The Effect of Concept Maps on Reading Comprehension Skills of Elementary School Students Working Outdoors

Esin Yağmur Şahin

Department of Turkish Language and Literature Education, Faculty of Education,
Çanakkale Onsekiz Mart University, Çanakkale 17100-Turkey

Abstract: In this research, it is sought to determine the effect of concept maps on the reading comprehension skills of 6th grade elementary school students (f=31) working outdoors. Pre-and post-tests designed with experimental and control groups through experimental research methods were adopted for this aim. The participants were divided into two groups, such as experimental (f=16) and control (f=15) groups, according to their pre-test scores. The courses in the experimental group were conducted with concept maps, but those in the control group were conducted with a traditional teacher-centred education approach. In order to determine the success levels of each group-in terms of their reading comprehension-a Quiz of Reading Comprehension Skill (QRCS) was adopted as a pre-and post-test, of which its reliability and validity were maintained. The activities that were related to reading comprehension skills were practiced by the researcher with two groups for two hours a week for a total of four weeks. The results demonstrate that the activities with concept maps in the experimental group have a preponderant effect on the reading comprehension of participants.

Key words: Turkish teaching · Elementary school students working outdoors · Concept maps · Reading comprehension

INTRODUCTION

Language is considered to be a key for conveying thoughts. However, "the discussions and studies on language and literacy education reveal the inadequacy of education in these disciplines. In this regard, scholars and researchers assert that language and literacy teaching programmes which have been adopted in elementary schools do not meet the cognitive and affective needs of students" [1]. Language teaching is, then, also to be handled as a process of the production and organization of thoughts [2].

As for reading, being one of the basic language skills it has an important role in human life as socialization, comprehension, learning and personal development are based principally upon it. Considered to be a complex process, reading is a physiological skill with dimensions of seeing and vocalizing, as well as a cognitive skill involving a comprehension dimension. Education is based basically on reading as well as listening and monitoring. Accordingly, the effect of reading skill on attaining educational objectives is an undeniable fact [3].

In order to eliminate the problems faced in language and literacy teaching and in many other fields, for the sake of a qualified education, scholars have constantly sought new teaching strategies, techniques and methods. Concept maps are, then, seen as a contemporary teaching method.

Concept maps are a form of tool that demonstrates the relationships between concepts. The core starting point of concept maps is based on this thought: "learning is practiced during the associations and utilizations of concepts [4]. Concept maps support all the teaching strategies, such as the understanding of the subjects taught, integrating old information with new information, developing the conceptual perception level of students and upgrading student success, etc. [5, 6]. Concept maps can be considered as an objectified instance, by paper and pencil, of people's cognitive schemas, or as a visual image which is computerized. Subjects are divided into organized sub-dimensions, these dimensions into main ideas and, lastly, these ideas into concepts that are the smallest parts of knowledge. Concepts can be handled with those of their features with or without which they are

Corresponding Author: Esin Yağmur Şahin, Department of Turkish Language and Literature Education, Faculty of Education, Çanakkale Onsekiz Mart University, Çanakkale 17100-Turkey.

called 'concepts'. During a conceptual analysis, their relationships are coded with each other and the structural interactions are taken into consideration. The keywords and data in a concept map are taken into a frame and these frames are linked to each other by the fixer words or sentences. The subject to be taught by the concept map is organized in a hierarchical order, from general concepts to specific ones and this order makes the differences, similarities and samples more visual. The more a concept map has relationships with vocabularies, the more people understand and recall the original concepts with ease. A concept map can be compared to-at least to some extent-a road map. For instance, road maps show roads and their connections; concept maps show concepts and relationships between them. Accordingly, they teach us to think in-depth and learn the subject at hand [7].

As concept maps support brain development, they can be used as a supporter of memory; at the same time, as they are graphical and visual presentations, the subject can be learnt with ease. Concept maps can also be used for the reviewing of a subject, conceptualizing it and also developing any materials related to the subject area [8].

Novak and Gowin [9] assert that students should participate in the preparation of concept maps. This is because they think that knowledge is not a thing, such as gold or petrol, to be explored. On the contrary, it is an entirety that is arranged by collecting together parts, such as a car or a pyramid [10]. From this point of view, concept maps are to be handled as one of the outputs of the structuralist approach [7]. The Turkish language teaching programme, which was put into practice in 2004 by the Turkish Minister of National Education, was prepared in view of the constructivist approach, which asserts that language and cognitive skills are to be handled as a whole. In this approach, language is learnt by the active effort of the person themselves and by developing and arranging cognitive skills and constructs [11].

Many scholars assert that concept maps support students' in noticing their own cognitive levels and determining unknown subjects, namely organizing their knowledge in order to develop an in-depth understanding of the subject matter, thereby providing some permanence with regard to knowledge [12-15]. As for Trowbridge and Wandersee [16], they found in their study that students' drawing concept maps developed their sense of success and self-confidence [17]. Students can develop certain skills and abilities by this effective learning technique, such as problem-solving, creative thinking and knowing how to acquire knowledge.

In addition to the above statements, there are children of all nations working outdoors in poor conditions in the streets who are defenceless to every danger and deprived of self-confidence and a sense of success. The first item of the Convention on children's rights asserts that people under 18 years are considered to be "children". UNICEF [18] defines street children as people who pass their entire time on the streets and are deprived of the support and guidance of adults. The International Labour Organization (ILO) defines people who are under 15 years old and working in the street with the aim of supporting the family budget or by reason of survival as "working children" or "child labour". According to the ILO's current estimation regarding the number of children working outdoors in the world, 352 million have been doing so. Duyar and Özener [19] assert that there are 246 million children working outdoors across the world (p. 74). According to TUIK's [20] results concerning the Child Labour Survey, 292,000 children between the ages of 6-14 have been working outdoors in Turkey, while 601,000 between the ages of 15-17 also doing so. The quantitative results can be varied as regards these surveys; however, scholars have arrived at a consensus that the number of children working outdoors is much greater than predicted.

Some children thus labelled "child labour" may at the same time pursue their education, but most of them leave their education for various reasons. In a survey and interview research carried by Güngör [21] with 510 school children working outdoors in view of determining their problems concerning their education, 72% of children who left their education stated that they were unsuccessful in it.

Children working outdoors are at risk because of threats in the streets, a lack of inspections and their young age. These children try to gain money in the streets by pursuing various forms of work during their school time or else after school. As such, they cannot benefit from any of the formal education that they need [22]. The most effective means of preventing them working outdoors is to integrate them into the school environment. It is appreciated that human capital, in the long-term, creates the most guaranteed outcomes [23, 24]. According to a study carried out by Goulart and Bedi [25], one hour of working by a child drops his/her school success at a rate of 4%. In addition, each "one" hour increases the possibility of leaving school at a rate of 1.6%. For a child, one hour of working per day increases his/her likelihood of failure at school at a rate of 10% [26].

Bloom [27] asserts that the mental development of a child up until 17 years develops up to 4 years at a rate of 50%, up to 8 years at a rate of 20%, up to 17 years at a rate of 20%. In the early years of a child, a restricted stimulant comes to child with regard to mental development. Accordingly, this child interacts with the environment with 20 degree of difference in terms of intelligence. Bloom asserts that this difference can be likened to those between working as a worker and working as a professional worker with regard to the child. In addition and according to the results of Bloom, the success of children up to 18 years comes, respectively, from 33% pre-school, 42% primary school and 25% elementary school. These results demonstrate that a great deal of the success of a child comes from the pre-school and primary periods [27].

In short, "education is the most effective tool for keeping a child from working outdoors. Those children who continue their education at least 6 hours per day will have been protected from the adverse influences of outdoors" [28]. In this regard, the aim of education according to Samford and Durnaum [29] is to "socialize the children and train them in order for a qualified society" (p. 177). In order to make them achieve any objective, the sole struggle for a child is to have responsibilities. However, since the sole responsibility of 86 children working outdoors is not to have responsibility of school [28], the outcomes are worrisome for educators. According to the observations made here and in order to determine the educational needs of these children, it was revealed that the children had difficulties in reading comprehension, oral communication and speaking their mother language, Turkish, in an effective way.

As a final statement, we are seeking a favourable reply to the following research question: is there a meaningful difference in the success of 6th grade elementary students, with regard to reading comprehension development, between the two groups (namely, the experimental and control groups, the latter of which took courses that where integrated with a concept maps approach)?

MATERIAL AND METHODS

The sample of this research consists of thirty-one 6th grade elementary school students, working outdoors, during the spring semester of 2008-2009. These children took part in a project called "No Child Left Working Outdoors",[1] carried out by Atatürk University, Kazİm Karabekir Faculty of Education. In this research, it is sought to determine the effect of concept maps on reading comprehension. In this regard, pre-and post-tests designed with experimental and control groups according to experimental research methods were adopted for this aim. The participants were divided into two group, the experimental (f=16) and the control (f=15). The courses in the experimental group were practiced with concept maps while those in the control group used a traditional teacher-centred teaching approach.

Data Collection: In order to determine the success levels of the two groups of students in relation to reading comprehension, one story, one essay and one poem were selected from 6th grade course books and a twenty-two item Quiz of Reading Comprehension Skill (QRCS) was developed from each of these texts. This quiz, which will be used as a pre-and post-test, was controlled by three Turkish teachers, two scholars and two researchers. Hence, the criticisms that they raised urged the researcher to reduce the number of questions to seventeen items. Firstly, a pilot survey in an elementary school was carried out in order to determine the reliability of the survey. Afterwards, all the test scores were graded and an item-total analysis was run. The sensibility robustness of each item and the degree of difficulty was maintained. The seventeen item test was ultimately shaped as a thirteen item test for the final version. Finally, the reliability index for this test-called KR-20-was found to be 0.81.

Procedure: The QRCS was administered to the experimental and control groups at the beginning and at the end of the process in order to determine the meaningful difference of the academic success of both groups with regard to the "noun" subject. In the experimental group, the courses were carried out with concept maps, while a traditional teacher-centred teaching approach was used in the control group. The activities of the "noun" subject in the experimental and control groups were practiced by the researcher for two hours per week for a total of four weeks. The researcher firstly organized a strategy education for the two groups about how to conduct the lessons in each session. The activities during the process were prepared by taking into consideration the outputs of the Turkish Language Teaching Programme. Some activities were practiced in pairs and each session was evaluated. The researcher, as a teacher, guided to the students during the process in view of ensuring effective teaching. The concept maps in the

---

Table 1: The Differences between Pre- and Post-test Scores with Regard to the Academic Success of Reading Comprehension of Children Working Outdoors

Group	F	$\bar{x}$	Sd.	t	P
Pre-test					
Experimental	16	7.6250	1.54380	.643	.525
Control	15	7.2000	2.11119		
Post-test					
Experimental	16	11.8750	2.02896	3.410	.002*
Control	15	9.2000	2.33605		

*p<.05

experimental groups were all prepared together. In the control group, the materials to be used were prepared by the teacher before the courses, while the courses themselves were practiced in a traditional teacher-centred way.

At the end of the process, the results obtained from QRCS were classified and analysed by an independent-sample t-test.

DISCUSSION

Significant findings were achieved by this experimental study, which aimed to determine the effect of concept maps on the reading comprehension skills of 6th grade elementary school students working outdoors. The findings are presented in Table 1, which compares the two approaches employing concept maps and traditional teacher-centred methods.

Pre-test results demonstrated that there was no meaningful difference concerning the academic success of reading comprehension between the experimental ($\bar{x}$=7.6250) and control ($\bar{x}$=7.2000) groups. However, the post-test results showed that there was a meaningful difference, compared to the control group ($\bar{x}$=9.2000), in favour of the experimental group ($\bar{x}$=11.8750) in which the courses were conducted according to concept maps, concerning the academic success of reading comprehension. Hence, it can be asserted that the courses for the experimental group that integrated with concepts maps for children working outdoors were more effective than traditional teacher-centred courses in the control group. This finding is in line with the research findings of Girgin [30] and Kırkkılıç et al. [31], both of which showed approximately the same results concerning reading comprehension.

There are many studies in the education literature which have sought to develop other language skills apart from reading comprehension by integrating concept maps. These studies are as follows: Şahin et al. [32] and Witkin and Trochim [33] carried a study on listening comprehension; Yaman [34] and Beydoğan and Şahin [35] did so in relation to grammar teaching; Durukan and Maden [36] looked at note-taking skills; and Chularat et al. [37] considered the teaching of English as a second language, with regard to the self-efficacy perceptions of students. These studies demonstrated that concept maps are an effective approach in developing language skills.

It is seen in the related literature that concept maps are issued for many different disciplines apart for language skills. These studies are as follows: Erdoğan [38] in teaching mathematics; Çoban et al. [17] in dietetics education in sports; Hoffman et al. [39] in the teaching of behaviors; Özata [40] in misconceptions in science education; Sarİçayİr [41] in chemistry education.

CONCLUSION

As a conclusion, it can be asserted that concept maps are an effective approach in developing the reading comprehension of elementary students working outdoors. In this regard, some suggestions are given as follows:

- The efficiency of concept maps should be investigated for different subjects, such as children working outdoors who require special care.
- In order to completely integrate children working outdoors into educational environments, concepts maps should be addressed for an effective and incentive courses.
- The use of concept maps in primary and elementary Turkish course books should be increased.
- Concept maps and other mapping styles should be taught to pre-service teachers in faculties of education.

REFERENCES

1. Kiliç, Y., 2005. İlköğretim okullarında Türkçe eğitimi ile ilgili problemler üzerine bir araŞtİrma. Kastamonu Eğitim Dergisi, 13: 81-92.

2. Dilidüzgün, Ş., 2010. Türkçe Derslerinde Metin Etkinliklerinin Okuma-Anlama Kazanİmlarİnİ Gerçekleştirme Yeterliği-Bir Öykü Örneği. Hasan Ali Yücel Eğitim Fakültesi Dergisi, Sayi, 13(1): 13-30.

3. Özbay, M., 2006. Okuma eğitiminde çevre faktörü. Eurasian Journal of Educational Research, 24: 161-170.

4. Boyle, T., 1997. Design for Multimedia Learning. Prentice Hall, Europe.

5. Heinze-Fry, J. and J. Novak, 1990. Concept mapping brings long-term movement towards meaningful, Learning. Science Education, 74: 461-472.

6. Akyürek, S., 2003. Din kültürü ve ahlak bilgisi derslerinde kavram haritalarinin kullanimi. Değerler Eğitimi Dergisi, 1(3): 65-85.

7. Gürbüz, R., 2006. Olasilik konusunun öğretiminde kavram haritalari. Yüzüncü Yil Üniversitesi. Eğitim Fakültesi Dergisi, 3(2): 133-151.

8. Brinkmann, A., 2000. Mind Maps im Mathematik unterricht. In: Michael Neubrand (Ed.), Beitrage zum Mathematik unterricht 2000, pp: 121-124. Hildesheim: Franzbecker.

9. Novak, J.D. and D.B. Gowin, 1984. Learning how to learn. USA: Cambridge University Press.

10. Martin, R.E., 1994. Teaching science for all children. Boston: Allyn and Bacon.

11. Güneş., F., 2008. Türkçe öğretiminde yeni yaklaşimlar. Türkçe Öğretimi Kongresi, Bildiriler ve Diğer Etkinlikler. İstanbul: Bahçeşehir Üniversitesi.

12. Ault, R.A., 1985. Concept mapping as a study strategy in earth science. Journal of College Science Teaching, 15(1).

13. Briscoe, C. and S.U. La Master, 1991. Meaningful Learning in College Biology Through Concept Mapping. The American Biology Teacher, 53(4).

14. Jegede, O.J., F.F. Alaiyemola and P.A.O. Okebukola, 1990. The effect of concept mapping on student's anxiety and achievement in biology. Journal of Research in Science Teaching, 27(10).

15. Novak, J.D., D.B. Gowin and G.T. Johansen, 1983. The use of concept mapping and knowledge and mapping with junior high school science students. Science Education, 67(5).

16. Trowbridge, J.E. and J.H. Wandersee, 1998. Theory-Driven Graphic Organizers. In J.J. Mintzes, J.H. Wandersee and J.D. Novak (Eds.), Teaching science for understanding: A human constructivist view, pp: 95-131. New York: Academic Press.

17. Çoban, B., S. Devecioğlu and Z. Coşkuner, 2008. Öğretim tekniği olarak kavram haritalarinin "sporda beslenme" dersinde kullanilmasi. Fİrat Üniversitesi Sosyal Bilimler Dergisi, 2: 141-146.

18. UNICEF., 1998. Sokak çocuklari ve çalişan çocuklar. Unicef.

19. Duyar, İ. and B. vand Özener, 2003. Çocuk işçiler: çarpik gelişen bedenler. Ankara: Ütopya Yayinlari.

20. TUIK., 2013. Çocuk İşgücü Anketi Sonuçlari, http://www.tuik.gov.tr/PreHaberBultenleri.do?id=13 659.

21. Güngör, M., 2009. Eğitim Hakki ve Sokakta Yaşayan/Çalişan Çocuklar: Mersin İli Örneği. University Journal of the Faculty of Education, 5(1).

22. Dessy, S.E. and J. Knowless, 2008. Why is child labor illegal? European Economic Review, 52: 1275-1311.

23. Hazan, M. and B. Berdugo, 2002. Child Labour, Fertility and Economic Growth. Economic Journal, 1(12): 810-828.

24. Karaman, B. and M. Özçalik, 2007. Türkiye'de gelir dağİlİmİ eşitsizliğinin bir sonucu: Çocuk işgücü. Yönetim ve ekonomi, Celal Bayar Üniversitesi İ.İ.B.F. Dergisi, 14(1): 25-41.

25. Goulart, P. and A.S. Bedi, 2007. Child labour and educational success in Portugal. Economics of Education Review, 27(5): 575-587.

26. Rosati, F.C. and M. Rossi, 2001. Children's working hours, school enrolment and human capital accumulation: Evidence from Pakistan and Nicaragua. Understanding Children's Work (Ucw) Project Working Paper. Unicef. http://www.ucw-roject.org/pdf/publications/standard_working hours_humancapital.pdf, 01.03.2009.

27. Bloom, B.S., 1964. Human characterizes and school learning. New York: McCraw-Hill Book Company.

28. Keskinkiliç Kara, S.B. and T. Çalik, 2012. Sokakta çalişan çocuklarin eğitim ihtiyaçlari. GEFAD/GUJGEF, 32(3): 673-695.

29. Samford, R.T. and M.E. Durnaum, 1985. Women and self-esteem. Harvard: Penguin Books.

30. Girgin, Y., 2012. İlköğretim sekizinci sinif Türkçe ders kitaplarİndaki metinlerde kavram haritasi kullaniminin öğrencilerin okuduğunu anlama becerileri üzerine etkisi. Yayimlanmamiş Doktora Tezi. Erzurum: Atatürk üniversitesi, Eğitim Bilimleri Enstitüsü.

31. Kirkkiliç, H.A., S. Maden, A. Şahin and Y. Girgin, 2011. Kavram Haritalarİnİn Okuduğunu Anlama ve Kalicilik Üzerine Etkisi. Pegem Eğitim ve Öğretim Dergisi, 1(4).

32. Şahin, A., G. Aydin and E. Şahin, 2009. Effect of the computer-based concept maps on comprehension of the listened text and retention. European Journal of Educational Studies, pp: 109-115.

33. Witkin, B.R. and W.K. Trochim, 1997. Toward a synthesis of listening constructs: A concept map analysis. International Journal of Listening, pp: 70-87.

34. Yaman, H., 2006. Ilköğretim ikinci kademe Türkçe dil bilgisi derslerinde kavram haritasi tekniğinin öğrenci başarisina ve hatİrlamaya etkisi. Yayimlanmamiş Doktora Tezi. İstanbul: Marmara Üniversitesi, Eğitim Bilimleri Enstitüsü.

35. Beydoğan, H.Ö. and A. Şahin, 2002. Türkçe dilbilgisi öğretim hedeflerine ulaşma düzeyi açisindan kavram haritalari ile düz metne dayali öğretim materyallerinin karşilaştirilmasi. Hacettepe Üniversitesi Sosyal Bilimler Enstitüsü E-Dergisi.

36. Durukan, E. and S. Maden, 2010. Kavram haritalari ile not tutmanin ilköğretim öğrencilerinin dinlediğini anlama becerisi üzerine etkisi. ODÜ Sosyal Bilimler Enstitüsü Sosyal Bilimler Araştirmalari Dergisi, 1(2): 63-70.

37. Chularat, P. and K.T. De Backer, 2003. The influence of concept mapping on achievement, self regulation and self-efficacy in students of English as a second language. Contemporary Educational Psychology. www.elsevier.com/locate/cedpsych.

38. Erdoğan, Y., 2000. Bilgisayar destekli kavram haritalarinin matematik öğretiminde kullanilmasi. Yayimlanmamiş Yüksek Lisans Tezi. Marmara Üniversitesi.

39. Hoffman, E., J. Trott and N.K. Patterson, 2002. Concept mapping: A tool to bridge the disciplinary divide. Am. J. Obstet Gynecol, 187(3): 41-43.

40. Özata, Ö.F., 2003. İlköğretim birinci kademe fen bilgisi dersinde kavram haritalarinin kavram yanilgilarin gidermeye ve hatirlamaya etkisi. Yayimlanmamiş yüksek lisans tezi. Marmara Üniversitesi.

41. Sariçayir, H., 2000. Lise II kimya derslerinde kavram haritalarinin baŞariya etkisi. Yüksek lisans tezi. Marmara Üniversitesi.