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THE EFFECT OF TEACHING GAMES FOR UNDERSTANDING COACHING CONTEXT ON ELITE MALAYSIAN SCHOOL PLAYER'S IN GENERA HOCKEY SKILLS AND MINI GAME PLAY

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ABSTRACT

The study investigated the effect of Teaching Games for Understanding coaching approach on elite Malaysian school hockey players as they have problem in term of speed and accuracy executing general hockey skills, and ball control, decision making, skill execution with players on the ball, as well as supporting player's role without ball in 5 versus 5 mini game situation. The study was a quasi-experimental equivalent pretest-posttest groups design whereby sports school players and district level hockey players (14-17 years old) randomly assigned to experimental groups of TGfU,(n= 15), and control group known as SDT (skill drills and Technical), (n=15). The TGfU model was exposed to tactical coaching approach, while the control group of SDT underwent predominantly skill-based coaching in hockey. The effectiveness of these two models was measured by Henry-Freidel-Field hockey test, and Game observation Instrument. Univariate of ANOVA was used to analyze the data, followed with analysis of covariance (ANCOVA) if the pretest results yielded significant difference. The results indicated that there were significant difference between TGfU and traditional approach of SDT on players posttest score on speed(1,28) =15.05, $p<0.05$, and in ball control, 5 versus 5 game play F(1,28) =4.25, $p<0.05$.Conclusion: The findings revealed that TGfU is better model for upgrading player's speed of executing general hockey skill, ball control of game play and more research has to be done to validate these two models in Malaysia in term of coaching.

KEYWORDS: Teaching Games for Understanding, Game Play, Coaching

INTRODUCTION

Recent development in the field of teaching and coaching games, as Teaching Games for Understanding (TGfU) seems to be dominant model across many parts oftheworld, in contrast TGfU seems to be at early stage of implementation in Malaysia. On the other hand, Malaysian coaches' senior and junior school coaches fancied the technical model of teaching via demonstration, command and practice styles. As a result, school and senior hockey players seems to be performing badly, comparing more advance country's players who have better and sound performance in term of speed and accuracy executing skills, and better ball control, decision making on 'what to do and how to do', players with the ball able to execute skills well in game situations and as well as players without ball able to support players with ball in game situations.

Bunker and Thorpe (1986) first proposed Teaching Games for Understanding (TGfU) in 1982 as an alternative to traditional, technique-led approaches to games teaching and learning. Since then, TGfU has attracted widespread attention from teachers, coaches, and researchers. The TGfU, was suggested as a better model of coaching and teaching games compared to a technical lead skills-based model (Hopper, 2002). The technical model lessons are considered too structured, with warming up activities and skill drills as the main components and students lack of chances to play in game play. The emphasis of this technical model is on acquiring technical skills for game play, while the cognitive skills

essential for effective participation in games are often undermined (Tuner &Martinek, 1999). As a result, it is suggested that students fail to transfer the skill and knowledge, tactical decision making elements of game performance to game plays.

Proponents of the TGfU model suggest that exposing students to game like experiences early in the teaching-learning process helps them acquire substantive declarative and procedural knowledge, thereby facilitating tactical decision making during game play (Crespo, Reid &Mileyo, 2004; Grehaigne& Godbout, 1995; Mitchell, Griffin & Oslin, 1994; Turner, 1996; Werner, Thorpe & Bunker, 1996).

The purpose of this study is to investigate the effect of TGfU coaching model compared to skilled based Technical model of SDT training on players, in term of in speed and accuracy executing general hockey skills among players. As well as in term of 5 versus 5 mini game performance of ball control, decision making (passing, dribbling, tackling and scoring), skill execution (passing, dribbling, tackling and scoring) with players on the ball, supporting role player without ball and among Malaysia's elite school hockey players after 12 units of coaching interventions.

The study specially addresses the following research questions: Is TGFU compared to SDT (Technical model) effective in speed and accuracy executing general hockey skills among players? Is TGFU compared to SDT (Technical mode) effective in ball control in 5 versus 5 mini game performances? Is TGFU compared to SDT (Technical model) effective in decision making (passing, dribbling, tackling and scoring) in 5 versus 5 mini game performance? Is TGFU compared to Technical model effective in skill execution (passing, dribbling, tackling and scoring) in 5 versus 5 mini game performance?Is TGFU compared to Technical model effective in role of supporting player 5 versus 5 mini game performance?

METHODOLOGY

The main methodology that proposed in this research is Quasi-experimental balanced group design pre and posttest to determine the effect on speed and accuracy executing hockey general skills, as well as 5 versus 5 in mini game performance in term offootball control, decision making (passing, tackling, dribbling, shooting), skill execution (passing, tackling, dribbling, shooting), role of supporting players,. The study was carried out over a period of 5 weeks (12 hockey training units).

The samples consists of n = 30 players of district and sports school players (14-17 years old) that were selected out of total 45 players and usage of 30 samples was limitation of this study using simple random technique and assign equally into groups of TGfU, n = 15 and SDT model, n = 15. The players had some experience playing hockey using skill based approach. Informed consent was obtained from all 30 samples and their parents or guardians through their coaches.

Two qualified and experienced hockey coaches were selected to train the samples using the two models. In order to maintain the fidelity in implementation of these models, following steps were taken. A simultaneous briefing session was conducted on how to implement these two different models, by the principal researcher. The two coaches were given modules and checklist on implementing two training models. A pre training stint was conducted by researcher on implementation of these training intervention and method on carrying out all the required test of measures. A preliminary interview was conducted by the principal researcher to make sure these teachers conducted the training units accordingly.

The players underwent three (3) training session per week (two (2) hour per session) for five weeks as training intervention. Group A has undergone TGfU model as guided model of training, while group B has gone through Technical model, a coach centred training model. The TGfU model uses mini games situations as main activities to improve student's tactical strategy, physical conditioning and skill components of the game. Whereas SDT model undergo skill drills method and mini game towards end of each lesson. The implementation of these two models was based on sports training principle and motor learning principle (Bompa, 1999; Fitts & Posner, 1967). The study utilized the following instruments to measure the effect of interventions on all the dependent variable of game play (ball control, decision making, skill execution and role of supporting players without ball), speed and accuracy hockey general skills.

The study utilized the following instruments to measure the effect of interventions on all the dependent variables of game play (ball control, decision making, skill execution and role of supporting players without ball), speed and accuracy of hockey general skills.This research used Henry Freidel Field Hockey Test (H.F.F.H.T) adapted from Turner and Martinek (1999) and Sanmuga (2008) was used to measure general field hockey tests in speed and accuracy of executing hockey skills. This test incorporated the skills of ball control, dribbling, tackling, evading an opponent and shooting. The reliability using H.F.E.H.T in Malaysian environment (secondary school boys) was calculated using Cronbach's alpha at .81 for speed of execution and .72 for accuracy of executing skill using Malaysian secondary school students (Sanmuga, 2008).

This study adopted nonhabitual game play observational instrument used by Turner and Martinek (1999) and adapted by permission from Mitchell, Oslin and Griffin (2005). The game performances of ball control decision making and skill execution by players on the ball were evaluated by using Game Observation Instrument suggested by Turner and Martinek (1999).

The dependent variables of ball control, decision making, skill execution and role of supporting players were coded 5,4,3,2 for successfully (5- very effective performance; 4-effective performance, usually; 3-moderately effective performance, sometimes; 2-very weak performance and 1- very weak performance, never) for unsuccessful ball control skill, decision making (dribbling, tackling, passing and scoring) as well as skill execution (dribbling, tackling, passing and scoring) and role of supporting players.

An experienced and qualified Malaysia Sports School hockey coach was trained to code all the dependent variables using game play observational instrument by watching all two video tape of 5 versus 5 game play situations. As for inter coder reliability, based on the 20 players featured in three game situations of 5 versus 5 the agreements between the coder and principal researcher were 89% for ball control, 81% for decision making and 88% for skill execution and supporting role 89%.

The dependent variables for 5 versus 5 game play for ball control, decision making (passing, dribbling, tackling and scoring) and skill execution (passing, dribbling, tackling and scoring) players without ball and role of supporting players (players without ball) were calculated with total marks based on successful and unsuccessful responses (5-1 mark range) for each dependent variable of game play. While for general hockey skill speed and accuracy was analysed based on speed score represented in time and accuracy was a total score out of nine marks. The effect of the TGfU and Technical training model at pre-test and post-test were analysed using SPSS version 19, using ANOVA. In addition ANCOVA (as pre-test score was used as covariate) and were used to confirm the results when there were significant difference at base line level.

FINDINGS

Speed and Accuracy

Table 1: Pre-Test and Post-Test Score for Speed and Accuracy Executing Hockey Skills

Skills	Model	*Mean*	*SD*	*N*	*P*
Speed Executing	**Pretest**				
	TGfU	10.48	2.41	15	$F(1,28)=4.03$, $p>0.05$
	SDT	12.56	3.17	15	
	Posttest				
	TGfU	9.76	.615	15	$F(1,28)=15.05$, $p<0.05$
	SDT	11.45	1.57	15	
Accuracy Executing	**Pretest**				
	TGfU	5.40	2.38	15	$F(1,28)=0.32$, $p>0.05$
	SDT	5.53	1.59	15	
	Posttest				
	TGfU	7.13	1.59	15	$F(1,28)=3.08$, $p>0.05$
	SDT	5.80	2.11	15	

As for speed, univariate ANOVA indicated no significant difference between TGfU(*M/SD*: 10.48±2.41), and SDT(*M/SD*: 12.56±3.170,($F(1,28)=4.03$, $p > 0.05$) and for accuracy too indicated no significant difference between TGfU(*M/SD*:5.40±2.28) and SDT(*M/SD*: 5.53±1.59), ($F(1,28)=0.32$, $p > 0.05$) at pre-test level. Whereas post-test resultsindicated there was significant difference between TGfU (*M/SD*: 9.76±.615) and SDT model *(M/SD*: 12.56±3.17) on speed(1,28)=.15.05, $p < 0.05$. TGfU seemed to be better model for speed of executing hockey general skills. However for accuracy, post-test results indicated, there was no significant difference between TGfU (*M/SD*: 7.13±1.59) and SDT model (*M/SD*: 5.80±2.11),$F(1,28)= 3.80$, $p > 0.05$.Table 1 indicate the mean and SD for speed executing hockey skills at pre and post-test.

Ball Control, Decision Making, Skill Execution and Supporting Player's Role in 5 versus 5

Table 2: Pre-Test and Post-Test Score for Ball Control, Decision Making and Skill Execution

Skills	Model	*Mean*	*SD*	*N*	*P*
Ball Control	**Pretest**				
	TGfU	3.13	.351	15	$F(1,28)= .651$, $p> 0.05$
	SDT	3.00	.534	15	
	Posttest				
	TGfU	3.53	.516	15	$F(1,28)= 4.25$, $p< 0.05$
	SDT	3.10	.593	15	
Decision Making	**Pretest**				
	TGfU	2.90	.351	15	$F(1,28)= 3.32$, $p> 0.05$
	SDT	2.65	.398	15	
	Posttest				
	TGfU	3.28	.311	15	$F(1,28)=4.85$, $p< 0.05$
	SDT	2.96	.461	15	
Skill Execution	**Pretest**				
	TGfU	2.90	.311	15	$F(1,28)= 5.32$, $p< 0.05$
	SDT	2.63	.281	15	
	Posttest				
	TGfU	3.30	.330	15	$F(1,28)= 1.64$, $p> 0.05$
	SDT	3.11	.450	15	

Ball Control, decision making, skill execution, supporting players in 5 versus 5 game playUnivariate ANOVA test indicated there was no significant difference between TGfU with SDT training model on ball control in 5 versus 5 game play at pre-test, $F(1.28)= .651$, $p>0.05$ (TGfU, *M/SD*: 3.13±.351, $n = 15$ and SDT, *M/SD*: 3.00±.534:, $n=15$). However

post-test result indicated significant difference between TGfU (M/SD: 3.53±.516) and SDT model (M/SD: 3.10±.593), $F(1,28)=4.25$, $p<0.05$. Table 2 illustrates the results mean and SD for ball control. TGfU seems to be significantly better training model after training intervention based on mean score, TGfU: 3.53±.516, SDT: 3.10±3.10 at post-test level.

As far as overall decision making indicated univariate ANOVA indicated significant difference between TGfU and SDT model at pre-test, $F(1,28)=5.32$, $p<0.05$ (TGfU, *M/SD*: 2.90±.311, n = 15 and SDT, *M/SD* : 2.63±.281, n=15). However overall post-test, result for decision making indicated the was no significant difference between TGfU, (*M/SD*: 3.28±.311, n=15) and SDT model (*M/SD*: 2.96±.461), n = 15 $F(1,28)=1.64$, $p>0.05$.Univariate ANOVA, $F(1,28)=.5.32$, $p<0.05$ indicated for overall skill execution (passing, dribbling, tackling and scoring) at pre-test indicated significant difference between TGfU (M/SD:2.90 ±3.11) and SDT training model (M/SD:2.63±.281).

UnivariateAnova, indicated no significant difference for overall skill execution at post-test (1,28) =1.64, $p>0.05$ between TGfU (M/SD: 3.30±.330) and SDT training model (3.11±.45). This result was confirmed using analysis covariate (ANCOVA), the results too indicated no significant difference between these two models in for skill execution, $F(2,27)$ =0.15, p>0.05. The results presented in table 3 and the estimated marginal means for post-test skill execution presented in table 4.

Table 3: Analyses of Covariance Summary for Skill Execution

Source	Sum of Squares	Df	Mean Square	F	Sig.
Model	.002	1	.002	.015	.904

***p*<0.05

Table 4: Estimated Marginal Means for Skill Execution

95% Confidence Interval				
Model	**Mean**	**SE**	**Lower Bound**	**Upper Bound**
TGfU	3.22[a]	.095	3.02	3.41
SDT	3.20[a]	.095	3.00	3.39

As for supporting player variable, univariateANOVA indicated there was significant difference TGfU model (M/SD:3.40 ±, .632, n=15) with SDT model (M/SD:2.67±.817, n=15) at pre-test level, $F(1,28)$ =7.56, P<0.05. As for post-test, findings indicated, there was significant difference between TGfU (M/SD: 3.67±.488, n=15) and SDT model M/SD: 3.20±.676, n=15), $F(1,28)$ =4.70, P<0.05.

Table 5 illustrates the results mean and SD for role of supporting players. This result was checked again using analysis covariate (ANCOVA), the results indicated no significant difference between these two models in role of supporting players, $F(2,27)$ =.644, p >0.05 as presented in table 6 and the estimated marginal means for post-test supporting players role without ball presented in table 7.

Table 5: Pre-Test and Post-Test Score for Supporting Players

Model	*Mean*	*SD*	*N*	*P*
Pretest				
TGfU	3.40	.632	15	$F(1,28)=$
SDT	2.67	.817	15	7.56, $p< 0.05$
Posttest				
TGfU	3.67	.488	15	$F(1,28)=4.70$,
SDT	3.20	.676	15	$p<0.05$

Table 6: Analyses of Covariance Summary for Supporting Players

Source	Sum of Squares	Df	Mean Square	F	Sig.
Model	.175	1	.175	.644	.429

**$p<0.05$

Table 7: Estimated Marginal Means for Supporting Players

95% Confidence Interval				
Model	Mean	SE	Lower Bound	Upper Bound
TGfU	3.52[a]	.143	3.23	3.81
SDT	3.35[a]	.143	3.05	3.64

DISCUSSIONS

There was significant improvement speed in executing hockey general skill among players using TGfU model after intervention. This finding supports the importance continuous small sided mini game without skill drills activity ableto enhance speed of executing hockey skills, (Aziz, Chia &Teh, 2000; Wassmer & Mookerjee, 2002). TGfU model through mini game activities enable the players to build up superior neuromotor coordination, and this findings parallel with the motor learning principle players have better neuromuscular, eye-leg coordination, fast reflexes, motivation and high concentration to sprint (Wrisberg, 1993). The achievement of TGfU in speed was parallel with previous research (Nevett, *et al*., 2001). This finding supports the TGFU model as suitable training model in improving speed of scoring towards goal using skill drills activities mini and suitable playing in turf hockey. However, findings indicated no significant between these two models in term of accuracy of executing hockey skills, therefore more research need to be done in future.

These findings show that TGfU model compared to SDT was significantly more effective at the post-test for ball control in 5 versus 5 game plays. One of the reasons for this improved performance in ball control as suggested from the model application of players cantered mini game, which advocated guided discovery method assist the players to improve tactical decision making and improve how they execute passing, dribbling, scoring hockey skills in 5 versus 5 game plays. This finding supports that the TGFU model is an important model for learning as it develops high order of thinking and training motor skills in decision making, (Bunker & Thorpe, 1986) and Light (2003).

Improvement in players decision making in 5 versus 5 based on the content knowledge were taught “what to do” and “how to do” in their 5 weeks training with TGfU model, as the fourth steps in teaching the TGFU model. This finding was parallel and further supports motor learning theory framework that suggests that there is linear relationship between motor performances of ball control with acquisition of game knowledge a through the mini game (Denis, 1993; Anderson, 1976). The present findings on ball control improvement through TGfU in 5 versus 5 among sports school players were parallel with previous findings in soccer and hockey (Sanmuga & Khanna, 2012; Sanmuga, 2008; Harvey, 2003; Light & Fawns, 2003; Turner & Martinek, 1999) and badminton (French, Werner, Taylor, Hussey, & Jones, 1996).

As for overall decision making and skill execution of passing, dribbling, scoring and tackling indicated no significant difference between using TGfU, compared SDT model. However based on mean score TGfU seems to be more effective compared to SDT. This findings in supports the findings of field hockey (Turner & Martinek, 1999), badminton (Lawton, 1989), soccer and volleyball (Mitchell, Oslin & Griffin, 1994).

As role of supporting players findings indicated no significant difference between TGfU and SDT, probably too short intervention period. This finding similar with previous findings by Sanmuga and Khanna (2012) using India junior hockey detected no significant difference between TGfU and Technical model.

However this findings in contrast with findings by Pritchard, Hawkins, Wiegand& Metzler (2008) using *n* =20 volleyball lesson indicated Sport Education Model showed significant improvement in supporting in adjust their position to support their teammate. Therefore, the role of supporting players (players without ball) in providing opening up for teammate to pass ball, need longer period of training to improve their performance especially positioning, timing tactics and skill execution too. Game player whether players with or supporting players without ball needs to undergo learning process about game constitute such as cooperation and understanding during game play in order to improve game performance.

Therefore, supporting players role in adjusting their position to receive ball need longer period of learning and training within game situations. Based on findings of using TGfU original model and Tactical Game model, the study revealed that Malaysian sport school hockey player with tactical and skill understanding "what to do and how to" which benefited them in term of ball control, decision making (passing, dribbling, tackling and scoring) and skill execution (passing, dribbling, tackling and scoring) as well as cardiovascular fitness (vo_2 max).

Therefore, we modified the original model of TGfU in adding dimensions of, (i) what tactics to use in order to score goals and how to execute scoring skills. (ii) what tactics to use in order to defend goals and how to execute defending skills and (iii) What tactics to use in order to restart game and how to execute restart skills as indicating improvised model of TGfU.

CONCLUSIONS

In conclusion, coaches and teachers in Malaysia should adopt TGfU model with small sided mini game situation such 3 versus 3 or 4 versus 3 or 5 versus 5 small sided game approach in training in order to improve speed and ball control as been proven from this research. TGfU approach seems to be suitable coaching method to train hockey player to meet the present changes the rule of hockey especially in penalty flick situations (draw after extra time), whereby the new ruling requires the players to play 1 versus 1 (goal keeper vs 1 striker). However, more research has to be done on how to TGfU would improve other components of game play especially skill execution, supporting players through players positioning.

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