National Character: Integration Nationalist Value on Civics Teaching Materials in Elementary School

Florentina Zarco; Patricia Shalati

Social Science Studies, Sorbonne Université, France

Abstract

This research is conducted to know the effect of Team Games Tournament (TGT) learning model with "Numbered-Board Quiz" game in increasing science learning achievement of four grade students in Sawahan, Madiun. Although many research results show that students' learning achievement are much improved, however the use of TGT learning model in science and the use of it in teaching learning process for elementary school are rarely found. Many teachers have not known about TGT learning model. The main requirement to observe science teaching learning process in the class refers to the requirement to the application of learning model TGT especially in science subject. The purpose is to know the effectiveness of the application of TGT to improve students' achievement based on learning motivation. The population in this research is 154 students that come from 6 schools, 79 students are in experiment group and 75 students are in control group. Students in experiment group are given treatment with TGT learning model while students in control class are given treatment conventional learning model that is direct teaching. Collecting data is conducted two times, they are pretest and posttest. The result shows the significant differences of science learning achievement between students that are given TGT learning model and conventional method, also there is an interaction between the learning model used with student learning motivation.

Keyword: *Teams Games Tournament; Learning Motivation; Science Achievement*

Introduction

Learning is an interaction process involving students, teacher, and learning resources in certain learning environment. Learning that conducted in formal institution aims to process of knowledge acquisition that is appropriate with the purpose of learning target. Learning process between teacher and student is not only one way system but also should be two way traffic systems. According to curriculum that is applied in Indonesia, science is one of main subject given, starts from primary level. Science is the collection of knowledge that organized systematically that in the application generally limited to nature phenomenon (Carin, 1985) (Amien, 1987).

The problem of science teaching in primary school, generally is the learning proess that is still teacher-centered, and the less varied learning source used. Usually students are asked to read first at home, and listen to explanations from the teacher when in class. The use of conventional learning model is only effective for active students and less effectively for the passive one. In addition, science learning on a

trasdional basis cannot stimulate the whole to actively engage in learning, and finally that causes communication between teachers and students become less. Other studies also revealed that the difficulty of science learning in the field is the lack of teacher communication with students (Goghiu, Draghicescu, Cristea, Petrescu & Gorghiu, 2015). Lack of student curiosity, and self-efficacy to get good scores in science lessons also become an additional factor for students' learning difficulties in learning science (Ardasheva, Carbonneau, Roo & Wang, 2017). Self-efficacy is one's awareness of their ability to do things that can affect their lives. Bandura (1997). suggests one factors that determines one's learning motivation is Self-Efficacy. Lack of self-efficacy for students in learning science, is because the use of learning models that are less in line with the development of elementary school students.

In science learning for elementary school, it is important to pay attention to the fun learning, so that children are more relaxed in receiving learning materials and they can be actively involved during the learning process (Suduc, Bizoi & Gorghiu, 2015). Teachers should be creative and innovative in learning to make students easy to understand the material presented and motivated to participate actively in learning. Learning activities presented by the teacher must be qualified, which ultimately expected student learning outcomes are also adequate. The selection of learning models should be appropriate and suitable with the learning material, because the learning model also determines the success of the learning objectives. The science lesson using the TGT learning model is focused on learning outcomes conducted in groups rather than individual work. Group assessment is determined by the mastery of the material by each member of the group, so it takes a good work.

Ana-Maria Suduc, Mihai Bizoi, Gabriel Gorghiu (2015) state that science learning is more effective by finding out or enquiry. Enquiry and solving problem element can be found in TGT learning model as well. That is in line with the research conducted by Alake-Tuenter (2012), Suduc, Bizoi, & Gorghiu (2014). Veloo, Arsaythamby and Chairhany, Sitie (2013). Based on the research conducted by Veloo shows that there is significant differentiation in learning achievement between students given TGT treatment and control class that using conventional model (Think-Talk-Write). Research that done by Salam, Hossain & Rahman (2015); Pangestuti, Anjar, Mistianah, Corebima, Zubaidah & Siti (2015. Pangestuti, Anjar, Mistianah, Corebima, Zubaidah & Siti, (2015) find that TGT gives other positive effectslike new learn experience that gotten by students and they will not have bored to learn in the class. Other result is found by Ke (2008) learning games-based using TGT become more effective in improving learning result compared with the use of computer gaming.

Components in TGT learning model are class presentation, work in group, game, tournament, and group award (Pangestuti, Anjar, Mistianah, Corebima, Zubaidah & Siti, 2015). Game in TGT learning model will draw students' attention and will be more motivated students in learning. Suduc, Bizoi, Gorghiu (2015) state that primary aged children tend to curios and motivated in learning, that is why it is better if the teacher improve their curiosity and motivation earlier. According to Feng & Chen (2013) research result students really like learn while playing and expect the teacher to facilitate them with innovative learning especially in science. Students that learn while playing get science material comprehension more deep and increase their learning motivation also the effectiveness of learning schedule (Liu & Chen, 2013).

Team Games Tournament (TGT) is the oldest learning model based from cooperative learning. Wodarski & Feit (2011) explain that TGT is a unique learning model that presenting role of peer tutor and group award to strengthen healthy social behavior. TGT learning model gives more chances to create learning team that can be compared one to another with heterogeneous member (Davison, 2008). TGT's steps are 1) game as teaching medium, 2) learn in small group, and 3) giving assignment and award. Tanner & Linquist (1997) state that in TGT learning, every student represents their group to compete other groups, with determination that every student in a tournament comes from same academic ability level.

TGT learning level more focus on group achievement rather than individual achievement. TGT can facilitate students especially in group problem solving with a challenging and interactive ways (Veloo, Arsaythamby, Chairhany & Sitie, 2013). Group learning in class can give positive effect for students. Learning technique in small group can give positive reinforcement from peer tutoring and team work, competitive game and tournament (Wodarski & Feit, 2011).

Kiyikkaya, Iseri & Vurkaya (2010) state that the used of game component in learning is more effective compared with the traditional learning especially in improving learning motivation, active participation, and students' concentration. Moreover, game also able to improve students' comprehension and students' ability to solve problems. Billinghurst & Kato (2002) say that game that conducted directly (not computer digital game) gives more positive effect to students because involves face to face interaction and shows face expression one to another, physical action, and intonation. Liu, Lin, Hsiaso & Chen (2009); Lin Liu, Chen Liou, Chang, Wu & Yuan (2013); Liu & Chen (2013) have almost the same research result, those are game can improve students' motivation, attention toward the learning, social ability and material comprehension.

Besides that, game, based on research that they have done, able to improve students' activeness with high curiosity and left deep impression for students. By combining game component in cooperative learning (Team Games Tournament type) can give positive effect for students, especially in material comprehension (Liu & Chen, 2013).

Different ways of teaching and application of some learning models have been done with the aim to motivate and increase students' interest to learn science. Previous research has suggested that cooperative learning model type TGT has a positive impact on improving student learning outcomes in Accounting lessons (Tanner & Linquist, 1997); in mathematics (Veloo, Arsaythamby, Chairhany & Sitie, 2013) (Ke, 2008) (Salam, Hossain & Rahman, 2015); in children and adolescent health program (Wodarski & Feit, 2011); in chemical subject (Pangestuti, Anjar, Mistianah, Zubaidah & Siti, 2015). Another advantage of the TGT learning model is that it can actively involve students in learning, train students to become peer tutors, and improve students' ability to socialize with their learning environment. Many studies using TGT learning model applied to Mathematics subject, and still rarely encountered applied in science subjects that related to learning motivation especially at elementary school level.

Problem identification of this research is: Is there any significant differentiation of science learning achievement between students given TGT learning model treatment and students given conventional learning model based on learning motivation?

Methods

This quasi-experimental research used pretest-posttest control group design. Samples from this research is 154 students from 6 elementary schools in Sawahan, Madiun that consists of 79 students in experiment group and 75 students in control group. Questionnaire is used to know how large students' learning motivation. Questionnaire that used in this research consist of 22 questions that will be analyze using Likert scale (1-5) then classified to high, average, and low. For science learning result test use multiple choice test consist of 24 questions. Data analysis uses 2 ways anova with different cells.

Result and Discussion

After the two classes of research were taught with the two different learning models, a motivation test was conducted with a questionnaire. Each of these data is tested for normality and homogeneity, both after pretest and posttest. The pretest results of this study indicate that the data is in a normal and homogeneous state. Learning outcome average of TGT (experiment class) is $\overline{X} = 45.04$ and conventional class that uses direct learning has $\overline{X} = 42.56$. While in posttest, students that given TGT learning model treatment has $\overline{X}_{TGT} = 86.81$ and students that given direct learning model treatment has $\overline{X}_{direct} = 72.50$.

After the post test data is known in a state of normal and homogeneous conditions, then proceed with anava test. Anova test shows $F_a = 27.85 > 3.04$; $F_b = 11.3 > 3.04$; & $F_{ab} = 2,62 > 2,41$ means that H_0 is rejected. H_{0A} rejected means there is differentiation of the influence of TGT learning model and direct learning toward science learning result. H_{0B} rejected means there is differentiation of students' motivation towards science learning result. H_{0AB} rejected means there is interaction between learning model with learning motivation towards science achievement.

Table 1. ANOVA Result on Science's Learning Outcomes

Source	F_{value}	F_{table}	Test Decision
Learning Model (A)	27,85	3,04	H_{0A} rejected
Learning Motivation (B)	11,30	3,04	H_{0B} rejected
Interaction (AB)	2,62	2,41	H_{0AB} rejected

The Influence of Learning Model on Learning Outcome

Based on Avana test, $F_a = 27.85 > 3.04$, means that there is influence the use of learning model towards learning achievement. Posttest average TGT learning model is higher than the direct one. Although both of them have improvement compared with average of pretest, but significant improvement occurs in class that given TGT learning model. Based on these results it can be concluded that student's outcome which treated with TGT learning model is more effective than with direct learning model. A significant difference in the acquisition of learning outcomes of science shows that the learning model applied to the experimental class attracts more students' attention. The students' active participation is evident from how they want to get involved in their group activities and play in the games presented by the teacher. In TGT learning the students receive not only the material from the teacher, but also the group task paper to be solved with the group before the game starts. Each member of the group has different tasks in completing the paper. Each member of the group must understand the answer of the task they are doing because it can be their provision while playing in the game.

Table 2. Students' Science Pretest-Postest Learning Achievement for Experiment & Control Class

Class	n	$\overline{X}$	Mo	Me	Max	Min	SD
Pretest							
TGT	79	45,04	45,83	45,83	16,67	75,00	13,93
Direct Learning	75	43,56	20,83	41,67	91,67	8,33	18,84
Posttest							
Class	n	$\overline{X}$	Mo	Me	Max	Min	SD
TGT	79	86,81	100	87,50	100	62,50	10,28
Direct Learning	75	72,50	87,50	70,83	100	41,67	14,22

The first finding shows that TGT learning model is more effective for improving science learning outcomes compared to direct learning models. That first findings result is in line with previous research result that conducted by Kirik & Makik (2012) which state that the use of cooperative learning model TGT type proven can improve learning motivation, science learning result, and concept comprehension that explained. Goghiu, Draghicescu, Cristea, Petrescu and Gorghiu (2015) also state learning using TGT learning model that is cooperative based will improve students' comprehension. That research result is also in line with researches before that areTanner & Linquist (1997); Veloo, Arsaythamby, Chairhany & Sitie (2013); Ke (2008); Salam, Hossain & Rahman (2015); Wodarski & Feit (2011); Pangestuti, Anjar, Mistianah, Zubaidah & Siti (2015). The use of game that is inserted in TGT learning model in research also gives positive effect that is by improving science learning result from posttest $\overline{X} = 45.04$ become $\overline{X} = 86.81$. That effect is also occurred in findings from researches that done by Liu & Chen (2013); Kiyikkaya, Iseri & Vurkaya (2010); Lin Liu, Chen Liou, Chang, Wu & Yuan (2013); Billinghurst & Kato (2002).

In the learning with TGT, the elements of games and tournaments are the main reference that differentiates the learning model with others. The game for elementary school-age children according to Ucus (2015) is an appropriate means for teachers to pursue innovation in learning and activate passive students during the learning process. This is in line with Kiyikkaya, Iseri & Vurkaya (2010) suggested that games will make learning more effective than using traditional learning, especially to improve the learning, active participation, and student concentration. Furthermore, the game can also improve students 'understanding and improve students' ability to solve problems. Billinghurst & Kato (2002) direct game (not digital computer games) is more positive for learners because it involves face-to-face interaction, expression of each other's faces, physical actions and voice intonation. Liu, Lin, Hsiaso & Chen (2009); Lin Liu, Chen Liou, Chang, Wu & Yuan (2013); Liu & Chen (2013); have almost identical research results ie, games can improve students' learning motivation, attention to learning, social enhancement and material understanding. In addition, through the game based on the research they do can increase the activity of students with greater curiosity and leave the impression of deep learning to students. Combining elements of the game into cooperative learning (Team Games Tournament type) will give a positive effect on students, especially in material understanding (Liu & Chen, 2013).

The Influence of Learning Motivation on Learning Outcome

According to Avana test, $F_b = 11.3 > 3.04$ means that there is influence students' learning motivation to science learning achievement. In table 3, it can be known that average of questionnaire of students learning motivation score that given TGT learning model treatment is $\overline{X} = 88.51$ while average of questionnaire of students learning motivation score that given direct one is $\overline{X} = 83,12$. Based on these findings, it can be concluded that the students' learning motivation that is treated with TGT learning model is higher than the students' learning motivation that is treated with direct learning model.

Table 3. Obtaining Students' Questionnaire Score for Experiment and Control Class

Class	n	$\overline{X}$	Mo	Me	Max	Min	SD
			Questionnaire Score				
TGT	79	88,51	84	87	110	62	10,40
Direct Learning	75	83,12	85	84	106	54	11,21

The second finding shows that the use of learning models determines the level of students' learning motivation. It can be concluded that students' learning motivation which treated with TGT learning model has higher questionnaire score than the students' learning motivation which treated with direct learning model. Student learning motivation is closely related to student learning outcomes. The higher the students'

learning motivation, the better the learning outcomes. Motivation questionnaire score obtained is a description of how their interest to learn science. The results obtained by questionnaire is an implication, if the score of a student's questionnaire is high, his science learning results is also high.

This second finding is line with the previous research done by Cheng & Su (2012) which state that students' learning motivation has a significant impact on the students' learning outcomes, and the students' learning outcomes treated by using the games are better than the student learning outcomes treated with traditional "face-to-face teaching". Cojocatiu & Boghian (2014) and Ucus (2015) also state that using game in a learning meets the basic needs of learning by giving students fun, engagement, structure, motivation improvement, ego satisfaction, adrenaline, creativity, social and emotional interaction. Mahfudh, Joebagio & Mulyoto (2017) stated that motivation caused students to always learn and improve the learning outcome. Finding from this research also appropriate TGT learning model cooperation based that is able to improve self-efficacy that means improving students' learning motivation (Ardasheva, Carbonneau, Roo dan Wang, 2017).

The Interaction between Learning Model and Students' Motivation on Learning Outcome

Table 4. Scheffe'/Comparison Result on Science's Learning Outcomes

Comparison	F_{value}	F_{table}	Test Decision
$F_{1.2-2.2}$	18,06	15,855	$H_0 rejected$
$F_{1.3-2.3}$	22,53	15,855	$H_0 rejected$

Based on Avana test result, $F_{ab} = 2.62 > 2.41$, means that there is interaction between learning model and learning motivation. Because there is an interaction between the learning model used with learning motivation, it is necessary to do Scheffe 'test. The result of the Scheffe 'test shows that 2 hypothesis were rejected means, students' science learning outcomes based on the model of learning selected by the teacher will also be influenced by student learning motivation. Start from Table 3, after determined composite average and composite deviation, can be classified the students' learning motivation with category high, moderate, and low. High science learning motivation $\bar{X} \geq 91.8$, moderate $81,2 < \bar{X} < 91,8$, and low $\bar{X} \leq 81,2$. Based on these results, it can be concluded that the motivation of learning and learning models affect student learning outcomes. There is an interaction between the influence of learning models (TGT, Direct Learning) and students' learning motivation toward learning outcomes.

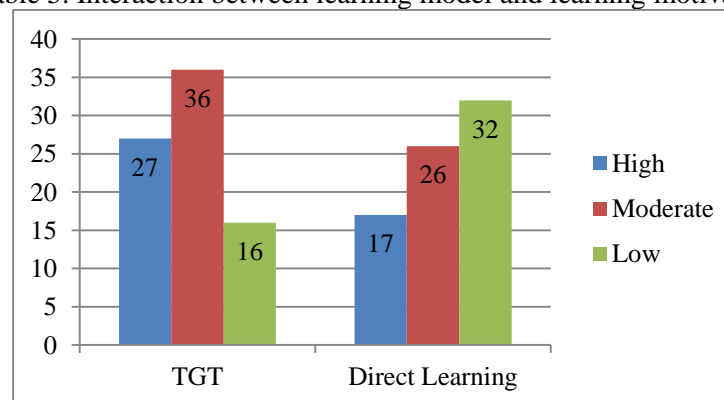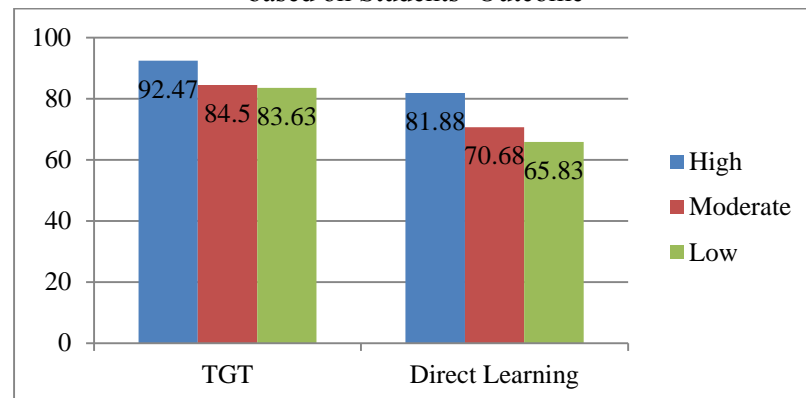Table 5. Interaction between learning model and learning motivation

Table 6. Interaction between learning model and learning motivation
based on Students' Outcome

Related to the first and second findings, the third finding shows the interaction between the learning model used by the teacher and the students' learning motivation. Based on these results, it can be concluded that students' science learning outcomes based on the learning model selected by the teacher will also be influenced by student learning motivation. In TGT learning model, students that have high motivation are 27 students and it is more in quantities compared with number of students that have high motivation in direct learning model, those are only 17 students. Numbers of students that have low motivation in direct learning model are 32 students while in TGT learning model are 16 students.

Based on advanced post-anava/Scheffe' test analysis, students with moderate ($F_{1.2-2.2} = 18,06$) and low ($F_{1.3-2.3} = 22,53$) learning motivation level showed significant difference of learning outcomes between students which treated with TGT learning model with students which treated with direct learning model. Students' learning outcomes with the TGT learning model shows better result than the students' learning outcomes with the direct learning model. These findings are line with Su and Cheng (2013) previous research which state that students of the experimental group using MILS had better learning achievement than other control groups after the test. Co, Aydin, Filiz (2009) states that the games presented by the teacher during the lesson really help them, especially the game is related to learning, more, they feel entertained, so their learning outcomes increase. Other research findings show higher learning achievement and student learning motivation by using innovative learning model (Wiwik, Subandi & Fajaroh, 2015) (Setyorini, Subandi & Santoso, 2015). Based on the findings of the research, it can be seen that innovative learning models will increase students' curiosity, which ultimately motivates them to actively engage in learning.

Conclusion

This research shows empirical proof that TGT learning model with Numberes-Board Quiz can become an alternative in learning innovation in class so that students' learning motivation toward science subject increase. Teacher needs to know the effective steps in TGT learning model and then adjusted with science material that will be delivered. TGT learning model is very flexible and can be used in almost every subject, and game in that model can be modified and adjusted with teaching material. TGT learning model will facilitate students to learn how to build their own knowledge and socialize with their friend through team work because TGT is learning mode that take root from cooperative learning. Learning that conducted by using TGT learning model will challenge the students to involve actively in learning without they notice it. It is important for students to motivate students toward a subject so that not only the learning achievement increases but also their material comprehension.

References

Amien, Mohammad. 1987. *Mengajarkan Ilmu Pengetahuan Alam (IPA) dengen Menggunakan Metode 'Discovery' dan 'Inquiry'*. Jakarta: Departemen Pendidikan dan Kebudayaan.

Ardasheva, Y., Carbonneau, K. J., Roo, A. K., & Wang, Z. (2018). Learning and Individual Di ff erences Relationships among prior learning, anxiety, self-e ffi cacy , and science vocabulary learning of middle school students with varied English language pro fi ciency. Learning and Individual Differences, 61(November 2017), 21-30.

Bandura, A. (1997). Self-efficacy: The exercise of control. New York: W.H. Freeman.

Billinghurst, M., & Kato, H. (2002). How the virtual inspires the real. Communications of the ACM, 45(7), 64-70.

Cheng, C., & Su, C. (2012). Social and WCLTA 2011 A Game-based learning system for improving student' s learning effectiveness in system analysis course, *31*(2011), 669–675.

Co, S., Aydın, S., & Filiz, M. (2009). Students â€™ conceptions about browser-game-based learning in mathematics education: TTNetvitamin case, *1*, 1848–1852.

Cojocariu, V., & Boghian, I. (2014). Teaching the Relevance of Game-Based Learning to Preschool and Primary Teachers. *Procedia - Social and Behavioral Sciences*, *142*, 640–646.

Davison, L., I. Galbraith, and M. McQueen. 2008. "Cooperative Learning: A Partnership Between an EPS and School." Educational Psychology in Practice 24(4):307-317.

Gorghiu, G., Cristea, S., Petrescu, A., & Monica, L. (2015). Problem-Based Learning - An Efficient Learning Strategy In The Science Lessons Context, 191, 1865-1870.

Ke, F. (2008). Alternative goal structures for computer game-based learning. International Journal of Computer-Supported Collaborative Learning, 3(4), 429-445.

Kirikkaya, E. B., Iseri, S., & Vurkaya, G. (2010). A board game about space and solar system for primary school students. Turkish Online Journal of Education Technology, 9(2) , 1-13.

Lin, C. H., Liu, E. Z. F., Chen, Y. L., Liou, P. Y., Chang, M., Wu, C. H., & Yuan, S. M. (2013). Gamebased remedial instruction in mastery learning for upper-primary school students. Educational Technology & Society, 16(2), 271-281.

Liu, E. Z. F., & Lin, C. H. (2009). Developing evaluative indicators for educational computer games. British Journal of Educational Technology, 40(1), 174-178.

Mahfudh, M. H., & Joebagio, H. (2017). International Journal of Multicultural and Multireligious Understanding Manuscript Suluk Wujil : Values Tansformation of Tassawuf Education Sunan Bonang in Nation Character Building, 15–28.

Pangestuti, A. A., Corebima, A. D., & Zubaidah, S. (2015). Using Reading-Concept Map-Teams Games Tournament (Remap-TGT) to Improve Reading Interest of Tenth Grade Student of Laboratory Senior High School State University of Malang, 3(2), 250-254.

Salam, A., Hossain, A., & Rahman, S. (2015). Effects of Using Teams Games Tournaments (TGT) Cooperative Technique for Learning Mathematics in Secondary Schools of Bangladesh. Malaysian Online Journal of Educational Technology, 3(3), 35-45.

Su, C., & Cheng, C. (2013). A Mobile Game-based Insect Learning System for improving the learning. *Procedia - Social and Behavioral Sciences*, *103*, 42–50.

Suduc, A., Bizoi, M., & Gorghiu, G. (2015). Inquiry Based Science Learning in Primary Education. Procedia - Social and Behavioral Sciences, 205(May), 474-479.

Tanner, M. M., & Lindquist, T. M. (1998). Using MONOPOLY and Teams-Games-Tounaments in accounting education: a cooperative learning teaching resource. Accounting Education.

Tastan, O., & Markic, S. (2012). The self-efficacy of pre-service elementary teachers using cooperative learning in science teaching, 46, 5005-5009.

Tsay, M. and M. Brady. 2010. "A Case Study of Cooperative Learning and Communication Pedagogy: Does Working in Teams Make a Difference?" Journal of the Scholarships of Teaching and Learning 10(2):78-89.

Ucus, S. (2015). Elementary School Teachers' Views on Game -based Learning as a Teaching Method. *Procedia - Social and Behavioral Sciences*, *186*, 401–409.

Veloo, A., & Chairhany, S. (2013). Fostering Students' Attitudes and Achievement in Probability Using Teams-games-tournaments. Procedia - Social and Behavioral Sciences, 93, 59-64.

Wodarski, J. S., & Feit, M. D. (2011). Adolescent Preventive Health and Team-Games-Tournaments: Five Decades of Evidence for an Empirically Based Paradigm. Social Work in Public Health, 26(5), 482-512.

Zhi, E., Liu, F., & Chen, P. (2013). The Effect of Game-Based Learning on Students ' Learning Performance in Science Learning - A Case of " Conveyance Go." Procedia - Social and Behavioral Sciences, 103, 1044-1051.

Copyrights