The Effects of Cooperative Learning and Learning Journals on Teacher Candidates' Self-Regulated Learning

*Hülya GÜVENÇ**

Abstract

The purpose of this study is to investigate the effects of cooperative learning and learning journals on teacher candidate students' self-regulated learning. Data of the research were collected by the Turkish version of the Motivated Strategies for Learning Questionnaire. 84 university students (52 girls and 32 boys) participated in this research. A quasi pre-test/post-test experimental design with control group was utilized. Both groups were taught by cooperative learning. The experimental group wrote their reflection in learning journals. The research has discerned that there is a difference between experimental and control groups and experimental groups' students have been effected more positively on self-efficacy for learning and performance, elaboration, organization, critical thinking and metacognitive control strategy dimensions of self-regulated learning.

Key Words

Self-regulated Learning, Reflection, Cooperative Learning, Learning Journals.

* *Correspondence:* Assist. Prof. Hülya Güvenç, Çanakkale Onsekiz Mart University, Faculty of Education, Department of Educational Science, 17100 Çanakkale/Turkey.
E-mail:guvenchulya@hotmail.com

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One important aspect of active learning is social interaction among students and small group activities are an easy way to facilitate social interaction. Although a small group activity aims to accomplish one or more learning objectives, students often limit their focus to finishing assignments (Meyers & Jones, 1993). It is difficult for an instructor to ensure that students support each other and take responsibility for project goals. In order to resolve this problem and ensure efficiency, small groups should be structured (Açıkgöz, 2003). Cooperative learning occurs in the context of formal small groups, in which students collaborate in order to accomplish shared goals (Açıkgöz, 2003). In cooperative learning groups, students benefit from the positive aspects of social interaction while completing the given assignment. The basic components of cooperative learning include positive interdependence and individual accountability through face to face interaction (Johnson, Johnson, & Holubec, 1994). Because of its flexibility, cooperative learning is a useful tool in many instructional contexts. Many researchers, studying different subject matters, grade levels, and cultures, have indicated that cooperative learning is an effective method on cognitive, social, and affective learning outcomes (Açıkgöz, 1992; Özkal, 2000).

On the other hand, when highly formal and structured, cooperative learning is criticized for high teacher control and low learner autonomy (Panitz, 1997). A teacher exercises control over groups by setting group goals, distributing the roles, and supplying all the material necessary to complete the work (Corliss, 2005). Obviously, low student autonomy could cause less opportunity for self-regulated learning.

Self-regulated learning is the collection of thoughts, feelings, and actions that are produced to reach an academic goal (Zimmerman, 2000). Self-regulation is related to a student's effective participation in his or her own learning process in terms of motivation and behavior. In other words, self-regulation is the affecting, guiding, and controlling of the student's behavior by himself/herself (Senemoğlu, 2007). Learners are assumed to construct their own meanings, goals, and strategies from the information available in the "external" environment as well as the information in their own minds (Pintrich, 2004). Zimmerman has presented a model, based on Bandura's socio-cognitive theory that explains the self-regulation process according to three cyclical phases. During the pre-action, preparation phase self-regulation processes and motivational beliefs are founded. During the action phase, a student

exercises self-control and observation, and the post-action phase comprises self-reaction and reflection (Zimmerman, 2001). Self-regulatory activities are mediators between personal and contextual characteristics and actual achievement or performance (Pintrich, 2004). Due to this, the development of self-regulation competencies can be considered the most important learning outcome, and, for this reason, it is important that students be given opportunity to regulate their learning (Schunk & Zimmerman, 1997; Senemoğlu, 2007). To this end, reflection materials assigned after the completion of in-class activities can function as an easy-to-use tool to support self-regulated learning. It is possible to design a learning environment that improves self-regulated learning (Orhan, 2008; Üredi & Üredi, 2007). However, designing a positive classroom environment that supports self-regulated learning may prove to be difficult in classes where students are accustomed to the traditional teaching approach that includes high teacher control. This may also run contrary to the structure of certain methods, such as cooperative learning.

Reflection materials can be thought of as tools that encourage students to reflect on what has been learned, how learning occurred, and also to increase awareness of one's own learning development (Haigh, 2001; Thorpe, 2004). These studies show how the use of reflection materials with different names and different properties can have positive effects, such as the development of life-long learning skills, the construction of awareness of regarding one's own learning process, and the cultivation of personal responsibility for self-assessment and learning processes (Chirema, 2007; Du & Wagner; 2005; Haigh, 2001; Lee & Ertmer, 2006; Myers, 2001; Orlang-Barak & Yinon, 2007; Park, 2003). Reflection materials cause the students to create intrinsic feedback that affects all the self-regulation process related to their own learning processes (Corliss, 2005).

Learning journals, which are a type of reflection material, encourage students to write personal reflections about their learning processes. Learning journals have positive effects on learning and reflective learning (Chirema, 2007; Orlang-Barak &Yinon, 2007), promote critical thinking skills (Dantas-Whitney, 2002), and encourage self assessment. Learning journals also have a positive impact on self-regulated learning. Research has shown that self-regulated learning programs which were supported by journals have positive effects on self-regulation (İsrael,

2007; Schmitz & Wiese, 2006). Additional research has indicated that study diaries related to homework have positive effects self-regulated learning among sixth graders (Güvenç, 2009). On the other hand, there is currently no research related to the effects of teaching methods supported with learning journal writing.

Aim

In this context, this study aims to analyze the effects of cooperative learning and learning journals on the self-regulated learning of teaching candidates.

Method

Research Model

A quasi pretest / post-test with control group experimental design was utilized. Quasi experimental designs are utilized when random assignments of participants are impossible (Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2008).

Participants

The experimental application was made during the 2008-2009 spring semester with the participation of 84 students (52 females, 32 males) enrolled in the class titled "Teaching Principles and Methods" at the Science Education Department of Çanakkale Onsekiz Mart University Faculty of Education. The age of the participants ranged between 18 and 24 years with a mean age of 19.1 years. The participants of this research project were not regrouped. One class was assigned at random to be the control group (N=40) with the other randomly assigned to be the experimental group (N=44). The absence of 27 students from the experimental group and 26 students from the control group was considered in the analysis of the data.

Instrument

The research data were collected by the Motivated Strategies for Learning Questionnaire (MSLQ) developed by Pintrich, Smith, Garcia and McKeachie (1993) which was adapted into Turkish by Büyüköztürk, Akgün, Özkahveci and Demirel (2004). The MSLQ, which has been

adapted multiple languages and has been used by hundreds of researchers, is a useful scale with which to measure self-regulated learning (Duncan & McKeachie, 2005). The scale is an 81 item self -reporting scale. It is composed of two parts, the first dealing with motivation and containing six subscales and the second dealing with learning strategies and containing nine subscales. The Cronbach Alpha Reliability Coefficients of these subscales ranged between .86 and .41, whereas the collected item-total correlation ranged between .19 and .66.

Procedure

The application was made during the Teaching Principles and Methods course. This course is a theoretical course of three credits. The application covered the entire semester. During the application, differences between the two groups regarding objective, content, method, course material, and evaluation were strictly prohibited. All of the applications were performed by the researcher. The treatment lasted for ten weeks excluding the data collection applications. Due to the rules of the educational institution, the treatment was suspended during the midterm exam week as determined by the institution.

1. Preparation: since the students were not familiar with cooperative learning methods, they were trained for it. In addition, students in the experiment group were informed about learning journals and their positive effects on learning. Those students were informed about how to reflect on classroom learning processes. It was also emphasized that they should focus on both processes and products of learning. This stage lasted for a total of five course hours.
2. Pre-measurement: a data collection instrument was administered to both groups, the application of which lasted for one hour.
3. Treatments: during the experimental applications, both groups were taught the cooperative learning method. The *Learning Together technique* (Johnson, & Johnson, 1991) was used five times, *Aronson's Jigsaw technique* (Açıkgöz, 2002) was used three times, and the *Academic Conflict* and *Ask Together Learn Together techniques* (Açıkgöz, 2002) were used once. The treatment was the learning journals which were written weekly after learning / teaching processes by the students in experimental group.
4. Post measurements: The data collection instrument was applied once again to both groups. The application lasted for one course hour.

Data Analysis

The data obtained by the scale utilized in this research were analyzed by SPSS 11.0 Statistics software. While the data were being analyzed, their arithmetic means and standard deviations were calculated and paired. A dependent *t* test was used to analyze the difference between the groups' arithmetic means before and after the application, and ancova analysis was used to determine the significance of the difference between the groups' post-measurements according to experimental applications. That analysis, which used the pretest measurements as a covariate in ancova with a pretest / post-test design, has been used frequently by researchers (Büyüköztürk, 2007). Finally, student learning journals were analyzed by content analysis to support qualitative findings.

Results

Group pretest and post-test arithmetic means, standard deviations, and paired sample *t* test results are presented in Table 1 with respect to motivation and in Table 2 with respect to learning strategies. The experimental group pre-test mean was $\overline{X}$= 42.19, and post-test mean was $\overline{X}$=45.11. The difference between pre-test and post-test means was significant (t=3.81; p<.05) for self-efficacy for learning and the performance subscale. Also an increase of the means in intrinsic goal orientation (t=2.76; p<.05) and task value (t=2.16; p<.05) were significant for the experimental group. The control group means were increased, and they were significant for intrinsic goal orientation (t=3.81; p<.05) and task value (t=3.81; p<.05) subscales. On the other hand, according to ancova results there is a significant difference between the experimental and control groups (F=9.06, p<.05). Cooperative learning and learning journals effected students' self-efficacy for learning and performance marks more positively than in control groups.

According to paired sample *t* test results, both groups' post-test learning strategy usage scores were significantly higher than pre-test for elaboration, organization, critical thinking, peer learning, and help-seeking learning strategy subscales. Also, an analysis of treatment group members' post-test metacognitive control strategy use scores $\overline{X}$=69.81 were significantly higher (t=6.06; p<.05) than pre-test scores $\overline{X}$=61.96. Analysis of covariance of the post-test result showed that the treatment group members scored significantly higher than the control group students who didn't write learning journals with respect to elabora-

tion (F=11.30, p<.05), organization (F=15.82, p<.05), critical thinking (F=6.06, p<.05) and metacognitive control (F=16.32, p<.05) strategy subscales

Content analysis of student journals showed that students write their reflections in relation to content, learning processes, and their perceptions about self-efficacy and affections. Content analysis indicates that students summarized (f=145), outlined (f=29), criticized information (f=18) and also wrote about content which they could not understand (f=42). Students reflected on learning and teaching processes (f=98) and group processes (f=28) also. Content analysis showed that students wrote about self-efficacy in learning processes (f=68) and expressed positive (f=76) and negative (f=34) feelings of satisfaction.

The results of this research show that cooperative learning and learning journals had positive effects on self-efficacy for learning and the performance of students. Self-efficacy is people's judgments of capabilities to organize and execute courses of action required to designed types of performance (Bandura, 1986, p. 391). Students in the experimental group perceived themselves to be more capable to learn that course. Journal writing supported a student ability to assess performance in the learning processes. Güvenç (2008) found that the use of reflection materials supports the cooperative learning applications and students' self-efficacy for learning and performance.

In addition, the results showed that cooperative learning and learning journals have positive effects on student elaboration, organization, critical thinking, and metacognitive control strategy usage. That could be related to self-efficacy for learning and the performance of students. Self-efficacy is positively related to student cognitive engagement and performance. Students who believed they were capable were more likely to report use of cognitive strategies and to be more self-regulating in that they reported more frequent use of metacognitive strategies (Pintrich & Groot, 1990). On the other hand, content analysis of student journals showed that students were summarizing, outlining, and critically evaluating new information. Journal writing provides an opportunity to use learning strategies.

It can be said that cooperative learning has positive effects on self-regulated learning. Research showed that cooperative learning has positive effects on cognitive and affective learning outcomes (Açıkgöz, 1993;

Gömleksiz, 1993; Gömleksiz & Özyürek, 1994; Güvenç & Açıkgöz, 2007; Karnasih, 1995; Lazarowitz, Hertz-Lazarowitz & Baird, 1994; Özkal, 2000; Özkılıç, 1999; Qin, Johnson & Johnson, 1995) but additional research is needed to explore the effects of cooperative learning on self-regulated learning.

Based on the results of this research, it can be said that similar research should be performed at different educational levels and courses, and it should be determined whether similar results would be obtained for the efficiency of using cooperative learning and journal writing. Finally, teachers and parents should be informed about the positive effects of learning journals so that they can motivate their students to write them.

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