Knowledge Levels About Cooperative Learning Model of Science and Technology Teachers

Samih BAYRAKÇEKEN[**], Kemal DOYMUŞ[***], Alev DOĞAN [****], M. Said AKAR [*****], Samih DİKEL

Abstract

The aim of this present study was to examine science and technology teachers' views about knowledge levels and practice of the cooperative learning model which student-centered instruction and one of the many uses in the education. The sample of this study composed of 248 science and technology teachers who served from Agri, Ardahan, Igdir, Erzurum, Kars andMusprovinces ofscienceandtechnologyteachers of the EasternAnatolia Region. As the data collection instruments, cooperative learning model scale were used. Scaleused in this study, consists ofeightquestions. Some oftheopen-endedquestions areprovided asapart of theLikert. The data obtainedwere evaluatedmeasurement tool. Accordingto the data obtained from the analyses, teachersinformationaboutthis modelispartly, but cannot do onthe applicationclassesand how theyhad troubleemerged.

Keywords: Cooperative learning method, Science and Technology teacher, Eastern Anatolia Region, student-centered instruction

---

[*] Bu çalışma 110K252 nolu TÜBİTAK projesinden elde edilen verilerin bir kısmının kullanımı ile hazırlanmıştır.

[**] Prof. Dr., Atatürk Üniversitesi, samih@atauni.edu.tr.
[***] Doç. Dr., Atatürk Üniversitesi, kdoymus@atauni.edu.tr.
[****] Doç. Dr., Gazi Üniversitesi, alevd@gazi.edu.tr.
[*****] Arş. Gör., Erzincan Üniversitesi, msakar@erzincan.edu.tr.

.Extended Summary

Purpose

The aim of this study is to determine the science and technology teachers' knowledge about and the level of practice in cooperative learning method, which is commonly used in student-centered education.

Method

The sample of the study consists of 248 science and technology teachers from Ağrı (n=22), Ardahan (n=18), Iğdır (n=33), Erzurum (n=80), Kars (n=44) and Muş (n=51). The survey method was used in this research. "Determining knowledge and level of practice in cooperative learning scale" was used as a scale. The measurement was conducted quantitatively and qualitatively. Some of the items used in the instrument were developed by Doymuş et al.,(2006), Bourner et al., (2001) and Garvin et al., (1995) while others were prepared by the researchers. Semi-structured interviews were conducted on 10 teachers (Annex 1 for sample questions). Interviews were recorded and made face-to-face. The data collected from the interviews were transformed into written reports and then analyzed. The scale was also administered to the teachers participating in the research. The scale was formed as A and B. The scale A contained the information and questions related to cooperative learning method while the scale B had questions determining student's and teacher's in-class and out-of-class conditions of cooperative learning method. The scale was composed of 24 open-ended and likert-type questions. The present study was made possible considering the A group questions. The reliability of the scale's likert type questions was measured by Cronbach Alfa test and found .68.

Results

The answers of the teachers showed that most of them made different descriptions of cooperative learning method. About 25% of the teachers stated that they had experience with cooperative learning method while 65% of them had partly known about it and the rest not having any knowledge (Figure 1) 20% of the teacher used this method while 60% partly used it (Figure 2). It was found that almost all the teachers had difficulty in using this method. The teachers showed anxiety about the students' behavior, evaluation of data in group work and the fear of fail in the application of the method. Even if the teachers know about the method and apply it, it is clear that there are mistakes made in the applications and they can not conduct the method properly (Figure 3). 25 % of the teachers are conscious about why they use the model while about 75% of them do not know about the reason why they employ it (Figure 4). About 75% of the teachers could not state the ideal number of a group as 2-6. Besides, 35 % of the teachers grouped the students according to their talents while about 60% according to gender, student volunteering, and social skills (Figure 5). 60 % of the teachers alleged that using cooperative learning method was more fruitful than conventional method (Figure 6). Again, the same teachers declared that they had the knowledge about

cooperative learning during their university studies or from other sources. It is therefore obvious that they did not receive any in-service training or workshops (Figure7).

Discussion

The results and the findings obtained in this study are based upon four objectives: the first one is to allow teachers to know about the cooperative learning method. Taking into consideration the answers in Table 2, teachers were not able to explain it. Second one is related with the skills and frequency of usage of this method. Figure 1 and 2 show that teachers had difficulty in using the method frequently. Third one is related with the concerns and how they evaluate group activities in the application of the method. Figure 3 and 4 reveal that teachers could not comprehend how they could deal with the problems of students not working in teams as well as the negative outcomes of the students during the application of the method and that they did not have enough experience and knowledge in evaluating students working in groups. The fourth one concerns how to compose student groups and how to increase the level of student's achievement during the application of cooperative learning method in teachers' classroom. Figure 4 and 5 suggest that teachers are not informed enough about how to construct the groups and how many members each group is to have in cooperative learning. Besides, Figure 7 demonstrated that cooperative learning method is more fruitful than any other student-centered method. We are of the opinion that this information is bibliographic because without skills in application and without knowing principals of cooperative learning in addition to the lack of applications in the classes, it is questionable that teachers use the phrase "one method is more successful than others". The fifth one is related to from where teachers got information about cooperative learning. Teachers participating in our questionnaire stated that they got informed about the method during their studies at the university, and not at their in-service training or workshops. The study when compared with others is compatible with Maria et al. (2005), Bourner et al (2001) and Mills (2003), and not compatible with others like Garvin et al., (1995) and Doymuş et al (2006).

Conclusion

In conclusion, it is obvious that our teachers cannot conduct enough the student-centered methods, techniques or strategies even if they are student-centered. Therefore, we suggest that teachers get training of applied student-centered learning methods in their workshops, in-service training or special educations programs.

* * * *

References

Aksoy, G. ve Doymuş, K. (2011). Fen ve Teknoloji Dersi Uygulamalarında İşbirlikli Okuma-Yazma-Uygulama Tekniğinin Etkisi, *Gazi Üniversitesi Eğitim Fakültesi Dergisi*, 31 :(2), 43-59.

Aktamış, H. ve Ergin Ö. (2006). Fen Eğitimi ve Yaratıcılık, *Dokuz Eylül Üniversitesi Buca Eğitim Fakültesi Dergisi*, 20, 77-83.

Aktamış, H. ve Pekmez, E. Ş. (2011). Fen ve Teknoloji Dersine Yönelik Bilimsel Süreç Becerileri Ölçeği Geliştirme Çalışması.*BUCA eğitim fakültesi dergisi*,30 :(2),192-205

Arı, E. veBayram, H. (2011). Yapılandırmacı Yaklaşım ve Öğrenme Stillerinin LaboratuvarUygulamalarında Başarı ve Bilimsel Süreç Becerileri ÜzerineEtkisi. *İlköğretim Online*, 10 : (1), 311-324.

Brewer, S andKlein, J.D., (2006). Type of PositiveInterdependenceandAffiliation Motive in an Asynchronous, Collaborative Learning Environment.*Educational Technology Research and Development*,54 : (4), 331–354

Bourner, J., Hughes, M., and Bourner, T. (2001).First-Year Undergraduate Experiences of Group Project Work.*Assessment and Evaluation in Higher Education*, 26, 19-39.

Brooks G. and M. G. Books (1999). TheCourageto be Constructivist. *EducationalLeadership*, 57 : (3), 18-24.

Doymuş, K., Şimşek, Ü., Bayrakçeken, S. (2004). İşbirlikli öğrenme yönteminin Fen Bilgisi dersinde akademik başarı ve tutuma etkisi, *Türk Fen Eğitimi Dergisi*,1 : (2), 103-115.

Doymuş, K., Şimşek, Ü., Şimşek, U. (2005). İşbirlikçi öğrenme yöntemi üzerinederleme: İşbirlikli öğreneme yöntemi ve yöntemle ilgili çalışmalar, *ErzincanEğitim Fakültesi Dergisi*, 7 : (1), 59-83.

Doymuş, K., Karaçöp, A., veŞimşek, Ü.(2010).Effects of jigsaw and animation techniques on students'understanding of concepts and subjectsin electrochemistry, *Educational Technology Research and Development*, 58, 671-691.

Fidan, N. (1996). *Okulda Öğrenme ve Öğretme.* Ankara: Alkım Yayınevi.

Garvin, J., Butcher, A., Stefani, A., Tariq, V., Lewis, N., Blumson, R., Govier, R. & Hill, J. (1995). Group Projects for First-Year University Students: An Evaluation.*Assessment & Evaluation in HigherEducation*, 20,279–294.

Gömleksiz, M.,&Tümkaya, S. (1997). Kubaşık öğrenme yönteminin sınıf öğretmenliği bölümü birinci sınıf öğrencilerinin akademik başarıları ile öğrenme ve ders çalışma stratejileri üzerindeki etkisi, *Çukurova Üniversitesi Eğitim Fakültesi Dergisi*, 14 : (2), 230–236.

Johnson, D.W.,& Johnson, R. T. (1999). Makingcooperativelearningwork. *TheoryIntoPractice*, 38 :(2), 67–73.

Karasar, N. (2005). *Bilimsel Araştırma Yöntemi*.(15. Baskı),Ankara, Nobel Yayın Dağıtım.

Kıncal, R. Y., Ergül, R. veTimur S. (2007). Fen Bilgisi Öğretiminde İşbirlikli Öğrenme Yönteminin Öğrenci Başarısına Etkisi.*Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 32, 156-163.

Mills, P., (2003). Group project work with undergraduate veterinary science students,*Assessment and Evaluation in Higher Education*, 28 :(5),527-38.

Şimşek, Ü., Doymuş ,K., ve Kızıloğlu N., (2005). Lise Düzeyinde Öğrenim GörenÖğrencilere Grupla Öğrenme Yönteminin Kazandırdığı Bilgi ve beceriler, *Kastamonu Eğitim Dergisi*, 13 : (1), 67-80.

Yıldırım, N., Er Nas, S. ve Ayas, A. (2009). Kimya Öğretmen Adaylarının Öğretim Teknolojilerini Kullanabilme Durumlarına İşbirlikçi Öğrenmenin Etkisi. *Necatibey Eğitim Fakültesi Elektronik Fen ve Matematik Eğitimi Dergisi*, 3 :(1), 99-116.