The Views of the Teachers about the mind mapping technique in the Elementary Life Science and Social Studies lessons Based on the Constructivist Method

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Abstract

The purpose of this study is to reveal the opinions of teachers on using the mind mapping technique in Life Science and Social Studies lessons. The participants of the study are 20 primary education teachers. In this study, a semi-structured interview technique was used. For content analysis, the themes and codes were defined, based on the views of the teachers. According to the findings, the teachers had lack of proficiency in the parts of the lesson which was lectured by using the constructivist approach and it was seen for this reason that the teachers used only the introduction and evaluation steps in applying the mind mapping technique to the parts of the lessons. Teachers think that it would be more appropriate using the mind mapping technique to oral lessons. While expressing the factors that are providing permanence in students' acquisition and increasing the success in the exams among the advantages of this technique, the possible troubles about time limitation can be expressed among the disadvantages.

Key Words

Primary Education Social Studies Teaching, Life Science Teaching, Mind Maps, Constructivist Approach.

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The information era in which we are requires revision especially in education. The information in our era updates itself very quickly, and has a dynamic and variable structure. This dynamism and variety bring foreground the individuals who can reach and use that information and as a result, it has become inevitable for education to adapt to the circumstances of the information era. So, the individuals have to renovate and improve themselves steadily. The main goal in our education system must be to bring students in the skills of reaching information more than transferring the present information. This comes out with top-level mental processes. In other words, it requires the skills of learning by understanding more than memorizing, being able to solve the problems encountered with the new situation and the skills related to scientific method process (Yaşar, 2006).

According to the constructivist method, people construct the knowledge in their minds when they have real life experience (İşman, 1999). Indeed, according to Durmuş (2001), constructivism is concerned with the process of constructing the information. The information that we have created depends on what we know in advance, what kind of experiences we have had, how we organize these experiences in our information structure, and what we believe about these experiences. Our worldview is formed by our interpreting these experiences. Teachers cannot fully transfer their own perceptions to students, because students and teachers do not have the similar knowledge and experience. The purpose is to upbring individuals who make their questionings and who have developed critical thinking skills. The use of these tools which can achieve this objective is extremely important since it provides meaningful and lasting learning (Bütüner, 2006).

In the traditional note taking method, it is aimed to remember the information, to make a written or oral communication, to sort the ideas, to make a problem analysis or a plan and to bring out a creative idea. The standard format used is the linear: It consists of sentences or phrases or numbers or letters in the form of sorted list. Because of the lack of color, visual rhythm, image and spatial relations, these methods courses brain to atrophy (Buzan, 2001b, p. 14).

In the research, findings related to the usage of traditional methods such as note-taking, lecturing, and findings related to inadequate course materials have been revealed (Çelebi, 2006). This lessens the interest of the students in the courses and prevents reaching the goal. Because a

course's being able to achieve its objectives depends on the students' liking and interest in the courses (Delen, 1998, p. 10). According to Barth (1984), in order to achieve the lesson objectives, the methods that make students active must be used (Barth, 1984 cited in Öztürk & Otluoğlu, 2003). Constructivist method is based on a principal where the student is active, and where the student gathers his/her prior knowledge and the knowledge gained (Deryakulu, 2001; Jonassen, 1994). The mind mapping technique is an alternative technique which can be used in the constructivist approach with respect to its activating prior knowledge and multiple senses by appealing to both hemispheres of the brain.

The human brain consists of two main parts: the right and left lobes. Each lobe has its own special function in terms of the activities it performs. According to Townsend (1998, p. 94) in order to ensure full learning, it is necessary to use these two lobes coordinately. In the study of Ornstein and Haden (2001), the actions taken by the both sections of the brain were explained more (Buzan, 2001a, p. 25). According to the findings of Ornstein, the left brain deals with math, language, logic, exploring, writing, and other similar activities, and the right brain deals with imagination, color, music, harmony, dreaming, and other similar activities (Buzan, 1996, p.26). Children learn holistically and their brain prefers co-operation rather than conflict. (Healy, 1997, p. 45). So, both lobes of the brain are effective in learning. In order for the individuals to learn the information, the activities given in schools focus mostly on left brain activities and the students who have more dominant right brain competence are characterized as unsuccessful. (Yasar, 2006).

The mind mapping technique which aims to activate both hemispheres of the brain was developed by Tony Buzan toward the end of 1960. Buzan introduced mind mapping method to the world with his books and developed a system which would pave the way for many people. Basically, what he did was to give up insisting on using the traditional methods for creative minds, but instead he aimed to reflect the brain functioning of the human.

These maps allow us to reach the incredible potential of our brains easily. Mind maps allows us to group the concepts, re-group again and compare the concepts. The movement of the concepts and synthesizing them together in new clusters, often reveal new ideas (Findlay & Lumsden, 1988). The mind mapping is an organized brainstorming method (Michelco, 1998). Mind map is a powerful graphic technique

which aims to use the brain with full capacity (Buzan & Buzan, 1996). At the same time, studies point out that the use of the mind mapping technique develops thinking skills. While using the mind map technique, the individual does not only use the words in keeping the ideas in mind but also he/she uses the symbols. So, the use of words and symbols together activates both hemispheres of the brain. The studies point out that the use of the mind mapping technique develops thinking skills. As it also activates the imagination, the combined use of words and symbols increases the creativity as well as thinking skills. (Anderson, 1993; Margulies, 1991, Menton, Martinelli & Raymond, 1999; Tetzeli, 1992).

The implementation of this technique which enhances the creativity, and makes learning and note-taking easier is extremely simple in which a hierarchical order is followed. Starting from the main branches, secondary and additional lines for further ideas (sub-branches) can be drawn. This order is from abstract to concrete, and from public to private. Also, while mind map is drawn, colors should be used. As well as paying attention to use of color, the symbols that define the mind map in the best way such as pictures, sketches, small arrows, geometric figures, exclamation marks and question marks can be used. (Beyer, 1993, Buzan & Buzan, 1993; Hemmerich, Wendy & Kanwal, 1994; Hugl, 1995; Svantesson, 1992).

Mind map, as well as encouraging the infinite continuous flow of ideas, enables the brain to be awake and alert by making the brain use its skills. (Buzan, 1996). Also, it is envisioned that it will take an important place among the techniques which contribute to the implementation of the constructivist approach with the idea that it will be effective in identifying and eliminating misconceptions. Note-taking that is described as a boring activity by the students can be turned to a more enjoyable activity by using the mind mapping technique. Studies in the literature related to the mind mapping techniques are available; the Life Science and Social Studies courses are scheduled for the first time for the feasibility study of this technique. As stated above, the technique of mind mapping to be available in almost every area will provide a significant contribution to student's learning, especially in the field of education for the implementation of the constructivist approach by teachers in the clasWycoff (1991) sorted some of the usage areas of the mind mapping technique as writing, project organization, brainstorming, meetings, do-

ing lists, presentations, note-taking, and personal development. When viewed from this angle, it can be used in almost every area from technical note-taking to examining a personal shopping list strategically (ceted in Bütüner, 2006).

The studies related to the mind mapping technique are available in the books and articles. These studies which were carried out in different times are encountered in the field of Science and Technology and Mathematics especially the last years. A thesis which was based on comparing the mind mapping technique to the traditional method researching the effectiveness of the mind mapping technique on the success of the students in the field of Science and Technology and a thesis (Kıdık, 2005) which focused on the effect of the mind mapping technique on learning concepts and on academic success in science education were carried out. In the field of Mathematics, a study on the development of attitude scale toward the mind maps (Gür & Bütüner, 2006) and a study on researching the effect of teaching by using the mind mapping technique on the performance of the student (Bütüner, 2006) are available. In addition, in terms of Life Science and Social Studies an academic announcement of Derelioğlu (2005) on using mind maps in Social Studies course is also available. As seen, the effects of the mind mapping technique to the success of the student, its contribution to the teaching of concepts. Moreover, the mind mapping technique has been evaluated mainly in terms of comparison and effectiveness. When studies examined, no application of this technique in Life Science and Social Studies courses has been found. When examined in terms of the literature review, a practicality study on using the mind mapping technique in Life Science and Social Studies courses has been carried out for the first time. For this reason, the opinions of the teachers in using the mind mapping technique in Life Science and Social Studies are important in order to maximize the practicality of the technique. Besides, in terms of the practitioner who applies the technique, getting the opinions of the teachers about the technique is the first in this sense. Based on all these explanations, in order to eliminate the above mentioned gap in the literature, the problem which is the subject of the study can be defined in the following:

"What are the opinions of the teachers about using the mind mapping technique in Life Science and Social Studies courses, based on constructivist method, in primary education?"

Depending on the problem statement to be answered, we can list the sub-problems in the following way:

"What do you think about the constructivist approach?", "In which part of the course, is it appropriate to use the mind mapping technique according to the constructivist approach?", "What are the positive sides of the mind mapping technique?", "What are the missing aspects or limited sides of the mind mapping technique?", "In which course can the mind mapping technique be applied best?", "What is the role of The mind mapping technique in developing the creativity?", "How does The mind mapping technique help students with the SBS (Placement Test in Primary Education in Turkey) and the other exams?".

Method

This research is a qualitative study in which content analysis has been used by receiving the opinions of the teachers. The qualitative research technique focuses on explaining the relations between the events and the facts unlike quantitative research which focuses on numerical data (Yıldırım & Şimşek, 1999, p. 32).

Participants

The participants of the study were 20 teachers who were selected with random sampling method among 2nd, 3rd 4th and 5th grade teachers in Ardeşen, Rize. Three of the selected 20 teachers were 2nd grade teachers, 7 of them were 3rd grade teachers, 4 of them were 4th grade teachers and 6 of them were 5th grade teachers. 14 of the teachers are females and 6 of them are males. The study was conducted at 3 Primary Schools and one of the researchers was a teacher working in the district and knew the environment and the participants.

Data Gathering and Analysis

The research data were collected in the 2009-2010 academic year. In the implementation phase of the study, the Life Science and Social Studies teachers were primarily instructed about the application of the mind mapping technique. While doing the instruction, these steps were followed. The selected teachers were given 2 course hours of instruction; one hour is theory and 1 practice, about the mind mapping technique.

As seen in Table 1, different mind mapping samples were shown to the teachers. Then, the teachers were asked to apply this technique in their classrooms. After the application of the technique, the teachers were asked to state their opinions about the technique. As the data gathering tool in the study, 7 semi-structured interview questions were asked to teachers. These questions were prepared in order to get the opinions of the teachers about the practicality of the mind mapping technique. The prepared semi-structured interview questions were presented to expert opinions. During the interviews, the possible troubles in recording the interviews were tried to minimize by using a recorder. Each teacher was interviewed one-to-one. The recording time of the interview was approximately 2 hours. In order to obtain the opinions of the teachers in a proper way, every kind of ease was tried to provide, enough time was given and no video recording was taken. While transcribing the voice recordings, the accuracy of the transcription was taken into consideration by listening each recording several times.

The basic process in the content analysis of the qualitative research is to group similar data within the frame of definite concepts (codes) and themes and organize them and comment on them in the way that the reader understands (Yıldırım & Şimşek, 2008, p. 227). Moreover, in order for the codes and themes to be understood better, the examples of the opinions of the related teachers were given.

For the reliability of the study, after the recorded interviews were transcribed, these interviews were encoded independently by both researchers and when they were compared to each other, it was found that the encodings were compatible with each other. In this way, the encodings were provided to be eliminated from prejudices and misconceptions and to be made with a common point of view. The consensus of the researchers was considered in order to create themes by determining the outlines of the relations between codes. It was paid attention to make sure that the codes under any theme were far from any code of other themes. The opinions of the experts who work in the field were taken about the codes and themes on which the researchers came to agree. One of the researchers was working in the school where the research was carried out which has contributed to the interviews to be done in an environment of confidence. This situation can be said to increase the reliability of the study.

Method

Table 1.
The analysis of the answers of the teachers to the question of "What do you think about the constructivist approach?

Themes	Codes	Repeating Teachers	Σ
Student	Active	1,5,6,8,9,10,13,14,15,16,17,20	12
Learning	By Doing And By Living	3,10,14,17,20	5
	By Using Previous Knowledge	4,12,7	3
	Process Oriented	4,5	2
	Bottom Up	2,18	2
	By Seeing	11	1
Teacher	Counselor	13,15,16,17	4

As it is seen in Table 1, while the answers of the teachers about the constructivist approach were being codified, given answers were gathered under the themes of student, learning, and teacher. According to the answers of teachers to these themes, the code of students' activeness was put under the 'student' theme; the codes of learning by doing and living, learning by using previous knowledge, process oriented learning, bottom up learning, and learning by seeing were put under the 'learning' theme; and finally, the code of teacher's counseling was put under the 'teacher' theme. According to this, the number of teachers who consider the constructivist approach as students' activeness is 12. The rest of the teachers did not mention this subject while they were expressing their thoughts. These findings are parallel with Sewell's idea (2002) 'in constructivism, learning does not come out on the result of teaching; learners do not become the passive receivers of new information, on the contrary; they reconstruct their knowledge actively', and also with the thoughts of Glasersfeld (1989), Yaşar (1998), Naylor and Keogh (1999), Perkins (1999), Liang and Gabel (2005), Savaş (2007) ve Koç (2007). The number of teachers who consider the constructivist approach as learning by doing and living is 5. These findings are parallel with the findings of Fosnot, (1996); Jones and Southern (2003). The number of teachers who regard constructivism as teachers' counseling is 4. These findings are parallel with the findings of Vermette et al. (2001); Elkind (2004); Null (2004).

Table 2.
The analysis of the answers of the teachers to the question of 'In which part of the course, is it appropriate to use the mind mapping technique according to the constructivist approach?'

Codes		Repeating Teachers	Σ
Assessment	Summary	2,8,12,13,14,15,16,17,18,19,20	11
		3,4,6,9,10	5
	Repetition	7,13	2
Introduction		6,7,8,12,13,14,15,17,20	8
Exploration		4,5,9,11	4
Explanation		10	1

The number of teachers who think that it would be more appropriate to use the mind mapping technique only in assessment step is 18. However, the diversities concerning the aim of usage of the technique in assessment draws attention. 11 teachers approve the usage of this technique for the aim of summarizing in assessment. The number of teachers who told their opinion without distinguishing assessment code to any part is 5. These findings are parallel with the thoughts of Ünver (2005): 'Students can realize whether they have sufficient knowledge about the notion or not when they prepare mind map', and also with the thoughts of Brinkmann (2003): 'A subject of a unit can be organized and revised by preparing a mind map. This mind map helps it to be a good and memorable summary'. 8 of the rest teachers agree that using this technique in the introduction part of the course is more appropriate. These findings are parallel with the thought of Brinkman: 'Mind map is a powerful technique which takes out the potential of the brain'. The number of teachers who say that The mind mapping technique can be used in exploration phase is 4.

Table 3.
The analysis of the answers of the teachers to the question of "What are the positive sides of the mind mapping technique?"

Themes	Codes	Repeating Teachers	Σ
Generally	Permanency	1,3,7,8,9,10,11,12,14,15,16,19	12
	Entertaining	3,7,8,9,10,11,18,19,20	9
	Visualization	5,9,11,12,13,14,15,18	8
	Systematic Learning	5,9,13,15,17	5
	Providing Awareness	8,18,20	3
	Integrating	2,9	2

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Individually	Creative Thinking	4,7,17	3
	Revising	12,13,17	3
	Expressing Oneself	6	1
	Planning	13	1
	Producing A Product	13	1

The number of teachers who stated that the mind mapping technique generally increases the permanency of learning is 12. These findings are parallel with the thoughts of Buzan and Buzan (1993) and with the thought of Gelb (1995, p. 134): 'Mind mapping provides you with gathering and memorizing what you learn in books and courses'. In addition; the number of teachers who agree that this technique generally provides students with an entertaining learning is 9. These findings are parallel with the thought of Öztürk (2005, p. 176-177): 'In this system which turns out to be a visual exhibition with colorful pencils, the knowledge remains more in the memory and can be memorized faster'. The number of teachers who agree that the technique is beneficial for visualization is 8. These findings are parallel with the thoughts of Buzan and Buzan, and with the thought of Gelb (1995, p. 112): 'Colors, images and key words, that is; the three basic constituents of mind maps are adopted easier than sentences by the brain'.

The number of teachers who think that it is beneficial from the aspect of chronological learning is 5. These findings are parallel with the thoughts of Aalia (2004); Budd (2004), and also with thought of Tergan (1986): 'The hierarchial structure of the mind map confirms the assumption that knowledge organizes the cognitive notation in a hierarchial way.'

Table 4.
The analysis of the answers of the teachers to the question of "What are the missing aspects or limited sides of the mind mapping technique?"

Themes	Codes	Repeating Teachers	Σ
Lesson plan	Deficiency Of Time	3,4,7,10,11,13,16,19	8
Subject	Convenience	2,3,5,10,17,20	6
Individual	Hand skill	3,4,5,6,18	5
	Not Knowing The Technique	7,9,14,19	4
	Discrepancy Among People	8,14,15	3
	Lack Of Chronological Knowledge	2	1
Financial	Financial Deficiency	1,6	2

The number of teachers who agree that there is a deficiency about time in mind mapping is 8 . These findings are parallel with the thought of Kan (2006, p. 537-544): 'Research done to use new methods and techniques proves that these are not used too much'. The idea "besides the factors such as limited course time, intense curriculum, inadequate course materials, reasons that teachers' not being familiar with the technique and the usage of that technique can be added to these reasons." goes with this idea of Wallace and Mintzes (Wallace & Mintzes, 1990 cited in Bütüner, 2006), "If students are beyond creativity and have obstacles in perception, for teachers presenting mend map technique and for students comprehending it are loss of time". The number of teachers agreeing on the deficiency in subject convenience is 6. These findings parallel with the idea of Kan (2006, p. 537-544): "The research either done inland or abroad show that various methods and different strategies and techniques are used by researchers in Social Studies classes. The research put forth that these methods and techniques affect the success of students positively and sometimes form students' future attitudes. The number of teachers thinking of deficiency in hand skill is 5. These findings parallel with the ideas of Harlen (1998); Sözer (1998), and ideas of Turgut, Baker, Cunningham and Piburn (1997): "If the abilities of children at a certain age are known, educational targets, content and methods must be defined according to their levels. If the intentional education goes beyond students' abilities, then they will fail." and with the ideas of Kazu and Özdemir (2009): "Both genetic characteristics and the environment set people apart from each other. It is even possible to find differences with maternal twins. It is not expected from a group of people having such differences to perform all details exactly in the same way. The number of teachers who support the idea that deficiency in students' knowledge of techniques is also important is 4.

Table 5.
The analysis of the answers of the teachers to the question of "In which course can the mind mapping technique be applied best?"

Themes	Codes	Repeating Teachers	Σ	%
Lessons	Social Studies	2,7,8,9,12,13,20	7	35
	Science and Technology	3,7,12,13,14,15,20	7	35
	Science of Life	1,11,15,18,19,20	6	30
	Turkish	12,18	2	10
	Mathematics	11	1	5
All Lessons	T,M,S&T,SS,SOL	13	1	5

7 teachers indicate Social Studies, 7 of them indicate Science and Technology and 6 of them indicate Science of Life as the lessons in which mind maps can be mostly used. These findings support this idea of Derelioğlu (2005), "The utilization of the mind mapping techniques within the context of Life Science and Social Studies lessons is considered to be effective and fertile in terms of improving both students' mental abilities and creativity."

Table 6.
The analysis of teachers' answers to this question: "What is the effect of the mind mapping technique on improving creativity?"

Themes	Codes	Repeating Teachers	Σ	%
Provides Improvement	Imagination	5,7,8,11,12,13,15,20	8	40
	Thinking In A Different Way	10,14,15,16,18,20	6	30
Provides Exposure	Abilities	3,6	2	10
	Mind	13,17	2	10

8 teachers agree on the effectiveness of this technique on imagination. These findings support the opinions of Anderson (1993); Margulies (1991); Mento, Martinelli and Raymond (1999); Tetzeli (1992) "As the use of words and symbols together activates imagination power, creativity also improves besides mental abilities (cited in Derelioğlu, 2005). 6 teachers share the same opinion about the effect of the mind mapping technique on mental improvement. These findings parallel with Telman's (n.d., p. 64) idea, "A well made mind map is a mechanism of creative thought".

Table 7.
The analysis of the answers of the teachers to the question of "How does the mind mapping technique help students with the SBS (Placement Test in Primary Education in Turkey) and the other exams?"

Codes	Repeating Teachers	Σ	%
Stability	5,6,7,8,11,13,14,20	8	40
Improving Interpretation Ability	2,3,12,16,17,18	6	30
Visuality	1,6,15,19,20	5	25
Integrating	2,8,15	3	15
Gaining Basic Knowledge	10,11	2	10

8 teachers agree on the idea that this technique provides permanent knowledge needed for exams. These findings are similar to Koç, Yavuzer, Demir and Çalışkan's idea (2001, p. 183) "Meaningful coding elicits the use of knowledge in various situations by recalling it from long-term memory." and Brinkmann's idea (2003), "Every mind map is different from each other and has a strong visual appeal. Finally, the knowledge can be kept in mind and recalled, learning method can be accelerated and knowledge becomes permanent." 6 teachers think that the best advantage of the mind mapping technique in terms of exams for students is the improvement of interpretation ability. 5 teachers think that the knowledge visualization of mind maps makes substantial contributions in the exams. In today's exam system, the questions have been prepared to measure mainly the interpretation skill not the absolute knowledge (Gelbal & Kelecioğlu, 2007). When the questions asked in the SBS (Placement Test in Primary Education in Turkey) are analyzed, it is seen that the test focuses mainly on the questions which require logical reasoning and interpretation ability (Milli Eğitim Bakanlığı [MEB], 2010). Besides, the constructivist method intends to provide the permanence of learning and contribute to the development of high-level cognitive skills (Saban, 2002, p. 167; Yaşar, 2001, p. 132-134). In order to provide the permanence of knowledge, mind-mapping, one of the most effective techniques, is the most important aid to the students in this regard. The student using this technique can learn the subject by associating not only with one area but also with multiple areas. While these associations are being made, the best aids are colors and the visuals (Buzan & Buzan 1993; Gelb, 1995). The student who keeps the concept in mind with the visual aids, place this information into his/her long term memory and can recall whenever he needs.

Results and Discussion

According to the findings of the study, while teachers have knowledge of teacher, student and learning environment dimensions of the constructivist approach at a certain level, they do not have enough knowledge about the parts and steps of models (5E) designed within the constructivist approach. As the reason of this, it can be asserted that the seminars and training given to teachers with the constructivist method might have been insufficient and there might have been lack of instructions. For this reason, teachers think that the mind mapping technique

is only used in introduction and evaluation parts of a lesson. However, according to the constructivist approach, the mind mapping technique can easily be used in exploration, explanation and insight of a lesson. It is possible for a student to reveal prior knowledge in the exploring stage, to add new concepts to his/ her own mind map and relate prior knowledge with the knowledge gained in explaining stage and to relate different topics in the same scope considering advance knowledge and new knowledge on the insight stage. To overcome this deficiency, arrangement of the environment where teachers can learn the constructivist approach and its models and providing the teacher participation to these environments can be given as suggestions.

According to the teachers, the advantages of the mind mapping technique are its providing permanence, being enjoyable, visualizing, and organizing systematic learning. The main reason of the teachers' holding these opinions might be the colors, visuals, and key words used in the mind mapping technique rather than the classical texts and also might be that students in the age group of 10-11 years enjoy learning environments based on such techniques. Accordingly, mind-maps which will be used by teachers at the beginning and the end of the course can help students see what they create in their minds. Moreover, the technique can be useful in terms of teachers' comparing the mind-maps of the students, identification of misconceptions and compensation for students' lack of knowledge and systematic organization of learning. According to teachers, the most deficient part of this technique is time insufficiency. This problem, which is assumed to have been caused by the usage of the technique for the first time, is believed to be minimized in the next applications depending on the experience that students will gain. Apart from this, the idea that every subject isn't suitable to this technique, students' insufficiency in hand skill and students' lack of knowledge about the technique are included in the deficiencies part. The idea that every subject is not suitable to this technique and student's insufficiency in hand skill harbors the difficulty in visual expression as the main reason of this. To overcome this problem, when the students cannot explain the situations with visuals, the choosing the best key words that explain the topic and its connotation with various colors can be options to try. Besides, in relation to the inability of drawing, it is possible for the students to compensate for this lack by cutting and pasting the pictures they get from different sources. Other than this, students' collaborating

with Visual Art teacher in order to improve themselves in drawing can be among the suggestions. Also, students' participating in the activities (table tennis, handball… etc) that will help them exercise their hand muscles or develop their hand muscles can compensate for the developmental lack of the drawing ability. In addition to all these, using suitable comic magazines in the classroom and giving examples of cartoons in the classroom can be another suggestion to overcome drawing problem. Moreover, teachers' benefiting from different stimuli (like music) while applying the technique and so addressing to the different areas of intelligence can be suggested in terms of its influence on students' drawing and imagination. Application of the mind mapping technique with the different stimuli at the same time, analysis of this situation from students' and teachers' point of view and evaluation of its effectiveness can be suggested to be the subject of another study. Again, the research about the effect of using The mind mapping technique in Life Science and Social Studies courses on students' attitudes, skills and academic achievements in other lessons such as Visual Arts, Music, Mathematics, Turkish …. etc can be suggested to be a subject of another study. When we consider the individual differences, different learning styles of the students that students have reveals the effectiveness of the learning tools used in the lessons. This issue can be a research topic of a different study. That a significant number of teachers have not heard about the technique requires the suggestion of introducing new and contemporary methods with in-service courses.

Teachers think Mind Mapping guidelines should be used mostly in Life Science and Social Studies classes as they make abstract expressions concrete. In the formation of these views, it can be said that this technique is effective in terms of its efficiency in explaining how the abstract concepts forms in the minds of the students. However, mind mapping guideline is an entertaining technique that can easily be applied to all classes. Applying different techniques for each topic prevents monotonous in classes and makes students more active by appealing to their different aspects. In this respect, while talking about Life Science course, teachers defined it as verbal lesson. Life Science course form a basis not only for Social Studies classes but also for Science and Technology classes. Teachers' perception about this topic can be the subject matter of a different research.

Teachers think that the mind mapping technique will generally develop creativity. Moreover, it has been observed that they think students with this technique will discover their potentials better, understand themselves (qualifications, intelligence) and will develop their imagination and thinking different. It is assumed that formation of this view has been affected by the assumption that the mind mapping technique activates the imagination by operating the both hemispheres of the brain. the mind mapping technique help 2 hemispheres of the brain communicate each other so that the child can express the concept with the visual so, the child can imagine the figure which associates with that concept and these all help the child develop his/her imagination and creative thinking. The student thinks in mind in order to find the visuals related to given concepts and tries to imagine the best visual. While doing this, he/she can develop his/her creativity by coming up with hundreds of different concepts and visuals.

The point of view of the teachers about the contribution of this technique to the students in SBS (Placement Test in primary education in Turkey) and in other tests can be evaluated positively as in general order; providing continuance in knowledge and skills obtained, developing interpretation skill, providing opportunity to visualize, looking through a holistic point of view on the acquired pieces. The opinion that the technique is effective in terms of learning by fun, and that the visuals, colors and key words will increase the permanence of the knowledge and the consistent functioning of the brain will develop the interpretation skill can be said to be effective in the formation of this positive point of view. Based on the opinions of the teachers, the usage of the mind mapping technique in Life Science and Social Studies courses at Primary Schools can be said to bring to a successful conclusion in creating active and creative individuals.

On account of the aforesaid benefits, the technique can be suggested to extend by analyzing its relation with different variables like different lessons (Turkish, Science and Technology, Mathematics), participants in the study (teacher, student … etc) and different levels (primary education 6th, 7th and 8th grades, high school, university…etc)

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