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Teacher and student thoughts on effectiveness of cooperative learning in geography teaching

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The aim of this study was to determine teachers and students' opinions on the effectiveness of cooperative learning. This study conducted in İstanbul Lycee and it had a qualitative research design.The participant of the study assigned randomly among ninth grade students who were studying in İstanbul Lycee in the year of 2012 to 2013. Among 180 ninth grade students the researchers chose 15 male and 15 female students randomly (n=30). Thus,the sample of this study consisted of 30 randomly assigned students.The researchers then, chose 8 students randomly for the focus group interview and two geography teachers with 20 years of experience for the individual interview.The data collected by means of a questionnaire form which consist of two open ended and ten semi-structured questions. Ten hour lesson plan developed by using cooperative learning method in the ninth grade geography lesson and applied two week period. In this study qualitative data analysis which consisted of classification of data, determining major themes used.The findings demonstrated that cooperative learning method was effective and increase student's achievement.

Key words: Cooperative learning ınstructional design, geography teaching, cooperative learning.

INTRODUCTION

Since antiquity human being has solved their problems by sharing knowledge and experience and also co-operating with each other. The rise of human history, struggle for existence, and its evolution can be demonstrated as the best example of cooperation.Similarly, the history of science starting from the discovery of fire, the invention of wheel and ever growing until today can be attributed to the intense cooperation of human being. According to Şimşek (2005) in today's societies which based on scientific and technological development cooperation has become substantially important among groups and individuals, and day by day it has become impossible for societies to survive without cooperation.

In educational system student interaction and co-operation is neglected, most of the instructional period takes place between student and equipments and students and teachers. Cooperative learning (CL) enables students learn better, adopt positive attitude to each other, to school, to teacher and their self esteem improve. There are three basic ways students can interact with each other as they learn. They can compete to see who is "best"; they can work individualistically on their own toward a goal without paying attention to other students; or they can work cooperatively with a vested interest in each other's learning as well as their own (Johnson and Johnson,1994).

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Cooperative learning is one of the most remarkable and fertile areas of theory, research, and practice in education. Cooperative learning exists when students work together to accomplish shared learning goals (Johnson and Johnson,1999:p.1 to 5). Each student can then achieve his or her learning goal if and only if the other group members achieve theirs (Deutsch,1962: cited, Johnson et al., 2000:p.2). CL is a method formed by clustering students as a group to achieve common goal and by this way students work collaboratively to enhance their learning(Kurt, 2001). In another definition Açıkgöz (2002:p.172) defined CL as a process that enable students working in a small group and trying to help each other's learning. Doymuş et al. (2004:p.103) defined CL as a learning approach in which students; help each other's learning by forming small groups to achieve common goals both in class and other places, boost self-confidence, develop their communication, problem solving, critical thinking skills and participate actively in teaching and learning process. Similarly, Saban (2005: p.182) emphasized that students explore,construct, and extend their own knowledge. Learning is not a process committed by someone else but commited by students themselves. Students do not recieve knowledge passively from the teacher but they use knowledge to construct new structure, scheme,and balance in their mind. Application of CL requires certain principles and conditions.These are;

1. Positive ınterdependence: Every group member are interdependent. Every group member are mutually complementary.
2. Individual accountability: Group success depends on individual success and learning.
3. Face to face ınteraction: Group members accomplish by sharing thoughts and mutualization.
4. Social skills: In CL students are in a group for this reason they gain social skills better.
5. Group Processing: At the end of group work students come together to discuss about productivity and whether they achieve their goal or not (Johnson et al., 1994; cited, Saban, 2005: p.192-193).

The most important point which differentiate CL from other methods is that it has fertile conceptual underpinnings. In this context, three conceptual underpinnings of CL are mentioned. These are ; Social ınterdependence theory, cognitive development theory and behavioral learning theory (Johnson et al., 1994; cited, Saban, 2005:p.188).

According to social ınterdependence theory the way of constructing social interdependence is how individual interact and assume the result based on this interaction. Accordingly positive interdependence (cooperative approach) results in an interaction which encourage, support, develop group member's individual efforts. On the other hand negative interdependence (competitive approach) ends up antogonism which hinder students for their individual efforts in class and discourage them. If there is no interdependence (individualistic approach) all individual work independently on their own, it is not possible to mention any interaction (Johnson and Johnson, 1992; cited Saban, 2005: p.188).

Cognitive development theory based heavily on scientific studies of Piaget and Vygotsk. According to Piaget when two or more people work together it is more likely that a socio-cognitive conflict occurs, creating what some call cognitive dissonance. This disequilibrium, in turn stimulates perspective taking among participants and leads to overall cognitive development. According to Vygotsky knowledge is social and it can be constructed by cooperative efforts in order to learn, understand, and solve problems(Johnson and Johnson, 1992; cited, Saban,2005:p.189). Behavioral learning theory focuses on the effect of group reinforcements and rewards on learning. According to this theory rewarded behaviour can be repeated (Saban, 2005: p.189).

There are many techniques in CL, in the context of this study team-games- tournaments(TGT) and Jigsaw techniques were used. Jigsaw method was developed by Aranson. In this technique students are divided into 5 or 6 groups. Every member of each group studies his or her own responsible subject and students who are studying the same subject in different groups come together to form expertise groups. In expertise groups students discuss their subject thoroughly. After learning their responsible subject profoundly students in the expertise group return their groups to teach their responsible subject to his or her own group members (Slavin, 1988; cited Senemoğlu, 2012: p.486). TGT technique was develepod by Slavin et al. In this technique, after the teacher presents his or her lesson, students are divided into heterogenous groups. First of all students in the same team try to teach the subject each other after that they compete against other teams in a tournament (Slavin, 1990; cited Senemoğlu, 2012: p.494).

So far; definition, basic principles, theoritical underpinning and techniques of CL were explained. Thereafter definition, purposes and scope of geography, importance of geography teaching and research findings related to the effectiveness of CL in geography teaching will be explained. Küçükahmet (2011: p.2) alleged that the educational process of human being continues from cradle to grave and he defined instruction as a life long process partly taken place in class or school settings in a programmed manner.

Şahin (2003:p.1) defined geography as a science which examine and explain the result of natural features of environment in which human being lives, and human being's interaction with his natural environment and as a result of this interaction human being produce social and economic activities. Similarly, Doğanay (1993) explained geography as a science which explain natural, social and economic events of earth relating human being. In another definition Güngördü (2006: p.3) defined geography as a science which examine relationship between

natural events and human being, dispersion of these events and the cause of this dispersion.

The subjects of geography curriculum organized as a whole and spiral form and based on learning domain, gains, and instructional activities in order to give students geographical awareness. In geography curriculum much importance is given to the balance among knowledge, skill, value, attitude and in learning process students' daily life is taken into account. Geography curriculum covers not only classroom activities but also out door activities. This new geography curriculum approach comprise a new understanding in geography teaching with its learning-teaching process, measurement and evaluation methods, role of teacher- student in teaching and active class culture. By this understanding geography curriculum theoretically gives much importance to constructivism with its student centered approach and active learning methods (National Ministry of Education, 2005).

Geography is a science of scrutinizing the relationship between human being and earth, as a result of this relationship what has been done by human being. From this aspect geography aims to make people understand their relationship with their environment and try to help them suggest solutions to the economic and social problems of the world. For this reason, it is important to teach geography to the students in all grade level because geography gives them opportunity to comment about physical and social events of the world and their surroundings.

By this time, geography is misunderstood and mistold by the geographer and this leads to many problems. Because the science of geography is ; not a useless mass of knowledge, not encyclopaedic knowledge to memorize, not teaching or memorizing geographical knowledge of certain areas. By this way geography became charmless. In fact geography is a science of comment and synthesis. So as to reach its aim geography teaching must be given appropriate teaching methods. Otherwise geography is introduced as a science which is different from real, false, useless and unnecessary science----------cancel science (Şahin, 2003).

Teaching methods which are used in geography lesson is not qualified enough to teach students geographical subjects in Turkey. The most important reason of this is that in geography teaching teacher centered methods are used and students in the class are all or partly passive in Turkey. Instead of these teaching methods student centered, active methods must be used and the role of teacher must be guiding. One of the teaching methods in which students are active is CL. In CL students work for a common goal in a small group try to help each other's learning process. In this approach especially middle school students strive to learn and share what they learned, they improve ability to express themselves and all group members have equal chance to learn. The purpose of education is not only teaching knowledge but also improving students' social skills. In CL process students are likely improve their problem solving, communication, decision making, time management skills.

When we investigated researches which analyze the effect of CL in geography teaching in Turkey we found that CL had a positive impact on students' geography achievement. The researches are as follows; (Sezer and Tokcan, 2003; Tarım, 2003; Aydın,2004; Coşkun, 2004; Temizbaş, 2005; Yüzer, 2005; Özbaş, 2006; Acar, 2006; Şimşek, 2007; Güngördü and Demirkaya, 2007; Aydın, 2009; Çapar, 2011; Şahin, 2011). When we investigated researches which analyze the effect of CL in geography teaching in abroad we found that CL had a positive impact on students' academic achievement and motivation. The researches are as follows; (Tan et al., 2007; Le Heron et al., 2006; Holliday 1995, 2000, 2002; Reed and Mitchel, 2001; Johnson et al., 2000; Johnson and Johnson, 1988).

The aim of teaching methods in education is to create settings which facilitate meningful learning for the students.For this reason, students opinions must be taken about teaching methods and this helps to develop and control operability of teaching methods. Students' opinions are investigated about CL application in the following researches (Aydın, 2009; Tan et al., 2007; Şengören, 2006; Tanel, 2006; Tonbul, 2001). This study is important to contribute related literature by indicating how CL effects the opinions of teachers and students in geography teaching.Furthermore, this study is important ; to provide scientific data for selecting appropriate geography teaching method, to contribute developing functional and productive geographical teaching method, to quide teachers in geography teaching, to provide base data for qualitative analysis in the future.

The problem of this study is to determine opinions of teachers and students on effectiveness of team-games-tournaments and Jigsaw techniques of CL in climatology unit of ninth-grade geography lesson.With in the scope of this study following research questions were tested.

1. What are the opinion of students regarding the effectiveness of CL in climatology unit of ninth-grade geography lesson?
2. What are the opinion of teachers regarding the effectiveness of CL in climatology unit of ninth-grade geography lesson?
3. What are the opinion of students regarding the CL?
4. What are the opinion of teachers regarding the CL?

METHODOLOGY

Research model

In this study it is aimed to determine opinions of teachers and students on effectiveness of TGT and Jigsaw techniques of CL in climatology unit of ninth-grade geography lesson. Teachers and students opinions regarding the effectiveness of CL method were taken by questionnaire form which consist of two open ended and ten semi-structured questions and this study examined its research

questions by means of a qualitative data analysis and research model. According to Creswell (2007:p.129) qualitative research is an inquiry process of understanding based on distinct methodological tradition of inquiry that explore a social and human problem.The researcher builds a complex, holistic picture, analyzes words, reports detailed views of informants and conducts the study in a natural setting. The methods applied in this study were one to one ınterview for teachers and focus group ınterview for students. one to one ınterview is a process of collecting and recording data in which researcher ask questions to the participant and record his or her responses. focus group ınterview is a process of collecting data through group interview which consist of four to six people (Creswell, 2007:p.218).

Participants

The participants of this study consist of randomly assigned ninth grade students who were studying in İstanbul Lycee in the year of 2012 to 2013 and two geography teacher with 20 years experience. In the ninth grade class there were 180 students aged 16, 90 boys and 90 girls.The sample of this study consist of 30 randomly assigned students 15 male and 15 female (n=30) and two geography teachers with 20 years experience (n=2). The students who participated in this study were competitive and had a high academic achievement. They were all in the top % 1 of the national high schools entrance examination among more than 1.500.000 applicants (National Ministry of Education, 2012).The reason of choosing these participants was to see whether competitive students adopt cooperative ways. Among 30 students 8 students had chosen randomly for the focus group ınterview two geography teachers for one on one Interview. All parental consents were obtained from their parents to participate in this research. Consents were also obtained for the teachers who participated prior to the commencement of the research.

Data collection ınstrument

The data were collected by means of questionnaire form which consist of two open ended and ten semi-structured questions. After questions have been developed using principles of question construction, a researcher pilot tests the questions. This helps determine that the individuals in the sample are capable of completing the survey and that they can understand the questions. A pilot test of a questionnaire or interview survey is a procedure in which a researcher who complete and evaluate the instrument. The participants in the pilot test provide written comments directly on the survey, and the researcher modifies or changes the survey to reflect those concerns. Because the pilot group provides feedback on the questionnaire, you exclude them from the final sample for the study (Cresswell, 2007:p.390). As with the questionnaires, a relaxed and comfortable atmosphere was promoted throughout the interviewing process and the pupils were encouraged to talk openly about their ideas. It is acknowledged that the setting for the interview can impact on the interview itself (Hammersley and Atkinson, 2007:p.97). The interviews were semi-structured, allowing a degree of freedom during the interview process. Therefore, this type of interview was chosen as it best suited the purposes of this study. In a semi-structured interview, the interviewer is free to follow up areas of interest and the interviewer is able to find out more about the participant's interests and personal concerns (Yates 2004:p.155). This allowed some in-depth discussion during the interview, whilst still adhering to a structural process. Building a rapport between the interviewee and interviewer is fundamental to the success of the interview process (Hammersley and Atkinson, 2007:p.98). An interview schedule was organised in advance but in keeping with the semi-structured style of the interview, this was intended merely for guidance purposes (Yates, 2004:p.156). The aim of the interview was to provide depth of discussion and having the schedule helped to ensure that the discussion did not digress from the issues in question. Drever (1995) suggests that formulating an interview schedule also helps to ensure that all interviews are conducted fairly and consistently, hence providing reliable research data.

Empiric procedure

1. In order to use CL in the unit of climatology in ninth grade geography lesson, firstly geography curriculum was analyzed and student gains was determined. After this life skills which were gained by students because of the nature of CL were identified.
2. In the identification of content stage climatology unit was analyzed and divided into five subsections. In the process of rendering the content of climatology unit ninth grade geography course book and additional resource of Güvender publications were used. In ninth grade geography course book the climatology unit was divided into five subsections and worksheets were prepared for the students. After that, in order to prepare worksheets and assessment questions for the expertise groups Güvender publications' additional resources were used. In the application of TGT technique prepared questions about the climatology unit were installed into the computer and by this way students found the chance to answer the questions visually. In this study CL techniques of jigsaw and TGT were used.
3. In the stage of determining learning experiences ten hour instructional design was developed. The first two hour of this instructional design consisted of written or visual introductory activities which aimed to introduce CL to students.In the developmental stage of instructional design two hours for the individual work, two hours for the expertise groups and two hours for the process of narrating to the group were given respectively.

Steps of empiric procedure

1. Ten hour instructional design which used CL in the unit of climatology in ninth grade geography lesson, was prepared.
2.CL groups were constituted heterogeneously according to their geography achievement grades.
3.Ten hour instructional design which based on CL was developed and it was applied in company with to teachers.
4. Two open ended questions and ten semi structured questions were developed about the effectiveness of CL in geography teaching and pilot study was carried out. After pilot study necessary changes were done to make questions ready for the application.
5. Individual interview was carried out with two teachers who participated to the study.
6. Eight students assigned randomly among the students who participated to the study and focus group interview was carried out to them.

Data analysis

In this study, focus group interview was carried out to eight randomly assigned students and individual interview was carried out to two teachers. In qulitative interview researcher ask focus group participants open ended and semi-structured questions record their answers. The researcher then transcribes and types the data into computer file for analysis. In this study, the process of qualitative data analysis consist of classification of data, determining major themes and frequency distribution tables. (Creswell, 2007:p.237).

Table 1. Students thoughts on the effectiveness of CL N:8

According to Students Characteristics which make CL Effective	f
1. Sense of Responsibility	6
2. Team Work	6
3. Peer Learning	6
4. Mastery Learning	5
5. Productivity	4
6. Time Saving	3
7. Sharing	2
8. Learning by dividing subject into small parts	1

Table 2. Teachers' thoughts on the effectiveness of CL N:2

According Teachers Characteristics which make CL Effective	f
1. CL requires course preparation from students	2
2. CL requires course preparation from teachers	2
3. Active Participation	2
4. Decreases attention deficit in class	2
5. Develops communication skills	2
6. Develops sense of responsibility	2
7. Teaches all subjects comprehensively	2
8. Mastery Learning	2

RESULTS

Results derived from focus group ınterview with students

In order to derive students' opinions on the effectiveness of CL in geography teaching focus group interviews and carried out. By classifying obtained data main headings determined. All eight students who participated to the study stated that geography lesson based on memorization and it is boring.They further stated that CL is effective in geography teaching.These statements were as follows;

"By this method I learned with joy and my opinions related to geography lesson changed." " I learned in a sincere setting with my friends this affected my opinions and my achievement positively." " I participated actively and learned more by this method". Students indicated that CL was effective because it needs short time, it is fruitfull, it enables me to learn joyfully, it gives responsibility to the students, it creates comfortable learning environment among peers, it is different, it is attractive, it provides active participation.Students described CL as; highly fruitful, self access and transfer to the peers, specializing and sharing in a subject, mastery learning, interaction among peers, active participation. As can be seen from the statements students considered CL effective as shown in Table 1.

Results derived from ındividual ınterviews with teachers

In order to derive teachers' opinions on the effectiveness of CL in geography teaching individual interviews carried out. By classifying obtained data main headings determined. First teacher who participated to the study noted CL as a method of enabling students to be active, more fruitful and more successful. Second teacher noted CL as a method of enabling studens to learn comprehensively and he had a positive opinion about CL. He further added that he decided to use CL in his lessons. Both teachers noted CL effective. Teachers defined CL as an effective method which provides active participation, decreases attention deficit in the class, increases students' satisfaction and achievement and provides social interaction opportunities to the students. Results indicated that teachers also considered CL effective as shown in Table 2.

Results about students' opinions on the effectiveness of CL in general

Students' opinions related to strengths and weaknesses of CL were taken and these were given under the main headings in Table 3.

Table 3. Students' thoughts about the strength and weaknesses of CL N:8

According to Students Strength and Weaknesses of CL			
Strengths	**f**	**Weaknesses**	**f**
1. Sense of responsibility	6	1. Neglection of individual responsibility	6
2. Team work	6	2. Among peer groups the lesson goes beside the point	4
3. Active Participation	6	3. Students do not have enough experience in teaching	3
4. Peer Learning	6	4.Difficulty in group discipline	3
5. Entertaining and interesting	5	5. Allocation of subjects among students is not same equal level of difficulty	2
6. Mastery Learning	5		
7. Productivity	4		
8. Comfortable learning environment	3		
9. Time Saving	3		
10. Sharing	2		
11. Learning in a short time	2		

Table 4. Teachers' thoughts about the strength and weaknesses of CL N:2

According to Students Strength and Weaknesses of CL			
Strengths	**f**	**Weaknesses**	**f**
1. Sense of responsibility	2	1. Noise in the class setting	2
2. Active participation	2	2. Neglection of individual responsibility	2
3. Provides lesson preparation	2	3. Difficulty in using under heavy curriculum load	2
4. Develops socials skills	2		
5. Increases achievement	2		

Results about teachers' opinions on the effectiveness of CL in general

Teachers' opinions related to strengths and weaknesses of CL were taken and these were given under the main headings in Table 4.

Eight students and two teachers who participated to the study asserted that CL increased students' achievement. Half of the students suggested that CL should be applied in the school, the rest of the students did not suggest to apply CL in the school because of neglection of individual responsibility, CL is not convenient for all subjects and difficulty in group discipline.

DISCUSSION

As a result of this study it has emerged that students and teachers considers CL effective in geography teaching and all participants have asserted that CL increases achievement. Findings obtained from this study are supported by the researches which are carried out in Turkey and abroad. These researches are as follows; Johnson et al. (2000), Le Heron et al. (2006), Tarım (2003), Yüzer (2005), Özbaş (2006), Acar (2006), Şimşek (2007), Güngördü and Demirkaya (2007), Aydın (2009), Şahin (2011). According to research findings students consider effective characteristics of CL as follows; active participation, sense of responsibility, peer learning, team work, time saving, fruitful, sharing, learning by dividing subject into small parts. In terms of teachers, effective characteristics of CL as follows; active participation, sense of responsibility, lesson preparation and planning, decreasing attention deficit in class, developing communication skills, teching all subjects comprehensively and mastery learning. When we examined findings we concluded that both teachers and students emphasizedactive participation and sense of responsibility.These findings have been supported by Aydın (2009).

According to research findings students conceive strengths and weaknesses of CL as follows; sense of responsibility, team work, time saving, sharing, learning in a short time, comfortable learning environment, productivity, mastery learning, active participation, peer learning, entertaining and interesting. As for weaknesses neglection of individual responsibility, students do not have enough experience in teaching, allocation of subjects among students is not same equal level of difficulty, difficulty in group discipline and among peer groups the lesson goes beside the point. In terms of teachers strengths and weaknesses of CL as follows;

sense of responsibility, active participation, lesson preparation and planning, development of social skills and increasing achievement. As for weaknesses noise in the class setting, neglection of individual responsibility and dificulty in using under a heavy curriculum load. When we observe findings we conclude that both teachers and students highlight active participation and sense of responsibility as a strength. Similarly, when we observe weaknesses both teachers and students highlight neglection of individual responsibility. These findings are supported by Aydın (2009).

Students have pointed out that they have found CL interesting, entertaining, effective and they have thought that CL developes social skills. These findings are supported by Tan et al.(2007). According to both teachers and students the most distinguishing limitation of CL is the neglection of individual responsibility. In order to overcome this limitation all group members create an atmosphere which motivate,direct and control each group member working to fulfill common goal.In such an atmosphere each group member percieve himself or herself as an important part of the group, without completion of his or her responsibility the group can not reach its ultimate goals. Another common limitation of CL is noise in the class setting during the activities, to overcome this seperate classes can be allocated for each group for discussions and teachers can facilitates students' interactions.

The participant of this study consisted of competitive and academically successful students, these students answered questions anxiously and hesitantly for fear of making mistakes during TGT technique. This situation can be defined as peer pressure or indignity. In TGT technique students answered 95% correctly. TGT technique created competitive setting among students and this contradicted main principles of CL. Despite the fact that all participants of this study are competitive and academically successful students, they all adopt cooperative ways by helping each other's learning enthusiastically.

Researches which investigate students' opinion about the effectiveness of CL are carried out by (Aydın, 2009; Tan et al., 2007; Şengören, 2006; Tanel, 2006; Tonbul, 2001). But when we analyze related literature we see that researches are mostly quantitative. Researches which used qualitative methods are rare. This study is important to present teachers' and students' opinions about the effectiveness of CL, in general strengths and weaknesses of CL in geography teaching. It is also important to show us the need for further studies in this field.

CONCLUSION

Research findings have indicated that CL is effective in geography teaching and participants have stated that CL increases students' achievement. These findings are supported by other research findings. In addition, characteristics which make CL effective, strengths and weaknesses of CL are obtained through teachers' and students' opinions, these findings are also supported by other research findings. We can say that CL creates positive interdependence among individuals, supports individual responsibility, provides face to face interaction among students, develops social skills. Moreover CL is an effective teaching method and it has a rich theoretical foundation such as it relies on Social Interdependence Theory, Cognitive Development Theory and Behavioral Learning Theory. As a result of research findings and our experiences from this study we can suggest followings for the researchers.

According to the findings derived from participants of this study, CL increases students' achievement in geography teaching and CL enable students adopt cooperative ways. In order to generalize these results similar studies about CL should be done for different grade levels. For, the findings of this study are limited or can be generalized to İstanbul Lycee. We used Jigsaw and TGT techniques of CL in this study. Different techniques should be used to increase validity of CL.

Traditional teacher centered instruction decreases students active participation and presents self-expression of them for this reason, in geography lesson active participation methods can be used.In service training about CL can be organized to encourage geography teacher to use CL methods in class. This study is carried on students who are competitive and has high academic achievement. In order to generalize findings this study can be conducted for different school type. In Turkey, mostly traditional teaching methods have been used in geography lessons. This prevents knowledge gained from geography lesson to be permanent. From this point of view CL methods can be used effectively in geography lesson. It is a thought that CL could not provide same level of achievement in the long run application.

It is thought that application of CL in crowded classes is difficult because of noise and it is not productive. CL method should be used starting from primary school years. Consequently, CL is not a frequently used method in Turkish educational system. By encouraging further studies related CL, we can have benefits from its comprehensive application in our educational system.

Conflict of Interests

The author(s) have not declared any conflict of interests.

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