Kuram ve Uygulamada Eğitim Bilimleri • Educational Sciences: Theory & Practice - 11(2) • Spring • 911-917

Effect of Jigsaw I Technique on Achievement in Written Expression Skill

Sedat MADEN[a]
Cumhuriyet University

Abstract

This study aims to compare the effects of Jigsaw I technique from the cooperative learning methods and traditional teaching method on academic achievement and retrieval of Turkish teacher candidates in the matter of written expression. The sample of the study consists of 70 students studying at the Department of Turkish teaching in the academic year of 2009-2010. One of the classes was randomly specified as control group (N=34) to which traditional teaching method was applied while the other as test group to which the Jigsaw technique (N=36) was applied. The study was predicated on "Non-equal control group pattern". Learning styles of the groups were determined by the Kolb Learning Style Inventory (LSI). Data about their academic success were collected through Success Test for Written Expression (STWE) applied as pre-test and post-test and views of students about Jigsaw I technique were collected through a form questioning students' views (SVF). Then, the results obtained from them were analyzed. It was observed as a result of statistical analyses that there was not a significant variation in favor of the test group in terms of academic success and stability between the test group and the control group in teaching the written expression subject. It was also determined according to the results obtained from the study that the students stated positive views for the Jigsaw I technique.

Key Words

Written Expression, Cooperative Learning, The Jigsaw I Technique, Traditional Teaching.

This study aims to determine effects of the Jigsaw I technique and traditional teaching method on academic success in the subject of written expression and to learn the views of the students about this method, who were included in the group on which the Jigsaw I technique was applied.

According to these objectives, answers were sought for the following research questions in the study:

1- Is there a significant difference between the scores of pre-test and post-test, which measure academic success in the skills of written expression as well as stability test of the students included in the test group on which the jigsaw I technique was applied and the students of the control group on which traditional method was applied?

2- What are the views of the students about this method, who were included in the group on which the Jigsaw I technique was applied, about this method?

Written expression is defined as a complex behavior that involves many interrelated skills, including grammar, punctuation, handwriting, spelling, creativity, and expressiveness (Shapiro, 1996) as well as specific written expression components, such as mechanics, production, conventions, linguistics, and cognition (Bradley-Johnson & Lesiak, 1989). Writing is a powerful instrument of thought. In the act of composing, writers (learner) learn about themselves and their world and communicate their insights to others. Writing confers the power to grow personally and to affect change in the world (National Council of Teachers of English, 1979).

a *Correspondence:* PhD. Sedat MADEN, Cumhuriyet University, College of Education, Department of Turkish Language Education, 58140 Sivas / Turkey. E-mail: smaden@cumhuriyet.edu.tr & sedd52@gmail.com. Phone: +905053935814 Fax: +903462191224.

Writing or written expression is an essential tool for that the individuals get success in the school and find the job (Bradley-Johnson & Lesiak, 1989; Bryson, 2003; Cavkaytar, 2010; Demirtaş, 1989; Temur, 2001).

Cooperative learning may be characterized as a learning approach in which students build small mixed groups in classroom and other environments to assist each other in learning a certain academic subject according to a common objective in which the individuals' self-confidence is encouraged and their communication and interaction are developed in which problem-solving and thinking capacity are enhanced and in which students participate in learning process actively and teach something each other (Bolling, 1994; Bowen, 2000; Carol, 1988; Coppola & Lawton, 1995; Eilks, 2005; Gardener & Korth, 1996; Gillies, 2006; Hall & Paolucci, 1972; Hennessy & Evans, 2006; Imel, 1989; Kerka, 1990; Levine, 2001; Lin, 2006; Parker, 1985; Prichard, Bizo & Stratford, 2006; Prince, 2004; Slavin, 1991; Şimşek, 2007). Cooperative learning is still a concept considered significantly by teachers, school managers, and educationalists; however, it is one of the approaches prevalently seen in the area of theory, research and educational practices (Graham, 2005; Howard, 2004; Johnson & Johnson, 1999; Maloof & White, 2005; Slavin & Sharan, 1990).

Cooperative learning facilitates this process by assigning students to small groups in which they work together to increase their own and one another's learning (Colosi & Zales, 1998). Cooperative learning is viewed as a tool for preparing students to work in teams as required in various employment settings, in the home, and in the community when there is a need to combine energies and work towards a common goal (Bolling, 1994; Bowen 2000; Eilks, 2005; Gardener & Korth, 1996; Gillies, 2006; Hennessy & Evans, 2006; Levine, 2001; Lin, 2006; Mergendoller & Packer, 1989; Prince, 2004; Prichard et al., 2006). In addition to cooperative learning, it is an umbrella term for a variety of educational approaches involving joint intellectual effort by students, or students and teachers together (Delucchi, 2006).

Sapon-Shevin found out that cooperative learning was a successful teaching strategy at all levels from pre-school to post secondary. Cooperative learning is a peer-centered pedagogy that can promote academic achievement and build positive social relationships (Sapon-Shevin, 1994).

The research done by Johnson, Johnson and Stanne show that cooperative learning is essential for maximizing learning and ensuring healthy cognitive and social development as well as many other important instructional outcomes (Johnson, Johnson & Stanne, 2000, p. 44).

Many cooperative learning strategies make use of the principles of cooperative learning for specific purposes. These strategies can be categorized into the following models: (I) The Structural Approach, (II) Group Investigation (III) Student Team Investigation (IV) Curriculum Packages (V) Learning Together and (VI) Jigsaw. It is seen that the jigsaw techniques, which have quite flexible practices with limitless variations, are among the techniques, which have been mostly studied and more frequently used compared with the other cooperative learning techniques until today (Doymuş, 2007; Hedeen, 2003).

The strategy that is recommended most for social and science studies is the Jigsaw series (Slavin, 1990). Cooperative learning techniques like the jigsaw method have other classroom benefits (Meyers, 1997). Johnson, Johnson and Smith (1991) reviewed research suggesting that cooperative learning fosters positive attitudes toward the subject of study. In our experience, many students approach the statistics course with fear and anxiety. Incorporating cooperative learning exercises into the course may improve student attitudes. Cooperative learning methods can also benefit student achievement (Johnson et al., 1991; Slavin, 1983, 1990). Students may see that classmates are also struggling, and together they may feel more comfortable asking for help. Assisting less able classmates may help the more able students learn the material more thoroughly (Cumming, 1983). This technique contains two different practices of small groups to assist learning and to develop cooperation between students. This technique was developed by Eliot Aronson in 1978 for the first time (Aronson & Patnoe 1997; Hedeen, 2003).

The jigsaw method provides students with the opportunity to be actively involved with the learning process. With multiple exposures to this method, students should feel more comfortable with their roles. Some type of evaluation of the cooperative group could increase its effectiveness by adding accountability to each individual for the group's performance (Lucas, 2000, p. 221). Some modifications were brought into the technique in the practice process as a result of various studies conducted on the Jigsaw technique and new types of the techniques emerged. The original was the aforemen-

tioned Jigsaw-I, and it was developed to new types in the form of Jigsaw-II-III-IV and Reverse-subject jigsaw. Basically, the assembling technique follows same steps in all forms. Modifications made in the practice step cause new names for the technique. Variations in practice fashion exist between the Jigsaw types. The Jigsaw technique has contributed many sub-jigsaw techniques to the educational area through various modifications in practice.

Today, there are currently six types of Jigsaw strategies available for teachers to use in their classroom: *(a) Jigsaw* developed by Aronson (1978); *(b)* Jigsaw II developed by Slavin (1987); and *(c)* Jigsaw III developed by Stahl (1994). Jigsaw and Jigsaw II differ only in the fact that team competition is allowed in Jigsaw II. In addition to *(d)* Jigsaw IV was developed by Holliday (2000). It is distinguishable from Jigsaw I-II-III because students have quizzes for checking correct learning in expert and actual groups and the practice includes re-teaching missing parts in the subject at the last step. In addition to them, Hedeen (2003) developed *(e)* Reverse Jigsaw technique and *(f)* Doymuş (2007) developed Subject Jigsaw technique. The home groups then break apart, like pieces of a jigsaw puzzle, and the students move into jigsaw groups consisting of members from the other home groups who have been assigned the same portion of the material. While in the jigsaw groups, the students discuss their particular material to ensure that they understand it. Students then return to their home groups, where they teach their material to the rest of their group (Colosi & Zales, 1998).

In Jigsaw groups, the students may take in charge more than once in order to instruct the lesson (Grasha & Yanberger-Hicks, 2000). In Jigsaw technique the students are participants of two different groups: main group and Jigsaw group. At the beginning, the students come together in main groups and each participant in main group learns a part of the topic as a "specialist", and teaches to his/her peers at the same time (Doymuş, Şimşek & Bayrakçeken, 2004; Slavin, 1991).

Stevens and Slavin (1995) found that a cooperative learning reading and language arts program that used group goals based on individual accountability had significant positive effects on students' achievement in reading and language arts. Cooperative Language Learning methods are very useful in the multilevel class, allowing for both homogeneous and heterogeneous grouping in term of English (language / communicative) proficiency (Rodgers & Richards, 2001, p. 198). Cooperative learning has positive effect on success in learning process and it has been becoming more popular everyday (Siegel, 2005; Slavin, Madden, Karweit, Livermon, & Dolan, 1995; Webb, Sydney & Farivor, 2002).

The language teaching profession has mirrored these theoretical trends with approaches and techniques that have stressed the importance of self-esteem, intrinsic motivation, students cooperatively learning together, of developing individual strategies for constructing meaning, and above all of focusing on the communicative process in language learning (Brown, 2007, p. 18). Experience of collaborative writing can enable pupils to learn that contributions to various cultural and social discussions are sometimes more powerful when constructed by groups. In principle, it is easy to see that one of the potential advantages of collaborative writing is that a number of minds working together are able to keep a whole range of considerations about the writing more constantly in view (Davison & Dowson, 1998, p. 132).

Mayo (2002) and Hazne and Berger (2007) explain that through interaction in cooperative language learning, the learners' attention may become focused on those parts of their interlanguage that deviates from the target language or on forms that are not yet in the learners' interlanguage repertoire.

The effect of cooperated learning techniques on the subjects of writing and written expression has been evaluated in various studies (Bruffee, 1999; Hillebrand, 1994; Randolph, 1997). As a result of these related works, it has been seen that the writings written as group are more superior than the ones written individually (Englert, Berry, & Dunsmore, 2001; Reither & Vipond, 1989).

Finally, cooperative learning is an effective strategy for classrooms with language learners. Pair and small group activities provide learners with more time to speak the target language than teacher-fronted activities, and promote learner autonomy and self-directed learning (Ghaith, 2004; Zuheer, 2008). Because this technique brings interclass interaction, cooperation, research and teaching others in the foreground, it is one of the techniques with priority to be used in teaching language. The aforementioned features make clearer how necessary to determine effect of the jigsaw technique in the process of teaching the subject of written expression, which occupies a significant place in teaching mother tongue.

It is thought that the findings of the research will light the way to new researches and arrangements,

concerning the improvement of the programs of Turkish teaching, teacher education and native language teaching (Aksakal, 2002; Çörek, 2006; Karabay, 2005; Uysal, 2009).

Method

"The Model of Pre-test/post-test model with control group", which is one of empirical models for this study, was employed.

Sample

The sample of this study consisted of 70 students from two different classes enrolled to a native language teacher (Turkish Teacher) course during the 2009–2010 academic years at Ataturk University. One of the classes was defined as the control group (n=34) and got education by traditional teaching method, while the experimental group (n=36) was taught by jigsaw.

Data Collection and Analyzing

In the research, learning style inventory of Kolb (1985), adapted to Turkish language and tested in terms of reliability, has been used in order to determine the learning styles of students (Denizlioğlu, 2008). In the learning style inventory of Kolb, there are 12 items that each of them has four choices, and the students have been asked for ranking four learning styles which ideally describes their own learning styles (Aşkar & Akkoyunlu, 1993).

Data about their academic success were collected through Success Test for Written Expression (STWE) applied as pre-test and post-test and views of students about jigsaw technique were collected through a form questioning students' views (SVF). Then, the results obtained from them were analyzed by SPSS package software.

Procedure

This chapter contains the activities conducted by the researcher intended for the principles, which are valid in theory and practice, of the subject of written expression of the Jigsaw I technique under study and traditional teaching method. In the practice process, the subject of written expression was taught by using the Jigsaw I technique from the cooperative learning techniques in the test group while traditional teaching method was employed for this purpose in the control group. The researcher resolved to teach both of the groups (test and control groups) the subject of written expression four times a week for six weeks by using the relevant method and technique.

Results

In this study, Two-way Anova for Mixed Measures and the percentages of the answers given for the open-ended questions asked in SVF were used for the results obtained from STWE.

It has been found that both traditional method and Jigsaw I technique are effective on the control. Besides, experimental groups' pre-test and post-test, stability test, and Jigsaw technique are a little more effective than traditional teaching.

According to the findings relating to the students' views about the Jigsaw I technique obtained at the end of the experimental process, it was seen that most of the students stated that *Jigsaw technique increases success, encourages self-confidence, develops cooperation and interaction, makes students more active and encourage them to research*.

Discussion

In our study on effects of the Jigsaw I technique from cooperative learning techniques on written expression skills, the findings indicate a little variation between success of the test group students, who were taught by the jigsaw technique, and success of those, who were taught by traditional method in the control group, in the subject of written expression. There are many other studies pointing out cooperative learning methods and techniques have an effect on the subjects of writing and written expression.

Student perceptions of the Jigsaw I procedure were very positive, especially as an alternative learning experience. Instructors who are reluctant to displace time spent on inactive techniques (like lecturing) with time on active techniques (like jigsaw exercises) might note that a Jigsaw exercise saves time over doing worksheets individually and that in our classes exam performance was as good or better for jigsaw versus non-jigsaw students (Perkins & Saris, 2001).

Our study focused on Jigsaw, support Slavin's (1987) claims about the instructional conditions which must be met for small group, cooperative learning to be consistently effective. There may be little reason to maximize the time spent on inac-

tive techniques like lecturing if students who collaborate actively during class sessions value these experiences and learn just as much. The improvement in student ratings of the instructor is important in suggesting that students appreciated the instructor's efforts to accommodate the course to different learning styles and had more positive attitudes about their experience in learning statistics (Perkins & Saris, 2001).

The reason for the fact that Jigsaw I group students' scores' mean is higher than that of control group students is may be attributed to the fact that cooperative (jigsaw) group students fulfilled their individual responsibilities during the study, they learnt their subject headers thoroughly, they made effort to make their friends learn theoretical knowledge that they have learnt, they built effective interactions with their friends and they actively participated in the process. These findings have similarities with other studies in the relevant literature (Barrett, 2005; Cadopi & Winnykamen, 2002; Ernst & Byra, 1998; Huang, 2000; Johnson & Ward, 2001; Ward & Lee, 2005; Tunçel, 2006). Besides students' opinions in our study have similarities with the ones in other studies (Bourner, Hugnes, & Bourner, 2001; Mills, 2003; Ulmer & Gramer, 2005).

Generally, different students have different learning styles and too many are passive learners, especially in classes like statistics. By making each student part of the solution, the jigsaw technique blurs the distinction between students who know and students who do not yet know, requires all students to make active responses, and moves away from the experience of learning as a solitary activity that is detached from the social context. The technique also helps students appreciate that one of the best ways to learn is to teach others (Webb, 1992). According to these conclusions, it may be said that specifically jigsaw technique and generally cooperative learning method have positive effects on student success and participation in lesson in learning a language. It may be recommended that Jigsaw I technique is also used in other studies intended for other language skills.

References/Kaynakça

Aksakal, Ö. D. (2002). *İşbirlikli öğrenme yönteminin ana dili (Türkçe) eğitimine katkısı.* Yayımlanmamış yüksek lisans tezi, Dokuz Eylül Üniversitesi, Sosyal Bilimler Enstitüsü, İzmir.

Aronson, A. (1978). *The jigsaw classroom*. Beverly Hills, CA: Sage.

Aronson E., & Patnoe S. (1997). *The jigsaw classroom: building cooperation in the classroom* (2nd ed). Wokingham: Addison-Wesley Educational Publishers Inc.

Aşkar, P. ve Akkoyunlu, B. (1993). Kolb öğrenme stili envanteri. *Eğitim ve Bilim*, *87* (2), 37–47.

Barrett, T. (2005). Effects of cooperative learning on the performance of sixth- grade physical education students. *Journal of Teaching in Physical Education*, *24*, 88-102.

Bolling, A. (1994). Using group journals to improve writing and comprehension. *Journal on Excellence in College Teaching*, *5* (1), 47–55.

Bradley-Johnson, S., & Lesiak, J. L. (1989). *Problems in written expression: Assessment and remediation.* New York: Guilford.

Bruffee, K. A. (1999). *Collaborative learning* (2nd ed). Baltimore: The Johns Hopkins University Press.

Bowen, C. W. (2000). A quantitative literature review of cooperative learning effects on high school and college chemistry achievement. *Journal of Chemical Education, 77* (2), 116–119.

Bourner, J., Hugnes, M., & Bourner, T. (2001). First-year undergraduate experiences of group project work, *Assessment and Evaluation in Higher Education*, *26* (1), 19–39.

Brown, D. (2007). *Principles of language learning and teaching. 5th edition.* White Plains, NewYork: Pearson Education Inc.

Bryson, F. K. (2003). *An examination of two methods of delivering writing instruction to fourth grade students.* Unpublished master's thesis, Texas Woman's University, Texas (UMI No: 1417565).

Cadopi, M. L., & Winnykamen, F. (2002). Peer tutoring in a physical education setting: influence of tutor skill level on novice learners motivation and performance. *Journal of Physical Education*, *22*, 105–123.

Carol, A. (1988). *High school graduates in entry level jobs: What do employers want*? New York: Reproduction Service (ED No: 293972).

Cavkaytar, S. (2010). İlköğretimde yazılı anlatım becerilerinin geliştirilmesinde yazma süreci modelinden yararlanma. *Uluslararası Sosyal Araştırmalar Dergisi, 3* (10), 133-139.

Colosi, J. C., & Zales, C. R. (1998). Jigsaw cooperative learning improves biology laboratory course. *Bioscience*, *48* (2), 118–124.

Coppola, B. P., & Lawton, R. G., (1995). Who has the some substance that I have? A blueprint for collaborative learning activities. *Journal of Chemical Education*, *72,* 1120-1122.

Cumming, G. (1983). The introductory statistics course: mixed student groups preferred to streamed. *Teaching of Psychology 10,* 34-37.

Çörek, D. (2006). *İşbirlikli öğrenmenin Türkçe dersine ilişkin başarı ve derse yönelik tutum üzerindeki etkileri***.** Yayımlanmamış yüksek lisans tezi, Dokuz Eylül Üniversitesi, Eğitim Bilimleri Enstitüsü, İzmir.

Davison, J., & Dowson, J. (1998) *Learning to teach English in the secondary school*. New Fetter Lane, London: Routledge.

Delucchi, M. (2006). The efficacy of collaborative learning groups in an undergraduate statistics course. *College Teaching*, *54* (2), 244–248.

Demirtaş, A. (1989). Üniversite öğrencilerinin yazılı kaynakları tarama ve rapor yazma bilgi ve becerileri. *Hacettepe Eğitim Fakültesi Dergisi*, *4*, 51-71.

Denizlioğlu, P. (2008). *Fen bilgisi öğretmen adaylarının fen bilgisi öğretimi öz yeterlik inanç düzeyleri, öğrenme stilleri ve fen bilgisi öğretimine yönelik tutumları arasındaki ilişkinin değerlendirilmesi.* Yayımlanmamış yüksek lisans tezi, Çukurova Üniversitesi, Sosyal Bilimler Enstitüsü, Adana.

Doymuş, K., Şimşek, U., & Bayrakçeken, S. (2004). The effect of cooperative learning on attitude and academic achievement in science lessons. *Journal of Turkish Science Education*, *2* (2), 103–113.

Doymuş, K. (2007). The effect of a cooperative learning strategy in the teaching of phase and one-component phase diagrams. *Journal of Chemical Education*, *84* (11), 1857-1860.

Eilks, I. (2005). Experiences and reflections about teaching atomic structure in a jigsaw classroom in lower secondary school chemistry lessons. *Journal of Chemical Education*, *82* (2), 313–319.

Englert, C. S., Berry, R., & Dunsmore, K.(2001). A case study of the apprenticeship process; another perspective on the apprentice and the scaffolding metaphor [Electronic version]. *Journal of Learning Disabilities, 34* (2), 152-171.

Ernst, M., & Byra, M.(1998), Pairing learners in the reciprocal style of teaching influence on student skill, knowledge and socialization. *Physical Educator*, *55*, 24-38.

Gardener, B. S., & Korth, S. D. (1996). Using reflection in cooperative learning groups to integrate theory and practice. *Journal on Excellence in College Teaching*, *7* (1), 17–30.

Ghaith, G. (2004). *Correlates of the implementation of the stad cooperative learning method in the english as a foreign language classroom*. Beirut, Lebanon: American University, Department of Education Press.

Gillies, R. M. (2006). Teachers and students verbal behaviors during cooperative and small-group learning. *British Journal of Educational Psychology*, *76* (2), 271–287.

Graham, D. C. (2005). *Cooperative learning methods and middle school students*. Unpublished doctoral dissertation, Capella University, Minneapolis (MN 55402).

Grasha, A.F., & Yangarber-Hicks, N. (2000). Integrating teaching styles and learning styles with instructional technology. *College Teaching*, *48* (1), 2–11.

Hall, O. A., & Paolucci, B. (1972). *Teaching home economics*. New York: John Wiley & Son, Inc.

Hanze, M. & Berger R. (2007). Cooperative learning, motivational effects, and student characteristics: An experimental study comparing cooperative learning and direct instruction in 12th grade physics classes. *Science Direct. Learning and Instruction Journal*, 17 (1), 29-41.

Hedeen, T. (2003). The reverse jigsaw: A process of cooperative learning and discussion. *Teaching Sociology*, *31* (3), 325-332.

Hennessy, D., & Evans, R. (2006). Small-group learning in the community college classroom. *The Community College Enterprise*, *12* (1), 93–109.

Hillebrand, R.P. (1994). Control and cohesion: Collaborative learning and writing [Electronic version]. *English Journal, 83* (1), 71-74.

Holliday, D. C. (2000, April). *The development of Jigsaw IV in a secondary social studies classroom*. Paper presented at the 2000 Midwest Educational Research Association (MWERA) Annual Conference in Chicago, IL.

Howard, A. (2004). Cooperative education of the twenty-first century and internships at the threshold, In P. L. Linn, A. Howard & E. Miller (Eds.). *Handbook for Research Cooperative Education and Internships*, *Antioch College* (pp.3-11), Mahwah: Lawrence Erlbaum Associates Publishers.

Huang, C. Y. (2000). The Effects of cooperative learning and model demonstration strategies on motor skill performance during video instruction. *Proceeding National Sciences Council, 2,* 255-268.

Imel, S. (1989). *Employers' expectations of vocational education*. Columbus, Ohio: ERIC Clearinghouse on Adult, Career and Vocational Education (ERIC Document Production Service No. ED 318912).

Johnson, D. W., Johnson, R. T., & Smith, K. A. (1991). *Cooperative learning: Increasing college faculty instructional productivity* (ASHE–ERIC Higher Education Rep. No. 4). Washington, DC: George Washington University, School of Education and Human Development.

Johnson, D. W., & Johnson, R. T. (1999). What Makes Cooperative Learning Work. In D. Kluge, S. McGuire, D. W. Johnson, R. T. Johnson (Eds.) *Cooperative learning* (pp. 23-26). Tokyo: Japan Association for Language Teaching.

Johnson, D. W., Johnson, R. T., & Stanne, M. B. *(2000). Cooperative learning methods: A meta-analysis* . Retrieved January 5, 2008, from *http://www.cooperation.org/pages/cl-methods.html*

Johnson, M., & Ward, P. (2001). Effects of classwide peer tutoring on correct performance of strinking skills in 3rd grade physical education, *Journal of Teaching in Physical Education, 20,* 247-263.

Karabay, A. (2005). *Kubaşık öğrenme etkinliklerinin ilköğretim beşinci sınıf Türkçe dersinde öğrencilerin dinleme ve konuşma becerileri üzerindeki etkileri*. Yayımlanmamış yüksek lisans tezi, Çukurova Üniversitesi Sosyal Bilimler Enstitüsü, Adana.

Kerka, S. (1990). *Job related basic skills.* Columbus, Ohio: ERIC Clearinghouse on Adult, Career, and Vocational Education (ERIC Document Production Service No. ED. 318912).

Kolb, D. A. (1985). *Learning style inventory* (Rev. Ed.). Boston: McBer.

Levine, E. (2001). Reading your way to scientific literacy. *Journal of College Science Teaching*, *31* (2), 122–125.

Lin, E. (2006). Learning in the science classroom. *The Science Teacher, 73* (5), 35–39.

Lucas, C.A. (2000). Jigsaw lesson for operations of complex numbers. *PRIMUS, Problems, resources, and issues in mathematics undergraduate studies 10* (3), 219-22.

Maloof, J., & White, V. K. B. (2005). Team study training in the college biology laboratory. *Journal of Biological Education*, *39* (3), 120-124.

Mayo, M. (2002). Interaction in advanced EFL pedagogy: a comparison of form-focused activities. *International Journal of Educational Research*, *37* (3-4), 323-341.

Mergendoller, J., & Packer, M. J. (1989). *Cooperative learning in the classroom: A knowledge brief on effective teaching*. San Francisco: Far West Laboratory.

Meyers, S. A. (1997). Increasing student participation and productivity in small-group activities for psychology classes. *Teaching of Psychology*, *24* (4), 105-115.

Mills, P. (2003). Group Project work with undergraduate veterinary science students. *Assessment and Evaluation in Higher Education*, *28* (5), 527–538.

National Council of Teachers of English (1979). *Commission on composition.* London.

Parker, R. (1985). Small-group cooperative learning in the classroom. *Oregon School Study Council Bulletin*, *27* (7), 1–28.

Perkins D. V., & Saris R. N. (2001). A "jigsaw classroom" technique for undergraduate statistics courses. *Teaching of Psychology, 2*, 111-113. Retrieved March 20 2008 from http://www.informaworld.com/smpp/37135734750835294/title~db=all~content=t775653707~tab=issueslist~branches=28 - v28

Prichard, J. S., Bizo, L. A., & Stratford, R. J. (2006). The educational impact of team-skills training: Preparing students to work in groups. *British Journal of Educational Psychology, 76* (1), 119–140.

Prince, M. (2004). Does active learning work? A review of the research. *Journal of Engineering Education*, *93* (3), 223–231.

Randolph, G. (1997). "F*used Horizons": collaboration and co-authored texts: a case study of a freshman writing group*. Unpublished doctoral dissertation, Capella University, Dissertation Abstracts International (UMI No. 9722670).

Reither, J. A., & Vipond, D. (1989). Writing as collaboration [Electronic version]. *College English, 51* (8), 855-867.

Rodgers, T. S., & Richards, J. C. (2001). *Approachers and methods in language teaching* (2nd ed). Cambridge-UK: Cambridge University Press.

Sapon-Shevin, M. (1994). Cooperative learning and middle schools: What would it take to really do it right? *Theory into Practice 33 (3),* 183-190.

Shapiro, E. S. (1996). *Academic skills problems: Direct assessment and intervention* (2nd ed). New York: Guilford Press.

Siegel, C. (2005). Implementing a research-based model of cooperative learning. *The Journal of Educational Research*, *98* (6), 339-350.

Slavin, R.E.(1983). When does cooperative learning increase student achievement? *Psychological Bulletin, 94*, 429-445.

Slavin, R. E. (1987). *Cooperative learning: Student teams, what research says to teachers* (2nd ed). Washington, DC: Professional Library National Education Association.

Slavin, R. E. (1990). Cooperative learning. *Review of Educational Research, 50* (2), 315–342.

Slavin, R. E. (1991), Are cooperative learning and untracking harmful to the gifted? *Educational Leadership*, *48*, 68–71.

Slavin R. E., & Sharan S. (1990). *Comprehensive cooperative learning methods: Embedding cooperative learning in the curriculum and school. Cooperative learning: Theory and research*. New York: Preston Press.

Slavin, R. E., Madden, N. A, Karweit, N., Livermon, B. J., & Dolan, L. (1995). Success for all: First year outcomes of a comprehensive plan for reforming urban education. *American Educational Research Journal*, *27*, 255-278.

Stahl, R. (Ed). (1994). *Cooperative learning in social studies: A handbook for teachers*. Menlo Park, CA: Addison-Wesley.

Stevens R. J., & Slavin R. E. (1995). The cooperative elementary school: effects on students achievement, attitudes, and social relations, *American Educational Research Journal*, 32 (2), 321–351.

Şimşek, Ü. (2007). *Çözeltiler ve kimyasal denge konularında uygulanan jigsaw ve birlikte öğrenme tekniklerinin öğrencilerin maddenin tanecikli yapıda öğrenmeleri ve akademik başarıları üzerine etkisi*, Yayımlanmamış doktora tezi, Atatürk Üniversitesi, Fen Bilimleri Enstitüsü, Erzurum.

Temur, T. (2001). *İlköğretim 5. sınıf öğrencilerinin yazılı anlatım beceri düzeyleri ile okul başarıları arasındaki ilişki.* Yayımlanmamış yüksek lisans tezi, Ankara Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara.

Tunçel, Z. (2006). *İşbirlikli öğrenmenin beden eğitimi başarısı, bilişsel süreçler ve sosyal davranışlar üzerindeki etkileri*, Yayımlanmamış doktora tezi, Dokuz Eylül Üniversitesi, Sosyal Bilimler Enstitüsü, İzmir.

Ulmer, J. D., & Cramer, M. M. (2005). Why are those kids in groups, *The Agricultural Education Magazine*, *77* (6), 14-17.

Uysal, M. E. (2009) *İlköğretim Türkçe dersinde işbirlikli öğrenmenin erişi, eleştirel düşünce ve yaratıcılık becerilerine etki*si. Yayımlanmamış yüksek lisans tezi, Dokuz Eylül Üniversitesi, Eğitim Bilimleri Enstitüsü, İzmir.

Ward, P., & Lee, M. A. (2005). Peer-assisted learning in physical education: a review of theory and research, *Journal of Teaching in Physical Education*, *24*, 205–225.

Webb, N. M. (1992). Testing a theoretical model of student interaction and learning in small groups. In R. Hertz-Lazarowitz & N. Miller (Eds.), *Interaction in cooperative groups: The theoretical anatomy of group learning* (pp. 102–119). New York: Cambridge University Press.

Webb, N. M., Sydney, H., & Farivor, A. M. (2002). Theory in to practice. *College of Educatio*n, *41* (1), 13-20.

Zuheer, K. M. (2008). The effect of using a program based on cooperative learning strategy on developing some oral communication skills of students, Sana'a University, A Thesis Submitted for the Fulfillment of the M. A. Degree in (TEFL).