Peer Assessment Activities For the Secondary Students in Science and Technology Course

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Abstract

The use of peer assessment as an alternative form of evaluation method is reported to be helpful in learning. This paper enhanced students' experiences of peer assessment and describes how peer assessment was implemented as a method of enhancing secondary students engagement in Science and Technology Course. During the training session, Performance Task Rubric was developed. After the training session, in the main application, 6th grade (n=54), 7th grade (n=30) and 8th grade (n=30) with a total of 114, participants, were divided into groups of three or four depending on the class size. Students made their oral presentations on performans tasks and were evaluated using the Performance Task Rubric by peers. Teacher assessment and self-assessment were also conducted in the study. Additionally, Peer Assessment Attitude Questionnaire, has 25 item Likert type, developed to determine the students' attitudes towards the method of peer assessment. To determine the significance of the change in students' attitudes before and after training paired samples t-test was used. Students' views on peer assessment was a positive change post-implementation training in a meaningful way. The statistical comparison between female and male responses to pre test and post test was not significant. The statistical comparison regard to between female and male responses to pre test and post test was not significant. The results of the study revealed that the between peer and teacher assessment scores of classes were positive and high correlations as compared.

Keywords: Peer assessment, attitude, oral presentations, science and technology course

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Fen ve Teknoloji Dersinde Ortaokul Öğrencilerine Yönelik Akran Değerlendirme Etkinlikleri

Özet

Öğrenmenin değerlendirilmesinde akran değerlendirmenin kullanılmasının faydalı olduğu bildirilmektedir. Bu çalışma ortaokul öğrencilerin akran değerlendirme deneyimlerini ve akran değerlendirmenin öğrencilerin Fen ve Teknoloji dersine ilgilerini artırıcı bir yöntem olarak nasıl kullanılabileceğini açıklar. Çalışma öncesi pilot çalışma yapılmış ve performans değerlendirme rubriği geliştirilmiştir. Pilot uygulama yapıldıktan sonra, 6. sınıf (n=54), 7. sınıf (n=30) ve 8. sınıf (n=30) öğrenci olmak üzere toplam 114 öğrenciyle çalışma gerçekleştirilmiştir. Öğrenciler sınıf mevcutlarına göre üçerli veya dörderli gruplara ayrılmıştır. Öğrenciler hazırladıkları performans görevlerini sunarken, performans değerlendirme rubriği kullanılarak akranları tarafından değerlendirilmişlerdir. Çalışmada, öğretmen değerlendirme ve öz-değerlendirme de yapılmıştır. Ayrıca, öğrencilerin akran değerlendirme yöntemine yönelik tutumlarını belirlemek için 25 maddelik, Likert tipi Akran Değerlendirme Tutum Anketi geliştirilmiştir. Öğrencilerin uygulama öncesi ve sonrası tutumlarındaki değişimi belirlemek için elde edilen veriler eşleştirilmiş t-testi kullanılarak analiz edilmiştir. Akran değerlendirme uygulaması sonucunda, öğrencilerin tutumlarında anlamlı bir şekilde pozitif bir değişiklik olduğu görülmüştür.. Kız ve erkek öğrencilerin tutumları arasında, istatistiksel olarak anlamlı bir fark bulunmamıştır. Akran ve öğretmen değerlendirme puanları karşılaştırıldığında, pozitif ve yüksek korelasyon olduğu görülmüştür.

Anahtar Kelimeler: Akran değerlendirme, tutum, sözlü sunumlar, fen ve teknoloji dersi

1. Introduction

Showed a shift towards student-centered learning environment than the traditional, the implementation of active learning methods to innovation-oriented education programs in many countries have started to go. Active learning methods are applied learning process, students to learn new responsibilities, affecting necessitated the training of their habits and behavior of as a life long learners.

The term *assessment* is often interpreted as referring to marking, grading, measuring or ranking and as a consequence peer assessment is regarded maitily as students giving marks or grades to each other. There are two main purposes of assessment: a certification (or summative) purpose and a learning (or formative) purpose. The first is usually regarded as dominant, with students frequently being reported as driven by a natural desire for high grades (Becker *et al.,* 1995), even when such instrumental motivations may lead to adverse impacts, such as surface learning (Ramsden, 2003).

This study examined whether the involvement of secondary school students in peer assessment predicted their oral presentation on performance tasks. The way in which students learned and engaged in peer assessment in this study. Peer assessment has been defined as "an arrangement for peers to consider the level, value, worth, quality of successfulness of the products or outcomes of learning of others of similar status" (Topping *et al*., 2000, p. 150).

In recent years, a strategy for ''formative assessment'' has adopted peer assessment (Cheng & Warren 1999) or ''assessment for learning'' and for involving students as active learners (Gielen et al. 2009; Topping et al.

2000). Further, research on peer assessment has amassed substantial evidence on the cognitive (Nelson and Schunn 2009; Tseng & Tsai 2007), pedagogical (Falchikov & Blythman 2001), meta-cognitive (Butler & Winne 1995; Topping 1998), and affective benefits (Strijbos et al. 2010) of peer assessment on student learning (Topping 2003). These efforts have resulted in peer assessment being successfully designed and implemented in K-12 classrooms and in higher-education contexts (Topping 2003).

Falchikov and Boud (1986) self-assessment can be a valuable learning activity, even in the absence of significant agreement between student and teacher, and can provide potent feedback to the student about both learning and educational and professional standards. (p. 427)

Over the last decade there has been an increasing interest in self-assessment in higher education (Boud, 1995; Falchikov, 2005). Boud (2000) maintains that the development of lifelong learning skills requires that assessment must 'move from the exclusive domain of the assessors [teachers] into the hands of learners' (p151), while Sadler (1998) argues that the intention of formative assessment should be to equip students gradually with the same evaluative skills that their teachers' possess. These writers are concerned that an over-emphasis on teacher assessment might increase students' dependency on others rather than develop their ability to self-assess and self correct.

Studies show that rubric-supported peer grading enhances student learning. Students become more reflective and their learning outcomes improve when they are involved in defining marking rubrics (Stefani 1994). Reports from undergraduates have indicated that, although peer grading is

challenging and time-consuming, it is also beneficial as it enables students to think more critically and to learn more effectively (Falchikov 1986; Hughes 1995; Orsmond et al. 1996). While peer grading is widely used and its effects on university students have been extensively examined, its effects on high school students have seldom been investigated.

Brew (1999) argues that to assess is to have power over a person and sharing the assessment with students leads to sharing of teacher's power.

This paper enhances students' experiences of peer assessment and describes how peer assessment was implemented as a method of enhancing secondary students engagement in Science and Technology lessons. Self, peer and teacher assessment in enhancing the interaction with the students and teachers in the use of together is very important to develop enterprising competencies.

The use of together self, peer and teacher assessment allows to deep learning and more motivation (Smorvell, 1993). Peer and self-assessment in terms of developing a co- assessment practices can be said to be a valuable practice. Students will have the opportunity to work with teachers in evaluating this way.

While this association enables the teacher to retain priority assessment, it gives students a deep understanding of detection and scoring the criteria. Additionally, determination of evaluation the criteria which are subject to provides to see the objectives for the students to learn. This situation brings significant benefits students both learning and assessment in the later stages of educations in their lives. In addition to co-assessment,

self-or peer-assessment practices provides teachers to control in a fair and consistent evaluation of the activities.

Related studies show that students generally display a liking for peer assessment activities because these activities provide an opportunity for comparison of student work, but they are much less appriciative of criticism from peers (Brindley & Scoffield 1998; Cheng & Warren 1999). Teachers also agree on the helpfulness of peer assessment in learning and relevant evaluation techniques (Zevenbergen, 2001). However, studies also show a lack of self-confidence by students when rating their peers and the need for a pre-existing guideline or rule for the assessment activity (Orsmond & Merry 1996).

Analysis of the literature, while most studies are encountered with sample group consists of pre-service teachers and high school students, the limited number of studies is noteworthy that sample of secondary school students. In other words in general, peer assessment were used higher education and teacher training. Thus, in this study, 6th, 7th and 8th grade students were performed self-, peer and teacher-assessment activities. This activities were taking into account some criteria to performed in the form of presentation of theirs performance task in Science and Technology courses.

In this study is based on the perspectives of the students to determine the effectiveness towards peer assessment in Science and Technology course. In Turkish education system not to care self, peer and teacher assessments so the researches have been limited about this evaluations. There needs a lot of research so it is eliminate the lack of research in this area. With this study it is expected to contribute addressing this shortcoming.

2. Methodology of Research

2.1. Research design

This study, 6th, 7th and 8th grade students in order to determine the opinions of the peer assessment were used case study. Case study is used to in-depth analysis of one or a few specific situation (Creswell 2005). Case study is carried out in a natural environment such as an organization, a class (Hartley 2004). Research is limited that students' performance tasks present in science and technology course to practice peer assessment activities. Activities during, a questionnaire named "Peer Assessment Attitude Scale" was developed according to the qualitative results obtained in the about the application. SPSS for Windows was used to analyze the quantitative data.

2.2. Participants

This study, 114 secondary students participated by performing in a total of fifty-seven team presentations over a period of three weeks, with two to three students on each team. Of 114 participants, 48.25% of them (*n*=55) were female and 51.75% (*n*=59) were male. The research was set up during the 2010-2011 semester years. The students in the study group participants had no previous peer and self-assessment experiences.

2.3. Data collection tools

Peer assessment Attitude Scale

In this study, Peer Assessment Attitude questionnaire developed to determine the students attitudes towards the method of peer assessment. We developed a 25-item, 5-point Likert type questionnaire and the response was

coded as 1= strongly disagree to 5 = strongly agree. Students can take the scale of minimum 25 and maximum 125 points. The reliability of the *Peer assessment Attitude Scale* was 0.855. Score ranges for the degree of participation in scale items are determined as follows: Completely agree: 4.21-5.00, Agree: 3.41-4.20, Partially agree: 2.61-3.40, Disagree: 1.81-2.60, Completely disagree: 1.00-1.80. Interview method was used to evaluate students in the collection of the views. The views of the students were asked to evaluate their peers in the interview forms.

Performance Task Rubric

The "Performance Task Rubric Assessment" was developed and implemented in the classroom during applications. Firstly, During development of rubrics firstly carried out a pilot study with 28 students (8th grade) in science and technology course. In this study, students select a topic within the curriculum and were asked to prepare and submit performances tasks such as posters, models, model etc. Before started pilot study, sample rubric drafted. This sample rubric distributed to students and self, peer and teacher assessment was implemented. Rubric of Performance Task' each criteria discussed by the students and made a decision to add new criteria to the rubric at the end of the pilot applications. Criteria which were not understood were remove and shaped rubric of final version.

The draft rubric used in the pilot application were divided into three categories as follows, Category 1.“ Performance task of contents", Category 2" Writing report", Category 3. "The presentation (poster or electronic media).

Rubric consists of categories; Category 1.“Performance task of contents"had included; The use of sources, Data collection on the subject, Rewriting concepts in their own words, Painting, photography, vs. use of materials, Concepts and supporting materials bring together in accordance with the task. Category 2."Writing report" had included, To use correctly and properly language, Compliance with the rules of syntax and grammar for poster, Ensuring the integrity of Written and visual component, Category 3. "The presentation” (poster or electronic media) had included; Presenting the topic to the audience of interest, Use effectively time, Answering correctly to the questions, Perform accurate and effective presentation.

While Science, Technology, Society and Environment (STSE) achievements were not taken into account in the draft rubric, developed rubric STSE achievements (goals) and the use of technology criterion were added. The final version of the rubric was divided into four categories; Category 1.“Performance task of contents"; Category 2" Writing report", Category 3. "The presentation”, Category 4.“ Using of technology”.

- Category 1 “Performance task of contents" included; The use of sources, Data collection on the subject, Rewriting concepts in their own words, Mention about the importance of the issue in terms of the environment and society, Mention about the historical development of the subject, Design model on the subject, Mention on the subject of the occupational groups criteria.
- Category 2 “Written Report" included; To use correctly and properly language, Compliance with the rules of syntax and grammar, Ensuring the integrity of written and visual component, Members actively participating in the presentation

- Category 3 "Presentation" included; Presenting the topic to the audience of interest, Use effectively time, Answering correctly to the questions, Perform accurate and effective presentation.

- Category 4 "Using Technology" included; Preparation of the original presentation (not quote), Enrichment of visual objects (pictures, figures, tables,...), Utilization of animation, video, etc.., Mention technological developments, Mention how utilized Science and Technology.

Category 2 "Written Report" and Category 3."Presentation" have remained same criteria.

Development rubric was finalized by five experts who become an expert in the field of science education. Performance Task Rubric rating scale was based on a 5-point Likert scale so that each assessor would categorize performance as being: 1 – poor; 2 – unsatisfactory; 3 – satisfactory; 4 – good; 5–excellent. Students are asked to evaluate classmates of a 5-point Likert scale. The lowest score of rubric is 20 while the highest score is 100.

Practice

Before starting the main application, a pilot application was implemented with 8^{th} grade. Students were informed about how to do peer assessment and the training session lasted for about four hours of science and technology course time. The main purpose of the training session was to establish the Performance Task Rubric criteria. During the training session, the students were given a worksheet to introduce them to Performance Task Rubric criteria.

After the training session, in the main application, 6th grade (n=54), 7th grade (n=30) and 8th grade (n=30) with a total of 114, participants, were divided into groups of three or four depending on the class size. Participants made their oral presentations their own science and technology courses, on performans tasks.

For peer assessment, three students were selected by way of draw by students who given oral presentation performance task and the selected students were asked to evaluate the students' oral presentation. Doing so is to reduce to rate the risk of high scores close friends to each other.

Group oral presentation lasted own performing tasks from ten to twenty minutes.

Performance Task Rubric developed for the assessment were applied for the self, peer and teacher assessment. Also in this study Peer Assessment Attitude Scale was applied to students in order to determine theirs attitudes towards peer assessment. The researcher assessed the participants during the oral presentation using Performance Task Rubric. During the presentation, peers noted their comments on the Performance Task Rubric.

3. Results of Research

The scores of students attitude towards the survey in peer, self and teacher assessments were presented the mean and standard deviation values in the Table 1.

Table 1. Descriptive statistics for attitude towards the survey scores

	Pre test		Post test	
	Mean	SD	Mean	SD
1. I think peer assessment is reliable	3.87	1.17	4.21	1.25
2. I do not want to give bad marks to friends	3.96	1.32	3.25	1.46
3. Peer assessment provides that improve my learning issues.	3.62	0.99	4.17	1.15
4. I see that peer assessment method is as a time-consuming.	2.85	1.29	2.81	1.53
5. I think that peer assessment is a fair method.	3.58	1.32	3.75	1.32
6. When evaluating friends I conduct emotional to them.	2.81	1.41	2.67	1.48
7. Peer assessment method provides to love science.	3.45	1.10	3.96	1.28
8. I think my friends are acting prejudiced evaluating peer.	3,33	1,39	3,29	1,48
9. I think the lack of time given to the peer assessment.	2,72	1,18	2,78	1,56
10. I join the course more by evaluate peer.	3,76	1,01	3,86	1,23
11. I start to be more careful to perform task with peer assessment.	3,85	1,05	3,75	1,35
12. I think peer assessment provides a democratic classroom environment.	3,20	1,31	3,84	1,37
13. I want all the other courses in the use of peer assessment.	3,82	1,28	3,57	1,53
14. I do not want to evaluate by friends.	3,10	1,50	2,54	1,58
15. I think teacher should only evaluate.	3,13	1,45	3,00	1,64
16. Peer assessment increase participation of the course.	3,46	1,04	3,81	1,38
17. I think peer review would give high marks to each other close friends	3,47	1,46	3,79	1,35
18. Peer assessment increases my motivation to science.	3,57	1,19	3,79	1,38
19. When assessing peers, I try to be fair to my friends.	4,14	1,06	3,82	1,42
20. When assessing pers, I try to be careful my friends.	4,07	1,23	4,44	0,98
21. Peer assessment allows me to see my mistakes.	3,83	1,23	4,40	1,01
22. I like to be evaluated by my friends.	3,35	1,48	3,95	1,23
23. Peer assessment encourages better than doing task.	3,56	1,08	3,67	1,42
24. Peer assessment has increased my self-confidence.	3,15	1,18	3,67	1,45
25. Peer assessment is useless to correct my inaccuracy.	2,20	1,25	2,20	1,26

The average of each item shown in the on Table 1. The average scores of the survey showed that participating students had a positive attitude toward Peer Assessment activities (Table 2).

Table 2. Descriptive statistics of item responses attitude towards the survey

		N	Mean	Std. Deviation	Std. Error Mean
Pre test	female	55	83.36	10.33	1.39
	male	59	83.34	12.02	1.57
	total	114	85.93	11.46	1.07
Post test	female	55	90.35	16.14	2.17
	male	59	90.68	13.21	1.71
	total	114	90.52	14.63	1.37

All grade students' performans task of descriptive statistics values found out pre test Mean=85.93 (SD=11.46), post test Mean=90.52 (SD=14.63). To determine the significance of the change in students' opinions before and after training paired samples t-test was used. The statistical comparison regard to between female and male responses to pre test and post test was not significant (t=-0.121, p=0.904). To determine the significance of the change in students' opinions before and after training paired samples t-test was used. t-tests of item responses attitude towards the survey, the statistical comparison between students' responses to pre test and post test was significant (t=-2.382, SD=20.52, *p<0.05). Students' views on peer assessment was a positive change post-implementation training in a meaningful way.

All grade students oral presentations' performans task given to rating of self, peer and teacher assessments in the Figure 1.

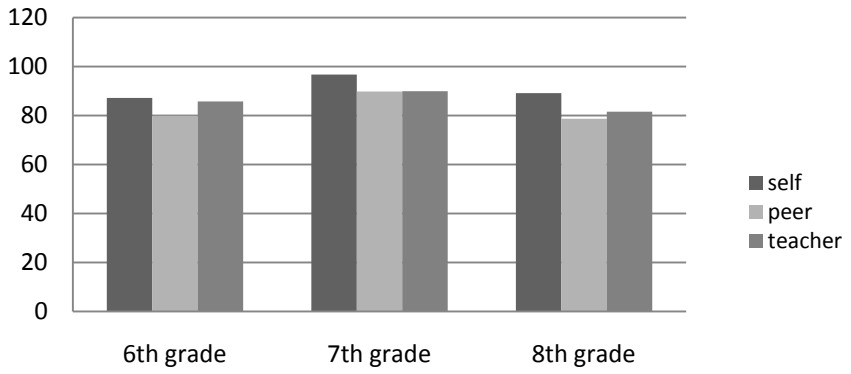


Figure 1. The mean scores of self, peer and teacher assessments' all classes.

Self-assessment are higher than teachers and peer assessments. Pearson correlation coeffcients were calculated between teacher–self, teacher–peer and self-peer assessments for 6th, 7th and 8th grades. Each student's average rating with the teacher's average rating for that student; and the mean peer rating of each student with the teacher's average rating for the student.

6th grade performance tasks' with in classroom practice were given peer, teacher and self-grades' minimum, maximum, average, and standard deviation values (Table 3) and correations (Table 4).

Tablo 3. Descriptive Statistics of self, peer, teachers assessments 6th grade scores

	Min	Max.	Mean	SD
self	71	100	96.72	6.19
peer	64	95	89.5	8.97
teacher	75	99	90	7.67

6th grade students' performans task of descriptive statistics values found out self (Minumum=71; Maximum=100; Mean=96.72; SD=6.19), peer (Minumum=64; Maximum=95; Mean=89.5; SD=8.97), and teacher (Minumum=75; Maximum=99; Mean =90; SD=7.67) assessments.

Table 4. Pearson correlation coefficient 6th grade between self, peer and teachers assessments scores

	Correlation coeffcient (r)		
	self	peer	teacher
self Pearson Correlation Sig. (2-tailed)	1	.461 .012	.591* .001
peer Pearson Correlation Sig. (2-tailed)	.461 .012	1	.509* .005
teacher Pearson Correlation Sig. (2-tailed)	.591* .001	.509* .005	1

*. Correlation is significant at the 0.01 level (2-tailed).

Between peer and teacher assessment (r=.509) and between self and teacher assessment (r=.591) were found to a medium and positive correlation.

7th grade students who practice oral presentation performance tasks given peer, teacher and self assessments' minimum, maximum, mean and standard deviation values in the Table 5.

Table 5. Descriptive Statistics of self, peer, teachers assessments 7th grade scores'

	Min	Max.	Mean	SD
self	70	95	87.24	7.47
peer	50	93	79.82	11.13
teacher	55	95	85.79	9.94

7th grade students' performans task of descriptive statistics values found out self (Minumum=70; Maximum=95; Mean =87.24; SD=7.47), peer (Minumum=50; Maximum=93; Mean=79.82; SD=11.13), and teacher (Minumum=55; Maximum=95; Mean=85.79; SD=9.94) assessments. Pearson correlation coefficient was the technique which was used to correlate students' results of peer, self and teacher assessments results in

Table 6.

Table 6. Pearson correlation coefficient between self, peer and teachers assessments 7th grade scores

	Correlation coeffcient (r)		
	self	peer	teacher
self Pearson Correlation Sig. (2-tailed)	1	.698* .000	.785* .000
peer Pearson Correlation Sig. (2-tailed)	.698* .000	1	.753* .000
teacher Pearson Correlation Sig. (2-tailed)	.785* .000	.753* .000	1

* Correlation is significant at the 0.01 level (2-tailed).

Between self and teacher assessment (r=.785) and peer and teacher assessment (r=.753) were found to a high and positive correlation. Between peer and self-assessment were found to a medium and positive correlation

(r=.698). 8th grade performance tasks' with students in classroom practice were given peer, teacher and self-assessments' minimum, maximum, average, and standard deviation values in the Table 7.

Table 7. Descriptive Statistics of 8th grade scores self, peer, teachers assessments

	Min	Max.	Mean	SD
self	70	100	89.13	9.77
peer	62	100	78.68	12.95
teacher	67	100	81.63	8.82

8th grade students' performans task of descriptive statistics values were found out self (Minumum=70; Maximum=100; Mean=89.13; SD=9.77), peer (Minumum=62; Maximum=100; Mean=78.68; SD=12.95), and teacher (Minumum=67; Maximum=100; Mean=81.63; SD=8.82) assessments. Pearson correlation coefficient was the technique which was used to correlate students' results of peer, self and teacher assessments results in

Table 8. Pearson correlation coefficient 8th grade between self, peer and teachers assessments scores

		Correlation coeffcient (r)		
		self	peer	teacher
self	Pearson Correlation	1	,462	,626*
	Sig. (2-tailed)		,072	,009
peer	Pearson Correlation	,462	1	,754*
	Sig. (2-tailed)	,072		,001
teacher	Pearson Correlation	,626*	,754*	1
	Sig. (2-tailed)	,009	,001	

*. Correlation is significant at the 0.01 level (2-tailed).

There was also a high and positive correlation between peer' and teacher' grades (r=.754). There was also a positive and medium correlation between self' and teachers' grades (r=.626).

4. Discussion and Conclusions

This study, thanks to collecting data from 114 elementary students in Turkey, a 25-item instrument was developed to investigate secondary students' attitudes toward and perceptions of peer assessment. Results revealed that participating students held positive attitudes toward the use of peer assessment activities male students had more positive attitudes toward peer assessment than females did, and students with previous PA experiences had less negative attitudes toward peer assessment. Results revealed that participating students held positive attitudes toward the use of peer assessment activities 7th and 8th students had more positive attitudes toward peer assessment than 6th did, and students with previous peer assessment experiences had less negative attitudes toward peer assessment. To determine the significance of the change in students' opinions before and after training paired samples t-test was used. t-tests of item responses attitude towards the survey, the statistical comparison between students' responses to pre test and post test was significant (t=-2.382, SD=20.52, *p<0.05). Students' views on peer assessment was a positive change post-implementation training in a meaningful way.

A meta-analysis shows a mean correlation of 0.69 between peer- and teacher- assigned grades, indicating that peer assessment can be reliable (Falchikov & Goldfinch, 2000). This finding can perhaps be explained by the fact that teachers often support peer grading by providing students with

assessment rubrics to ensure consistent and reliable peer evaluations (Jonsson & Svingby, 2007). the findings of this study indicate that correlation between peer and teacher-assessment were positive and high in 8th class.

Enjoying the learning experience is an essential ingredient in engaging students to learn. Like the other studies, in science and technology course, most students enjoyed the peer assessment process (Elliott & Higgins, 2000; Basheti *et al*., 2010). The literature also revealed that peer assessment motivated students to focus on how they could improve their work in the future (Elliott & Higgins, 2000; Harris, 2011).

Stefani (1994) analysed the correlation between self- and tutor-assessment and found that tutor's scores closely matched students' self-assessments. Other studies showed that high teacher–self correlations include. On the other hand, some studies recorded low agreement between the two (Hughes, 1995; Orsmond *et al*., 1997). With regard to peer-assessment, studies (Miller and Ng, 1994) have noted high agreement between teacher- and peer-assessments. Students in this study had an acute sense of solidarity and wanted their peers to do well. They did not want to award low scores, even if they felt that low scores were deserved. Other studies report similar findings (Nilson, 2003; White, 2009). This "relationship factor" might have led to some marking bias. Nevertheless, the assignments that were moderated by the module team were awarded the same grade as those given by at least one of the peer markers.

Sadler and Good (2006) study confirmed that there was the consistency among self-, peer- and teacher-assessment. A number of studies discovered

the consistency between self- and teacher-assessment (Sadler & Good, 2006; Tseng & Tsai, 2007). However, the study of Knowles, Holton and Swanson (2005) stated that there was the inconsistency between self- and teacher-assessment. As for peer and teacher-assessment, Chen (2010)'s study argued that there was inconsistency between peer and teacher assessment. The divergent outcomes above were probably due to various educational levels of students, assessment rubrics, or different assessment procedures employed. The use of peer assessment in more classes, students may begin to regard such assessment as a normal part of their education and may also understand more clearly how their peers' advice can contribute to their education. Continued use of peer assessment may also encourage students to see themselves as one justifiable audience for their peers' writing and thus a valuable source of feedback about that writing.

References

Basheti, I. A., Ryan, G., Woulfe, J. and Bartimote-Aufflick, K. (2010). Anonymous peer assessment of medication management reviews. *Am. J. Pharm. Educ.* 15, 74- 77. [Online] Available: URl:http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2907842/ (29 april 2013)

Becker, H., Gecr, B. and Hughes, E. (1995). *Making the grade: the academic side of college life.* (2nd) New Brunswick, NJ, Transaction publishers.

Boud, D. (1995). *Enhancing learning through self-assessment.* London: Kogan Page.

Boud, D. (2000). Sustainable assessment: rethinking assessment for the learning society. *Studies in Continuing Education*, 22(2), 151-167.

Brew, A. (1999). Towards autonomous assessment: using self-assessment and peer assessment, in: S. Brown & A. Glasncr (Eds) *Assessment matters in higher education.* Buckingham, Open University Press.

Brindley C, Scoffield S (1998). Peer assessment in undergraduate programmes. *Teaching in Higher Education*, 3(1), 79–90.

Butler, D. L., Winne, P. H. (1995). Feedback and self-regulated learning: A theoretical synthesis. *Review of Educational Research*, 65(3), 245–281.

Chen, C. (2010). The implementation and evaluation of a mobile self- and peer-assessment system. *Computers & Education*, *55*, 229–236.

Cheng, W. and Warren, M. (1999). Peer and teacher assessment of the oral and written tasks of a group project. *Assessment & Evaluation in Higher Education*, 24(3), 301–304.

Creswell, J. W. (2005). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (2nd ed.). Upper Saddle River, NJ: Pearson.

Elliott, N. and Higgins, A. (2000). Self and peer assessment-does it make a difference to student group work? *Nurse Education in Practice*, 5, 40–48.

Falchikov, N. (1986). Product comparisons and process benefits of collaborative peer group and self assessments. *Assessment & Evaluation in Higher Education*, 11(2), 146–166.

Falchikov, N. (2005). *Improving assessment through student involvement*. Oxon: Routledge Falmer.

Falchikov, N. and Blythman, M. (2001*). Learning together: Peer tutoring in higher education* (1st ed.). New York: Routledge.

Falchikov, N. and Boud, D. J. (1989). Student self-assessment in higher education: a meta-analysis. *Review of Educational Research*, 59(4), 395-430.

Falchikov, N. and Goldfinch, J. (2000). Student peer assessment in higher education: A meta-analysis comparing peer and teacher marks. *Review of Educational Research*, 70(3), 287.

Gielen, S., Peeters, E., Dochy, F., Onghena, P. and Struyven, K. (2009). Improving the effectiveness of peer feedback for learning. *Learning and Instruction*, 20(4), 304–315.

Harris, J. (2011). Peer assessment in large undergraduate classes: an evaluation of a procedure for marking laboratory reports and a review of related practices. *Advances in Physiology Education*, 35, 178–187.

Hartley, J. (2004). Case study research. In: Cassell, C. and Symon, G. (eds.) *Essential guide to qualitative methods in organizational research*. London: Sage.

Hughes, I. E. (1995). Peer assessment. *Capability*, 1, 39–43.

Jonsson, A. and Svingby, G. (2007). The use of scoring rubrics: Reliability, validity and educational consequences. *Educational Research Review*, 2(2), 130–144.

Knowles, M. S., Holton, E. F. and Swanson, R. A. (2005). *The adult learner: The definitive classic in adult education and human resource development* (6th ed.). California: Elsevier.

Miller, L.and Ng, R. (1994) Peer assessment of oral language proficiency. *Perspectives: Working Papers of the Department of English, City Polytechnic of Hong Kong*, 6(2), 41-56.

Nelson, M. M. and Schunn, C. D. (2009). The nature of feedback: How different types of peer feedback affect writing performance. *Instructional Science*, 37(4), 375–401.

Nilson, L. (2003). Improving student feedback. *Coll. Teach.* 51, 34–39.

Orsmond, P., Merry, S. and Reiling, K. (1996). The importance of marking criteria in the use of peer assessment. *Assessment & Evaluation in Higher Education*, 21(3), 239–250.

Ramsden, P. (2003). *Learning to teaching in higher education*. 2nd edn. London, Routledge.

Sadler, D. (1998). Formative assessment: Revisiting the territory. *Assessment in Education: Principles Policy and Practice*, 5(1), 77–84.

Sadler, P. M. and Good, E. (2006). The impact of self-and peer-grading on student learning. *Educational Assessment*, 11(1), 1–31.

Somervell, H. (1993). Issues in assessment, enterpriseandhighereducation: Thecasefor self-, peerandcollaborativeassessment. *Assessmentand Evaluation in HigherEducation*, 18(3), 221-233.

Stefani, L. A. (1994). Peer, self and tutor assessment: Relative reliabilities. *Studies in Higher Education*, 19(1), 69–75.

Strijbos, J. W., Narciss, S. and Dünnebier, K. (2010). Peer feedback content and sender's competence level in academic writing revision tasks: Are they critical for feedback perceptions and efficiency? *Learning and Instruction*, 20, 291-303.

Topping, K. J. (1998). Peer assessment between students in colleges and universities. *Review of Educational Research*, 68(3), 249–277.

Topping, K. J. (2003). Self and peer assessment in school and university: Reliability, validity and utility. In M. Segers, F. Dochy, & E. Cascallar (Eds.), *Optimising new modes of assessment: In search of qualities and standards* (pp. 55–87). Dordrecht, Netherlands: Kluwer.

Topping, K. J., Smith, E. F., Swanson, I. and Elliot, A. (2000). Formative peer assessment of academic writing between postgraduate students. *Assessment & Evaluation in Higher Education*, 25(2), 149–169.

Tseng, S. C. and Tsai, C. C. (2007). On-line peer assessment and the role of the peer feedback: A study of high school computer course. *Computers & Education*, 49(4), 1161–1174.

White, E. (2009).Student perspectives of peer assessment for learning in a Public Speaking course. *Asian EFL J.* 33, 1–31.

Zevenbergen, R. (2001). Peer assessment of student constructed posters: assessment alternatives in preservice mathematics education. *Journal of Mathematics Teacher Education,* 4 (2), 95-113.