The Effectiveness of Teaching Games for the Improvement of the Hockey Tactical Skills and the State of Self-Confidence among 16 Years Old Students

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Abstract—This study was conducted to examine the effectiveness of Teaching Games For Understanding (TGFU) in improving the hockey tactical skills and state self-confidence among 16-year-old students. Two hundred fifty-nine (259) school students were selected for the study based on the intact sampling method. One class was used as the control group (Boys=60, Girls=70), while another as the treatment group (Boys=60, Girls=69) underwent intervention with TGFU in physical education class conducted twice a week for four weeks. The Games Performance Assessment Instrument was used to observe the hockey tactical skills and The State Self-Confidence Inventory was used to determine the state of self-confidence among the students. After four weeks, ANCOVA analysis indicated the treatment groups had significant improvement in hockey tactical skills with $F_{(1, 118)} =313.37$, $p<.05$ for school boys, and $F_{(1, 136)} =92.62$, $p<.05$ for school girls. The Mann-Whitney U test also showed the treatment groups had significant improvement in state self-confidence with $U=428.50$, $z= -7.22$, $p < .05$, $r=.06$ for school boys. ANCOVA analysis also showed the treatment group had significant improvement in state self-confidence with $F_{(1, 136)} =74.40$, $p<.05$ for school girls. This indicates that TGFU in a 40-minute physical education class conducted twice a week for four weeks can significantly improve the hockey tactical skills and state self-confidence among 16-year-old students. The findings give new knowledge to PE teachers to implement the TGFU method as it enhances the hockey tactical skills and state self-confidence among 16-year-old students. Some recommendation was suggested for future research.

Keywords—Hockey tactical skills, state self-confidence, teaching games for understanding, traditional teaching.

I. Introduction

PHYSICAL Education (PE) currently emphasizes teaching and learning that encompasses students' games skills, fitness, knowledge and attitudes [1]. Teaching games in PE class are important because 65% of teaching time allocated for the game [2]-[4]. Its aims are to improve students' skills, their motivation to engage in the game and ensure students' mastery in the game [4]-[6]. Self-confidence is one of the criteria to ensure the students' success in mastering the hockey game. It is a process of encouraging that may affect the effectiveness of individual's achievement [7]. Reference [7] highlighted

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factors such as verbal persuasion, individual physiology, performance and experience that influence the state self-confidence in PE classes.

Research shows that the motivation and interest among school students towards PE lessons after the age of 14 have declined especially among female students [8]. This situation will persist until adulthood if students are not motivated to do physical activities and continuous exercise in their lives. This happens because of the teaching methods given by PE teacher are not sufficient enough to increase the level of self-confidence among the students.

Although there were no studies reported a dominant teaching model used in the teaching of PE, but the common teaching model used is the direct instructional in the class [3], [9]-[11]. PE teacher emphasizes direct instruction to the students to perform skills in teaching the game. Emphasis direct instruction is more Instructional Model also known as Traditional Teaching Model [3], [9], [12]-[14]. Traditional Teaching Model is a favorable teacher-centered method among students to perform the skills in the game [3].

This is because the process of teaching the game is more organized and controlled. Teachers control the process of teaching the game, and the students' game techniques can be corrected during the process of teaching in PE. Teachers are also emphasizing drills to the students so that students can master the skills in the game entirely. The structured and organized Traditional Teaching Model does not give a sense of contentment or satisfaction to the students [10], [12]-[15]. This is because the drills or repeated skills can easily cause students to feel bored and trapped in the process of learning [3], [11], [13], [16].

Recent studies show that students' interest in games in PE is dwindling [9], [11], [24], [29]. This is because the Traditional Teaching Model given by the teacher is not so inclusive [3], [12]-[16]. Students cannot get to experience the actual gameplay and skills gained from the drills are also not applicable in real game situations.

The TGFU approach known as Tactical Games Model has been introduced to ensure that students' achievement could be increased to the optimum level [12], [14], [15], [17], [18]. TGFU is able to improve overall students' achievement in the games [2], [5], [9]-[10], [12], [17]-[25]. TGFU is a student-centered approach [12], [14], [26]. In TGFU, students are given the autonomy to make decisions such as the selection of members and playing equipment. Autonomy given for students to participate in the modified games tailored

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according to the requirements of the students' opportunity, understanding of the game can improve learning outcomes in PE class [2], [24], [27]-[29].

TGFU can also improve students' knowledge and understanding a whole of the game aspects [2], [12], [20], [21], [25].TGFU has been carried out for school students ages below 15 in schools [2], [15], [17]-[20], [22]-[25], [29]-[41] and 16 above [37], [42], [43]. Previous TGFU studies conducted focus on 16 above was outside of PE classes [37], [42], [43]. Studies of self-confidence in sports also have been conducted [44]-[53] but studies of TGFU in improving students' self-confidence in PE classes are still limited.

The gap had shown that lesser studies of TGFU conducted by researchers in PE classes, especially in the hockey tactical skills and state self-confidence among 16 years old school students in a hockey game. Thus, a study should be conducted to examine the effects of TGFU and Traditional Teaching method in improving the hockey tactical skills and state self-confidence among 16 years old school students in PE classes.

This study was conducted to examine the effects of TGFU Model and Traditional Teaching Model in improving the hockey tactical skills and state of self-confidence among 16 years old school students in a hockey game in PE classes. The purpose of the study conducted was:

1. To examine the mean scores of the hockey tactical skills and state self-confidence between the treatment groups and the control groups among 16 years old school students in PE classes.
2. To examine the significant of differences mean scores of the hockey tactical skills and the state self-confidence between the treatment groups and the control groups among 16 years old school students in PE classes.

II. METHODOLOGY

A quasi-experimental design with a pretest-posttest was adopted for the study [54], [55]. Two schools in the district of Segamat, state of Johor in Malaysia were randomly selected for the study. There were six 16 years old students' classes in each of the selected schools. Two classes in each school were randomly selected and randomly assigned intact for the treatment and the control groups. The treatment groups consisted of 129 students (Boys= 60, Girls= 69), and the control groups consisted of 130 students (Boys= 60, Girls= 70) respectively and their age was 16 years old.

The treatment groups underwent the TGFU for 40 minutes in a hockey game in PE classes twice a week for four weeks. While the control groups was followed Traditional Teaching in a hockey game in PE class as usual twice a week for four weeks. A pretest was conducted before the initiation of teaching approach, and a posttest was done after four weeks. The data collected were analyzed for the effectiveness of the TGFU and Traditional Teaching in the hockey game in PE class twice a week for four weeks.

A. Research Instruments

Games Performance Assessment Instruments (GPAI) was used to observe the effects of hockey tactical skills such as adjust, support, cover and guard [10]. The instrument consists of seven components, namely base, adjust, decision making, skill execution, support, cover and guard using a Likert scale from one (very poor performance) to five (very effective achievement). The reliability GPAI is more than 0.75 [2], [17], [19], [24], [26].

The State Self-Confidence Inventory (SSCI) was used to observe the state of self-confidence among school students in the hockey game in PE classes [7]. This instrument consists of 13 items using a Likert scale from one (low) to nine (high). The validity and reliability of SSCI is more than 0.95 [7], [53]. Researcher has given SSCI to two experts in language and two experts in PE from Faculty of Education in University of Malaya to be verified the usage and validity as the instruments was translated into Malaysian Language via back to back translation [56]. The pilot study that was conducted on 60 school students in schools that have the same characteristics indicates accepted reliability of 0.82 for GPAI and 0.88 for SSCI [57].

B. Procedure

A letter of authorization from the Division of Educational Planning and Research, Ministry of Education Malaysia, Johor State Education Department and District Education Office was submitted to the principal of two schools for the study purpose. Participation is voluntary, and the consent of the parents to all subjects obtained as subjects still under age. All PE teachers from two schools selected and three observers appointed from District Education Office underwent three days training courses and practical to ensure that the PE teachers are expertise in TGFU and Traditional Teaching Model and expertise in GPAI for the three of the observers.

To observe the effects of hockey tactical skills such as adjust, support, cover and guard in pretest and posttest, treatment and control groups consisted three of students in a group. The treatment group versus the control group in real situations hockey game for three minutes. Three observers have appointed to assess the tactical skills each group by using the GPAI form.

After the pretest, subjects were given 25-30 minutes to complete the SSCI. The researcher has cooperation from the school administrators to gather all the subjects in the school canteen and make sure the subjects answered all the items in the SSCI individually without any interaction. This was to avoid any bias in the subjects. The researchers also explained to the subjects that all their responses must be compared with the best athlete in each school who's represented the school for a hockey game in the district tournaments. All the answers must reflect subjects' true feeling related to the teaching and learning process they underwent in PE lessons.

After the pre-test, the treatment groups underwent the TGFU for 40 minutes twice a week for four weeks of a hockey game in PE classes. While the control groups underwent the Traditional Teaching of hockey game in PE classes as the usual five-minute warm-up, followed by activities progression, small games and cooling down the body in a learning session for 40 minutes twice a week for four weeks.

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After four weeks, a posttest was administered and derived from the treatment groups and the control groups administered as pre-test procedures.

C. Data Analysis

Data were analyzed using the program Statistical Package for the Social Sciences (SPSS) version 20.0. After four weeks following TGFU and Traditional Teaching classes in a hockey game for 40 minutes twice a week, a descriptive analysis was used to examine the mean scores of hockey tactical skills and state self-confidence in the control groups and the treatment groups. ANCOVA analysis then was used to determine the differences mean scores of hockey tactical skills and state self-confidence between the treatment groups and the control groups.

III. FINDINGS AND DISCUSSION

This study involved a quasi-experimental design and intact sampling, therefore the ANCOVA analysis was used. Table I shows the computer of the hockey tactical skills (adjust, support, cover, and guard) pretest mean scores of the school boys treatment group were (Mean= 2.07, SD= 0.46) and posttest was (Mean= 3.57, SD= 0.34). While the pretest mean scores for the school boys control group was (Mean= 2.03, SD=0.46) and posttest was (Mean= 2.65, SD= 0.39). After four weeks, mean enhancement scores of the treatment of school boys' group was 1.50 while the control school girls group was 0.62. Normality test for skewness (± 2.00) and kurtosis (± 2.00) showed a normal distribution for treatment and control groups.

The hockey tactical skills (adjust, cover, guard and support) pretest mean scores of the school girls treatment group was (Mean= 1.34, SD= 0.30) and posttest was (Mean= 3.21, SD= 0.51). While the pretest mean scores for the school girls control group was (Mean= 1.31, SD=0.30) and posttest was (Mean= 2.43, SD= 0.50). After four weeks, mean enhancement scores of the treatment of school girls' group was 1.87 while the control school girls group was 1.12. Normality test for skewness (± 2.00) and kurtosis (± 2.00) showed a normal distribution for treatment and control groups.

The state self-confidence pretest mean scores of the school boys treatment group was (Mean= 4.45, SD= 1.32) and posttest was (Mean= 5.64, SD= 1.09). While the pretest mean scores for the school boys control group was (Mean= 3.99, SD=0.87) and posttest was (Mean= 4.06, SD= 0.81). The mean enhancement scores of the treatment of school boys' group were 1.19 while the control school boys group was 0.07. Normality test for skewness (± 2.00) and kurtosis (± > 2.00) showed an abnormal distribution for treatment and control groups.

The state self-confidence pretest mean scores of the school girls treatment group was (Mean= 4.39, SD= 1.27) and posttest was (Mean= 5.62, SD= 1.00). While the pretest mean scores for the school girls control group was (Mean= 4.23, SD=0.84) and posttest was (Mean= 4.21, SD= 0.99). The mean enhancement scores of the treatment of school girls' group were 1.23 while the control school girls group was

decrease 0.02. Normality test for skewness (± 2.00) and kurtosis (± 2.00) showed a normal distribution for treatment and control groups. The normal Q-Q plot detrended Q-Q plot and box plot had showed a normal distribution for school boys' and girls' hockey tactical skills and school girls of state self-confidence.

The analysis of linearity, regression and Leneve's test (F=0.07, $p>$ .05) for school boys tactical skills, (F=0.46, $p>$ .05) for school boys tactical skills, (F=0.05, $p >$ .05) for school girls state self-confidence has been carried out and met the criteria of ANCOVA analysis. For statistical analysis, the confidence level was set at .05. To see the effect of the difference between the treatment group and the control group, ANCOVA was conducted by pre-test scores of both groups as the covariate. While, normality test, normal Q-Q plot, detrended Q-Q plot, box plot and Leneve's test (F=23.54, $p<$ .05) had showed abnormal distribution for school boys state self-confidence, the Mann-Whitney U test was conducted for school boys state self-confidence.

TABLE I
HOCKEY TACTICAL SKILLS AND THE STATE OF SELF-CONFIDENCE AMONG 16 YEARS OLD SCHOOL STUDENTS

Variable		Treatment Group (Boys $n = 60$) (Girls $n = 69$)		Control Group (Boys $n = 60$) (Girls $n = 70$)	
		Pretest	Posttest	Pretest	Posttest
Hockey Tactical Skills					
School Boys	Mean	2.07	3.57	2.03	2.65
	SD	0.46	0.34	0.46	0.39
	Skewness	0.40	-0.16	-0.26	0.51
	Kurtosis	0.83	0.44	0.07	-0.05
School Girls	Mean	1.34	3.21	1.31	2.43
	SD	0.30	0.51	0.30	0.50
	Skewness	0.84	0.14	0.78	0.80
	Kurtosis	-0.08	-0.16	-0.18	-0.05
State Self-Confidence					
School Boys	Mean	4.45	5.64	3.99	4.06
	SD	1.32	1.09	0.87	0.81
	Skewness	0.47	-1.46	0.06	0.09
	Kurtosis	-0.88	2.44	3.89	0.30
School Girls	Mean	4.39	5.62	4.23	4.21
	SD	1.27	1.00	0.84	0.99
	Skewness	-0.29	0.08	1.08	0.31
	Kurtosis	1.34	-1.35	1.69	0.86

Table II showed the mean score of hockey tactical skills posttest for treatment school boys group was adjusted to 3.56, while the mean score of posttest for the school boys control group was adjusted to 2.66 in this study. The mean score of hockey tactical skills posttest for the treatment of school girls' group was adjusted to 3.20, while the mean score of posttest for the school girls control group was adjusted to 2.44. Moreover, the mean score of state self-confidence posttest for the treatment of school girls' group was adjusted to 5.59 while the mean score of posttest for the school girls control group was adjusted to 4.24.

Table III showed a summary of ANCOVA analysis for hockey tactical skills (school boys and girls) and state self-

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confidence (school girls) between the treatment group and the group of 16 years old who participated in this study. ANCOVA analysis showed a significant difference between school boys treatment group with $F (1, 117) = 313.37$, $p < .05$; Cohen $d= 0.73$ compare to the control group in hockey tactical skills. ANCOVA analysis also showed a significant difference between school girls treatment group with $F (1, 136) = 92.62$, $p < .05$; Cohen $d= 0.41$ compare to the control group in hockey tactical skills. And, ANCOVA analysis showed significant difference between school girls treatment group with $F (1, 136) = 74.40$, $p < .05$; Cohen $d= 0.35$ compare to the control group in state self-confidence.

TABLE II
ANCOVA MEAN SCORE ADJUSTED OF THE TREATMENT AND CONTROL GROUPS OF THE HOCKEY TACTICAL SKILLS (BOYS AND GIRLS) AND STATE SELF-CONFIDENCE (GIRLS)

Variable	n		Pretest	Posttest	Adjusted Mean
Hockey Tactical Skills					
Treatment Group (Boys)	60	Mean	2.07	3.57	3.56
		SD	0.46	0.39	
Control Group (Boys)	60	Mean	2.03	2.65	2.66
		SD	0.46	0.34	
Treatment Group (Girls)	69	Mean	1.34	3.21	3.20
		SD	0.30	0.51	
Control Group (Girls)	70	Mean	1.31	2.43	2.44
		SD	0.30	0.50	
State Self-Confidence					
Treatment Group (Girls)	69	Mean	4.39	5.62	5.59
		SD	1.27	1.00	
Control Group (Girls)	70	Mean	4.23	4.21	4.24
		SD	0.84	0.99	

TABLE III
ANCOVA ANALYSIS OF HOCKEY TACTICAL SKILLS AND STATE SELF-CONFIDENCE AMONG 16 YEARS OLD SCHOOL STUDENTS

Source	SS	df	MS	F	ES
Boys Hockey Tactical Skills					
Between	23.87	1	23.87	313.37*	.73
Error	8.91	117	0.08		
Total	1200.00	120			
Girls Hockey Tactical Skills					
Between	20.11	1	20.11	92.62*	.41
Error	29.52	136	0.22		
Total	1156.13	139			
Girls State Self-Confidence					
Between	62.38	1	62.38	74.40*	.35
Error	114.03	136	0.84		
Total	3554.26	139			

Significant at p < .05

The normality test, normal Q-Q plot, detrended Q-Q plot and box plot in Table I had showed an abnormal distribution for school boy's state self-confidence. This shows the non-parametric test (Mann-Whitney U Test) must be carried out to examine the differences of state self-confidence between treatment school boys group and control school boys group.

Table IV showed the state self-confidence mean rank of the treatment school boy's group and control school boys group. Data showed the mean rank of the pre-test for the treatment of school boys' group was 64.47 while mean rank for the control school boys group was 56.53. After four weeks intervention, the mean rank of posttest for treatment school boy's group was increased to 83.36 while the control school boys group was decreased to 37.64.

TABLE IV
MEAN RANK OF STATE OF SELF-CONFIDENCE AMONG 16 YEARS OLD SCHOOL BOYS

State Self-Confidence	Boys Group	n	Mean Rank	Sum of Ranks
Pretest	Treatment	60	64.47	3868.00
	Control	60	56.53	3392.00
	Total	120		
Posttest	Treatment	60	83.36	5001.50
	Control	60	37.64	2258.50
	Total	120		

Table V showed the result of state self-confidence Mann-Whitney U test for the pretest and posttest. Mann-Whitney U test showed there was no significant state self-confidence of treatment and control school boys group in pre-test, $U= 1562.00$, $z= -1.27$, $p>. 05$. After four weeks of intervention, the result showed there were a significant difference of state self-confidence between treatment and control school boys group with $U= 428.50$, $z= -7.22$, $p< .05$. Since, there was a significant difference posttest between treatment and control school boys group; the median scores must carry out to examine the effect of groups.

TABLE V
RESULT OF SCHOOL BOYS STATE SELF-CONFIDENCE MANN-WHITNEY U TEST

State Self-Confidence	Pretest	Posttest
Mann-Whitney U	1562.00	428.50
Wilcoxon W	3392.00	2258.50
Z	-1.27	-7.22*

Significant at p < .05

The different state of self-confidence between the treatment and control school boys group was $z = -7.22$, and $N = 120$, with the value of r is 0.06. The r value obtained is calculated as the low of effect [58], [59]. Table VI showed the mean median rank of state self-confidence among school boys. The analysis showed the median, mean scores of treatment school boys for posttest were 5.85 while for the school boys control group was 4.00. Mann-Whitney U test showed there was a significant mean rank difference between treatment groups ($Md = 5.85$, $n = 60$) and the control group ($Md = 4.00$, $n = 60$), $U = 428.50$, $z = -7.22$, $p <.05$, $r = .06$ with low effect between groups.

This finding has proved that TGFU can enhance the mean scores hockey tactical skills and state self-confidence among 16 years old school boys and girls compare to the Traditional Teaching in the context of Malaysian. This means TGFU in a 40-minute lesson twice a week for four weeks can increase

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mean scores hockey tactical skills among 16 year old school boys and girls in the schools. Constructivism Learning Theory emphasizes learning in the real situation [60]. In TGFU, the applied of modification of mini hockey games can let the school students' play in the real situation. When the students are exposed to a new experience in mini-games in TGFU, the process of assimilation happens to filter the input. If the new experience cannot be assimilated, the students resolve the disequilibrium by changing the cognitive structure by accommodation. The process will repeat and continues until a stable state of equilibrium that students can adaptation the tactical skills in mini hockey games.

TABLE VI
MEDIAN SCORES OF STATE SELF CONFIDENCE AMONG 16 YEARS OLD SCHOOL BOYS

State Self-Confidence		Pretest	Posttest
Treatment Group	Median	4.00	5.85
	n	60	60
Control Group	Median	4.00	4.00
	n	60	60
Total	Median	4.00	4.69
	N	120	120

In TGFU, the students also had their autonomy to select the team members, and equipment compared to Traditional Teaching Model [13]. Students were more comfortable and enjoyed themselves as they could play with the team members that they selected themselves. The feeling of comfortable among the students can influence students' physiology. The feeling of comfortable and enjoying the games can reduce fear and anxiety among the students. By reducing fear and anxiety, the state of self-confidence can be increased and students can do better without any pressure [7], [52]. In TGFU, PE teacher and team members gave verbal persuasion to the students more often compare to Traditional Teaching Model.

This verbal persuasion can motivate students to do better than the Traditional Teaching, which was controlled by the teacher. In TGFU, students could also perform better than those in Traditional Teaching Model, which was more structured. If the students have gone even with a good performance for sure, the state of self-confidence will be higher. The performance and experience can increase the level of students' state of self-confidence [7].

This finding is consistent with previous studies [22]. Differences in these findings may be due to factors such as the type of game, duration of intervention and the age of the subject. If look at the type of game, previous studies have used a football game during the tournament [22], while in this research was the hockey game. The possibility of a hockey game is more difficult dominated by students if compared to a football game that does not require any equipment to perform the skills.

Experience also maybe affects this finding, in this study the majority of the school boys ages 16 years had never been actively involved in the game of hockey. While in previous studies involving female subjects aged 20.9 years involved actively in football game and have conducted a research for five weeks with a time of 90 minutes [22], while in this research only for 80 minutes for four weeks. This indicates factors such as experience, the level of involvement, gender, type of game contribute to this finding. This indicated that TGFU should be implemented among 16 years old school students because it is only use 40 minutes twice a week for only four weeks to enhance the tactical skills and state self-confidence without any financial expenses.

This finding is also consistent with the findings conducted in a game of handball [2]. Studies of school boys aged ten years in a primary school during PE class for four weeks using GPAI found that the group that followed TGFU increased handball tactical skills [2]. This mean invasion games can increase the tactical skills although handball tactical skills more easy to master if compare to the school boys in a hockey game that requires equipment and proper body coordination to master.

This study also compatible with studies conducted a study on the effectiveness of the three Tactical Style students of various levels in the hockey game [24], [29], [37]-[38]. He used the Spectrum Teaching Model Mosston and Ashworth with TGFU in the study. The study was conducted on 225 male students' ages 13 years who were divided into groups of high skill, medium skill and low skill for 15 weeks. Period during the 15-weeks intervention may contribute to the differences findings of this study, which involved only for four weeks. In addition, the studies was conducted a training program involving PE classroom and also co-curriculum [24], [29], [37]-[38].

While this study only fully involves students in physical education classes. A total of three observers from the District Education Officer with experience in the game of hockey has been specially appointed to assess the hockey tactical skills using GPAI instruments. The presence of the observers may avoid any refraction among the school students during their pre-test and post-test in hockey tactical skills.

In terms of state self-confidence, the finding is consistent with a study conducted to examine the effectiveness of three intervention strategies in psychology in maintaining the multi-dimensional instantaneous concerns among volleyball players aged average 16.35 [49]-[50]. The study was conducted on volleyball players under 18 who represented a state to the National Volleyball Championship Malaysian Schools Sports Council, 2008. The Competitive Sports Anxiety Inventory-2 Revised (CSAI-2R) instrument was used to study three components, namely the cognitive anxiety, somatic anxiety, and self-confidence.

ANOVA tests have shown significant differences in cognitive anxiety, somatic anxiety and self-confidence between the control group and the experimental one day before the match [49]-[50]. Despite intervention, subjects and instruments used by past researchers and the ones in the present study are different. However, the study shows significant improvement in the level of state self-confidence among 16 years old students in hockey tactical skills in a

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hockey game after four weeks of intervention (TGFU) compare to the Traditional Teaching Model.

IV. Conclusion

This study has indicated that TGFU in 40 minutes twice a week for four weeks in PE classes can significantly improve the level of hockey tactical skills and the level of state self-confidence among 16 years old school students.

Since, TGFU is able to improve the hockey tactical skills and state of self-confidence among school students, a suggestion should be proposed to the PE teachers and PE curriculum department to implement the TGFU in the PE classes among 16 years old school students. This study provided a more holistic and new knowledge in Constructivism Learning Theory and Self-Efficacy Theory that had provided tactical skills and state self-confidence among 16 years old school students in the hockey game.

References

[1] A. Wuest, and C. A. Bucher, *"Foundations of physical education and sport (16th ed)",* New York: McGraw-Hill, 2009.

[2] M. Balakrishnan, S. Rengasamy, and Mohd Salleh Aman, " Effects of teaching games for understanding approach on students' cognitive learning outcomes", *World Academy of Science, engineering and Technology, 53,* 2011.

[3] M. W. Metzler, *"Instructional models for physical education",* Boston, MA: Allyn & Bacon, 2000.

[4] P. Werner, R. Thorpe, and D. Bunker, "Teaching games for understanding: Evolution of a model*", Journal of Physical Education, Recreation and Dance, 67(1),* 1996, pp. 28-33.

[5] J. Butler, and B. J. McCahan*, "Teaching games for understanding as a curriculum model"*, In L. Griffin & J. Butler (Eds), Teaching Games for understanding: Theory, research, and practice (pp. 33-35). Windsor, Ontario, Canada: Human Kinetic, 2005.

[6] J. Y. Chow, K. Davids, C. Button, R. Shuttleworth, I. Renshaw, and D. Araujo, "The role of nonlinear pedagogy in physical education". *Review of Educational Research, 77(3),* 2007, pp. 251-278.

[7] A. Bandura, "Fearful expectations and avoidant actions as coeffects of perceived self-efficacy", *American Psychologist, 41,* 1986, pp. 1389-1391.

[8] M. Newton*, "The relationship between perceived motivational climate and dispositional goal orientation on selected indices of intrinsic motivation",* Paper presented at the Association for the Advancement of Applied Sport Psychology, Tahoe, NV, 1994.

[9] D. Kirk, and D. Macdonald, "Situation learning in physical education", *Journal of Teaching in Physical Education, 17,* 1998, pp. 376-387.

[10] S. A. Mitchell, L. L. Griffin, and J. L. Oslin, "Teaching sports skills": A tactical games approach (2nd ed), Champaign, IL: Human Kinetics, 2006.

[11] A. S. S. L. Wee, R. Shabeshan, and B. H. Lim, "The effectiveness of teaching games for understanding (TGFU) in improving the hockey dribbling skills among school girls", *International Journal of Health, Physical Education and Computer Science in Sports, 17(1),* 2015, pp. 129-133.

[12] D. Bunker, and R. Thorpe, "A model for teaching games in secondary schools", *Bulletin of Physical Education, 18,* 1982, pp. 5-8.

[13] J. E. Rink, *"TGFU: Celebrations and cautions"*, In J. Butler & L. Griffin (Eds), Teaching Games for Understanding: Moving globally (pp. 33-48), Champaign, IL: Human Kinetics, 2010.

[14] R. Thorpe, and D. Bunker, *"Preface",* In J. Butler & L. Griffin (Eds.), More teaching games for understanding, Moving globally (pp. xi-xv), Champaign, IL: Human Kinetics, 2010.

[15] D. Belka, *"Teaching children games",* Champaign, IL: Human Kinetics, 1994.

[16] M. Mosston, and S. Ashworth, *"Teaching physical education"* (5th ed), San Francisco: Benjamin Cummings, 2002.

[17] Y. K. Liu, *"Teaching games for understanding: Implementation in Hong Kong context",* Proceedings of the 2nd International Conference: Teaching sport and physical education for understanding, Association De International des Ecoles Superiors D' Education Physique, 2003.

[18] I. Rovegno, M. Nevett, and M. Babiarz, "Learning and teaching invasion game tactics in 4th grade: Instructional and theoretical perspective", *Journal of Teaching in Physical Education, 20(4),* 2001, pp. 341-351.

[19] M. Blomqvist, P. Luhtanen, and L. Laakso, "Comparison of two types of instruction in badminton", *European Journal of Physical Education, 6,* 2001, pp. 139-155.

[20] S. A. Mitchell, *"Teaching and learning games at the elementary level",* In L. Griffin & J. Butler (Eds.), Teaching Games for Understanding: Theory, Research, and Practice (pp. 55-70), Champaign, IL: Human Kinetics, 2005.

[21] D. S-M. Moreno, L. M. G. Lopez, M. S. D. V. Diaz, and I. S. Martinez, "Spanish primary school students' knowledge of invasion games", *Physical Education and Sport Pedagogy, 16 (3),* 2011, pp. 251-264.

[22] R. Psotta, and A. Martin, "Changes in decision making skill and skill execution in soccer performance: The intervention study", *Acta Univ Palacki Olomuc Gymn, 41(2),* 2011.

[23] I. Rovegno, and J. P. Dolly*, "Contructivism perspectives on learning",* In D. Kirk, D. Mcdonald, & M. O' Sullivan (Eds), Handbook of physical education (pp. 242-261). London, England: Sage, 2006.

[24] N. Sanmuga, *"The effects and sustainability's of training programmers using Teaching Games for Understanding (TGFU) with different teaching style on students with varying hockey skill levels"*, A paper presented at 1st Asia Pacific Sport in Education Conference, Adelaide, Australia, 2008.

[25] P. Webb, and P. Pearson, "An integrated approach to Teaching Games For Understanding", *Journal of Health, Physical Education, Recreation & Dance, 67(1),* 2008, pp. 28-33.

[26] J. A. Oslin, S.A. Mitchell, and L. Griffin, "The Game Performance Assessment Instrument (GPAI): Development and preliminary validation", *Journal of Teaching Physical Education, 17,* 1998, pp.231-243.

[27] R. P. Pangrazi, and C. M. Casten, "Dynamic physical education for elementary school children (15th ed)", San Francisco, CA: Cummings, 2007.

[28] J. F. Richard, and N. Wallian, *"Emphasizing students engagement in construction of game performance",* In L. Griffin & J. Butler (Eds.), Teaching games for understanding: Theory, research and practice (pp. 19-32), Champaign, IL: Human Kinetics, 2005.

[29] N. Sanmuga, *"A study on effectiveness of SET and SHT Teaching Modules in in acquiring general skills, knowledge and game play among students of varying skill levels in hockey"*, International Congress (AIESEP), A Coruna, 26-29 October 2010.

[30] S. Allison, and R. D. Thorpe, "A comparison of the effectiveness of two approaches to teaching games within physical education: A skill approach versus a games for understanding approach", *British Journal of Physical Education, 28(3),* 1997, pp. 9-13.

[31] L. L. Griffin, S. A. Mitchell, and J. L. Oslin, *"Teaching sports concepts and skill: A tactical games approach",* Champaign, IL: Human Kinetics, 1997.

[32] S. Harvey, *"Effects of teaching games for understanding on game performance and understanding in middle school physical education",* Electronic theses and dissertations, 2006.

[33] N. Holt, W. Strean, and E. G. Begoechea, "Expanding the teaching games for understanding model: New avenues for future research and practice", *Journal of Physical Education, 21(2),* 2002, pp. 162-177.

[34] T. Hopper, "Teaching games for understanding: The importance of student emphasis over content emphasis", *Journal of Physical Education, Recreation, and Dance, 73(7),* 2002, pp. 44-48.

[35] D. Memmert, and S. Konig, "Teaching games in elementary school", *International Journal of Physical Education, 44,* 2007, pp. 54-67.

[36] I. Mesquite, A. Graca, A. R. Gomes, and C. Cruz, "Examining the impact of a step game approach to teach volleyball on students' tactical decision making and skill execution during game play", *Journal of Human Movement Studies, 448,* 2005, pp. 469-492.

[37] N. Sanmuga, and G. Khanna, "A comparison Study of TGFU with Technical Training Model in Mini Game Performance, Speed and Accuracy among Junior Hockey players", *Pan-Asian Journal of Sports & Physical Education, 4 (1),* 2012.

[38] N. Sanmuga, and G. Khanna, "A comparative approach to teaching Malaysian school boys hockey using two different pedagogical styles", *Asian Journal of Exercise and Sports Science, 9 (2),* 2012.

[39] N. Sanmuga, Ahmad Hashim, K. B. Ong, Abdul Rahim Shariff, Mohd Sani Madon, and Nelfianty Abd Rasyhid, "Effect of teaching games of

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understanding in 5 versus 5 mini game play, cardiovascular fitness, leg power and 30m running speed among Malaysian School elite players", *Bristish Journal of Arts and Social Science, 11(2),* 2013.

[40] I. B. Tallir, E. Musch, K. Lannoo, and J. V. Voorde, *"Validation of video-based instruments for the assessment of game performance in handball and soccer",* Proceeding of the 2nd International Conference, Teaching Sport and Physical Education for Understanding, University of Melbourne, 2003.

[41] I. B. Tallir, E. Musch, M. Valcke, and M. Lenoir, "Effects of two instructional approaches for basketball on decision making and recognition ability", *International Journal of Sport Psychology, 36,* 2005, pp. 107-126.

[42] S. Harvey, R. Bryan, H. Wegis, and H. Van der Mars, "Effects of teaching games for understanding on game performance in middle school physical education", *Research Quarterly for Exercise and Sport, 78(1),* 2007, pp. 119-121.

[43] S. Harvey, C. J. Cushion, H. M. Wegis, and A. N. Massa-Gonzalez, "Teaching games for understanding in American high-school soccer: A quantitative data analysis using the game performance assessment instrument", *Physical Education and Sport Pedagogy, 15(1),* 2010, pp. 29-54.

[44] T. Bagherpour, Hairul Anuar Hashim, S. Saha, and Asok Kumar Ghosh, "Exploratory factor Trait Sports Confidence Inventory (TSCI) scale among adolescent taekwondo players", *Middle-East Journal of Scientific Research 11(1),* 2012, pp. 106-112.

[45] K. Bjom, *"The effects of highlight videotapes on the Self-Efficacy and State Sport-Confidence of female tennis players,* Master Theses, McGill University, 1995.

[46] N. Callow, and L. Hardy, "Types of imagery associated with sport confidence in netball players of varying skill levels", *Journal of Applied Sport Psychology, 13,* 2007, pp. 1-7.

[47] N. Callow, and A. Waters, "The effect of kinesthetic imagery on the sport confidence of flat-race horse jockeys", *Psychology of Sport and Exercise, 6,* 2005, pp. 443-459.

[48] B. H. Lim, "A Comparison of Multidimensional State Anxiety through Time-to-Event Paradigm of Malaysian Sailors in Sailing Competition", *ISN Bulletin, Malaysia, 1,* 2008, pp. 19-25.

[49] B. H. Lim, and B. Singh, "The Effects of Psychological Interventions on Pre Competition Multi- dimensional State Anxiety in Volleyball Players.Malaysian", *Journal of Sport Sciences and Recreation, 6 (1),* 2010, pp. 81-93.

[50] B. H. Lim, and B. Singh, "Gender Differences in the Effects of Psychological Interventions on Multidimensional State Anxiety Prior to Competition in Malaysian Volleyball Players", *MJSSR, 7(1),* 2011, pp. 7-22.

[51] T. M. Magyar, and D. L. Feltz, "The influence of dispositional and situational tendencies on adolescent girls' sport confidence sources", *Psychology of Sport and Exercise, 4,* 2003, pp. 175-190.

[52] K. A. Morrison, *"The examination of state sport self-confidence of secondary school boys and girls participating in coeducational and gender separated physical education classes",* Master Thesis, McGill University, Canada, 1999.

[53] T. Woodman, S. Akehurst, L. Hardy, and S. Beattie, "Self-confidence and performance: A little self-doubt helps", *Psychology of Sport and Exercise 11,* 2010, pp. 467-470.

[54] L. R. Gay, *"Educational research: Competencies for analysis and application (5th ed)",* Upper Saddle River, NJ: Prentice Hall, 1996.

[55] L. R. Gay, and P. Airasian, *"Educational research: Competencies for analysis and application (6th ed.)",* Upper Saddle River, NJ: Prentice Hall, 2000.

[56] R. W. Brislin, W. Lonner, and R. M. Thorndike, *"Cross-Cultural Research Methods",* New York: John Wiley & Sons, 1973.

[57] J. Nunally, *"Psychometric theory (2nd ed)",* San Fransisco, CA: Jossey-Bass, 1978.

[58] J. Cohen, "A coefficient of agreement from norminal scale", *Educational and Psychgical Measurements, 20,* 1960, pp. 37-46.

[59] L. Cohen, L. Manion, and K. Marrison, *"Research methods in education (7th ed)",* New York, NY: Routledge, 2011.

[60] J. Piaget, *"The child and reality"* (A. Rosin, Trans.), New York, NY: Grossman, 1973.

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