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Effect of concept map supported teaching approaches from rules to sample and sample to rules to grammar teaching

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Abstract

In this study, the effect of approach from rules-to-sample and sample-to-rules to the teaching of grammar subjects has been analysed. While treating grammar subjects from rules-to-sample and sample-to-rules learning-teaching process in both approaches are supported by the concept map. Application has been maintained for six weeks and data were obtained by applying more assesment instruments to students taking part in experimental and control groups. In practice, pretest – post test model was applied. At the end of the learning-teaching process, achievements of students have been assesed by a variety of assesment instruments, the data gathered has been analysed with the help of statistical techniques such as one-way variance analysis,"t" test, arithmetic averages. 96 students at the level of fourth grade participated the application process; 30 of them participated application from rules-to-sample; 33 students participated application from sample to rules in an active manner, and 33 students in the control group continued to traditional teaching. Assesments have been analysed and results have been compared. As a result of research, results that participants obtained were compared in terms of variables such as students' participation level to teaching process, the time students spent for learning, students' rememberance level of what they have learned. In terms of foregoing variables, meaningful results were obtained in favor of approach from sample to rule. By taking into account of the results obtained, some suggestions have been done aiming to teaching done by teaching strategies and concept maps.

Keywords: Concept map; text; teaching; teaching through presentation; teaching through exploration.

1. Introduction

An effective teaching-learning process still stands as one of the most significant problems within the scope of education. According to behaviorist and cognitive approaches, learning is shaped through one's outer and inner world stimulants. Cognitive education psychologists have adopted the idea that a concept should be taught with the use of a sample in the process of concept shaping (e.g., Bourne, Goldstein, & Link, 1964; Bruner, Goodnow, & Austin, 1956; Tennyson, Wooley & Merrill, 1972). Bruner (1971), on the other hand, asserts that discovery is suitable for a child's cognitive development, and every single child passes actively from enactive stage to iconic stage, then to symbolic stage. Though the supporters of sample-to-rules and rules-to-sample approaches have

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significant contributions to teaching-learning process, both of them are stated to have some insufficiencies. Such researchers as Corno, Snow (1986); Slavin, Karweit and Madden (1989) assert that sample-to-rules based learning is ineffective and causes low-talented students to fail. In the studies of sample-to-rules, however, insufficiencies are related to the construction of the samples in the process, to the design of the sample based lessons, and to the way the students use thinking process in an sample supported curriculum.

Discovery learning can also be referred to as problem-based, inquiry, experiential, or constructivist learning It involves inductive reasoning because students move from a specific topic to formulating rules and principles (Kirschner, Sweller, & Clark, 2006) Sample-to-rules teaching approach has smilar features. A student uses progressive knowledge while constructing the rules s/he acquired as a concept map. In the process of building a concept map through the relations between the samples, they awake their foreknowledge, combine them with new ones and finally actualize meaningful learning. Clark (1991) states that students review their previous knowledge cautiously; correct their mistakes and can express what they've learnt much more easily in an environment of concept maps. Sample to rule approaches has three basic features:The first is the meaningfulness of the discovery processes, in that learners need to activate prior knowledge to help them understand the problem and generate appropriate hypotheses. Second, the logicality of the discovery activities must be determined, as effective discovery learning involves proper scientific reasoning and manipulations of the variables. Finally, there must be reflective generalization over the discovery processes, which means the rules and principles should be learned from the situation and can be applied to other settings (Reid, Zhang, & Chen, 2003).

According to Reed ve Bolstad (1991) one example may be insufficient for helping a student induce a usable idea and that the incorpo-ration of a second example illustrating the idea, especially one that is more complex than the first, garners significant benefits for transfer performance. So, "at least add a second example" appears to be a basic rule for worked-examples instructional design. Ainsworth and Loizou (2003), in a study, compared students' learning of schemas and texts with cardio-vascular system. They found that the students who used their schemas made more quantitative and qualitative expressions, and they behaved more independent in these expressions. When sample-to-rules approach is followed in a teaching process, the students directly participate in conceptualization process; use concept maps as a means of construction and get the opportunity to redirect their knowledge and to control their thoughts. While creating a map, students ask themselves questions on what they currently know about the subject, and then reflect their foreknowledge out (Mc Aleese 1998).

Direct instruction and rules-to-sample approach is used in same stages.Teacher in direct instruction process,if necessary, supports teaching process by concept maps. When the rules-to-sample approach is adopted in teaching process, a teacher transfers information by using pre-constructed concept maps. As a means of transferring knowledge, concept maps make it easier for students to visualize information, to realize the relations between the basic concepts and to distinguish the served information from the rest (Bromley, 1995, p.7). In rules-to-sample approach, when the concept maps are used as a means of transferring knowledge, they add to students' perception of knowledge as a whole, to the organization of knowledge and to the clarity of the text.

The works of Gowin and Novak (1998) provides us with supportive data aimed at facilitating maps, graphics, diagrams and webs to reach at knowledge, application, analysis and synthesis level learning. In parallel to this study, there are some notions that conversion of the messages that have perceived after reading into visual supplies affects the generalization of inner images of mind in a positive way (Cox, Smith, Rakes, 1994; Danserau, 1978; Snowman, Cunningham, 1975; Steingart Glock, 1979).

According to Novak, in the teaching process in order for concept maps to be functional, conceptual framework should be organized as a schema. In the organization process, visualizing the abstract concepts enables to connect the relation between contents and the cognition process and it gives opportunity for students to analyze the concrete information (Clarke, 1994). In teaching process which the concept maps used as a teaching material, learning occurs by the help of visual materials contrary to standard teaching style. That helps students to construct the information and store it in the long term memory (Novak, 1993).

When the students can not connect the relation between the available information and the further information, they can not absorb the information deeply (Cooper, 1994). Some researchers sharing the same view mention that the information which is memorized can not be integrated with the background information. For that reason, it can not be transferred to the long term memory (Novak, 1993; Holden, 1999; Senemoğlu, 1997).

There is a common view that using the concept maps as teaching materials by the teacher enables students to get the contents and have confidence in themselves in the teaching process. However, there are views that it could lower the participation in learning process as it pacifies students.

In his research depending on concept maps, Pankratius (1990) observes the student's improvements in solving problem in the teaching physical science. Also some researchers use the concept maps as a material synthesizing the information from the sources apart than using it as a material for primary school students to understand what they read (Anderson, Inman-Zeits, 1993).

In training process, it is obvious that any concept which is learnt makes another easier because concepts provide an opportunity for individuals to have abstract thoughts and to express them. Concept maps give the ability for students not only to connect information but also to make a criticism (Novak, 1991).

In grammar teaching sample-to-rules or rules-to-sample approaches can be used. When the rules-to-sample approach is followed, concept maps can be used as a teaching material by teacher. In this process, teacher builds up teaching process by the help of concept maps. Thus, teacher defines the concept and explains the relationship between main items about concept and exemplifies them. During the learning process, the teacher tries hard to let students analyze the generalized information, realize its organized form, discover the inter-component relations, and concretize through suitable samples. In the evaluation process, however, he follows an approach just to simplify it for them to recall what has been taught.

At the same time, concept maps can be used to discover the information on the teaching contents, and enable students to acquire the information (Kommers & Lanzing 1997). According to Alpert & Gruenenberg (2000), sample-to-rules approach restricts the function of the concept map and the way an individual shapes his own knowledge through his own method of understanding. Sample-to-rules approach helps the main point reveal and make a connection between the points. Apart from that, this approach provides students to give samples on the topic or not by the help of samples. Then, it helps students to argue from analogy by comparing the samples. The aim makes the students use the ability of generalization and visualization by means of arguing from analogy. The student who examines the samples in detail and uses the ability of generalization arguing from analogy has an active learning and constructs the information on his own experiences. On one hand, a student can visualize his comments and generalizations by means of concept map, on the other hand, he can internalize what he learns. This converts concept maps from a tool to transfer information into a product based on interaction.

In traditional teaching style, the teaching materials which are not related to field are served as stimulus by the teacher. Directly, written or visual materials are submitted to the students as part of presentation strategy and with the help of plain expression and question-answer methods. The information submitted is organized by the people preparing the teaching materials but the student stores the information to some extent and recalls it when he needs. The measuring instruments used in evaluation process in the traditional education consist of the questions based on recalling previous learning. The success of a student depends on recalling the information which is learnt from the memory. Students are regarded as successful when they can recall and unsuccessful when they cannot. This is because the questions in the tests are constructed to require recalling the stored information.

When such features as ability to be prepared for various subjects, enabling visualization of information, leading students to be active participants in the process, implementing critical thinking and meaningful learning are taken into account, concept maps are considered to be able to add to the actualization of "Goals of Grammar Course" which includes pre-acceptance based rules, requires grammatical processes and contains many abstract symbols. In this sense, contributions of concept map supported rules-to-sample and sample-to-rules approaches in "Goals of Grammar Course" have been quested in the study. Main problems are defined below.

1.1. Problem

An answer is sought for the question "Does it make any meaningful difference in learning if the concept map supported approach to follow is rules-to-sample or sample-to-rules while teaching 'Nouns and Adjectives' at the 4th grades".

The sub problems of the main problem above are defined as:

1- Is there any difference in the duration of teaching between concept map supported approach and sample-to-rules based teaching activities?

2- Is there any difference in achievement between concept map supported approach and sample-to-rules based teaching activities?

3- Is there any difference in remembrance level of what has been taught between concept map supported approach and sample-to-rules based teaching activities?

1.2. Hypotheses

Considering the problems in the research, hypotheses are shaped according to null hypothesis.

1- There is no difference in the duration of teaching between concept map supported approach and sample-to-rules based teaching activities.

2- There is no difference in achievement between concept map supported approach and sample-to-rules based teaching activities.

3- There is no difference in remembrance level of what has been taught between concept map supported approach and sample-to-rules based teaching activities.

2. Research Model

This is a semi-experimental study that aims at determining the effects of sample-to-rules approach on students' achievements. It has a semi-experimental pattern, in parallel to what Kerlinger (1986) stated, as a proper randomization in educational institutions is a weak probability. In experimental models, the goal is to determine how systematic variables in independent variables affect dependent variables (Karasar, 1999). According to Kerlinger (1986), experimental studies with educational intentions generally tries to find out which method is more effective. It is also stated that the studies in trial model are quite useful both in testing the theories and while answering the problems in application (Cozby, 1992; Kerlinger, 1986).

2.2. Population Sample

The population of the study consists of 4^{th} grade students at five different classes who are chosen at random. It has experimental characteristics and the samples are determined after negotiating with the teachers to define similar-leveled considering the difficulties in the control of variables that could affect the results. The activities to perform in those three groups during the study have been planned in cooperation with the teachers in guidance of the researcher. Before starting teaching process, differences in readiness levels of students in each three groups are determined and preparatory procedures are performed to eliminate these differences. The number of female students in both experimental and control groups is larger than male students.

2.3. Progress

Concept maps are developed by the researcher in order to make use of in rules-to-sample (RS) teaching approach while studying "Nouns and Adjectives" at 4^{th} grade grammar course. Students are asked to develop similar concept maps on their own after sample-to-rules (SR) process. Information at both concept maps in both strategies are frequently tested through two-dimensional antecedent list. To test students' pre-knowledge on the same subject, a multiple choice test with 40 questions is designed. Their attitudes towards the very beginning and the end of the teaching-learning process are assessed by the researcher-developed attitude scale with 15 questions on it. Students' participation in grammar courses and in-class activities, attendances, active learning skills, the way they react against the stimulus served in class and the level they are ready for the courses have been assessed by the teachers through five dimensional rubrics. The course subject has been evaluated using a multiple choice test with 40 questions on it. The period of time that is allocated for each subject has been planned by the teacher to ensure the availability of teaching goals. With the help of "activity time schedule", students are then asked to state how much time they spend on the subject, and their answers have been recorded. The reliability of the multiple choice test is calculated using Cronbach Alpha formula. Reliability factor is found to be 0,84. To find the validity factor, on the other hand, the questions on the test that MEB (Ministry of National Education) uses for public boarding schools are used as corresponding form. The relation factor between the researcher-developed test and the one used as a corresponding form is calculated r_{xy}=0,72.

In the teaching process that lasts six weeks for the two different groups, the teaching stages on the table below are studied. Students' participation in the course and their performances have been monitored and recorded.

Stages of RS group studies	Stages of SR group studies
o The subject is defined and expressed by the teacher orally. o A concept map suitable for the subject has been developed	o Students are attracted by the teacher using daily life samples. o Some sample that are suitable or unsuitable for the subject are given.

and it is used to express students the subject orally. o The teacher attracts student attention on each element of the concept map and the relation between them. He also makes expressions and exemplifies them accordingly. o Students are asked to find and review samples in their course books which are similar to the ones studied during the course. o Students are asked to make up new samples in parallel to the ones they have found in their course books. o They are asked to find suitable expressions for the samples of a paragraph from the course books. o They are asked to generate new samples using the rules they have learnt.	o Student attention is drawn on both the suitable and unsuitable samples. o Another exemplification is made which is both suitable and unsuitable for the subject. o Students are asked to define rules studying the relations between the samples. They are provided with tips to find the correct rules. o They are asked to use these rules on similar samples. o They are asked to find and apply these rules on a text chosen from the course book. o They are finally asked to develop a concept map including the associations they have made through the inferences out of the samples.

During the application period of sample-to-rules teaching approach, there has been some indications by the teacher to help students infer from the given samples; and tips, feedbacks, corrections and reinforcements have been made if there is any. At the end of the course, students are asked to develop concept maps related to the subject using the principles and rules they have inferred from the samples. Then, they have evaluated the concept maps with the guidance of the teacher and corrected existing deficiencies. As a final step, they are asked to answer the unit-related questions with the help of the concept maps they have developed.

2.4. Data Analysis

The data in the study are prepared using the SPSS software by analyzing frequency, percentage, arithmetic mean, standard deviation, independent groups, one-way variance and by using LSD test.

Table 1 Distrubition of the students participated in the study according to gender:

Groups	Male		Female		Total
	f	%	f	%	
RS group	13	.43	17	.56	30
SR group	14	.42	19	.57	33
TT group	17	.51	16	.48	33
Total	44	.45	52	.54	96

% of the students (44 individuals) are males and 54% of them are females (52 individuals). As seen on the table, the number of female students is 0.05% larger than the males.

Table2. Arithmetic mean and standard deviation of the assessments on pre-test, post-test, concept test, recalling level of the groups and teaching time alacotion that "Nouns and Adjectives" subjects are told using various teaching strategies

	Groups	N	M	SD
Pre-Test	SR group	30	40,66	6,22
	RS group	33	38,36	5,79
	TT group	33	38,60	4,34
Evaluation through concept maps	SR group	30	31,60	9,59
	RS group	33	36,96	7,41
	TT group	33	34,60	4,64
Post test	SR group	30	72,20	11,24
	RS group	33	64,48	6,67
	TT group	33	63,03	5,68
Recalling level	SR group	30	53,80	8,93
	RS group	33	62,18	13,35
	TT group	33	52,84	8,39
Learning time allocation	SR group	30	59,03	9,16
	RS group	33	33,21	7,72
	TT group	33	34,90	7,12

Pre-test result for the students in the study groups are; SR group mean is M=40,66, standard deviation is SD = 6,22; RS group mean is M=16,87 standard deviation is SD=5,79 and TT group mean is M=38,60 standard deviation is SD= 4,34. For the assessments through concept maps; SR group mean is M= 31,60 standard deviation is SD = 9,59; RS group mean is M=36,96 standard deviation is SD=7,41 and TT group mean is X=34,60 standard deviation is SD= 4,64. And for the post test assessments SR group mean is M= 72,20, standard deviation is SD = 11,24; RS group mean is M=64,48, standard deviation is SD=6,67 and TT group mean is M=63,03, standard deviation is SD= 5,68.

In the assessments on recalling levels, SR group mean is M= 53,80, standard deviation is SD =8,93; RS group average is M=62,18, standard deviation is SD=13,35 and TT group mean is M=52,84, Standard deviation is SD= 8,39.

For student time allocation to learn the subject; SR group mean is M=59,03 standard deviation is SK =9,16; RS group mean is M= 33,21 standard deviation is SD=7,72 and TT group mean is M=34,90, Standard deviation is SK= 7,12.

Table 3. One-way Annova of the assessments in the groups according to the strategies performed while teaching "Nouns and Adjectives"

		SS	DF	MS	F	p
Pre- test	Between	99,15	2	49,57	1,64	,19
	Within	2802,18	93	30,13		
	Total	2901,33	95			
Evaluation through concept maps	Between	453,91	2	226,95	4,12	,01
	Within	5120,04	93	55,05		
	Total	5573,95	95			
Post test	Between	1504,94	2	752,47	11,42	,00
	Within	6124,01	93	65,85		
	Total	7628,95	95			
Recalling level	Between	1722,00	2	861,00	7,79	,00
	Within	10277,95	93	110,51		
	Total	11999,95	95			
Learning time alocation	Between	6057,621	2	3033,811	41,537	,000
	Within	6257,621	2	3133,811		
	Total	12860,240	95	12860,240		

As seen on Table 3 a variance analysis has been done to decide if the difference between arithmetic mean of the results from the instruments applied to students during the teaching process in SR, RS and TT groups is significant or not. Analyzing the results, it is seen that there is no difference between pre-knowledge of the students in the groups where various strategies have been followed. There isn't a considerable differentiation between the pre-test results of the students according to one-way variance analysis results. However, there are significant differentiations in post test, concept map based assessments (P=0.05>.019), post test scores (P=0.05>.000), recalling levels (P=.001) and learning time allocation levels (P=0.05>.000).

Table 4. Pre- test mean standard deviations and t values of the groups where various strategies are performed while teaching "Nouns and Adjectives"

		Pretest of study group					Post test of study group				
Groups	**N**	**M**	**SD**	**sd**	**t**	**p**	**M**	**SD**	**Sd**	**t**	**p**
RS Group	30	40,66	6,22	61	1,52	,133	67,8	10,39	61	2,59	0.12
SR Group	33	38,36	5,79				75,2	12.00			
SR Group	33	38,36	5,79	64	-,19	,848	75,2	10,39	61	5,22	.000
TT Group	33	38,60	4,34				62,2	7,34			
TT Group	33	38,60	4,34	61	1,53	,130	62,2	12,00		2.54	0.13
SR Group	33	38,36	5,79				75,2	7,34	64		

As seen on Table 4; SR group mean is M= 75,20, Standard deviation is SD=12. RS group mean is M= 67,87, Standard deviation is SD=10,39. There is a significant difference between two (at P=0,05> .012 importance level). SR group mean is M= 75,20, Standard deviation is SD=12; TT group mean is M= 62,24, Standard deviation is SK=7,34. There is a significant difference in these two also (P=0,05> .013 importance level).

RS group mean is M= 67,87 standard deviation is SD=10,39; TT group mean is M= 62,24, Standard deviation is SD=7,34. There is a significant difference between the two groups (P=0,05> .000 importance level).

It is understood that, as seen on Table 4, there isn't a considerable difference between arithmetic mean of sample-to-rule (P=.133) rule-to-sample (P=.848) and traditional teaching groups (TT) (P=130). It can be said that the students in the study are almost the same in terms of their readiness on the study subject

Table 5. Pre-and post test difference mean, standard deviations and t values of the groups where various strategies are performed while teaching "Nouns and Adjectives"

Group	N	M	SD	df	t	p
SR Group	33	38,00	12,36	61	2,26	,027
RS Group	30	30,78	12,89			
RS Group	30	30,78	12,89	61	2,21	,030
TT Group	33	24,78	8,67			
SR Group	33	38,00	12,36	64	4,94	,000
TT Group	33	24,78	8,67			

The scores are compared in terms of the results that come out of the differences between pre- and post tests in the groups in which three different strategies are applied. The arithmetic mean and standard deviations are as on Table 5. The difference of arithmetic mean in the groups compared statistically results for the good of SR groups. While SR group seems more successful than RS group (P=0.05>.027) and SR group than TT group (P=.05>.00); RS group seems better than TT group (P=0.05> .030)

Table 6. Mean and standard deviations of students' recalling level of the learned in the course first- and second test scores in the groups where there are various teaching strategies followed

		Pre-test (teaching finish)			after tree month of teaching finish			
Variables	Groups	N	M	SD	N	M	SD	LSD
Recalling level of the learned in the course	SR Group	30	39,86	4,84	30	37,40	5,28	SR >RS
	RS Group	33	36,60	4,48	33	36,06	6,45	
	TT Group	33	38,54	4,07	33	32,48	5,40	SR>TT

The arithmetic mean and standard deviations are as on Table 6. When the teaching finished, SR group mean is M=39,86, Standard deviation is SD=4,84; RS group mean is M=36,60, Standard deviation is SD=4,48; TT group mean is M=38,54, Standard deviation is SD=4,07, After tree months apllied second time testing score in SR group mean is M=37,40, Standard deviation is SD= 5,28; RS group mean is M=36,06, Standard deviation is SD=6,45; TT group mean is M=32,48, Standard deviation is SD=5,40, İn TT group student forgetting level high more than the SR group and RS group

Table 7. Mean and standard deviations of students' Learning time allocation in the course test scores in the groups where there are various teaching strategies followed

Learning time allocation in course subject				LSD testing for Learning time allocation score					
Groups	N	M	SK	Groups	N	(I-J)	Ss	Sig	LSD
SR Group	30	223,83	19,98	SR Group	30	62,83*	5,19	,000	SR>TT
RS Group	33	161,00	26,91	RS Group	33	75,43*	5,19	,000	SR>RS
TT Group	33	148,39	12,12	TT Group	33	-62,83*	5,71	,000	RS>TT

The arithmetic mean and standard deviations are as on Table 7., Learning time allocation in the course SR group mean is M=223,83 Standard deviation is SD=19,98 RS group mean is M=161,00, Standard deviation is SD=26,91; TT group mean is M=148,39, Standard deviation is SD=12,12, in the groups where there are various teaching strategies followed, students have higher learning time allocation grammar subject at SR groups than the others at the end of teaching process. According to LSD test, this increase is because of the increase of the scores at RS group

Table 8. Mean and standard deviations of students' attitude towards the course pre- and post test scores in the groups where there are various teaching strategies followed

		Pre-test			Post-test		
Variables	Groups	N	M	SK	N	M	SK
Student attitude towards the course	SR Group	30	16,73	1,43	30	37,66	6,12
	RS Group	33	16,24	1,98	33	36,78	5,19
	TT Group	33	17,09	1,33	33	32,06	3,25

Students get the scores of: SR group mean M=16,73 and standard deviation SD=1,43; RS group mean M=16,24 and standard deviation SD=1,98; TT group mean M= 17,09 and standard deviation SD=1,33 as a result of the attitude scale towards grammar course applied all the students at the very beginning of teaching process.

They also get the scores of: SR group mean M=37,67 and standard deviation SD=6,12; RS group mean M=36,78 and standard deviation SD=5,19; TT group mean M=32,06 and standard deviation SD=3,25 as a result of the attitude scale towards grammar course applied all the students at the end of teaching process

Table 9. Differences between mean, standard error, and LSD results on the change of student attitudes towards the course in the groups where there are various teaching strategies followed

	Attitude pre test. assessment and LSD						Attitude post test assessment and LSD				
	Groups	I-J	SS	Sig	LSD		Groups	I-J		Sig.	LSD
SR Group	RS Group	,490	,40748	,231	SR=RS	SR Group	RS Group	,87	1,25	,485	SR = RS
	TT Group	-,357	,40748	,382	SR =TT		TT Group	5,60*	1,25	,000	SR > TT
RS Group	SR Group	-,490	,40748	,231	RS =SR	RS Group	SR Group	-,87	1,25	,485	RS < SR
	TT Group	-,848*	,39766	,035	RS > TT		TT Group	4,72*	1,22	,000	RS > TT
TT Group	SR Group	,357	,40748	,382	TT = SR	TT Group	SR Group	-5,60*	1,25	,000	TT < SR
	RS Group	,848*	,39766	,035	TT > RS		RS Group	-4,72*	1,22	,000	TT < RS

As seen on Table 10' in the groups where there are various teaching strategies followed, students have higher positive attitude levels towards grammar at TT groups than the others at the beginning of teaching process. According to LSD test, this is because of the attitudes of the students at TT group.

in the groups where there are various teaching strategies followed, students have higher scores at attitude test towards grammar at SR groups than the others at the end of teaching process. According to LSD test, this increase is because of the increase of the scores at RS group.

Table 9. Mean and standard deviations of students' participation level the grammar course pre- and post test scores in the groups where there are various teaching strategies followed

		Pre-test			Post-test		
	Group	N	M	SD	N	M	SD
Student's Participation level	SR Group	30	16,13	1,19	30	21,26	4,74
	RS Group	33	16,87	1,38	33	18,84	4,79
	TT Group	33	15,75	1,14	33	15,63	2,42

However, it is observed that: SR group mean is M=16,13 and standard deviation is SD=1,19; RS group mean is M=16,87 and standard deviation is SK=5, 1,87; TT group mean is M= 16,13 and standard deviation is SD=1,19 for the students' participation monitoring scale applied at the end of the teaching process.

Post test score is SR group mean is M=21.26 and standard deviation is SD=4,74; RS group mean is M=18,84 and standard deviation is SK=4.79; TT group mean is M= 15,63 and standard deviation is SD=2,42 for the students' participation monitoring scale applied at the end of the teaching process.

Table10. Differences between mean, standard error, and LSD results on the students' participation level at the beginning of teaching process

	Participation pre-test						Participation post-test				
	Groups	I-J	SS	Sig	LSD			I-J	SS	Sig.	LSD
SR Group	RS Group	-,74*	,315	,020	SR < RS	SR Group	RS Group	2,418*	1,038	,022	SR>RS
	TT Group	,37	,315	,236	SR < RS		TT Group	5,630*	1,038	,000	SR>TT
RS Group	SR Group	,74*	,315	,020	RS >SR	RS Group	SR Group	-2,418*	1,038	,022	RS < SR
	TT Group	1,12*	,307	,000	RS > TT		TT Group	3,212*	1,013	,002	RS > TT
TT Group	SR Group	-,37	,315	,236	TT<RS	TT Group	RS Group	-5,630*	1,038	,000	TT < SR
	RS Group	-1,12*	,307	,000	TT>RS		TT Group	-3,212*	1,013	,002	TT < RS

Table 10 shows that in the groups where there are various teaching strategies followed, the increase in students' participation in the subjects of the course is for the good of RS group. According to LSD test data, the level of students' participation in the subjects of the course is higher at RS group than the others.

İn the groups where there are various teaching strategies followed, students at SR group have higher participation levels towards the subject in grammar course than the others at the end of teaching process. According to LSD test, this is because of the increase in students' participation in the course at SR group.

3. Results and Discussion

According to data obtained in the study;

İn study group, there has been 44% of the students males and 54% are females. The number of female students is 0.05% larger than the males

In this study first hypothesis "there is no difference in the duration of teaching between concept map supported approach and sample-to-rules based teaching activities hasn't been confirmed

Second hypothesis "There is no difference in achievement between concept map supported approach and sample-to-rules based teaching activities hasn't been confirmed

Third hypothesis "There is no difference in remembrance level of what has been taught between concept map supported approach and sample-to-rules based teaching activities" hasn't been confirmed

Sample-to-rules strategy is based on attaining various generalizations and rules through induction in a discovery strategy driven environment. Sample-to-rules teaching strategy is seen to contribute more on achievement than rules-to-sample strategy. When the samples are well constructed, the strategy lets the students participate in the teaching process actively. The accurateness and the appropriateness of the results depend on the quality and quantity of the questions a teacher serves and their probability to have enough tips. The questions that have enough tips and that warn students against the tips lead students to use their pre-experience actively and to address their energy on the served stimulants. The realization of the students that they are successful when they infer from the samples, when they get generalizations and principles, when they apply them on various samples will increase their participation in the lesson. In parallel to the increase of participation, their attitudes will also be affected in a positive way. Especially in sample-to-rules teaching; interpretation of the context through samples, release of reason-result relations and clear indication of similarities and differences between the samples do affect teaching process. It is seen that people are more sensible towards the deep structures of participants' educational materials in the applications through sample-based representations (Cleermans, 1997).

In a study that investigates the effects of presentation, arrangement and sampled context in learning from the text, McCrudden and the others (2004) have found that sampled context is more effective in easing the cognitive loads; and it makes a text much more comprehensible to explain a text using samples.

In sample-to-rules teaching process, students are monitored to be active during the course; to use such expressions as "Now I got it", "Well, It's OK now" frequently; and to act enthusiastic while giving new samples.

The explanations given to students while studying courses using sample-to-rules approach are supposed to simplify the comprehension of the subject. Thus, it is maybe because students listen to subjects more enthusiastic that are more comprehensible and related to their pre-experience. It could be said that such activities as relating the subject with various samples, choosing the sample from the real world, stating the similarities and differences let students develop positive attitudes towards the course.

In sample-to-rules teaching; detailed analysis of the content element to be studied, giving samples which are suitable for distinctive and non-distinctive features make it possible to arrange the information related to the concepts accurately and appropriately and to prevent a potential confusion of the information.

Shu-Ling (2000) states that visual elements affect learning positively while the subjects are abstract concepts. Similarly, Guthrie and the others (1999) state that students have higher motivations in teaching process when they are provided with explanations.

Rules-to-sample strategy is a teacher-centered approach that is directly described within the expository strategy and is based on using deductive method. It requires students to get the rules, principles and samples the teacher give in a passive way; and as a result to transfer them into similar samples. When this approach is applied using the concept maps; the context is visualized, teachers are provided a roadmap to follow and students are attributed to be able to take the subject as a whole. Despite the benefits of this method of instruction, it is important to note that discovery can impede learning when students have no prior knowledge or background information about the topic being studied (Tuovinen & Sweller, as cited in Schunk, 2008)

4. Conclusion

Results obtained by study shows that it is possible that each student requires different methods in learning process. However, an approach should both expedite and provide persistence in learning. Teaching of fully abstract rules as grammar is quite difficult both for students and teachers. Using of concept maps in rules to sample teaching facilitates presentation of information as a whole to students. Students detect knowledge as a whole and can reach very comprehensive knowledge in a short time. Teacher following rule to sample teaching approach fulfills basic functions as defining rules in deductive method, explaining relationships between items, giving appropriate examples and asking students to give similar examples. As the teacher is active in structuring and submitting the knowledge as concept map in teaching process, students can't internalize the knowledge. Students move topics very quickly to short-term memory and then quickly forget. Setting knowledge to be presented according to the student's level is up to experience and competence of teachers. Samples to rules approach have usability features in all levels of teaching process.

In sample to rule approach, students learn by using his own knowledge or exploring it rather than listening to teacher and getting knowledge from what s/he read. Learning by exploration provides students transfer knowledge from other areas and give chance to move and use it to very large areas. In practice of sample to rule teaching, students' exploration to relationship between samples associated with the examples make them feel self-confident .Students' preparation of their own concept maps relating to topics activate their prior knowledge and lead them think deeply on topics. This case increase student's interest and participation to class. As the students explore relationship between samples based on their own lives, learning can longer be remembered. It is obviously seen that both strategies have certain advantages in facilitating students' learning according to traditional methods.

Although sample to rule approach takes more time it gives positive results in areas where students have readiness related to certain topics. Past experiences of students about nouns and adjectives contributed them to be successful. Active participation of students in class, developing positive attitudes towards class increase success in their lessons.

5. Recommendation

In practice of sample to rule teaching, examples consistent with each other can be prepared, number of samples and samples that can be good examples can be selected and they can be arranged in a level that students can understand easily. Clues helping students make inference from samples can be given by teachers. Number of samples to be presented can be determined under the scope of topics that will be practiced. By selecting examples from students' life area the student's attention time can be extended in the course. However, when a large number of examples similar to each other in courses were given the student's attention can be distracted and can be seen signs of weariness. When the process is supported by students' own concept map they can much more care it.

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