see, Cognitive Learning Level assessment checklist in Appendix B), activities and accompanying worksheet were prepared for each session in light of these objectives. Before the sessions, conditions for cooperative learning method were discussed and students were introduced with their roles that would be used alternately. Before the main sessions, pre-sessions were designed for 3 weeks in both experimental and control groups to make them internalize the necessary conditions of cooperative study method and their roles. In the first main session, both groups were informed that at the end of each session they would receive a peer and self-assessment form, the aim and content of which were explained briefly and nothing else was done afterwards in the control group concerning alternative assessment. However, activities to improve the alternative assessment skills were utilized through all sessions with the students in the experimental group. To form the basis for alternative assessment, the activities first started with co-assessment and later finished with peer assessment practices. While preparing the activities, the suggestions of such authors like Topping, Smith, Swanson & Elliot (2000), Norcini (2003), Dochy et al. (1999), Falchikov (1995), Johnston and Miles (2004), Oldfield and Macalpine (1995), Sluijsmans (2002), and Webb (1997) were made use of. With the aim of improving the alternative assessment skills of students, the

following stages were designed in the activities:

    1) Short introduction to co-, peer and self-assessment practices,

    2) Explanation of aims of peer and co-assessment,

    3) Discussion and identification of assessment criteria for cooperation and cognitive learning levels,

    4) All students attending to co-assessment under the guidance of the teacher,

    5) Students attending to sample peer assessment practices at the end of each appropriate group activities,

    6) Observation of assessment processes and results together with students,

    7) Giving feedback to members about the assessment processes and results,

    8) Repetition of the last four items (4-7) through all sessions.

Among the stages listed above, four (1-4) of them are about co-assessment and three (5-7) of them are about peer assessment activities. Neither the experimental nor the control groups were given any further activities about self-assessment after the initial short introduction in the first session. At the end of the sessions, the students in both experimental group and control group were given the two different peer and self-assessment forms inside envelopes as a post-test, the details of which are given in the instrumentation section, and assessment results were collected the next day. The reason to conduct secret peer and self-assessments rests upon the idea of Sharp (2006), "if peer and self-assessments are used as final assessments, they should be made secretly".

Instrumentation

The checklists given as post-test to define the effect(s) of peer and co-assessment training on self-assessment were designed in such a way that enables students to make peer and self-assessments by taking the group members' "cooperation skills" and "cognitive learning levels" into account.

The "Group Work Skills" (GWS is used hereafter) checklist that the members used to assess cooperation skills of themselves and their peers comprised of 18 items, with measures from "Very good" (5) to "Very bad" (1). For the reliability and validity of GWS checklist, while writing the items, the behaviors that would harm the function of cooperative group work (Açıkgöz 2003; Johnson, Johnson & Smith, 1998) were taken into account. Also, the assessment criteria found in the checklist were discussed together with the students and students were informed on how they would fill in the form and how the scoring would be done. The highest score an individual can receive is 90 while the lowest is 18.

The "Cognitive Learning Level" (CLL is used hereafter) checklist that the members used to assess the group work cognitive learning levels of themselves and their peers comprised of 14 items, with measures of "Very good" (5) to "Very bad" (1). For the reliability and validity of the CLL checklist, the items were written by taking into account both the Educational Planning and Assessment Course definition of HEB (Higher Education Board of Turkey) and the objectives defined by the help of the books of several authors like Açıkgöz (2003), Demirel (2000), Sönmez (2001), Turgut (1995), and Tekin (1984). Also, like in the GWS checklist, the assessment criteria found in the CLL checklist were discussed together with the students and students were informed on how they would fill in the form and how the scoring would be done. The highest score an individual can receive is 70 and the lowest is 14. The GWS and CLL checklists (sample items) are given in Appendix A and B.

As Sharp (2006) suggested, the self-assessment scores of students were calculated by taking the sum of their scores they got from the GWS form and CLL form; a member's peer assessment score was calculated by taking the averages of the scores given by the other members.

Data analyses

Since the current study focuses on the effect(s) of the process -which starts with co-assessment activities and continues with peer assessment activities- on self-assessment skills, peer assessment scores obtained through the post-test at the end of the semester were regarded as the independent variable of the study while the self-assessment scores were used as the dependent variable. In order to define the effect of peer assessment on self-assessment, students' peer and self assessment scores concerning their GWS and CLL were calculated in both the experimental and the control groups first. Later, the relationships between the peer and self-assessment scores of students in both groups were calculated by the Pearson moments multiplication correlation coefficient method and converted to Fisher's Z (Akhun, 1988) and analyzed comparatively. Cohen's (1987) suggested equation for the effect size (*ES*) was used. Then, regression analysis (Akhun 1980) was utilized in order to define the effect of peer assessment scores on self-assessment scores. Regression analysis was done separately for GWS and CLL. Regression analysis was performed for variables with significant F values (Table 1).

Results

The Predictive Power of Peer Assessment on Self-Assessment

According to Akhun (1980), if there is a relationship between two variables, the regression analysis aims to predict the value of the dependent variable, which is defined as the predicted, from the independent variable, which is defined as the predictor and the determination coefficient (R^2) obtained is used to identify how much of the total variance in the predicted variable is caused by the predictor variable. This way, the role or effect of the predictor variable on the predicted variable is defined.

In the regression analysis concerning GWS and CLL in the current study, peer assessment was defined as the predictor (independent) variable, and self-assessment as the predicted (dependent) variable. The obtained regression analysis calculation results for the GWS and CLL assessment skills in the experimental and control group are presented in Table 1.

Table 1.
The Regression Analyses for the Prediction of Self-Assessment from Peer Assessment

Groups	Forms	Predictor variable: Peer assessment (constant)							
		Predicted variable:	R	Adj. R^2	β	Se	sd	F	P
Experimental Group	GWS	Self-assessment	.79	.62	.87	3.75	1–31	52.84	.000
	CLL	Self-assessment	.69	.46	.76	4.38	1–31	28.19	.000
Control Group	GWS	Self-assessment	.41	.15	.39	8.16	1–35	12.23	.001
	CLL	Self-assessment	.06	-.03	.11	9.18	1–35	.109	.744

The correlation between the peer and self-assessment scores concerning GWS of students in the experimental group was found as .79 (p<.01) and the correlation between the peer and self-assessment scores concerning CLL of students was found as .69 (p<.01). Similarly, the correlation between the peer and self-assessment scores concerning GWS of students in the control group was calculated as .41 (p<.01) and the correlation between the peer and self-assessment scores concerning CLL of students was calculated as .06 (p>.05).

When the group work skills (GWS) peer and self-assessment correlations of the students in the experimental and control group were compared (z=2.06, p<.01, *ES*=.52), a strong difference

was found in favor of the experimental group. Similarly, the difference between the correlations of peer and self-assessment scores concerning cognitive learning levels (CLL) of students in the experimental and control group was found significant ($z=2.00$, $p<.01$, $ES=.63$) in favor of the experimental group (hypothesis 1).

Another comparison done was to find the correlations of peer and self-assessment scores of students concerning GWS and CLL within each group separately. According to that comparison, there was a significant difference ($z=.90$, $p<.01$, $ES=.23$) in favor of GWS in the experimental group, when the correlations concerning the GWS and CLL were analyzed. Similarly, when the correlations concerning the GWS and CLL in the control group were analyzed, a significant difference ($z=2.29$, $p<.01$, $ES=.50$) in favor of GWS was found (hypothesis 2).

According to the results obtained, the strongest relationship was found between the peer and self-assessments concerning GWS in the experimental group ($r=.79$, $p<.01$) and in the control group ($r=.41$, $p<.01$). In the experimental group a relationship was observed between the peer and self- assessment concerning CLL ($r=.69$, $p<.01$), but in the control group, a relationship wasn't observed between the peer and self-assessments concerning CLL ($r=.06$, $p>.05$). The peer and self-assessment correlations concerning the GWS ($z=2.06$, $p<.01$, $ES=.52$) and CLL ($z=2.00$, $p<.01$, $ES=.63$) were found to be significantly different in favor of the experimental group (hypothesis 3).

Also the determination coefficients in Table 1 show that peer assessment is a strong predictor of self-assessment concerning GWS ($R^2 = .62$) and CLL ($R^2 = .46$), especially in the experimental group. This finding indicates that the independent variable (peer assessment) accounts for the 62 % of the dependent variable (self-assessment) in the case of GWS and for its 46 % in the case of CLL. A medium level significant relationship is observed between the peer and self-assessment concerning the GWS in the control group. Also, when the determination coefficient ($R^2 = .15$) is examined, it can bee seen that peer assessment predicts self-assessment at low level (hypothesis 4). But in the control group, a relationship wasn't observed between the peer and self-assessments concerning CLL ($r=.06$, $p>.05$).

Discussion

The rapid changes in information technologies have caused great changes in disseminating and accessing information. These change also had an influence on individuals' view of their own learning. That's why there has been a transition from traditional learning settings to student-centered ones and there have been innovations in many countries to use active learning methods. The learning processes, where active learning methods are utilized, have charged students with new responsibilities concerning their own learning and have changed their learning customs and behaviors. The rapid change in the dissemination and accession of information has also necessitated training of students as "life-long learners". This requirement has given birth to discussions of concepts like "learning to learn" and "metacognitive knowledge".

There are strong links among concepts like active learning, learning to learn, life-long learning and metacognitive knowledge. It can be said that self-assessment has strong contribution to the development of metacognitive knowledge. A Sundström (2005) point out that self-assessment is an important skill that contributes to students making inferences about themselves. That's why many authors have advocated development of student self-assessment skills and have given some suggestions.

The current study explores the effects on the development of self-assessment skills from the point of cognitive learning levels that arise from group cooperation and from the point of group work skills that are maintained in groups where students and teachers study together and make peer and co-assessments. Four hypotheses were discussed in this research. Those hypotheses and results obtained are as follows: The first hypothesis of this research is, "The correlations between peer assessment and self-assessment in experimental group are higher than those in control

group". According to the results obtained, self- and peer correlations show significant difference in favor of the experiment group. This result proves the first hypothesis of this study. Also this result can be explained by the positive effect that the training on co and peer assessment in the experiment group had on self-assessment. Also these results support the findings of authors like Flavell (1987), Somervell (1993) and Topping (2005), as they say that results of peer assessment can be seen as part of self-assessment and those practices can have an effect on self-assessment skills. The second hypothesis of this research is, "Group working skills (GWS) oriented peer assessment and self-assessment correlations are higher than cognitive learning levels (CLL) oriented peer assessment and self-assessment correlations". The correlations between self- and peer assessments done in terms of group working skills were found to be higher than those done in terms of cognitive learning levels in both groups. These findings prove the second hypothesis of this study. Another finding related to this hypothesis is that without any training in the control group, the self- and peer assessments concerning the group working skills were found to be positive and significant. Many authors (Boud 1995; Falchikov 1995; Freeman 1995; Topping 2005) have called attention to the relationship between peer assessment and cooperative skills and stated that peer assessment could be effective in fulfilling conditions of cooperation like social interaction, individual appraisal and positive dependence. Although there was no assessment training, the reason behind the significant correlations concerning GWS in the control group could be the fact that lessons in both groups (experiment and control) were carried out using cooperative method principles. The third hypothesis of this research is "the training on co and peer-assessment has a stronger effect on the self-assessment of simple behaviors/tasks like group work skills when compared to the complex/difficult behaviors like cognitive learning levels. The findings of this research prove this hypothesis. GWS and CLL were designed according to the approach suggested by Webb (1997). Group members assessed each others' skills like taking responsibility, fulfilling responsibilities, contributing to others' learning, attending discussions and fulfilling the requirements of their roles with GWS, while they assessed the learning of others that comes from group cooperation and is congruent with the objectives of the learning process with CLL. Some authors (Ackerman, Beier, & Bowen 2002; Eva et al. 2004; Fox & Dinur 1988; Kruger & Dunning 1999) have put forward that accuracy of assessment would increase when the ability becomes easier and it would decrease when it becomes difficult. Even though there are no sound proofs, when we think that the abilities assessed with GWS are easier than those assessed with CLL, it is possible to see it as a reason for the GWS correlations to be significantly greater than CLL correlations. The last hypothesis of this research is, "the training on co and peer assessment affects the skill of self-assessment". The determination coefficients predicted relating to GWS and CLL in the control group show as that co and peer assessment training has an important influence on self-assessment. However, the determination coefficient relating to GWS in the experiment group is also significant. As mentioned above, it is possible to attribute this result to the cooperative learning method used in both groups. However, GWS coefficient being higher in the experiment group means that the influence was stronger in that group. As a result, when the regression analyses relating to this hypothesis are examined, it can be said that especially the self-assessment skill concerning GWS could not only be affected by the co and peer assessment training conducted, but also by the cooperative learning method as well.

Conclusion

The findings of this research revealed three important results: First, this study was conducted with teacher trainees in Turkey and it was observed that the teacher trainees could adapt in a short time to co-, peer and self-assessment issues that arose from the changes in the primary school curricula. However, there is a need for research on the perception, knowledge and practical skills of working teachers concerning alternative assessment methods. Second, there are authors in the international literature suggesting that co-assessment and peer assessment can be thought as part of self-assessment and peer and co-assessment practices can have effect(s) on the development

of self-assessment skills. In a way, the results of the current study support these ideas. Third, some authors point to the difficulty of self-assessment of more challenging abilities. The results of the current study reveal that, as much as the low abilities, co-assessment and peer assessment training could also be an important predictor of self-assessment of challenging or higher abilities.

This study was conducted with teacher trainees who are familiar with assessment issues because of the related courses they have taken. To support the findings of this research, there is a need to replicate the same study with different student groups. On the other hand, cooperative learning method was used in the current study. Naturally, cooperative learning requires informal feedback among peers. This process could have an effect on peer and self-assessment correlations. For this reason, replicating similar studies in classrooms where different methods and techniques are used may reveal helpful results.

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Appendix A: The sample items GWS form

Items	Self	Member 1	Member 2 …
1. Eagerness to take over tasks	(1) (2) (3) (4) (5)	(1) (2) (3) (4) (5)	(1) (2) (3) (4) (5)
2. Fulfilling responsibilities	(1) (2) (3) (4) (5)	(1) (2) (3) (4) (5)	(1) (2) (3) (4) (5)
3. The level of contribution to the members' learning	(1) (2) (3) (4) (5)	(1) (2) (3) (4) (5)	(1) (2) (3) (4) (5)
4. The level of contribution to the group's common product	(1) (2) (3) (4) (5)	(1) (2) (3) (4) (5)	(1) (2) (3) (4) (5)

Appendix B: The sample items CLL form

Items	Self	Member 1	Member 2 …
1. The knowledge of basic educational objectives	(1) (2) (3) (4) (5)	(1) (2) (3) (4) (5)	(1) (2) (3) (4) (5)
2. The knowledge of learning theories	(1) (2) (3) (4) (5)	(1) (2) (3) (4) (5)	(1) (2) (3) (4) (5)
3. The knowledge of teaching methods, techniques and strategies	(1) (2) (3) (4) (5)	(1) (2) (3) (4) (5)	(1) (2) (3) (4) (5)
4. The knowledge of basic concepts concerning Measurement and Evaluation	(1) (2) (3) (4) (5)	(1) (2) (3) (4) (5)	(1) (2) (3) (4) (5)