EFFECTS OF TEACHING GAMES FOR UNDERSTANDING APPROACH ON STUDENTS' LEARNING OUTCOMES

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Thesis Submitted to the Faculty of Education, University of Malaya In Fulfilment of the Requirements for the Degree of Doctor of Philosophy

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Synopsis

Effects of Teaching Games for Understanding Approach on Students' Learning Outcomes

By

Malathi Balakrishnan

The present study investigated the effects of Teaching Games for Understanding (TGfU) approach on students' learning outcomes. The study employed a quasi-experimental non-equivalent pretest-posttest control group design. Seventy-two (72) year four primary school physical education students from four intact classes were randomly assigned to an experimental group (n = 36) and a control group (n = 36). The experimental group students were exposed with TGfU approach and the control group students were with the Traditional Skill approach for handball game. The research was carried for six weeks in a primary physical education school setting. Research instruments used in this study were the Game Performance Assessment Instrument (GPAI) to measure students' tactical understanding and decision making in 3 versus 3 game situations; Situational Motivational Scale Instrument to evaluate students' motivation after the game session and 30 meter handball dribbling skill test to measure students' skill performance. Reliability and validity of the instruments were assessed in the pilot study. Quantitative data were analyzed using Analysis of

covariance (ANCOVA) and Mann-Whitney *U* test. Further focus group interview data were transcribed, coded and analyzed with cross-case analysis.

The major findings of this study revealed that there was a significant main effect of treatment on students' learning outcome. ANCOVA analysis revealed that there was significant main effect of TGfU approach on students' cognitive learning outcome ($F(1, 69) = 248.83$, $p < .05$). Also it showed that there were significant main effects of TGfU approach on students' psychomotor learning outcome ($F(1, 69) = 37.44$, $p < .05$). The Mann- Whitney *U* test result revealed students' situational motivation was significant: $U = 35.5$, $z = -6.95$, $p < .05$. The TGfU approach group students had an average mean rank of 53.5 compared to traditional skill approach students' average mean rank of 19.40. The result showed that the TGfU approach enhances students' situational motivation in handball game. The evidence gathered from the qualitative data showed that students with TGfU had better cognitive understanding in decision making and problem solving ability compared to students taught under the traditional skill approach.

The findings of this study have theoretical significance as well as pedagogical implications. In addition the findings of this study suggested the importance of TGfU approach to improve primary student's tactical understanding and decision making in handball. This study also helps to inform a better physical education game learning approach for students and provide suggestion for future research using TGfU approach.

Sinopsis

Kesan Pendekatan Pengajaran Permainan Untuk Pemahaman Terhadap Hasil Pembelajaran Murid

Oleh

Malathi Balakrishnan

Kajian ini menyelidik kesan menggunakan pendekatan Pengajaran Permainan Untuk Pemahaman (*Teaching Games for Understanding*) terhadap hasil pembelajaran murid. Kajian ini menggunakan reka bentuk kuasi eksperimen dengan ujian pra dan pasca. Seramai 72 murid tahun empat dari empat buah "intact" kelas di sebuah sekolah rendah telah dipilih secara rawak sebagai kumpulan experimental (n = 36) dan kumpulan kawalan (n = 36). Rawatan eksperimen melibatkan pendekatan Pengajaran Permainan Untuk Pemahaman untuk kumpulan experimental sementara kumpulan kawalan melibatkan pendekatan Tradisional *skill* permainan untuk permainan bola baling. Kajian ini dijalankan selama enam minggu. Instrumen dalam kajian ini adalah Instrumen Ujian Prestasi Permainan (GPAI), Skala Motivasi Situasi (SIMS) dan 30 meter ujian mengelecek bola baling. Kesahan dan kobolehpercayaan instrumen-instrumen dalam kajian ini telah ditetapkan pada kajian rintis.

Dapatan kajian dari Ujian ANCOVA menunjukkan terdapat kesan utama pendekatan pengajaran terhadap hasil pembelajaran kognitif murid (F (1, 69) = 248.83, $p < .05$). Keputusan ini menunjukkan bahawa pendekatan Pengajaran Permainan Untuk Pemahaman mempengaruhi hasil pembelajaran kognitif murid. Dapatan kajian

dari Ujian ANCOVA menunjukkan terdapat kesan utama pendekatan pengajaran terhadap hasil pembelajaran psikomotor murid (F (1, 69) =37.44, $p < .05$). Keputusan ini pula menunjukkan bahawa pendekan Pengajaran Permainan Untuk Pemahaman juga mempengaruhi hasil pembelajaran psikomotor murid. Analisis Ujian-*U* Mann-Whitney menunjukkan terdapat perbezaan signifikan di antara pendekatan Pengajaran Permainan Untuk Pemahaman dan pendekatan Tradisional *skill* permainan $U = 35.5$, $z = -6.95$, $p < .05$ terhadap motivasi murid. Kumpulan eksperimental menunjukkan purata min rank 53.5 berbanding dengan kumpulan kawalan 19.40. Keputusan ini menunjukkan pendekatan Pengajaran Permainan Untuk Pemahaman mempengaruhi motivasi situasi murid dalam permainan bola baling. Dapatan hasil kajian dari data kualitatif menunjukkan murid-murid yang melalui pendekatan Pengajaran Permainan Untuk Pemahaman mempunyai pemahaman membuat keputusan dan menyelesaikan masalah dalam permainan bola baling berbanding dengan kumpulan kawalan yang didedahkan dengan pendekatan Tradisional *skill* permainan.

Dapatan kajian ini menunjukkan signifikan kajian dan implikasi teori dan praktikal menggunakan pendekatan Pengajaran Permainan Untuk Pemahaman terhadap hasil pembelajaran murid. Dapatan kajian ini juga mencadangkan kepentingan meningkatkan Pemahaman taktikal dan membuat keputusan murid-murid tahun empat dalam permainan bola baling menggunakan pendekatan Pengajaran Permainan Untuk Pemahaman. Dapatan kajian menambah ilmu pengetahuan tentang bagaimana menambahkan pengetahuan murid terhadap pemahaman permanian. Kajian ini juga mencadangkan beberapa saranan untuk kajian lanjut menggunakan pendekatan Pengajaran Permainan Untuk Pemahaman.

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Chapter 1: Introduction

Overview

The chapter begins by providing overview of background of the study and the problem statement of physical education games teaching. It is followed by purpose of the research, research questions, rationale of the study, conceptual framework and significant of the study. Finally, definition of the terms and the chapter summary will conclude this chapter.

The physical education program experience has its unique contribution to students' well being (Cai, 1998; Darst & Pangrazi, 2006; Wuest & Butcher, 2006). Wuest and Butcher (2006) defined physical education as a process that uses physical activity as a means to help individuals acquire learning such as skills, fitness, knowledge, and attitude that contribute to their optimal development and well being. On the other hand, Darst and Pangrazi (2006) defined physical education as a learning process that focuses on increasing knowledge and affecting attitudes and behavior relative to physical activities, including exercise, sport, games, dance, aquatic activities, and outdoor adventure activities. It is an integral part of the total education program that contributes primarily through physical activity experiences, to the total growth and development of all students.

Melograno (1996) explained that physical education program give attention to all learning domains of psychomotor, cognitive, and affective. Cognitive outcome of learning encompasses knowledge to interpret an offensive and defensive move; intellectual abilities to synthesize such as to adjust the defense to a change in offence and evaluation components to compare the game plans**.** Psychomotor outcome of learning encompasses all observable human motion ranging from basic fundamental movement to modifying and creating aesthetic movement pattern. Affective outcome encompasses likes, dislikes, attitudes, values from a willingness to receive and respond.

Goals of physical education programs are to help students acquire the necessary learning outcome of knowledge, skills, and appreciation to participate in physical activity throughout their lifespan (Butcher & Wuest, 2006). In line with this the elementary school physical education program goals are to develop learning of cognitive, psychomotor, and affective outcome for students by providing developmentally appropriate programs. The programs enable students to acquire learning outcome of basic foundation of movements, skill and strategies needed to participate in a variety of games and sports in adults (Pangrazi & Casten, 2007).

Sport related games are a component in the school physical education program that have the potential to help students develop their thinking skill, problem solving skills, as well as offering them an opportunity to collaborate with other learning outcome (Griffin & Sheehy, 2004). Research had shown that early experiences of games learning are crucial for children to continue participating in physical activity throughout their lives (Chow et al., 2007; Kirk, 2005b). Therefore, primary schools are expected to deliver quality early learning experiences while the contribution of Physical Education in secondary school may come too late to affect the majority of children’s involvement in games (Chow et al., 2007; Kirk, 2005b).

The outcome of learning games in school is one of the most important components in the physical education curriculum because 65% of time spent in physical education is allotted to games (Werner, Thorpe, & Bunker, 1996). Games are competitive by design, meant to test one’s physical ability against another. This also involves the cognitive such as tactical understanding which is important in physical education (Oslin, 2005). Games also are enjoyable lifetime physical activities and they are based on sport which is an important institution in a society (Chow et al., 2007; Mitchell, Oslin, & Griffin, 2003). Educators who implement the games instruction approach in physical education at all levels value game playing as a physical activity in its own right (Mitchell et al., 2003). Therefore, students with varying skill level should be given the opportunity to participate and upgrade their game performance outcome (Bunker & Thorpe, 1982; Holt, Strean, & Begoechea, 2002; Rovegno, Nevett, & Babiarz, 2001).

The purpose of teaching games is to enable students to construct meaning in a game education (Butler & McCahan, 2005; Chow et al., 2007). Meanwhile according to Werner et al. (1996), the purpose of teaching games in physical education is to improve students' game performance and to improve their enjoyment and participation in games, which will lead to a better healthy lifestyle. According to K. T. Thomas and Thomas (1994), game performance can be divided into cognitive and skill components. The cognitive components include tactical understanding, decision making and knowledge; the skill components include motor execution (e.g., dribbling, shooting, passing). Quality of decision making in the game situation is considered as important as execution of motor skill.

Games that children play during the school physical education program make a valuable contribution to their growth and development (Pangrazi & Casten, 2007). According to Pangrazi and Casten (2007), games are a laboratory where students can apply physical skills in a game-like situation. While playing games, children can (a) learn game strategies, (b) develop a tactical understanding of how to adjust, support, and cover, as well as (c) learn the rules of decision making and how to behave in a variety of competitive situations through games (Oslin, 2005). Games can also contribute to the development of large muscle groups for children and enhance physical skills such as running, dodging, and learning how to start and stop the ball under control. Children learn to apply strategies during game play and, at the same time, they learn just how important it is to be mentally alert at all times. Honing mental skills in addition to physical skills is critical to game performance outcome (Pangrazi & Casten, 2007). Since games are a significant component of the physical education curriculum, they can be used as a pedagogical approach to motivate students to participate in game performance outcome (Mauldon & Redfern, 1981; Sanmuga, 2008; Werner & Almond, 1990; Werner et al., 1996). Therefore, students can be given the opportunity to participate, modify games to meet their needs, foster understanding of game components, and upgrade their game performance outcome in physical education classes (Pangrazi & Casten, 2007; J. F. Richard & Wallian, 2005; Sanmuga, 2008).

Increasing attention paid to how learning theory can enhance students learning in physical education pedagogy has contributed interest in the *Teaching Games for Understanding* (TGfU) approach in games teaching (Bunker & Thorpe, 1982; Butler & McCahan, 2005; Kirk & Macdonald, 1998; Rovegno & Dolly, 2006; Webb & Pearson, 2008). TGfU is a student-centered pedagogical approach aimed at generating understanding of all aspects of games (Bunker & Thorpe, 1982; Mitchell, 2005; Webb & Pearson, 2008). According to Webb and Pearson (2008), the TGfU approach places emphasis on the game that the students play, where tactical and strategic problem are posed in a modified game environment, eventually drawing students to make decisions. It places the focus of the lesson on the students in a game situation where cognitive components such as tactics, decision making, and problem solving are critical. Literature on the TGfU approach has also been proven to provide the link between tactics and skills of the game (Mitchell, Oslin, & Griffin, 2006).

Research from other countries such as the United States of America, Australia, New Zealand, Canada, and Singapore have proven that games can provide the context for students learning outcome beyond technical skill knowledge to include capacity to solve problems and collaborating through their roles as game players (Corbin, 2002; Griffin, Mitchell, & Oslin, 1997; Holt et al., 2002; Light, 2003, 2006; Light & Georgakis, 2005; Oslin, Mitchell, & Griffin, 1998; Rovegno et al., 2001; Thorpe, Bunker, & Almond, 1984).

The Malaysian primary physical education syllabus introduces games and sport skills at the second level after students have gone through the basic movement skills in level one (Ministry of Education, 1998). Physical education teachers are required to introduce games and sports skills at the second level with 14 teaching periods of three games in every year to enable students to master the basic game skills before they move to secondary school. Although teachers are following the syllabus developed at centralized level by the Curriculum Development Center, at the school level, teachers need to adapt approaches and the pedagogy to suit the student needs. Physical education researchers in Malaysia have debated the role and function of the physical education curriculum and how the pedagogy needs to be taught in school (De Vries, 2008; Julismah, 2000; Rengasamy, 2006; Salleh, 1997; Wee, 2001). Therefore, a new intervention in learning pedagogy is needed to make physical education more interesting for students' learning outcome. The traditional skill approach to games teaching follows a series of highly structured lessons, which rely on skill drills and carefully analyzed techniques (Salleh, 1997). The offensive and defensive game tactics are usually taught in the traditional skill approach over several stages of skill practice (Sanmuga, 2008). At the game stages in the traditional skill approach, teachers are primarily concerned with developing a student's motor control of an object and utilizing a combination of experiences through which extending, refining, and application tasks are learned leading toward skilfulness (Werner et al., 1996). The general belief is that once the skills have been mastered, the student can transfer these skills into a game situation. However, too much emphasis on learning skill and not enough on learning how to play skilfully in the game situation have led to gaps in game-performance learning outcome (Bunker & Thorpe, 1986a).

Introduction of TGfU in the Physical Education curriculum is in line with development in the Ninth Malaysia Plan and the Education Blueprint which gives much emphasis on improving teaching and learning approaches in school. This is because teachers are expected to source out effective ways to generate effective learning outcome for student's performance (Sanmuga, 2008; Wee, 2001). To help the primary students to enjoy games is to teach them how to play the game (Bell & Hopper, 2003). The TGfU approach enables students to appreciate the joy of game playing that leads to a desire to learn tactical understanding that will improve their game performance outcome (Griffin & Patton, 2005). A theoretical framework based on constructivist learning theory and self determination theory with TGfU was designed for the purpose of this study. Therefore, the purpose of the research is to investigate the effects of the TGfU approach on students learning outcome in primary physical education class. Specifically, the aim of this study is to investigate using a quantitative approach the effects of the TGfU approach on improving students' learning outcome such as in: (a) cognitive aspects of tactical understanding and decision making, (b) psychomotor aspects of skill performance, and (c) affective aspects of motivation in primary physical education. Further, the study intends to explore in depth the student learning experience of decision making and problem solving in games.

Background of the Study

Education in Malaysia is an effort toward further developing the potential of individuals in a holistic and integrated manner so as to produce individuals who are intellectually, spiritually, emotionally, and physically balanced and harmonious, based on a firm belief and devotion to God. Reflecting of the concepts of the development of the “Whole Child,” the Malaysian National Philosophy of Education supports the “total school program” designed to ensure the optimum growth and development of school children through physical activity (Ministry of Education, 2001). Improving students’ thinking has been a recognized goal of Malaysian education since the introduction of the integrated primary school curriculum (KBSR) since the mid-1980s. The pedagogy seeks to make learning more stimulating, motivating and meaningful by actively involving learners in the process of learning in relation to reality (Abtar, 2001; Sharifah, 1999; Sharifah & Lee, 2005; Wee, 2001).

Meanwhile the physical education curriculum in Malaysia emphasizes learning through activities that enable students to acquire knowledge, skills, and values (Sanmuga, 2008). Curriculum development trends in 2003 proposed innovative strategies in teaching and learning which underscore student ability of problem solving and decision making in learning outcomes (Sharifah, 2007). The primary physical education curriculum comprises three important aspects such as fitness, games and sport skills and sports related issues. Students are given opportunity to gain skill knowledge and experience with the planned activity. Students’ active participation will express their emotion, develop their mental processes, foster their healthy relationship with friends and carry out physical activity in a safe and conducive environment (Ministry of Education, 2002). More specifically teaching approaches proposed in the Primary Physical Education syllabus in Malaysia are:

- Students' active participation
- Creative interaction with friends and environment
- Keep the records of students learning (Ministry of Education, 2002).

All primary schools in the country follow a standardized physical education curriculum and suggested goals formulated by the Centre of Curriculum Development in the Ministry of Education. All the schools are required to teach a number of hours per week as required by the Time-table Regulation (Ministry of Education, 2002). The scheduling of physical education periods in the school time table is at the discretion of the individual school. Teaching approaches and pedagogies are the responsibility of the respective schools (Ministry of Education, 2002).

There is increased emphasis nowadays on the role of the physical education teacher to generate effective learning outcome for students (Kirk & McPhail, 2002; Pill, 2008; Wee, 2001). Teachers have become facilitators of learning rather than instructors transmitting a set body of knowledge (Light & Georgakis, 2005). Apart from the above role, teaching primary students to be better game players is also vital to give them the foundational skill and understanding to be competent and willing players in their secondary school (Mitchell, 2005; Webb & Pearson, 2008). Past research has shown that effective implementation of pedagogical approach in game teaching can generate significant learning outcomes in tactical knowledge, decision making, skill execution and affective values among students (Bunker & Thorpe, 1982; Holt et al., 2002; Hopper, 2002; Sanmuga, 2008;

Webb & Pearson, 2008) and can lead to satisfactory results of student interest and motivation to be active in physical education lesson (Lonsdale, Sabiston, Raedeke, Ha, & Sum, 2009). By experiencing modified games the students reported that they were able to develop tactical understanding of game knowledge (Mitchell, 2005; Rovegno & Dolly, 2006), decision making and problem solving (Webb & Pearson, 2008).

Enabling students to make appropriate decisions based on their environment is recognized constructivist learning theory as the ideal situation for meaningful learning (J. F. Richard & Wallian, 2005; Rovegno & Dolly, 2006). Constructivist learning theory proposes an active lifestyle when students are learning to take responsibility for making appropriate decisions based on their experiences in game situation (Kirk & MacPhail, 2002; Rovegno & Dolly, 2006). Constructivism as a student-centered approach suggests that the learning environment supports multiple perspectives of reality, knowledge and experience based on planned activities (J. F. Richard & Wallian, 2005). Therefore, the TGfU approach is based on the constructivist concept that encourages students to participate in learning activities and develop their own understanding with the game situation (Rovegno & Dolly, 2006). Students learn to apply strategy and tactics in games as well as the importance of alertness and the mental aspect of games. By experiencing playing games, students reported that they were able to develop tactical understanding of game knowledge (Rovegno & Dolly, 2006), decision making and problem solving (Webb & Pearson, 2008).

Piaget’s theory was most representative of the constructivist perspective as it has been applied in the field of education. Jean Piaget developed his theory around children’s stage of development (Piaget & Inhelder, 1969). He concluded that children learn best when they are active and seek their own solutions to problem. He emphasized that an active learner makes discoveries, reflects on them and discusses them with others. He was concerned with the developmentally appropriate activities, taking into account the students' current readiness for learning and thinking. He discovered that for students truly to learn, they need to be personally engaged in the learning activity. Observing someone else doing a task has little meaning until the students demonstrate the ability to perform the task (Piaget, 1973).

This study is carried out in line with curriculum development trends in our country which emphasize innovative strategies in teaching and learning which enhance student ability in problem solving and decision making (Munira, 2010; Sanmuga, 2007; Sharifah, 2007). Studies have shown that any effective implementation of pedagogical approach in game teaching can generate significant learning in game performance (Bunker & Thorpe, 1982; Holt et al., 2002; Hopper, 2002; Sanmuga, 2008; Webb & Pearson, 2008). Therefore, the aim of this study is to investigate the effects of the TGfU approach to improve students' learning in (a) cognitive domain of tactical understanding and decision making, (b) psychomotor domain of skill performance, and (c) affective domain of motivation of game performance in primary physical education. The study also intends to explore in depth the student learning experience of decision making and problem solving in games. In the application of Constructivism Learning Theory and Self-Determination Theory, this study will investigate whether students' learning outcome can be improved in the primary physical education setting in Malaysia.

At the beginning on this research a preliminary study was undertaken to know the problems faced in the traditional skill approach of teaching games in primary physical education pedagogy (Balakrishnan, 2009). Some 58 primary physical education in-service teachers who were registered in an in-service course in one of the teacher training institutes were the respondents in this study. There were 21 male respondents and 37 female respondents. They were aged between 24 to 46 years. Almost 50% of the respondents were graduate teachers with a degree in Teaching and another 50% of them have a diploma in Teaching. Findings from this study showed that 65.5% of respondents agreed that traditional skill approach was used in teaching games in primary school physical education lessons.

The findings of the preliminary study also showed that 53.5% of respondents reported that the lesson plan objective cannot be achieved with the traditional teacher skill approach, while 46.5% of respondents reported that the learning objectives can be achieved all the time. In an open-ended question regarding the current teaching games pedagogy, respondents suggested a need for different approach as compared to traditional skill approach for affective games learning outcome in primary physical education lessons. In a second open-ended question, respondents reported that their students did not show much interest in game lesson under the traditional skill approach. They also reported that the students were not motivated to continue practicing skills using the traditional skill approach. Overall, the respondents showed strong willingness to implement a new approach to teach games in school; they admitted that they need a new approach to upgrade their teaching methods to better meet student needs in future. This preliminary study was somewhat limited in that it only managed to get some information from the teachers' perspective. Hence, there is a need to find information on students' learning outcome with the traditional skill approach and if there is a need for a new approach. Therefore, further research is conducted in this study to find out in depth about students' learning outcome in game performance.

The Statement of the Problem

The Physical Education Program gives attention to all learning outcome domains such as psychomotor, cognitive, affective, and social of students (Darst & Pangrazi, 2006; Wuest & Butcher, 2006). Physical educators are challenged to use approaches and pedagogies to accommodate student differences in cognitive, psychomotor, and affective learning objectives (Allison & Thorpe, 1997; Hopper, 2002). Games teaching is considered as having the potential to help students perform effectively in the physical education learning outcome (Dyson, Griffin, & Hastie, 2004; Griffin & Sheehy, 2004, Mitchell, 2005). Researchers have debated on the best delivery approach and game learning outcome experiences in physical education class (Fleming, 1994; Holt et al., 2002; Hopper, 2002; Mandigo, Butler, & Hopper, 2007; Rink, 2001).

Some researchers argued that the content and pedagogy of games teaching are not being inclusive for student participation in games (Hopper, 2002: Kirk, 2005a; Siedentop & Tannehill, 2000; Thorpe, 1990). This is because the standardized skill test was used to measure students' skill performance, ignoring the dynamic, chaotic and changing situation associated with actual game play situation (J. F. Richard & Griffin, 2003). Therefore, it was noted that many delivery approaches in games teaching were irrelevant and failed to meet student needs (Webb & Pearson, 2004; Werner et al., 1996). As a result students lacked motivation for participation in games (ByCura & Darst, 2001; Howard & Howard, 1997). Moreover past studies also reported that students did not find enjoyment in making games a part of their healthy lifestyle (Hopper, 2002; Light, 2003; Mandigo et al., 2007; Nevett, Rovegno, Babiarz, & McCaughtry, 2001). This is because the traditional skill approach of games teaching dominates most of the physical education programs in schools (Bunker & Thorpe, 1986a; Hopper, 2002). However, the traditional skill approaches of teaching games have been shown to be less efficient in helping students understand, perform and consequently better appreciate games and sports (Asquith, 1989; J. F. Richard, Godbout, & Grehaigne, 2000; Turner & Martinek, 1995; Webb & Pearson, 2004; Webb, Pearson, & Forrest, 2006; Webb & Thompson, 1998).

Past research also highlighted that the traditional skill approach places too much emphasis on learning skills and not enough on learning how to use those skills in real game situations (Dyson et al., 2004; Webb & Pearson, 2008; Werner et al., 1996). Therefore, it has been demonstrated to be inconclusive for student learning as the skills are taught in isolation and not in real game situations (Dyson et al., 2004; Hopper, 2002: Light, 2003; Turner & Martinek, 1995; Webb & Pearson, 2008). The tactical aspects of games were given less attention in the traditional skill approach. The traditional skill approach was viewed as having highly structured lesson plans which focus on isolation of movement of skill during practice (Webb & Pearson, 2008; Werner et al., 1996); task decomposition during learning (Turner & Martinek, 1995; Werner et al., 1996); and the role of repetitive skill practice to allow learners to transfer technical skills to game situations (Nevett et al., 2001; Rink, 2005). Therefore, the traditional skill approaches resulted in a large percentage of children achieving little success on skill performance because when a larger number of children play, it allows some children to dominate and offers little opportunity for skill development (Allison & Thorpe, 1997; Bunker & Thorpe, 1982; Bunker & Thorpe, 1986b; Nevett et al., 2001; Pangrazi & Casten, 2007).

Researchers argue that the effects of pedagogical problems have caused the majority of students leave school having little understanding and very little knowledge about games. These students are poor decision making players because their performance was not evaluated in game performance (Bunker & Thorpe, 1986b; Jones & Forrow, 1999; Julismah, 2000; Nevett et al., 2001). Nevertheless the players become teachers, or coach dependent and there was failure to develop “thinking” spectators and knowledgeable administrators at a time when games are an important form of entertainment (Chow et al., 2007; Hopper, 2002; Thorpe, 1990). As a result, students do not understand the game. Students’ game performance showed less improvement and they were not motivated enough to find the enjoyment to make games a part of their healthy lifestyle (Hopper, 2002; Mandigo et al., 2007; Nevett et al., 2001; Webb & Pearson, 2008). Therefore, game learning outcomes in the physical education programs were unable to give impact for students’ tactical understanding and continued participation in secondary school (Chow et al., 2007; Hopper, 2002; Kirk, 2005a).

Some of the pedagogical physical education programs also were reported in Malaysia by De Vries (2008) on educational system; Salleh (1997) on end product of primary physical education program outcome; Julismah (2000) on academic learning time in physical education; Wee (2001) on the quality of physical education program in public schools in Malaysia and Rengasamy (2006) on transfer of knowledge from the physical education program to healthy lifestyle after school. However, there is only one study by Sanmuga (2008) carried out in Malaysia to investigate the effects of games on boys with different skill level. Sanmuga’s study was conducted with students in early secondary school. There is a gap in studies on students’ learning outcome in primary physical education programs in Malaysia. Therefore, there is a need to investigate the effects of games learning outcome among students in a primary physical education program. A preliminary study was carried out by the researcher on primary physical education in-service teachers' perception on the teaching and problems faced by the teachers in meeting student needs in games pedagogy. The study suggested a need for different approach as compared to the traditional skill approach for effective games learning outcome.

Several earlier studies have reported problems faced in implementing physical education programs due to poor pedagogical approach in physical education program which is also inclusive of games teaching. Therefore, as a physical educator, there is a need to find out the effective pedagogical approaches which will improve primary physical education students' learning outcome in our country. Games are one of the components in the primary physical education program which have the potential to improve student cognitive domain. The cognitive domain includes tactical understanding of adjust, support, cover, guard and decision making to develop their thinking, problem solving skills and application of those skills to game situations (Griffin & Sheehy, 2004; Mitchell, 2005; Pangrazi & Casten, 2007).

The effective implementation of pedagogical approach such as TGfU approach in game teaching will improve significant learning outcome in games as indicated by many researchers (Bunker & Thorpe, 1982; Hopper, 2002: Holt et al., 2002; Rink, 2005; Sanmuga, 2008; Webb & Pearson, 2008) and will lead to satisfactory results of student interest and motivation to be active in physical education lesson (Lonsdale et al., 2009). Even though most research comparing traditional skill approach and TGfU has been inconclusive, considering the paradigm shift toward more constructivist approach to teaching and learning, the traditional approach has to be altered (Kirk, 2005b; Rovegno & Dolly, 2006; Rink, 1996; Thorpe & Bunker, 1997). Although TGfU has grown in popularity as a teaching approach, researchers are still attempting to fully understand why learning within such a pedagogical approach may be successful (Chow et al., 2007).

Therefore, this study is based on the need to investigate based on the TGfU approach as an intervention program to see the effects of constructivist learning theory on primary students' game performance learning outcome compared to the traditional skill approach. This is to investigate whether the TGfU approach improves students' cognitive and psychomotor learning outcome and makes them motivated to continue participating in physical education class. Past research on the TGfU approach has been in the form of quantitative and qualitative approach exploring the effect of TGfU on cognitive and psychomotor learning outcome in secondary school (Light, 2002a; Rink, 1996; Turner & Martinek, 1999). Therefore, the purpose of this research is to investigate the effects of the TGfU approach on students' game performance learning outcome in primary physical education class. Specifically, the aim of this study is to investigate using a quantitative approach the effects of the TGfU approach to improve students' learning outcome such as in: (a) cognitive aspect of tactical understanding and decision making, (b) psychomotor aspect of skill performance, and (c) affective aspect of motivation for particating in game performance. Further, with the qualitative approach the study intends to explore in depth the student learning experience of decision making and problem solving in games. The findings of the study will contribute knowledge on students' game learning outcome in primary physical education lessons and may be the most influential stage to enhance learning theory in physical education.

Purpose of the Study

The purpose of this research is to investigate the effects of the TGfU approach on students' learning outcomes in primary physical education class. Specifically, the aim of this study is to investigate using a quantitative approach the effects of the TGfU approach on students' learning outcome such as in (a) cognitive aspects of tactical understanding and decision making, (b) psychomotor aspects of skill performance, and (c) affective aspect of motivation for participating in game performance. Further with the qualitative approach the study intends to explore in depth the student learning experience of decision making and problem solving in games. Specifically, the aim of this study is to investigate the effects of the TGfU approach on students' learning outcome in:

1. Cognitive learning outcome of tactical understanding and decision making,
2. psychomotor learning outcome of skill performance,
3. affective learning outcome of motivation. The study also intends to explore in depth:
4. What are the students' problem solving and decision making learning experiences in 3 vs. 3 game situations? .

Research Questions

The purpose of this research is to investigate the effects of the TGfU approach on students' learning outcome in the primary physical education lesson. Specifically, the aim of this study is to investigate using a quantitative approach the effects of the TGfU approach on students' learning outcome such as in (a) cognitive outcome of tactical understanding and decision making,

(b) psychomotor outcome of skill performance, and (c) affective outcome of motivation for participating in game performance. Further with the qualitative approach the study intends to explore in depth the students' learning experience of decision making and problem solving in games. Therefore, the following research questions were answered from the outcome of this study:

1. Are there any significant differences in cognitive learning outcome between students' who are exposed with TGfU approach and students' who are exposed with traditional skill approach?
2. Are there any significant differences in psychomotor learning outcome between students' with the TGfU approach and students' with traditional skill approach?
3. Are there any significant differences in total game learning outcome between students' exposed to the TGfU approach and students' with traditional skill approach?
4. (a) What are the students' motivations toward participation in game performance?

   (b) Is there any significant difference in students' motivation between the TGfU approach group and traditional skill approach group?
5. What are the students' problem solving and decision making learning experiences in 3 versus 3 game situations?

Rationale of the Study

First, the rationale for conducting this study on TGfU approach is the environment which assumes a constructivist position on learning outcome whereby the learners construct their understanding of information, concepts and facts by building upon existing knowledge available to them (Abtar, 2001; Light, 2003; Mandigo et al., 2007; Webb & Pearson, 2008). Past studies have compared the traditional approach of teaching games with constructivism approach; the results of the studies, however, were inconsistent (Allison & Thorpe, 1997; Chow et al., 2007; Rink, 1996; Turner & Martinek, 1992). Research initiatives in Malaysia have reported encouraging results with a constructivism based environment (Abtar, 2001; Sharifah, 1999). However, these studies were not in physical education game learning outcome. Therefore, constructivism theory is important to study the learning outcome of games that can be enhanced in physical education class. Such investigation will enable physical educators to source effective ways of utilizing the TGfU approach to provide learners with effective tools to enhance learning outcome (Chow et al., 2007; Rovegno & Dolly, 2006; Sanmuga, 2008; Webb & Pearson, 2008).

Second, within the structure of the TGfU approach, the learning environment created for students was not in isolation from their peers or teachers as compared to the traditional skill approach (Hopper, 2002). The TGfU approach focuses on learning experiences for students to acquire tactical understanding of major games through playing modified versions of the games. While playing games, students have opportunity to create and modify games to display skills such as leading, following and decision making (Pangrazi & Casten, 2007). Learning experience involves active engagement of students with their environment (Chow et al., 2007; Kirk & MacPhail, 2002). Rather than receiving information from another source and internalizing that information, students can actively experience appropriate information and thus become authors of their own learning outcome (Kirk & MacPhail, 2002; Light, 2002a). Because the teaching of TGfU approach provides positive interaction among peers and between student and teacher, it was noted that student enjoyment and motivation increased and they did not show any decrease in skill improvement (Holt et al., 2002; Hopper & Kruisselbrink, 2002). Through the TGfU approach, effective method of teaching and learning may be developed in cognitive, psychomotor and affective domain to generate a whole child concept.

Thirdly, physical educators are facing the challenge in implementation of the program that presents the successful transfer of theory to practice (Munira, 2010). Past study have reported the integration of the TGfU approach with constructivism learning theory (Chen, Rovegno, & Iran-Nejad, 2002; Griffin & Placek, 2001). Therefore, this study represents one such program whereby the pedogogy of TGfU approach and particular elements of constructivism are incorporated in games learning to improve student learning outcome and motivation. With the Game Performance Assessment Instrument (GPAI) and Situational Motivational Scale (SIMS), this study can provide quantitative data on student's learning outcome on game performance in a primary physical education program. In short the study is aimed at investigating the effects of TGfU as a practical approach to improve student learning outcome of games within a constructivist learning environment in a primary physical education class. This is because the TGfU approach advocates a student-centered approach. Learning activities have potential to include psychomotor, affective and cognitive learning domain in physical education. Students in constructivist environments work in small groups. The learning environment also showed active participation of students in learning activities (Dyson et al., 2004).

Fourthly this study is focused on 10-year-old primary school Year-Four students as these students are beginning to learn the games and sports skill in level 2 (Ministry of Education, 1998). According to the Malaysian physical education syllabus, Year-1, Year-2, and Year-3 are categorized as Level 1 and Year-4, Year-5, and Year-6 are in Level 2. Students in Level 1 learn the fundamental movement skills of locomotors, non-locomotors and manipulative skills (Ministry of Education, 1998) before learning the sports skills in Level 2. The syllabus introduces games and sport skills at Level 2 after students have gone through the basic movement skills in Level 1 (Ministry of Education, 1998). Therefore, Year-4 students were selected as the population of the study because these students had some prior knowledge of basic movement and are at the beginning stage of learning game skill in Level 2.

Fifthly the handball game in primary school was selected as a game in this study because it is in the Malaysian physical education Year Four syllabus. Acording to Malaysian Physical Education syllabus Year One, Two and Three are in Level 1 and Year Four, Five, and Six are in Level 2. Students in Level 1 learn the fundamental movement skills of locomotors, non-locomotors and manipulative skills (Ministry of Education, 1998). The syllabus introduces games and sport skills at Level 2 after students have gone through the basic movement skills in Level 1 (Ministry of Education, 1998). Suggested games in Year Four syllabus are football, netball, basketball handball and hockey. The handball game was chosen for this study as most of the students had not played handball in the beginning of Year Four. Students had experience of playing football and basketball in school and after school as these games are considered favorite games. Therefore, learning handball game will be a new experience for students. Hence, new findings on students learning outcome can be obtained from the outcome of this study.

Finally, the TGfU approach is important in the physical education curriculum because games are an enjoyable lifetime physical activity and they are based on sport which is an important institution in Malaysian society. The latest news from the Ministry of Education Malaysia regarding “One student, one sport” was highlighted in *New Sunday Times, April 4, 2010* about sports in Malaysian schools. Now there is a move to make each student take up one sport in schools. Therefore, the findings of this study can contribute new knowledge to the development of games in the primary physical education program.

Conceptual Framework of the Study

Reviews of the literatures have revealed the gap in physical education game teaching as many delivery approaches in games teaching failed to meet student needs (Webb & Pearson, 2004; Werner et al., 1996). Therefore, game learning outcomes in the physical education programs were unable to give impact for students’ tactical understanding and continued participation in school (Chow et al., 2007; Hopper, 2002; Kirk, 2005a). The result of the preliminary study had shown the need for the research.

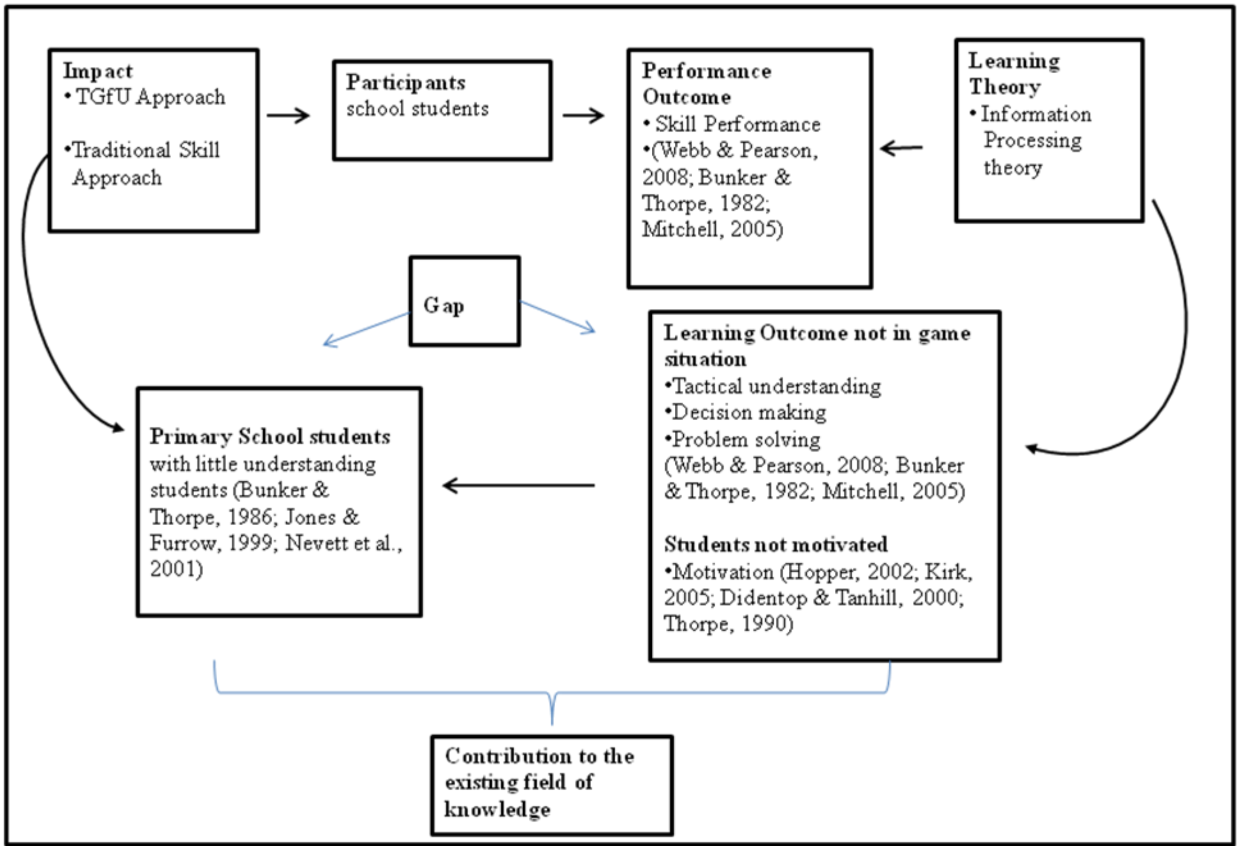


Figure 1. Gap in the literature.

Based on the gap the research purposed was determined to investigate the effects of the TGfU approach on students learning outcome of game performance in primary physical education class. Specifically, the aim of this study is to investigate the effects of the TGfU approach on students' learning outcome such as in (a) cognitive outcome of tactical understanding and decision making, (b) psychomotor outcome of skill performance, and (c) affective outcome of motivation in primary physical education. The study also explored in depth the student learning experience of decision making and problem solving in games. The first phase the study used quasi experimental nonequivalent control group design as it uses intact groups thus establishing its quasi-experimental nature of pre-post control group to answer the research questions on quantitative approach. The study also employed qualitative approach of focus group interview data to explore students' learning experience of decision making and problem solving in games.

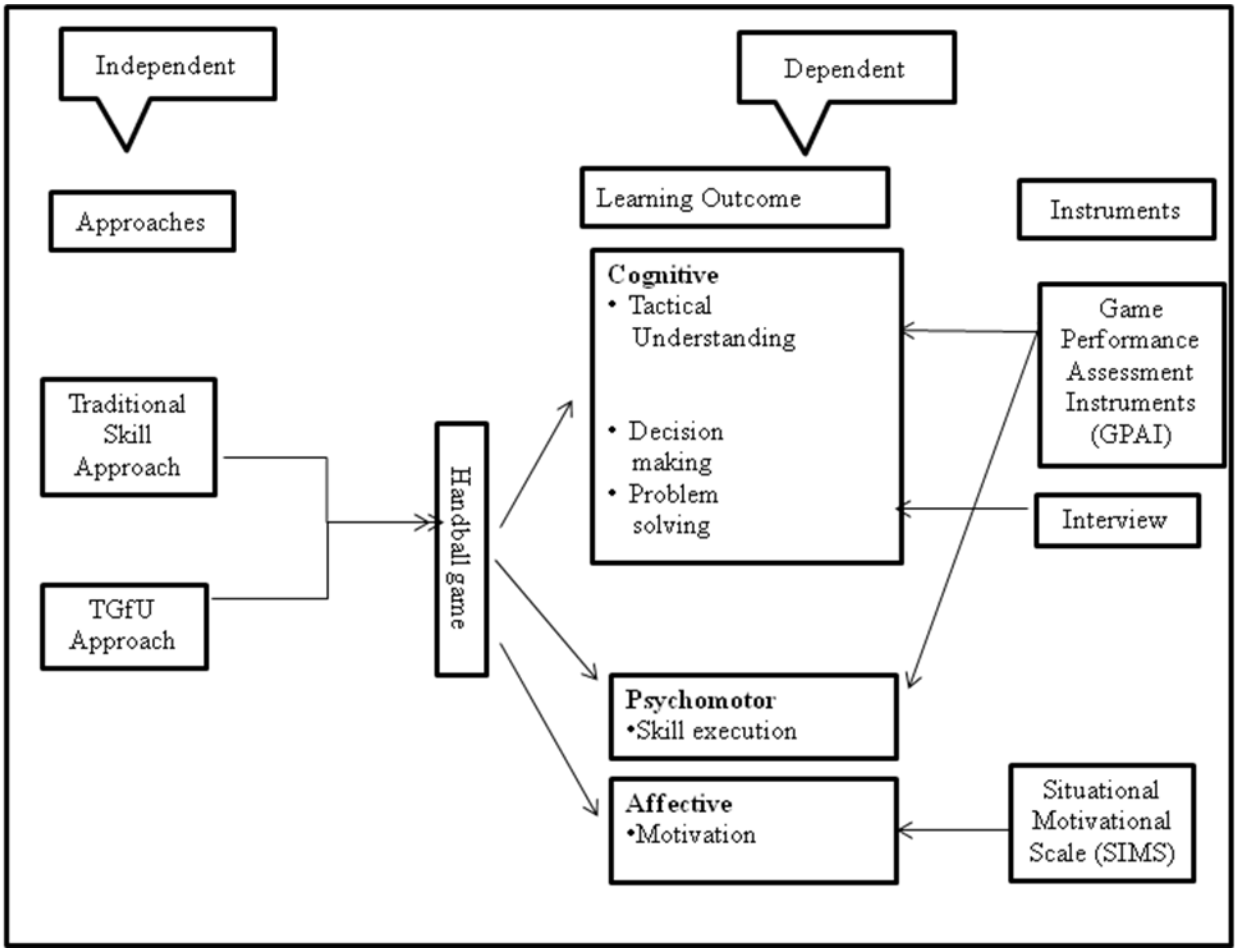


Figure 2. Conceptual framework of the study.

The independent variables in the conceptual framework are the traditional skill approach and TGfU approach to investigate the effects of primary year four students' learning outcome in 3 versus 3 handball game performances. The dependent variables in this study are: (a) cognitive learning outcome of tactical understanding and decision making and problem solving, (b) psychomotor learning outcome of skill execution and 30-meter handball dribbling skill test, and (c) affective learning outcome of motivation. Students' cognitive and psychomotor learning outcomes were measured with the Game Performance Assessment Instrument (GPAI). The GPAI instrument measures the game performance behaviors that demonstrate the tactical understanding, decision making and skill by selecting and applying appropriate skills (Oslin et al., 1998). Students' game performances were observed and recorded using the Likert-rating scale of GPAI.

The third dependent variable is affective learning outcome of motivation. This variable was measured after the final game performance with the Situational Motivational Scale (Guay, Vallerand, & Blanchard, 2000) instrument to evaluate the student's situational motivation after playing the game. The research also explored students' learning experience of decision making and problem solving in game situations.

This study focused on 10-year-old primary school Year-Four students as these students' are beginning to learn the games and sports skill in level 2 (Ministry of Education, 1998). Past literature has reported that Fitts and Posner (1967) information processing theory are based by the traditional skill approach in teaching games. In this study the appropriateness of constructivism learning theory was explored to facilitate students' understanding to perform learning outcome in games. Therefore, the conceptual framework of the study will contribute to existing field of knowledge of students' learning outcome. Figure 2 describes the conceptual framework of the study.

Significance of the Study

The findings of this research can contribute knowledge and information on students' learning outcome in games, particularly related to student centered learning. This is because games are one of the important components in the physical education curriculum as 65% of time spent in physical education is allotted to games (Werner et al., 1996). The study may outline how the TGfU approach to teaching games can affect students' learning outcome in games with the TGfU module designed for the study. Therefore, the findings of this study will inform educators of how the TGfU module may be used as an alternative approach to cater to student needs in all components of cognitive, psychomotor and affective domain in physical education. In other words, the study will reveal ways in which the learning cognitive, psychomotor, and affective domain can be enhanced with the TGfU approach in teaching games for primary physical education class. Such information is crucial in the planning of game lessons in large classes and where learners come from different ability. Therefore, the findings of this study will be of interest to physical educators and researchers who wish to use the TGfU approach to cater for student needs in planning their lesson.

The finding of the study provided insight into how the TGfU approach affects student cognitive learning of decision making and problem solving in games. The effective implementation of cognitive pedagogical approach such as TGfU approach in game teaching can enhance significant students learning outcome in game performance as indicated by past studies (Bunker & Thorpe, 1982; Holt et al., 2002; Hopper, 2002; Rink, 2005; Sanmuga, 2008; Webb & Pearson, 2008). The study meets the expectation of curriculum development trends in 2003 proposed for innovative strategies in teaching and learning which underscore student ability of problem solving and decision making in learning outcomes (Sharifah, 2007). The outcome of the study showed the discussion of students' understanding process of meaning, decision making and problem solving.

This study also redefined the importance of affective domain of student motivation in games learning. Findings of this study will contribute data on students' motivation for participation in games learning outcome in physical education class. Early experiences of games learning are crucial for students' continued participation in physical activity throughout their lives (Chow et al., 2007; Kirk, 2005b). Research has shown that primary schools are to deliver quality early game learning experiences while the contribution of secondary school may give impact to the students' involvement in games later (Chow et al., 2007; Kirk, 2005b).

The study has an important implication on the theoretical contribution of games learning outcome in physical education programs. It provides students' game learning outcome under the constructivist teaching and learning environment in physical education. Traditionally, the teacher centered skill approach teaching has been viewed as an approach for the mastery of skills in game learning (Salleh, 1997; Sanmuga, 2008). The outcome of the study developing student centered learning using Constructivist learning theory may become more evident with the TGfU approach (Holt et al., 2002; Hopper, 2002; Rink, 2005; Sanmuga, 2008; Webb & Pearson, 2008). This will be a new finding in the primary physical education field in this country.

In line with the Malaysian aspiration to be a developed and industrialized country in 2020, much emphasis has been placed on the enhancement of teaching and learning in school. Development in the Ninth Malaysia Plan and the Education Blueprint gives much emphasis on the teaching profession, especially in strengthening teaching methods in teacher training institutes to produce quality teachers (Malaysia, 2006). This type of research will have practical application for research design and assessment in the physical education settings. The finding of the study will contribute to practical implication of data collecting in the physical education field. Therefore, the findings of this study will be of interest to policy makers, curriculum developers and educators as the study provides information on student learning outcome in primary physical education class through the TGfU approach as an intervention approach.

The study also provided some insight on the role of practical research of Game Performance Assessment Instrument (GPAI) to evaluate student cognitive learning and psychomotor learning domain in game situation as one instrument compared with the traditional skill approach which only assesses on skill execution on a skill test in isolation. The survey instrument of Situational Motivational Scale (SIMS) will help to evaluate students' motivation in game performance. Both these instruments in this study will serve as a whole to investigate students' learning outcome in the cognitive, psychomotor, and affective aspects.

The relevance of the teaching games for understanding (TGfU) approach is well established in other countries (Tan, 2005). However, there are only two documented records of research on TGfU in the Malaysian context by Sanmuga (2007, 2008). Therefore, there is a gap in application of theory-related knowledge to students' learning outcome in games with constructivist learning theory. Hence, this study will enhance curriculum development in teaching pedagogy and create better ways of learning in physical education especially in games learning in the primary physical education class. The finding of this study, therefore, will verify the relevance of information for the physical education curriculum in Malaysia.

Finally this study applied both quantitative and qualitative research approach to answer the research questions. Both the quantitative and qualitative research used together to produce more complete learning outcome to inform theory and practice (Onwuegbuzie & Leech, 2006). Therefore, the findings of this study will enrich the research finding debate by offering new aspects of research design and discussion on primary physical education students' learning outcome in games.

Definition of Terms

The research investigated the effects of the TGfU approach on students learning outcome in primary physical education class. Specifically, the aim of this study is to investigate the effects of the TGfU approach to improve students' learning outcome such as in (a) cognitive outcome of tactical understanding and decision making, (b) psychomotor outcome of skill performance, and (c) affective outcome of motivation of participation in games. The study also explored in depth the students' learning experience of decision making and problem solving in game situation. Below are the definitions of terms as used in this study:

TGfU approach. TGfU approach is a game centered learning approach to sport related games learning with strong ties to constructivist learning (Griffin & Patton, 2005). Tactical knowledge of strategy and tactics and understanding will enable students to anticipate the pattern of games. Students are able to process tactical understanding and tactical responses in game situations. In addition students are also able to experience positive motivational states while involved in games situation (Mandigo et al., 2007). In this study using TGfU approach, a 4-week lesson plan module was designed by the researcher using the Year-Four handball syllabus for passing and dribbling skills.

Primary physical education. According to Nixon and Jewett (1980), physical education is defined as the art and science of voluntary, purposeful human movement. It focuses on selective aspects of the realm of experiences in voluntary, purposeful human movement. In Malaysia, the Primary Physical Education Program is developed by the

Curriculum Development Centre, Ministry of Education. The focus of this study will be teaching handball game for Year Four students with the Malaysian Primary Physical education syllabus.

Learning outcome. Learning is derived from objectives that intend to measure the occurrence of learning by stating the proposed changes in students. Learning objective in physical education reveals what students should be able to do, know or feel as a result of learning experience (Melograno, 1996). Learning is a search for meaning of doing. Therefore, learning starts with the issues around which students are actively trying to construct meaning of information. Meaning requires understanding wholes as well as parts. Therefore, the learning focuses on primary concepts, not isolated facts. The lesson plan design for this study includes students' learning outcome in cognitive outcome, psychomotor outcome and affective outcome. Cognitive learning outcome of tactical understanding such as adjust, cover support and guard in game situation; decision making and problem solving in game situation. Secondly, psychomotor learning outcome of skill execution and 30-meter handball skill test. Thirdly, affective learning outcome of motivation in game situation. This study also will explore in depth on students' learning outcome with the interview questions

Games. Activities in which one or more learners engage in cooperative, collaborative or competitive play with or without an object within the structure of certain rules and boundaries (Allison & Barrett, 2000). Example of games in primary physical education classes are handball, basketball, badminton and softball. In this study the modified adult form of three versus three handball game situation in 20 x 20 meter square grid field was used. In the lesson plan students were taught on overhead pass and dribbling in three versus three handball game situation. The lesson also includes the tactics and strategy of scoring in three versus three game situations for the TGfU approach group. The traditional skill approach played the games that they practiced in a modified game before the lesson ends. Both the TGfU approach group and traditional skill approach group were tested for game performance in three versus three game situations.

Constructivism. Constructivism is a process of learning where by the learner personally constructs and interprets a given set of information based on his or her experience (Confrey, 1990). The constructivist view involves two principles: (a) knowledge is actively constructed by the learner, not passively received from the environment, and (b) *coming to know* is a process of adaptation based on and constantly modified by a learner's experience of the world. According to constructivism theory, students actively engaged in the learning process by connecting their prior knowledge to new knowledge, making personal meaning and sharing their understanding in real world experience. Therefore, application of Constructivism theory for this study is the learning that the students experience as they construct the tactical understanding and decision making of playing a game in 3 versus 3 handball game situations presented to them.

Motivation. Motivation is defined as the internal state or condition that is activated and gives direction to an individual's thoughts, feeling and action (Csikszentmihalyi & Nakamura, 1989). It is the key to getting individual to do what they want to do. Situational motivation refers to motivation an individual student experiences while engaging in a particular activity; it is the here and now of motivation (Vallerand, Fortier, & Guay, 1997). Hence, self-determination theory (Deci & Ryan, 2000) supports the theoretical framework of this study related to students' motivation while participating in three versus three game situations.

Game performance. Performance is defined in the Webster New World Dictionary as to carry out or to accomplish a purpose. According to K. T. Thomas and Thomas (1994), game performance can be divided into cognitive components and skill components. The cognitive components include tactical understanding, decision making and knowledge. The skill components include motor execution. Game performance behavior according to Griffin et al. (1997) are adjust, decision making, skill execution, support, cover, guard or mark and base. The Griffin et al. (1997) performance definition includes the cognitive components of adjust, cover, support, guard and psychomotor components of skill execution. Therefore, the operational definition of game performance in this study will be student's learning in cognitive outcome such as tactical understanding, decision making and problem solving and psychomotor outcome will be skill execution and 30-meter handball dribbling skill test.

Tactical understanding. Tactics refer to ways of playing (strategies) expressively selected in order to gain an advantage over an opponent. Strategic understanding refers to ways of playing. Once tactical understanding is realized, it can be practiced as a strategy to be based in games (Hopper, 2002). Tactics need to be taught in progressive elements related to development and experience of student understanding (Griffin et al., 1997; Mitchell, Griffin, & Oslin, 1994). According to Griffin et al. (1997) and Mitchell et al. (2006), tactical understanding is complex. However, they argued that it can be taught in progressive elements related to the development and experience of students. Tactical understanding in this study refers to the ways students' playing expressively on selected objective in order to gain advantage over opponents on the components of adjust, support, cover, and guard in 3 versus 3 handball game situations.

Decision making. Decision making is defined by Oslin (2005) as making appropriate choices about what to do during games. In a game match, students need to react to unexpected situations which they cannot precisely predict during practice. By playing the game with tactical understanding, the learning will be relevant to tactical knowledge. The decision making component of tactics involves an adaptation to an environment that the student produces within the game situation (Rovegno & Dolly, 2006). In this study decision making is defined as adaptation to an appropriate decision about what to do with and without the ball during a 3 versus 3 handball game situation.

Problem solving. The approach requires students to cognitively engage in the learning process, determining what is processed, how it is processed, and ultimately what is learned (Rink, French, & Tjeerdsma, 1996). In this study problem solving refers to what the students do to solve the problem on the ball movement and off the ball movement in 3 versus 3 game situations.

Skill execution. Skill is the ability of a player to perform as physical tasks necessary to succeed in a particular game or undertaking that has many dimensions. According to Oslin (2005) skill execution is the efficient performance of selected skill in game performance. In this study skill execution will be efficient performance of selected skills of passing and dribbling in a three versus three handball game situation.

Summary

This chapter has outlined the justification for the study and the need for research in the Teaching Games for Understanding (TGfU) approach. The chapter begins by providing a background of the study in physical education in the global scope. This is then followed by identifying the existing gap in the research and the purpose of the research. There are three rationales for research in TGfU approach. This chapter discussed the gap of the study and how this study can contribute knowledge and practical application to game pedagogy of teaching and learning in physical education to students, educators and curriculum developers. The chapter finally examines the benefit and significance of the study to primary physical education students and teachers as well as physical education curriculum policy makers in Malaysia.

Chapter 2: Literature Review

Overview

This chapter includes theoretical discussions, reviews of the status of knowledge by authority's descriptions and evaluation of current practices that have been reported on the TGfU approach. This chapter also provides an understanding of knowledge of the problem statement and the rationale for the research question. The chapter discussed the introduction, teaching approaches of game performance in physical education, teaching approaches in Malaysian physical education and the TGfU model. The chapter also discusses Constructivism Learning Theory, the theoretical framework of the study, and Self-Determination Theory. The final section of this chapter described how the key theories are used as a platform to guide the research in this study.

Teaching Approach of Game Performance in Physical Education

Teaching games in schools has traditionally emphasized the teaching of individual skill in organizational drill patterns without consideration of games themselves (Bunker & Thorpe, 1986a). Therefore, dissatisfaction has grown from sports and games physical education program researchers that implementation of innovation in physical education programs has been slow (Fleming, 1994; Holt et al., 2002; Hopper, 2002, Mandigo et al., 2007; Rink, 2001). Researchers like Griffin et al. (1997) argued that quite often during physical education classes, games were taught continuously with an emphasis on large sided group participation. Nevertheless, the emphasis was the large group activities in which competition plays a major role and active participation for all students was minimal (Griffin et al., 1997).

One of the most widely utilized teaching approaches in games teaching is the traditional skill approach which is also called as the direct instructional approach (Metzler, 2000). The approach was characterized by teacher-centered decision and teacher directed engagement patterns for learners. In this approach, (a) the teacher has a clear set of learning goals, (b) presents the students with the desired movement outcome, skill or concept, and (c) organizes the activities into blocks of time that are arranged to provide high rates of feedback during practice. This approach focuses on giving the students as many practice opportunities as possible so that the teacher can observe the skill attempts and provide high frequencies of appropriate feedback.

A traditional skill approach is typically divided into a series of sequential performance skill and knowledge areas. Lessons for students include tasks planned by the teacher and presented in the following progression: (a) review of previous learned material, (b) presentation of new content and/ or skill, (c) students' practice segment, (d) delivery of feedback, (e) independent practice periods, and (f) periodic review of selected task. By using this approach, the students' role is to simply follow the teacher's direction and respond to the teacher's question, for they are given only a few decisions to make.

This approach is based on the assumption that skills must be learned before a game can be played (Turner & Martinek, 1999). The teaching of techniques or skills is seen as the critical part of the lesson, and each week new skills are learned and assessed (Thorpe & Bunker, 1982). The traditional lesson plan is highly structured and teacher directed (Thorpe & Bunker, 1997). The lesson starts with an introductory or warm-up activity to develop student fitness, followed by a skill or technique practice in which skills the teacher deems essential are practiced and refined (Werner et al., 1996). The lesson concludes with a game which serves to develop an understanding and appreciation of both skills and tactics (Turner & Martinek, 1999).

Mitchell (1996) identified that the most beneficial approach to teaching invasion games should be the tactical approach rather than traditional skill based approach. The researcher argues that the tactical approach will facilitate a student's own inquiry and understanding for the essential skill as well as teach him or her the essential tactics of the game (Mitchell et al., 2003). The researcher also introduces the idea that developmental appropriateness must be considered with regard to tactical problems. Mitchell et al. (2006) argues that it is very important for children to understand why a certain skill is needed and what better way to understand the importance then when they need to use it.

Teaching Approaches in Malaysian Physical Education

Research in Malaysia reported that students were not given enough time and opportunity in physical education classes (Julismah, 2000); therefore, they do not perform well in their academic learning outcome. The researcher also reported that students spend the academic learning time with running, throwing and jumping without the presence of the teacher. The researcher demonstrated that less teaching and learning in physical education lesson resulted in poor performance of students in motor learning outcomes. Student skill performance outcome was tested in this study. This study is the evidence that the students' skill performance in games was not satisfactory (Julismah, 2000).

Another researcher, De Vries (2008), reported that the educational system and public do not value the role of physical activity and sports in life and society in Malaysia. Salleh's (1997) study had pointed out that the end product of physical education for students is questionable in Malaysia. The findings of his study stated that students in secondary school finish their schooling year with a negative view of physical education outcome in primary school where game teaching is one of the components in physical education lesson in the primary physical education syllabus.

Wee (2001), in his study examined the quality of the physical education program in school. The study showed that the teachers were not delivering the lesson properly; the students were not performing well and not showing interest in physical education. Rengasamy (2006) has also reported in his studies that students did not transfer knowledge from physical education lesson to healthy lifestyle. All this study had shown problems in the implementation of the physical education program.

The role and function of the physical education curriculum and how the pedagogy needs to be taught in school are reviewed in these studies (De Vries, 2008; Julismah, 2000; Rengasamy, 2006; Salleh, 1997; Wee, 2001). However, there is lack of research on how students learning outcome in game component of cognitive, psychomotor and motivation can be improved. Therefore, new intervention of learning pedagogy is needed to make physical education more interesting for students' learning. The traditional skill approach to games teaching follows a series of highly structured lessons, which rely on skill drills and carefully analyzed techniques (Werner et al., 1996). The offensive and defensive game tactics are usually taught in traditional skill approach after several stages of skill practice. At the first two game stages in the traditional skill approach, teachers are primarily concerned with developing of motor control of an object and utilizing a combination of experiences through which extending, refining and application tasks are learned leading toward skilfulness (Werner et al., 1996). The general belief is that once the skills have been mastered, the student can transfer these skills into a game situation. However, too much emphasis on learning skills and not enough on learning how to play skilfully in game situations have lead to new invention in game learning.

The Teaching Games for Understanding (TGfU) model as an approach in the primary physical education program was derived from evidence of Bunker and Thorpe's (1982) finding. They argued that novice learners would become more proficient game players and more knowledgeable spectators if they learned how to understand the decision to be required for successful performance (Thorpe & Bunker, 1997). They argued that this understanding would aid students' game knowledge and performance regardless of successful implementation of skill. Several studies have also compared the skill and the tactical approach of TGfU (Allison & Thorpe, 1997: Rink et al., 1996; Turner & Martinek, 1992). Findings of these studies have noted that students under the TGfU approach have reported increased performance and motivation.

The TGfU approach places importance on the students as learners (Bunker & Thorpe, 1982). Enabling learners to make appropriate decision based on demands by their environment is identified by Constructivist learning theory as the ideal situation for meaningful learning (Kirk & MacPhail, 2002; Griffin & Sheehy, 2004; Rovegno & Dolly, 2006). This approach also implies that active lifestyle can be enhanced when students are learning to take responsibility for making appropriate decision based on their perceived needs.

Light (2003) indicated that lack of relevance in sports and physical education experiences for students lead to alternative approaches in games teaching. The alternative approaches, such as TGfU, strive to make student experiences more relevant and meaningful. He also proposed that teachers and educators need to develop and implement practices that are educationally valued and relevant to the students' needs and interests.

Teaching Games for Understanding Model

The TGfU model was first introduced at Loughborough University (England) in the late 1960s, in response to concerns that children were leaving school with: (a) little success due to the emphasis on performance; (b) knowing very little about games; (c) some supposed skills, but in fact possessing inflexible techniques and poor decision-making capacity; dependence on the coach/teacher; and (d) little development as thinking spectators and knowing administrators (Bunker & Thorpe, 1982). Werner et al. (1996) reported that British children were leaving school having experienced little success in games because of the emphasis on performance.

The TGfU approach was proposed as an alternative to the traditional skill approach because it was noted that the traditional skill approach was practiced in isolation and did not transfer the games learning (Thorpe et al., 1984). In addition, Bunker and Thorpe (1986a) observed and believed this is still the same today and that "games teaching shows at best, a series of highly structured lessons leaning heavily on the teaching of technique or at worst lessons which rely on the children themselves to sustain interest in the game" (p. 7).

According to Bunker and Thorpe (1982), cognitive learning outcome particularly an understanding of games and game tactics, was critical to initial conception of the TGfU approach. They argue that novice learners would become more proficient game players and more knowledgeable spectators if they learned to understand what decisions to make during game play and the impact of such decisions on the skill required for successful performance

(Bunker & Thorpe, 1982; Holt et al., 2002; Hopper, 2002; Webb & Pearson, 2008; Webb & Thompson, 1998; Webb et al., 2006).

Asquith (1989) argued that the current school of thought (in the physical education field) did not provide students with the necessary skills to succeed in a game format. According to this researcher, the general consensus among physical education professionals is that a teacher-centered approach—which includes a warm up, a skills or drills portion, and, finally, having the class conclude with an opportunity for the children to apply their skills in an actual game—is the ideal learning environment. He explained how this student-centered model promoting problem-solving skills in a closed, predictable environment may not transfer to a game setting. It is the process of decision making, which he taught in his class, that gave students a better understanding of concepts of "why rules are important and what purpose they serve" (Asquith, 1989, p.77).

This model of games approach advocated learning about the WHY of game play before executing the HOW of game play (Bunker & Thorpe, 1986a). This approach suggested a six-stage model. A key focus of this model is that learners have to make decisions about "what to do" to play the game successfully, then "how to do" what they have realized they need. Based on their decision making, learners need to practice necessary skills or ways of playing to improve their game performance (Griffin et al., 1997).

However, researchers such as Asquith (1989) documented that the TGfU approach has not necessarily caused teachers to stand back in the tactical problem of the game play. A tactical lesson can still involve teacher-led questioning focused on one ability level where students are exposed to tactical problems to solve. Tactics can still be taught in a similar imposed manner to techniques without the necessary game modification to create student decision making based on their individual needs. Modified game activity will provide a developmentally appropriate environment for student learning outcome. Changes to equipment, playing areas, and game conditions enable young children to play the game that suits their needs (Mitchell et al., 2003).

The assumption is that games with similar purposes share common tactics (Rink, 2001). Research on the TGfU approach classifies games into four different game categories based on concepts that develop or build progressively across game categories. For example the first category, target games, emphasizes the concepts of spatial awareness and accuracy as children learn to send an object through space to a designated area. Net or wall games, the second category, increase students' understanding of more complex uses of space and involve moving and controlling an object, purposefully making it difficult for opponents to gain possession and/or send the object back to the wall or across the net. When playing games in the third category, fielding or run-scoring games allow the sender to propel an object into an open space and attempt to run to a goal (or base) and possibly return before the fielders can collect the object and send it back to a specified place. Both net, wall, and field or run-scoring games emphasize placing the ball into a space and keeping it away from opponents. Finally, in the fourth and most complex category, invasion games, players focus on controlling an object in a specified area. This includes both defending space as well as attacking space (Mitchell et al., 2006).

The TGfU model offers an alternative approach to teaching games in physical education and/or coaching environments. Many variations of the TGfU model have been developed including "Games Sense" (Australian Sports Commission [ASC], 1999), "Play

Practice" (Launder, 2001), The "Game Concept" (Wright et al. as cited in Light, 2003) and "Play for Life" (ASC, 2005). TGfU pedagogical approaches place students in a game situation where the tactic, decision making, and problem solving are critical for students (Webb & Pearson, 2004). These games were either small sided, full sided, or games for outcomes and they provided the opportunity for students to develop a greater understanding of all aspects of the game by actually playing (Hopper & Bell, 2001). However, Hopper and Bell suggest that the game is not enough to get students to play; they advocate that the excitement which grows from understanding how to play a game tactically is just as important. Heywood (as cited in Light, 2003) described that students noted that they enjoyed themselves while playing the game. For this to occur, modifications to adult games are needed. The games are planned with tactical understanding activities as part of the game play. This allows students to approach the games as problem-solving opportunities, thus moving the emphasis from individual skill performance to a team-based student-centered approach.

The TGfU model emphasizes student engagement in the constructivist learning theory perspective and explores different concepts of pedagogical principles that focus on the understanding of knowledge. It focuses on a constructivist approach of tactical understanding, problem solving, and decision making applied to games by emphasizing the notion of student observation during game play (J. F. Richard & Wallian, 2005). Constructivism approach requires students to be engaged in activities that require higher level thinking and reflective process. Ultimately, students must demonstrate their understanding by applying their newly acquired knowledge in a game situation. Figure 3 shows this model developed by Bunker and Thorpe (1982).

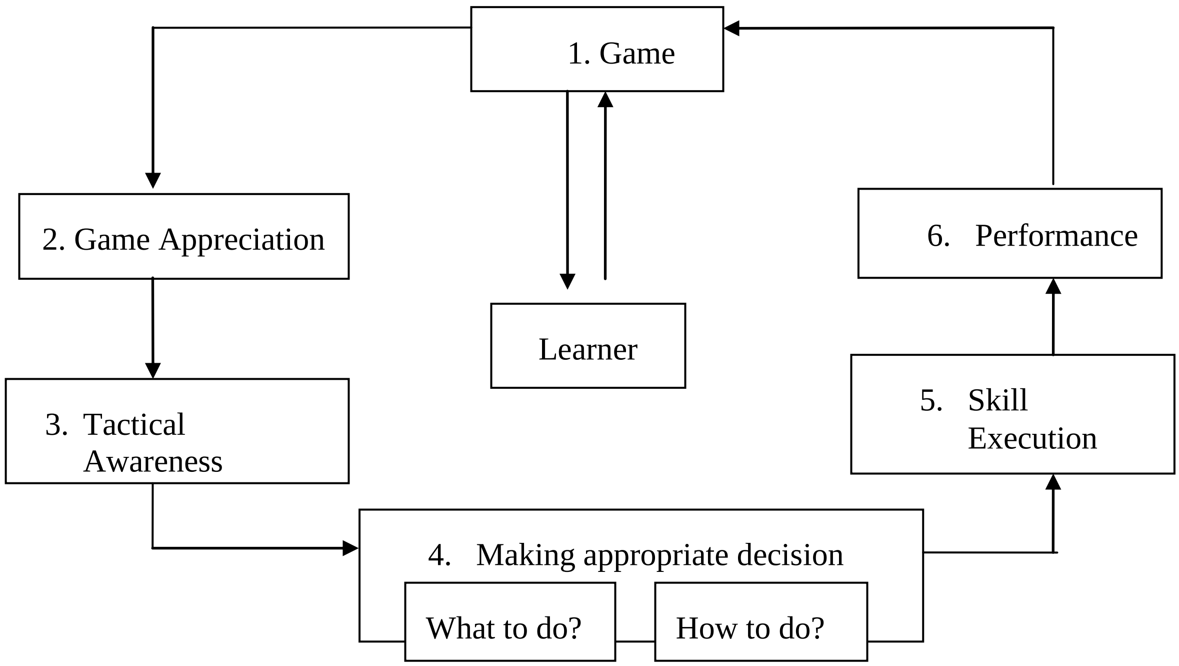


Figure 3. Original teaching games for understanding model.

As indicated in Figure 3, the first step, the *game* is introduced to students: it should be modified to represent the advanced form of the game and meet the developmental needs of the student or learner. *Game appreciation* is presented as the second step. Students in this step are presented with new rules such as scoring and boundaries of the game to be played. In the third step, students use the information that they have already learned to develop *tactical understanding.* Students would have learned skills like, running, chasing, throwing and catching balls, and manipulating the ball in previous years. When the game is introduced through modified games, the student may go through a state of disequilibrium due to facing a new experience. Disequilibrium is a state of cognitive conflict when expectations are not consistent with past experiences. Students try to assimilate the stimulus—namely the game skills and tactics—into their existing schema of knowledge. This will help them to adapt the new tactical awareness in the game.

The fourth step is *making appropriate decisions.* In this step, the student develops decision making by asking what to do (tactical awareness) and how to do it (appropriate response selection and skill execution) to help them make appropriate game decisions. Step five is *skill execution.* The focus in this step is how students execute specific skills and movements. Student *knowing* how to execute is different from performance as it is limited to specific skill of the game. Skill execution is always viewed as important components of any game. Finally, *performance* (based on certain criteria according to the goals of the game or lesson) will improve. According to Bunker and Thorpe (1982), these specific performance criteria result in competent and proficient game players.

TGfU is a learner and game-centered approach to sports-related games. TGfU facilitates our understanding of how students learn and, with strong ties to constructivist learning theory, it facilitates student learning (Griffin & Patton, 2005). TGfU values the role of students as active learners who are involved in learning by constructing knowledge. This model provides the underpinning theory of constructivism for the primary physical education of students developing gaming knowledge and skills.

Constructivism Learning Theory

Constructivism has roots in philosophy, psychology, sociology, and education. The central idea in constructivism is that human learning is *constructed*, and that learners build new knowledge upon the foundation of previous learning (Hoover, 1996). The constructivist view involves two principles, namely: knowledge is actively constructed by the learner, not passively received from the environment; *Coming to know* is a process of adaptation based on and constantly modified by a learner's experience of the world (Confrey, 1990). According to constructivism theory, students actively engage in the learning process by connecting their prior knowledge to new knowledge. They then take this newly integrated knowledge and understanding and apply it in real-world experiences.

Piaget described how children perceive their environment and represent it cognitively (Piaget & Inhelder, 1969) which most represented the constructivist perspective of student learning. He concluded that children learn best when they are active and seek their own solutions to problems. He emphasized that as active learners, students make discoveries, reflect on them and discuss them with others. He was concerned with developmentally appropriate activities taking into account a student's current readiness for learning and thinking. He discovered that for students truly to learn, they need to be personally engaged in the learning activity. Observing someone else doing a task has little meaning until the students demonstrate the ability to perform the task themselves (Piaget, 1973). Understanding the process of learning activities can be expressed diagrammatically as shown in Figure 4.

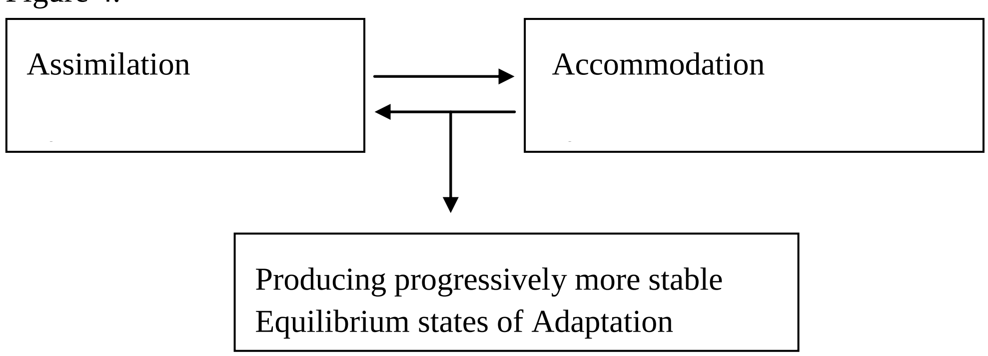


Figure 4. Process of understanding from P. G. Richmond (1970). *An Introduction to Piaget*. London, England: Routledge & Kegan Paul.

Richmond (1970) explained the process of understanding as illustrated in Figure 4. According to Richmond, assimilation and accommodation work like pendulum swings in advancing our understanding of the world and our competency in it. They are directed at a balance between the structure of the mind and the environment, at a certain congruency between the two, that would indicate that you have a good (or at least good-enough) model of the universe. This ideal state is called equilibrium.

According to Piaget (1973), children's experience develops as they confront new and unfamiliar features of their environment that do not fit with their existing view of the world. When a child is exposed to new experiences, a disequilibrium occurs which the child seeks to resolve through the process of adaptation. The child fits in the new experiences into his or her existing view of the world through a process of assimilation. Assimilation is the filtering or modification of the input. When the new experience cannot be assimilated, the child goes through disequilibrium. The child resolves the disequilibrium by changing the cognitive structure to incorporate the new experiences by accommodation. The process of understanding describes how adaptation will work in practice. This process will repeat for every new development or new environment presented to the child. The child continues to resolve the assimilation and accommodation until a more stable state of equilibrium is achieved. Therefore, based on this theory, it is important that a student is exposed to a variety of learning activities. This will enable instances of disequilibrium so that a student's cognitive structures are in a constant state of assimilation and accommodation.

With respect to the above discussion raised about constructivist learning theory, a theoretical framework from the TGfU approach will be presented later in this paper. Research will be presented that can facilitate the understanding of how games can contribute to a student's tactical understanding, decision making, problem solving and skill execution in games (Griffin & Sheehy, 2004; Rovegno & Dolly, 2006; Turner, Allison, & Pissanos, 2001). By placing students in a game situation, game performance such as tactics, decision making, problem solving, and other skills are developed at the same time (Webb & Pearson, 2008). Research also suggests that games can be designed to be developmentally appropriate and conditioned to highlight specific tactical situations (Griffin & Sheehy, 2004). This study proposes a game-centered and child-centered approach, with the intent to allow every child to participate in decision making based upon the tactical problem (Griffin & Sheehy, 2004). Past studies have shown that students are able to demonstrate their understanding by applying their new knowledge in a new game situation (Griffin & Sheehy, 2004; Lemlech, 1998; Webb & Pearson, 2008; Light & Wallian, 2008).

Theoretical Framework of Study

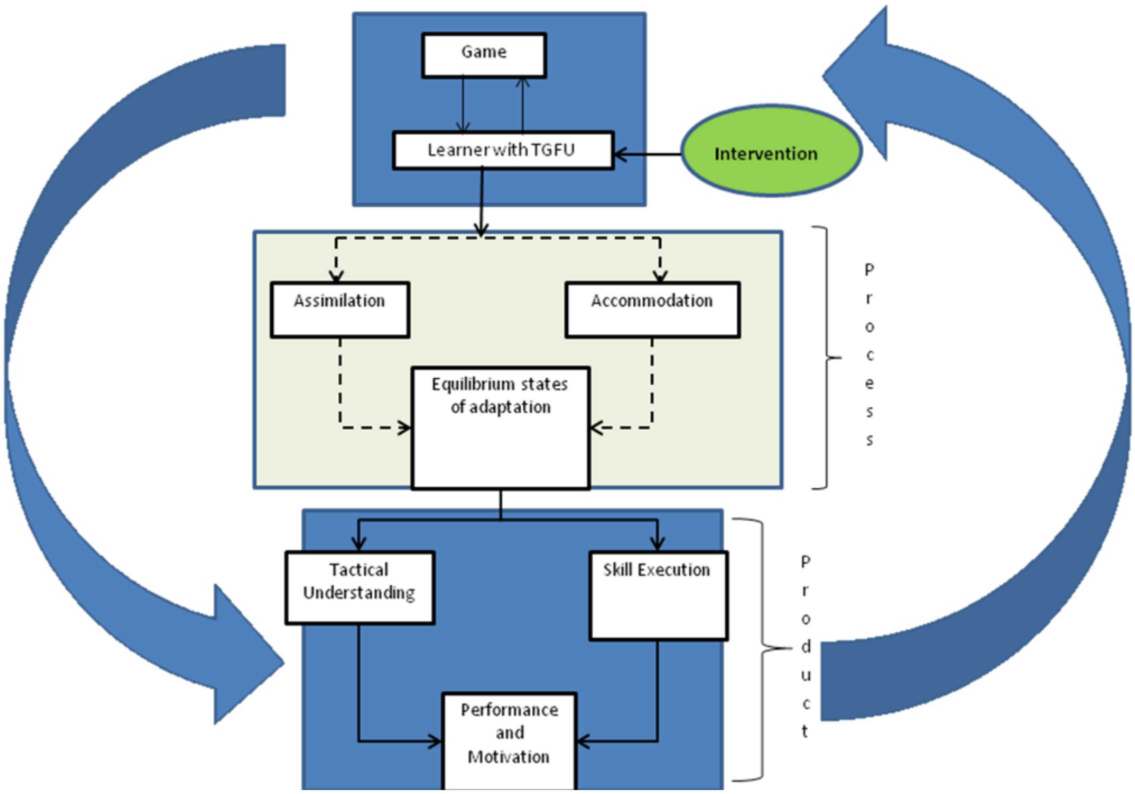


Figure 5. Theoretical framework of the study.

Based on the theory, it is important that the student is exposed to a variety of learning activities in games. This will enable instances of disequilibrium so that cognitive structures are in a constant state of assimilation and accommodation. The student will seek to resolve the disequilibrium through the process of adaptation. Therefore, the present study applied the constructivism learning theory in application of game learning. The proposed framework of study in Figure 5 was suggested and researched. The teaching commenced with a game which is modified from the adult game to present learners with a tactical problem. A modified game is one in which the number of players, rules, and the condition of the game are introduced which represent the rules and standards of the official game (Thorpe et al., 1984). The student would have learned in his or her previous years (Level 1) skills such as running, chasing, manipulating, throwing and catching, as well as passing the ball to a target. When overhead passing in handball of 2 versus 1 is introduced in a modified game situation, the students will experience a state of disequilibrium. The disequilibrium is the new experience of passing to a partner with an opponent. Passing to a partner as target was the previous knowledge the student had been taught. The student will assimilate the new experience which is the passing with game tactics of 2 versus 1 into his or her existing schema of knowledge. The student will fit in the new experience through the process of assimilation. Then the student begins to adapt the learning of passing of 2 versus 1 with the question “What must I do to succeed in this situation?” The student resolves the disequilibrium by changing the cognitive structure to incorporate the new experiences of passing of 2 versus 1 by accommodation. The student continues to resolve the assimilation and accommodation of tactical understanding until a new state of equilibrium is achieved.

With the intervention of TGfU approach, students were introduced to varieties of tactical problems of 2 versus 2 and 3 versus 3 in a game situation. With the new tactics of two and three opponents, the student begins to adapt the game learning of passing with the tactic to pass to partner with the question “What must I do to succeed in this situation?” The student confronts his or her understanding of what is encountered in the new learning situation. If what the students encounter is inconsistent with their current understanding, then the students’ understanding can change to accommodate the new experience. The student remained active throughout this process: he or she applied current understandings, and noted relevant elements in the new learning experience.

The student accommodated this idea of tactical understanding by modifying it. When the tactical understanding is taught in progressive elements related to development and experience, the student adaptation of tactical understanding becomes wider and more stable. The modified game presented allows students multiple opportunities for problem solving and for practicing of the appropriate tactical response (French & McPherson, 2003). When the tactical understanding of the games is introduced in another new situation, the assimilation will continue and the accommodation of the tactical understanding will not be difficult. The adaptation could be acquired after a considerable accommodation of understanding achieved by the students (Mitchell et al., 2006). Brooks and Brooks (1999) also suggested that, when students have to reconsider their prior ideas in the presence of new information to create cognitive structures, a deeper understanding will occur. Their game skill in negotiating, compromising, and their tactical understanding is developed through small groups.

Based on this theory, it is important that students are exposed to a variety of learning activities in games teaching and learning. Students' tactical understanding and skill acquisition develop after engaging in more activities that present tactical problem-solving opportunities. This enables the student to come into contact with more instances of disequilibrium of tactical understanding so that his or her cognitive structure is in a constant state of assimilation and accommodation. By engaging in tactical understanding activities, students get the chance to apply their tactical understanding, improved skills, problem solving, and decision making in real game situations (Griffin & Sheehy, 2004; Mitchell, 2005). When compared to the traditional model of games teaching, the TGfU approach is more focused on the students' development and understanding of the game. Much research has supported Piaget's constructivism of how children's understanding emerged in games (Grehaigne & Godbout, 1998; Grehaigne, Godbout & Bouthier, 2001; Harvey, 2006; Jones & Farrow, 1999; Kirk & MacPhail, 2002; Mitchel, 2000; Rovegno et al., 2001).

Recent research had shown the direction of the relationship between students and how they actually learn with the constructivist perspectives in physical education (Griffin & Sheehy, 2004; Rovegno & Dolly, 2006; J. F. Richard & Wallian, 2005). Constructivism is an active learning approach whereby the students personally construct and interpret given information based on their experiences (Allison & Barrett, 2000). Constructivism is a student-centered approach based on the notion that the learning environment should support multiple perspectives of reality, knowledge, and experience-based activities (J. F. Richard & Wallian, 2005). A constructivist learning environment proposes that students be engaged in activities that require thinking and reflective processing (Rovegno & Dolly, 2006).

Early studies on constructivist perspectives of games teaching in elementary physical education were carried out by Mauldon and Redfern (1969). They emphasized Piaget's children's learning games leading to development of (a) skilfulness, (b) use of problem solving approach to game like situation, (c) grouping skill according to a generalized construct, (d) game categories, and (e) game invention as a means of giving children choice and appreciation for value of rules. Good (1996) explained that teaching for student understanding is associated with the constructivist view of teaching and learning, and also described that children's development related to games learning is appropriate for primary physical education students.

Constructivism learning is relevant to physical education, to be specific in games learning for several reasons. First the cognitive construction of game tactics, skills, and concepts (e.g., tactical understanding, problem solving, decision making, skill execution, social responsibility, and effective group interaction) are critically important in physical education (Rovegno & Dolly, 2006). This is because it supports the Malaysian primary physical education objectives that allows for students' active participation in physical activity. This, in turn, will enable them to express their mental processes, emotions, foster healthy relationships with their friends, and carry out physical activity in a safe and conducive environment (Ministry of Education, 1998). Learning is an active discovery whereby learners actively engage in constructing tactical understanding. By getting students involved in tactical understanding, problem solving and decision making in games, teachers can promote students' active participation (Rovegno & Dolly, 2006). This places the teachers in a new role where they are seen as encouraging students to explore, discover knowledge, solve problems, and then reflect (Rovegno & Dolly, 2006). Hence, the teacher's role becomes as facilitator in generating effective learning outcomes for students rather than just an instructor transmitting knowledge (Light & Georgakis, 2005).

Secondly, the Malaysian national educational philosophy explicitly gives importance to students' decision making and problem solving (Abtar, 2001; Nik Suryani, 2002; Sharifah, 1999). Once the solution to a situation has been developed through insight with constructivist learning, it can be repeated promptly and it can also be transferred to similar game situations in the future (Piipari, Watt, Jaakola, Liukkonen, & Nurmi, 2009). Teaching games that emphasize insightful learning rather than pure memorization or mechanical skills encourages both problem-solving and learning (Griffin & Sheehy, 2004). Therefore, the learning environment in games that teachers plan plays a significant role in the student's knowledge development.

Thirdly, theories of learning in physical education in general psychology strongly resemble information processing based on cognitive science; therefore, by understanding the students' cognitive needs teachers can provide appropriate activities for students (Belka, 1994; Mitchell, 2005). Finally constructivism perspectives research shows that successful learning results in (a) deep understanding of a body of knowledge, (b) meaningful and important concepts within the domain, (c) knowledge that can be flexible and transferred to other contexts. Research needs to consider to what extent this perspective is applicable in physical education games learning in our country. Therefore, researchers can use theory and method especially the TGfU approach to attract student engagement to be active participants in games (Dodds, Griffin, & Placek, 2001; Rink, 2005).

Cognitive Learning Outcome (Tactical Understanding, Decision Making, and Problem Solving)

Children and adults differ in their body properties. It is difficult for a teacher to see how children think and feel. However, we can infer from observing children's behavior (J. R. Thomas, Thomas, & Lee, 2000). Before children can do a skill at 7 to 11 years old, they must understand what to do and remember what to do. Adults can understand the relationship between practice and learning but children may not see this. Improving game skill is important to children. J. R. Thomas et al. (2000) describe in their book that for children aged between 7 to 12 years old, improvement and fun are their primary goals in learning physical education. Therefore, research has confirmed the importance of cognitive game performance outcome for children (Belka, 1994; Mitchell, 2005). An early study was carried out on primary physical education students aged 8 to 12 years old. This study has indicated that the cognitive components of tactical understanding and decision making were important components of effective game performance (French & Thomas, 1987).

Tactical Understanding

Tactics refer to ways of playing (strategies) expressively selected in order to gain an advantage over an opponent. According to Rink (2010), tactics can be defined as knowing what to do in a given game situation and having ability to execute what needs to be done in the game situation. Once a tactic in a game can be realized by students, it can be practiced as a strategy to be used in games (Hopper, 2002). Tactics need to be taught in progressive elements related to development and experience of student understanding (Griffin et al., 1997; Mitchell, Griffin, & Oslin, 1994). Strategic understanding refers to ways of playing such as being consistent and keeping possession of the ball.

Cote and Hay (2002) reviewed the research literature from the developmental perspective and suggested that young people's socialization into sports follow a general pattern. An early experience in organized sport (which they call the sampling years) is usually when children are in the 7 to 12 year age groups according to activities. Young people participate in a range of activities where their main aim is fun and enjoyment that emphasize playing rather than training (Kirk, 2005a). Kirk (2008) described this phase as "deliberate play" (p. 241) which involves young people in structured activities that require development of particular techniques and tactical understanding. Young people may continue in this sampling phase for as long as opportunities are available to them, or else they may either drop out of sport or move into the second phase, which is called specializing space (Cote & Hay, 2002).

In the second specializing phase, beginning at around ages 13 to 15 in most activities, the range reduces and the motivation begins to shift from fun and enjoyment to competitive success and enjoyment of winning. Typically, in the specializing phase, there is a shift in emphasis from deliberate play to deliberate practice. Deliberate practice is focused on improving levels of performance in the frequency and intensity of training (Cote & Hay, 2002). Cote and Hay suggested that young people have three options from the specializing phase. First is to drop out of sport, the second to enter what they call the recreational phase where sport is played relatively for fun, and the third is to move to the investment phase. Entry into the investment phase is a signal to focus on one activity and commitment to intensive training and competitive success. In this phase, deliberate practice dominates and there is very little deliberate play.

Cote, Baker, and Abernethy (2003) place particular emphasis on the importance of deliberate play as a key characteristic of the early sampling years. They suggested that deliberate play activities are designed to maximize inherent enjoyment. They are regulated rules adapted from the standardized sport rules and are set up and monitored by the children or by an adult involved in the activity. Cote et al. (2003) argue that empirical studies of team sports players in Canada and Australia have shown they experienced a prolonged and high-quality period of deliberate play during their early years. The findings of Cote et al. (2003) suggest the importance of early playing experience from period of play to deliberate play. During the deliberate play, the student’s learning emphasis was on enjoyment of participation. After the deliberate play period, students develop deliberate practice to improve what they do. Therefore, the results of this study provide support to the theory that students learning with constructivism play environment (in a range of modified activities in primary school physical education) appears to be important in maintaining motivation and interest among students.

A study by Rovegno et al. (2001) looked into the effects of basic tactical understanding and motor skill of fourth-grade elementary school children in a 12 lesson aerial basketball physical education program. The study was conducted to examine what influences on the development of certain tactics were needed during invasion games. Twenty-four fourth-grade students (12 boys and 12 girls) received 12 lesson units of instruction in aerial basketball game. Each student was carefully marked and graded on certain skills which they performed before the 12 lessons and then again after the 12 lessons. All students were videotaped and their success and failure in each of three categories were recorded using the Game Performance Assessment Instrument (GPAI).

The study found that in all cases students improved their skills from pretest to posttest. The study also showed improvement on the ball skill (i.e., passing), off the ball skill (i.e., cutting and receiving) and decision making (who to pass to, what type of pass, where to pass, cut to get open). The result showed significant improvement in the class as a whole in each of the three categories with lesser skilled students improving more than highly skilled students. This study also found that children’s cognitive decision making during games improved more easily over the course of the season than their motor skill execution. This study supports the view that children can understand what skill they need to do before they can properly execute it. The study also concludes that fourth-grade students in a school setting can learn passing and cutting tactics in a modified invasion game when simple tactics are the focus of instruction. The study also concluded that modified games help to improve tactical decision making that students need to perform in games. However, the study did not explain what the students actually did to improve their tactical understanding.

Another experimental study was conducted by Jones and Farrow (1999) on transfer of knowledge on tactical understanding among two groups with TGfU approach with game classification system on eight-grade students. One group followed a 4-week rugby unit (control group), while the experimental group went through a 4-week volleyball unit. At the end of the 12th lesson, the two groups were observed playing a badminton game. The results of the study showed that the experimental group performed significantly better on tactical understanding as compared to the control group. Teaching with the TGfU approach is initiated with a modified game to help student's gain general understanding of key concepts. The modification is used to simplify the game, making it less complex and directs the players' attention to the key aspects of the game that are the primary lesson focus. The purpose is to develop tactical awareness of "what to do" in a game. Conversely, basic skills needed to know "how to perform" in the game are introduced and taught later after students have shown an understanding of the tactical concepts. Motor skills needed for the game are substituted or simplified (throwing instead of batting) in the modified game until game awareness is fully developed. The actual skills needed to play the game are taught and incorporated when students realize the need, and skill introduction progresses sequentially as the game becomes more complex (Rink, 2001).

Allison and Thorpe's (1997) research examined the effectiveness of two approaches to teaching games among children in physical education class. The students were 9-year-old boys (n = 40), and 8-year-old girls (n = 56). The 40 boys were randomly assigned to the traditional skill approach as a control group and TGfU approach as the experimental group for basketball and hockey games. The two teachers involved in the study employed both traditional skill based and games for understanding approach. Prior to the research, an outline of the two teaching approaches was provided to the teachers (which were the timetable of lessons and the scheme of work). The teachers were also presented with Bunker and Thorpe's (1986b) article on the curriculum model. The research lasted 12 weeks. The 3-week pretest period was followed by the treatment period whereby each teaching group received six 1-hour weekly teaching sessions. The period was immediately followed by a 3-week posttest period. The *American Alliance for Health, Physical Education, Recreation, and Dance* (AAHPERD) *Basketball Test* for skill test, knowledge, and understanding test and *Affective Domain Questionnaire* were administrated in this study. The results of this study provided evidence that groups taking part in the TGfU approach showed significant improvement in tactical understanding of the games of passing the ball, factors involving decision making, and the importance of appropriate support once a pass and/or shot were completed.

Research carried out by Turner et al. (2001), also supports the cognitive outcome of the TGfU approach. The study was carried out with two teaching approaches of tactical skill based as control group and teaching games for understanding as experimental group with physical education students aged 11 to 14. The students were divided into three teaching groups categorized as high, medium, and low skill. Boys and girls from each of the three groups were interviewed. Hockey was chosen as the teaching unit because the students had not played this game previously within the context of the physical education program. The study was carried out for 15 lesson units and students were taught a number of tactics and skills. Modifications of the games were introduced to assist the students' understanding. The instructors for this study were two physical education teachers who had previously taught students (aged 5 to 14 years) for a period of 4 years. They were introduced to TGfU as an in-service intervention education program.

During the last week of the study, 9 student participants were interviewed to find out their experience in the field hockey unit. The research data were gathered through open-ended interview using a structured guide for format consistency. Interview questions were focused on students' reflection on the field of hockey, self-perception of skillfulness, and connection to previous game experiences. Interview tapes were transcribed verbatim by utilizing the constant comparative analytic technique (Glaser & Strauss, 1967; Patton, 1990). The results of this study support the construction of students' understanding of tactical knowledge in invasion game play.

Mitchell's (2005) research on *Teaching and Learning Games at the Elementary Level* has supported that learning tactical components of one game can help with the tactical components of another similar game. Understanding the concepts of one game can aid in the players' performance of another similar game. The TGfU approach allows students to link and relate the tactical problems between all similar games.

Decision Making

Decision making is defined by Oslin (2005) as making appropriate choices about what to do during a game. In a game match, students need to react to unexpected situations which they cannot precisely predict during practice. By playing the game with tactical understanding, the learner will master the relevant to tactical knowledge. Decision making component of tactics involves an adaptation to an environment that the student produces within the game situation (Rovegno & Dolly, 2006).

Turner and Martinek (1992), in their research, compared the technique approach of teaching with TGfU approach with four groups of inexperienced students in field hockey.

The researcher described the key problem as being *a* lack of research "in the area of student decision making" (Turner & Martinek, 1992, p. 295) during the playing of game in physical education. The researcher believes that the technique approach the teacher uses creates teacher dependent students. This is because the students are constantly being guided and prompted instead of thinking critically about the game. One reason the researcher gave in the skill-based approach is that it is easier for them to evaluate the students' performance in the physical education lesson.

In another study regarding decision making (Mitchell, Griffin, & Oslin, 1995), off the ball movement for students in game performance showed this was enhanced for students taught using the tactical approach. In a long-term study conducted over 15 lessons for students learning a hockey game through the TGfU approach it was shown that these students made better decision making compared to students taught with the technical skill approach.

One of the early studies by Capel (1991) was done to determine the effects of TGfU as interactive activities on student decision-making performance. Capel attempted to observe the differences in tactics and skills between two groups of middle-school children. One of the groups was the control group taught by the traditional skill approach while the other group was taught with interactive TGfU activities. Interactive activities were defined as cooperation, decision making, and communication. The result of this study showed that students taught with the interactive TGfU approach performed better in decision making. Conversely, students taught with the traditional approach, which was the skill approach, crowded the ball in invasion games and did not know what skill was most appropriate to use in various situations. This study was evidence proving that students in the traditional skill-based approach had less understanding of how to improve their game play and performed poorly in decision making.

The study by Rovegno et al. (2001) supported that decision making can be enhanced among children in primary school. Twenty-four students in this study (12 boys and 12 girls) were graded in skill level before presenting by their teacher. The result of this study showed significant improvement of on the ball skill (i.e., passing), off the ball skill (i.e., cutting and receiving) and decision making for who to pass to, what type of pass (where to cut to get open) in a 12 lesson unit aerial basketball game. They were videotaped and their success and failure in each of the three categories were recorded with the Game Performance Assessment Instrument (GPAI). The result showed significant improvement in the class as a whole in each of the three categories with lesser skilled students also improving more as compared to highly skilled students.

The research carried out by Tallir, Musch, Lannoo, and Voorde (2003) support that invasion game of teaching with TGfU approach improves students' learning outcome in decision making as compared to the traditional skill approach. This study was carried out with 97 participants aged 10 to 11 years old (55 girls and 42 boys) from four classes of two primary schools from the same region. All lessons were organized within the normal school setting during the physical education classes. Classes were randomly assigned to two control (n = 45) and two treatment groups (n = 52). The control group focused on the traditional approach skill acquisition of 3 versus 3 half court basketball game. Skill acquisition was mainly practiced by game isolation. The lesson consisted of three parts: (a) an introductory activity, (b) practicing one or more skills, and (c) a game to conclude the lesson. The treatment group focused on aspects of the 3 versus 3 game play (scoring, creating shooting opportunity, set up, and attack). During each lesson, the teacher monitored tactical problems while the children played a game form (3 versus 2). This implied stopping the game and questioning the children, thereby encouraging them to think about the aim of the game.

The study lasted for 12 weeks of playing basketball games. The participants were tested before, during (two times) and at the end of the 12 weeks. The Groups Embedded Figure Test (GEFT) was carried out to determine the outcome of the study. Confirmatory factor analysis showed that there was no significant difference between the theoretical model and the measurement model. The decision making test was composed of seven video-based items. In this study, the procedure was adopted to study the impact of the two approaches on cognitive and skill performance. The measurement procedure was built based on both game and non-game situations.

The result of this study indicates that there is no differential impact of the two approaches on decision making. In relation to decision making, the traditional skill approach showed linear improvement in test score; whereas, the students in TGfU approach showed significant increase in test scores. The study concluded that the TGfU approach resulted in increased efficiency of the learning process as the students were better able to cope with the demand of the situation right from the start.

A similar study was carried out by Tallir et al. (2003) in another research to validate the instrument of GPAI. The study reports on the development and validation of two video-based coding instruments for assessment of individual game performance of 11- to 12-year-old children. The study was aimed at developing new, valid, and reliable assessments for decision making and execution of this decision in game situations. Two experts were consulted help with developing the video-based instruments. Description and criteria were formulated for the different decisions made during three on three soccer and handball games. The experts analyzed videotaped fragments to examine inter and intra observer agreement. The inter and intra observer agreement was calculated by means of kappa-values in SPSS. Kappa is a measure of agreement. A value of 1 implies perfect agreement and a value of less than 1 implies less than perfect agreement. Values higher than .80 are seen as very good agreement, while values between .61and .80 are seen as good agreement. The findings of this study suggested that the instrument provided a valid and reliable method for the assessment of decision making during 3 versus 3 in soccer game and handball game play. The kappa value for soccer was .80 and for handball it was .73.

In another experimental study on two groups, Jones and Farrow (1999) examined the potential transfer of knowledge about decision making using the TGfU approach with game classification on eight-grade students. One group was to undertake a 4-week rugby unit (control group), while the experimental group went through a 4-week volleyball unit. At the end of the 4 weeks, the two groups were observed playing a badminton game. The results showed that the experimental group had better decision-making skills and could make decisions faster than the control group.

Sanmuga’s (2008) study was carried out in Malaysia to investigate the effects and sustainability of three training programs on 225 boys with different skill levels. The three training programs which combined three different teaching styles incorporated TGfU of tactical elements. The research employed quasi-experimental factorial design with repeated measure using pretest score of dependent variable as covariate. The three training programs served as independent variables. The study was carried out on 12- to 13-year-old boys over

15 weeks in physical and health education classes. The pretest was conducted during the first week before the training intervention.

The effectiveness and sustainability of the three hockey-training programs were evaluated using speed and accuracy executing in general hockey skill on decision making of dribbling, tackling, passing, and scoring. Posttest 1 was conducted at week 8. Posttest 2 and 3 were conducted (to collect additional data) at week 12 and 15 to assess the sustainability of the training. GPAI was used to measure quality of decision making in a game play of 3 versus 3. As for inter-coder reliability, based on 18 players in three game play, agreement was 85.7% for decision making. ANCOVA and MANCOVA statistical tests were used to analyze the data. The findings concluded that the three training programs showed improvement in the students' decision-making performance. This was attributed to the modified game activities as suggested in the TGfU model which allowed for decision making using constructivism theory. The game assisted the players in controlling the ball, improving tactical decision, and improving their skill execution in 3 versus 3 game plays. Therefore, the findings of this study support that the TGfU model is important for students who want to improve their decision making while learning games in school.

Research (Light, 2002a, 2003; Turner & Martinek, 1999; Webb & Pearson, 2008) indicates the strengths of the TGfU approach and its desirability as a quality approach to teaching games. Light (2002a) highlighted the effectiveness of TGfU for engagement, cognitive learning, and demonstrated that cognition games teaching is difficult to address. With TGfU as a pedagogical approach, teachers can be assisted in addressing this issue.

Problem Solving

The TGfU approach emphasizes discovery and active hands-on learning. Therefore, it can be very meaningful and authentic to learners. The approach requires students to cognitively engage in the learning process, determining what is processed, how it is processed, and, ultimately, what is learned (Rink et al., 1996). The importance of learning to problem solve among children from 7 to 11 years old was also stressed in J. R. Thomas et al. (2000).

A study by Turner and Martinek (1995), with four groups of inexperienced students in a hockey game, discovered that teaching games with a technique approach produced students who possessed game skills during drills; however, these same students were unable to perform the same skills in actual game situations. The traditional skill approach to teaching game skills usually centers on acquiring relevant movement patterns in isolation—that is, outside of a game situation. Researchers argue that students might benefit if they could learn these skills within a game context. The researchers argued that the technique-oriented approach led by the teachers creates teacher-dependent students. According to Turner and Martinek (1995), skill is incorporated into game play and students are “doomed to failure if they cannot make proper decisions” (p. 296) such as where and when to execute an appropriate pass. The researchers also compared two methods of teaching games, technique versus tactical approach, and supported the tactical TGfU approach. Turner and Martinek (1995) also demonstrated that if students acquire knowledge about the game, the game goals, and knowledge of action within the context of the game situation, they would have more success in both their skill and tactics during game play.

In another study by Nevett et al. (2001), 24 fourth-grade students were interviewed and tested on problem solving skills before and after 12 lesson units of instruction on cutting, passing, and tactics in invasion games. After the 12-week lesson unit, the fourth-grade students' thinking and problem solving were better than before. The students not only improved in their knowledge and understanding of game tactics, but they also improved in their attempts to: (a) deliver more passes, (b) make more lead passes, (c) make more cuts into space, and (d) make decisive runs which were observed by teachers (who were tracking activities with a checklist). This research supports Anderson's (1982) research that in order to really learn a skill, one must perform the entire problem-solving activity successfully in a situation where the performer sees it as useful.

Research by Mesquita, Graca, Gomes, and Cruz (2005) examined the impact of teaching volleyball with TGfU approach proposing a step-by-step game form development on student's game performance. The study involved 25 seventh-grade students aged 12 to 15 years from Northern Portugal in 12 lesson units. The game form presented in this study was modified and adjusted to students' age and experience. Cognitive understanding of tactical adjustment and decision making were planned in a game-like situation. Students construct their learning from situational problems they encounter. Activity is designed to allow the problem-solving situation, in which perception, understanding, and the decision-making process are valued. Modifying the game into the most suitable form involves the adaptation of the game play area, the number of players, the equipment used and the rules applied. The game was planned from one vs. one to four vs. four which involves tactical understanding.

In this study data on student performance on the problem solving were gathered from systematic observation of video records of student behaviors while playing two vs.

two volleyball games. The observation protocol used GPAI. As normality condition was not met in this study, non parametric statistic for two independent samples (Mann-Whitney) was applied on between-group differences. Nonparametric statistic of Wilcoxon was applied to test within-group changes. The result of the study showed that students had made progress in both categories of problem solving on the skill execution. The one vs. one and two vs. two game forms allowed for significant changes in play performance which related to game continuity; however, in this study the transition for a more competitive oriented game was not evident. The study suggested the need of more time to introduce 3 versus 3 and 4 versus 4 for competitive orientation.

The current research on students' problem-solving ability in games was examined by Chao, Yu, Ming, Lien, and Kuo (2010). This study aimed at finding out the effectiveness of tactical discussion on game performance and student problem-solving ability. The participants for this study were 30 (n = 30) elementary physical education students. The study applied experimental design involving intervention of team learning model in physical education. *Game Performance Assessment in Team Sport* (GPATS) and *Sport Problem Solving Ability Assessment* (SPAA) were used to collect data after the first lesson, third lesson, fifth lesson, seventh lesson, and ninth lesson. The trend analysis achieved a linear trend which showed significant level of $p < .05$ on students' game performance and problem-solving ability. The result from this study indicated that sports problem solving could predict student game performance. The study made some suggestions for developing problem solving ability in the context of game performance.

Psychomotor Learning Outcome

Psychomotor domain of learning outcome encompasses all observable human motion ranging from basic fundamental movement to modifying and creating aesthetic movement pattern (Melograno, 1996). Psychomotor learning outcome is measured by the effectiveness of players' being able to learn skills from the teacher or coach and then being able to demonstrate that skill in their own performance. According to Fitts and Posner (1967), from the theory of motor learning, learning skill takes place in three stages: (a) cognitive, (b) associate, and (c) autonomous. In the cognitive stage, learners struggle to make sense of the skill in a cognitive manner. At this stage, the learner is still processing the task in his or her mind rather than in action; they cannot yet differentiate between the feel of correct execution and incorrect execution. The learners still lack body awareness. At this stage they still need the teacher or coach to be their primary source of feedback. The length of this period depends on the nature of the task and/or environment.

At the associate stage, the skill-learning progress is gradual and individual. Players execute the skill more consistently; however, the learning is not yet automatic. The learners feel the difference between incorrect and correct execution but cannot always explain the difference. The learners realize that they made a mistake, but they are not sure of their mistake. The learners still rely on feedback from the teacher or coach; however, they are beginning to develop the ability to self-correct and make their own adjustment. The skill execution is more natural and they can make sense of the instruction given by the teacher or coach. When the teacher or coach's questioning helps the players to self-correct, it improves their skill execution. In the final stage (the autonomous stage), learners' skill execution become more consistent and require less thinking as they move to the autonomous stage. At this stage the skill requires little thinking, is automatic, consistent, and habitual. Once the learners reach this stage the issue of thinking distracting their attention away from their external skill performance will be minimal.

Later Anderson (1982) developed the three stage model to cognitive skills as declarative stage and procedural stage. The cognitive stage heavily involved the learner concentrating on performing the skills. The learner uses information on how the skills were performed, in which the emphasis is on what to do. The J. R. Thomas, Thomas, and Gallagher (1993) study categorized the information processing to game play into three stages. At the cognitive stage, the learner is concerned with keeping the ball in play. Thereafter, the skills gradually develop and the learner's knowledge reaches an associate level due to integration and a combination of the skills. At the autonomous level, the learner tries to force errors on the opponent. This is possible by detecting weakness of the opponent. In this stage, the learners are able to anticipate their opponents' actions as well as reflecting on their own game play.

Skill Execution

The study by Rovegno et al. (2001) carried out to examine the effects of the TGfU approach on 12 lesson units showed enhanced skill execution among elementary school children. Twenty-four students participated in this study (12 boys and 12 girls). They were graded on their skill level by their teacher. The results of the study showed significant improvement on the ball skill (i.e., passing) and off the ball skill (i.e., cutting and receiving). Aerial basketball games were played by students for 12 lesson units. They were videotaped and their success and failure in each of the three categories were recorded with the *Game Performance Assessment Instrument* (GPAI). The results showed significant improvement in the class as a whole in each of the three categories with lesser skilled students improving more than highly skilled students in skill execution.

Sanmuga's (2008) doctoral study also supported that skill execution improves with the TGfU approach. The effects and sustainability of training program using the TGfU approach with different teaching styles have demonstrated significant improvement in skill execution in terms of dribbling, passing, tackling, and scoring in hockey. The study was carried out with 12- to 13-year-old boys in physical and health education class for 15 weeks. The training intervention used 12 lessons in physical education classes. The findings showed a significant difference in skill execution by the boys. Capel's (1991) study was done to determine the effects of the TGfU approach as interactive activities compared to traditional skill approaches on skill execution. Capel observed skills between two groups of middle-school children. One group was the control group taught using the traditional approach while the other group was taught using the TGfU tactical interactive activities. The result of this study showed that students taught with interactive (TGfU) approach performed better on all three components including skill execution. Students taught with the traditional approach crowded the ball in invasion games and did not seem to know which skill was most appropriate to use in various game play situations.

In another study by Allison and Thorpe (1997), research was carried out to examine the effectiveness of two approaches to teaching games within physical education. The students were (n = 56) 8-year-old girls and (n = 40) 9-year-old boys who were randomly assigned to traditional skill-based approach as a control group and the TGfU tactical approach as a experimental group for basketball and hockey games. The study lasted 12 weeks. A 3-week pretest period was followed by the treatment period whereby each teaching group received six 1-hour weekly teaching sessions. The period was immediately followed by 3-week posttest period. The AAHPERD Basketball Test for Skill test, Knowledge and Understanding test, and the Affective Domain Questionnaire were administrated in this study. The result of this study indicated that both groups showed improvement in their skill sets. Furthermore, students with low technical ability in the TGfU approach reported positive scores for skill execution compared to the traditional skill-based approach. One of the main arguments against the TGfU approach was that student technical skill would not show much improvement. However, this study not only proved that the skill execution was equal in both groups but that the tactical understanding and enjoyment showed greater improvement for the TGfU group as well.

Turner et al. (2001) study considered how the concepts of skillfulness were constructed by students in invitation games. The study focused on skillfulness in invasion games of field hockey taught with TGfU concepts. The study was conducted in a physical education program for 11 to 13 year olds. The school curriculum allocated 45 minutes physical education lessons per week. The invasion games fulfilled several interrelated criteria. An invasion game requires players to contend with environmental demands. To be successful, the individual must be able to make decisions rapidly. During the last week of the study data were collected for 9 participants using open-ended interview with structural guide for format consistency. Interview questions focused on students' reflection of the field hockey unit content and their perception of skillfulness. Each student was interviewed individually by experienced teachers. The interviews were audio taped and data were analyzed by constant comparative analytic technique. The interview was initially coded into tentative conceptual categories. The initial categories were then compared and merged until no additional discrete categories could be determined. Trustworthiness of the data were established through the use of multiple researchers independently coding the data and discussing categories of data analysis until interpretive coherence was reached.

Skill Test

Allison and Thorpe (1997) study compared the effectiveness of the skills approach with TGfU approach. The research was lasted for 12 weeks on 9-year-old boys. The pre and posttest were administrated on basketball and hockey skill test. The skills tested in this study were basketball skill test on speed shooting and passing (AAHPERD, 1984) and Henry-Friedel Hockey test on accuracy and speed. The finding of the study showed that students taught with TGfU approached improved their skill basketball skill test and hockey skill test better than the traditional skill approach. Students with TGfU approach who had lower technical ability in skill test had reported higher score compared to students with traditional skill approach. The study concluded that skills test consistently show no decline in TGfU group.

Harrison et al. (2004) study included 182 students in six beginning collegiate volleyball classes, meeting 2 days a week for 16 weeks. Students were divided into high-, medium-, and low-skilled ability groups for statistical analysis based on their combined *T*-scores on four skill pretests. The study administrated AAHPERD's test of set-up, passing, and serving tests and the Stanley's spike test, selected for their game-like qualities, were administered as a pretest, midterm test, and posttest. The skills tests were used to test learning at the beginning stages of game play. No significant differences existed between the groups taught by Tactical Instruction or Skill Teaching on skills tests. Students in both models improved significantly from pretest to posttest on all skills tests.

Studies conducted by French, Werner, Rink, Taylor, and Hussey (1996a), and by French, Werner, Taylor, Hussey, and Jones (1996b) examined effects of different approaches to games instruction on skill performance. The participants in this study were ninth-grade students who were randomly assigned to three treatment groups and a control group. The treatment groups played badminton and the control groups played other sports such as tennis. The participants in this study were assigned to one of three groups, (a) skills, (b) tactics, and (c) combination of tactics and skills. The first study was a 3-week study and the second study was a 6-week study. The results of the 3-week study showed that the treatment groups also played more competitively than the control group. The combination group did not show as much progress in terms of skills or tactical understanding after 3 weeks as was exhibited from the tactical and the skills group. However, later in the 6-week study, which replicated the first study, the combination group had shown significant improvement. The second study had 32 new participants and new teachers. However, the study followed same as the first study model. These results revealed that a combination of skills and tactics takes time to develop where skills alone or tactics alone might be acquired more readily.

A recent study by Pritchard, Hawkins, Wiegand, and Metzler (2008) did not support the finding of French (1996a, 1996b) on badminton skills. Pritchard et al (2008) reports the effects of two instructional approaches on students' skill, knowledge, and game performance on secondary school students. The study involved Sport Education Model (SEM) which used TGfU and Traditional Style (TS) which used the traditional teaching approach. The research was carried out for 20 lessons on volleyball unit and tested on serving, passing, and set up in volleyball testing. Repeated measures of ANOVA results showed there were no significant effects of the groups on the volleyball skill test of serve skill, pass skill, and setting skill. Students in the both SEM model and TS model did not improve on skill test significantly.

Blomqvist (2001) validation study was carried out to investigate the effects of TGfU approach on badminton skill between expert and novice students. The participants in this study were primary and secondary school students' age level 9, 12, and 14 years of age. The study involved serve, clear, and drop battery test on badminton skills. In the first serve test, long serve test was used to assess serve skill. Students were asked to hit a high and long serve toward the four scoring area (40, 80, 120, and 160 cm) near the center and baseline. In testing the clear skill, the students were asked to stand in the right receiver's box of 1.5 meters from the baseline and hit a clear from the assistance serve toward the four scoring area near the side and baselines. In testing the drop shot, students were asked to stand in the right receiver box 1.5 meters from the baseline and hit the drop shot from the assistance serve toward the three scoring area near the net and service line. The result of the study reports that the expert students performed significantly better than the novice students in both the long serve test and clear test skill test. In this validation study, the drop shot skill test was excluded from the analysis due to inability to discriminate between the groups. The study also reported that the skill test was found too difficult for novice players in badminton game. Therefore, the outcome of this study had shown that the skill test was appropriate to be carried out using expert students in physical education setting and not for the novice game players.

Game Performance

Game performance measures observable outcome from study to study. A study by Memmert and Konig (2007) was carried out to examine the impact of TGfU approach among students in elementary school. The study was conducted with children between 6 to 11 years old. Students from frist grade (*n* = 14), second (*n* = 14) and fourth (*n* = 15) grade of two elementary schools using modified TGfU invasion games. Varied components of pedagogical information such as questionnaires and students' observation as a measurement of game ability performances were chosen as a dependent variable. The result of the study showed that among students with the TGfU approach acceptance and performance were recorded higher compared to the control group. Students taught with TGfU showed significant improvement in game performance ability.

The overall game performance assessment of participants was evaluated in a study conducted by Tallir et al. (2003). The study aimed at evaluating overall game performance in handball and soccer game. The 11- to 12-year-old children were filmed playing soccer and handball in competition while playing three on three soccer and handball. The observable components of game performance were identified by two observers. The expert description of the decision resulted in good, poor, and a neutral level of decision for each observable component. The intra-observer agreement was valued between .61 and .80. The findings suggest that the new instruments provide a valid and reliable method to assess overall game performance.

Harvey (2003) carried out research to examine whether the TGfU approach can be used to improve specific aspects of game performance and game involvement. The study involved 16 participants aged 16 to 18 years old for 12 lessons of soccer. Player's game performance in a modified game situation of 3 versus 3 was analyzed using video camera before, during, and after the study. The modified game involved three central defenders working together to implement several defensive strategies. Data were collected for pre-, mid-, and post-assessment in game component. Game Performance Assessment Instrument (GPAI) was used to analyze the individual game components of skill execution, decision making, adjust, and cover. The result indicted gradual improvement and marked increase in game performance. The result of this study suggested that the TGfU approach has the potential to improve the student's game performance.

A similar study was carried out by Harvey (2006) to examine the effectiveness of TGfU approach on six grades (11 to 12 years) in a lesson unit of soccer. The study aimed at finding out whether the TGfU approach would improve the game performance and game understanding of participants. The study also wanted to assess the relationship between game performance and game understanding. Using single subjects delayed multiple baseline design, three students of higher, moderate, and lower skill were randomly selected from four different grades in a physical education classes. Data were collected on eight measures using Game Performance Assessment Instrument (GPAI) and Verbal Protocol Analysis technique for Game Understanding. Elements of game performance were formulated into four indexes of decision making, skill execution, overall game performance and game involvement. Level of sophistication was coded as (i.e., 0,1, 2, and 3).The relationship between GP and GU was also assessed using Pearson correlation.

The effectiveness of the TGfU approach was evaluated on the implementation in a study in the Hong Kong context (Liu, 2003). The researcher investigated the effectiveness of the proposed TGfU approached to assess primary physical education students' game performance in volleyball. Four physical education student teachers took part in this study. Some 162 primary six students in volleyball teaching practice were evaluated in this study. The GPAI instrument was used to evaluate students' game performance. The study reported that GPAI is practical and simple. However, the study also reported constraints in using the instruments. The student teachers were inexperienced in using the assessment procedure and faced time constraints. Another disadvantage was that the non-active students could not be assessed genuinely in a team with active students. The study suggested additional observation practice before implementing the assessment. Videotaping the lesson was also suggested to help in data recording. Finally, the study also suggested that the student teachers showed a high level of confidence in implementing this method and indicated that this assessment method can help students to learn.

Blomqvist's (2001) study was carried out to develop two valid assessment instruments to evaluate the game for understanding and game performance in badminton. This study also applied the instrument to different age groups and experience levels. The third purpose of this study was to evaluate the effects of two types of instruction on game understanding and game performance of physical education students. The participants in this study were primary and secondary school children at different age levels (9, 12, and 14 years old). Multiple measures of knowledge, game understanding, skills and game performance were used to evaluate the various aspects of game performance. The result of the study showed that the instruments were valid indicators of game performance. The study also revealed that the experimental group of games for understanding as an instruction was able to improve its badminton knowledge, game understanding, and serving skill; whereas, the traditional group receiving the skill instruction only improved its badminton skill.

Student teachers teaching experiences with TGfU were explored by Light (2003) in his study on a games unit in Australia. The research focused on low skilled students with little confidence in their ability to participate in games. Their response to TGfU reported through interview and written reports were generally positive. For most of them, their positive emotional experiences of the games were related to the fact that participation emerged as central to their changed perception of the educational value of games. Their response also indicated that their understanding of the deeper structure of game playing and their positive emotions were related. The pre service student’s empowerment arose from increased understanding and contribution to their enjoyment and increased self-esteem.

In the application of constructivism as a theoretical perspective, the teacher is viewed as a facilitator who helps student to learn new knowledge by creating a positive learning environment to take into account students’ prior knowledge, experience, and developmental levels (Rovegno & Dolly, 2006). The TGfU approach was effective as it was based on constructivist concepts that encouraged students to develop their own understanding with meaningful contexts. By experiencing modified games in various contexts, the students reported that they were able to develop tactical understanding, decision making, and problem solving of game performance (Allison & Barrett, 2000; J. F. Richard & Wallian, 2005; Rovegno & Dolly, 2006). However, past research did not explain what the students did to improve their tactical understanding (Rovegno et al., 2001). Participation in game learning for students also affects their motivation to engage in the activity (Piipari et al., 2009).

Self-Determination Theory

Recent research has shown that students’ participation in game learning affects their motivation to engage in the activity (Piipari et al., 2009). Self-determination theory has provided the conceptual framework for research on students, participation in sport and physical education programs (McKenzie, 2007; Ntoumanis, 2005; Piipari et al., 2009). Piipari et al. (2009) have identified that students’ motivation for participation in sports and physical education programs may affect their experience to continue participation in future. Another researcher also supported the statement that students will be interested when they are successful in doing certain activities and continue to participate (Ishee, 2004). Subsequently, Mosston (1966) has pointed out in past research that to get broader objectives in physical education lessons such as student interest and motivation, there is a need for teachers to source out effective approaches in teaching and learning. Recent research in education has found that giving students control of their learning activities improves their motivation (Bycura & Darst, 2001; Griffin & Maina, 2002). Recent research also stressed that when students experience positive outcome from their involvement in game activity, they can be expected to remain in physical activity in adolescence and adulthood (Dishman et al., 2005; Piipari et al., 2009; Telama et al., 2005).

Motivation is defined as the internal state or condition that is activated and gives direction to an individual's thoughts, feeling and action (Csikszentmihalyi & Nakamura, 1989). It is the key to getting people to do what they want to do. Situational motivation refers to motivation one experiences while engaging in a particular activity; it is the here and now of motivation (Vallerand et al., 1997).The theoretical perspective of situational motivation propose dimensions of intrinsic motivation, extrinsic motivation, external regulation, and amotivation (Moreno, Gonzalez, Martin, & Cervello, 2010). The most self-determination type of motivation is termed intrinsic motivation and refers to behavior students engage in for pleasure and the satisfaction one derives from direct participation (Guay et al., 2000). Research has shown that more self-determined forms of motivation are more closely associated with positive consequences psychological well-being such as intrinsic motivation and identified regulation. On the other hand, amotivation and external regulation are negatively associated (Moreno et al., 2010).

In brief, individuals' own experience help to mold what motivates them. People can feel motivated by interest, enjoyment, satisfaction and challenge of activity by a deep involvement in their activity (Deci & Ryan, 2000). One of the goals of game performance in a physical education program is to promote physical activity and it is important to explore ways to accomplish that goal. Hence, self-determination theory (Deci & Ryan, 2000) can support the theoretical framework to study issues related to motivating student to continue participating in game performance.

Individuals are more likely to be engaged in behavior or activity when they are self-determined (Ntoumanis & Standage, 2009). Any changes in feeling of competence, whether they are increased or decreased are often directly linked to changes in intrinsic motivation (Vallerand & Rousseau, 2001). Self-determination theory attempts to understand why students do what they do and ties it to the fact that they consistently attempt to integrate new views and interest within their self-determination (Ntoumanis, 2001b). The theory explains the "what and why" of children's determination for goal pursuit by understanding how to structure the motivational environment to foster a higher level of self-determination among students (Deci & Ryan, 2000).

In self-determination theory (Deci & Ryan, 2000), it is proposed that when a student moves along the motivation continuum from lack of motivation toward intrinsic motivation, there will be an increase in cognition (deeper understanding), behavior (increased participation) and affect (better attitude). According to the theory, three components lead to an increase in motivation. Students who are (a) competent, or believe they can succeed in the activity; (b) autonomous, or sense that they have choices; and (c) related, or feel socially successful, will be more motivated. Thus, intrinsically motivated students will be more likely to practice physically active behavior in class and possibly become physically active on their own.

The goal of self-determination is to identify those forces that cultivate children's potential, development and integration (Ryan & Deci, 2000). The research suggests higher level of physical activity involvement pattern imply that students are more attracted to physical activity overall (Brustad, 1991; Griffin & Maina, 2002). Student can feel motivated by interest and enjoyment by getting involvement in certain physical activity. Involvement in the physical learning activity for enjoyment is because it provides satisfaction (Csikszentmihalyi & Nakamura, 1989). Knowledge of what makes. an experience enjoyable to participants is critical to understanding which can enhance their motivation (Scanlan & Simons, 1992).

Researchers argue that enjoyment is a critical construct for understanding and explaining the motivation for engaging in activities (Kendzierski & DeCarlo, 1991; Kimiecik & Harris, 1996; Scanlan & Simons, 1992). Though Kimiecik and Harris (1996) believed that ambiguity exists in enjoyment definition, they defined enjoyment as an optimal psychological state that leads to performing an activity primarily for its own sake. Scanlan and Simons (1992) defined enjoyment as a positive affective response to experiences that reflects feeling and perception such as pleasure, liking and experienced fun. An enjoyment activity is any activity done because it serves as the cornerstone of intrinsic motivation (Csikszentmihalyi, 1990).

Research studies related to motivation by Ryan, Frederic, Lepes, Rubio, and Sheldon (1997), reported that levels of competence along with enjoyment of task were predictors of adherence and attendance in physical activity. Students are more likely to be engaged, perceive and demonstrate higher level of motivation when they have sufficient skill and are optimistic about the choices given to them (Prusak, Treasure, Darst, & Pangrazi, 2004). Physical education has the potential to be an extremely intimidating environment for children who may have little or no exposure to any physical activity (Papaioannou, 1994). Students who report higher level of perceived competence in physical education are likely to have had experience that they had found physical education more appealing and enjoyable than their peers who report lower perception of competence (Ntoumanis, 2001a; Prusak et al., 2004).

One of the benefits of utilizing TGfU approach is its connection with the games classification system. The game was designed to utilize the knowledge and strategies of one game situation to enhance the learning and performance in another game situation (Doolittle & Girard, 1991; Jones & Farrow, 1999; Mitchell & Oslin, 1999a; Werner & Almond, 1990; Werner et al., 1996). By utilizing the game, physical educators are able to promote the transfer of previously learned information about one game situation to the new game learning by organizing the similarities and differences of the games (Brooker, Kirk, Braiuka, & Bransgrove, 2000; Chandler, 1996; Jones & Farrow, 1999; Mitchell & Oslin, 1999a; Rink et al., 1996). This games situation allows for a richer understanding of the decisions made during games that promotes the transfer of previously learned information or skill and provides a logical progression for tactical concepts to be presented.

Getting involved in games will offer a self propelling motivation to students (Chandler, 1996). Participation in games provides the type of motivation to students that learning skills in isolation often neglected (Chandler, 1996; Schmidt, 1988). The significance of enhancing motivation through strategies such as game play is recognized as a positive basis for learning experience in game performance (Chandler, 1996: Mitchell & Chandler, 1992). With the TGfU approach, the physical educator is able to use the motivation of games to provide learning opportunities for students while fostering the task and skills of the games (Chandler, 1996). Therefore, it is helpful for physical educators to simplify the game rules and strategies to develop student understanding.

In this study when students are involved in a game situation of 2 versus 1, 2 versus 2 and 3 versus 3, it provides students' engagement in game learning. When passing skill and the tactics of game presented to them in the modified game, they can engage in a tactical situation such as: (a) What must I do to succeed in this situation? and/or (b) How can I help my team to move the ball? This situation can be explained in Self-Determination Theory as students' cognitive understanding becoming deeper; increased behavior of participation in a game of 3 versus 3 can improve their attitude. Motivational variable from Self-Determination Theory could predict student's cognitive and affective experiences while going through game situations. Students can feel motivated by interest, enjoyment, satisfaction and challenge of activity by a deep involvement in their activity (Deci & Ryan, 2000). Another researcher supported the statement that students will be interested when they are successful in doing certain activities and continue to participate (Ishee, 2004). Research suggests more physical activity involvement pattern imply that students are more attracted to physical activity overall (Brustad, 1991; Griffin & Maina, 2002). Therefore, one of the research questions in this study will be whether students with TGfU approach are better motivated compared to students with traditional skill approach after the game.

Affective Learning Outcome & Motivation

Self-Determination Theory (Deci & Ryan, 1985) proposed that when students move along the motivation continuum from lack of motivation toward intrinsic motivation, there will be an increase in understanding, increased participation and better attitude. Intrinsically motivated students will be more likely to practice physically active behavior in the physical education environment and possibly become physically active on their own. SDT proposes that intrinsic motivation and autonomous types of extrinsic motivation (identified and integrated regulation) lead to positive cognitive, affective, and behavioral consequences (Deci & Ryan, 2000; Piipari et al., 2009).

In the Memmert and Konig (2007) study, research was carried out to examine the impact of TGfU approach among elementary school students' motivation in game participation. The study was done with children between 6 to 11 years old. Students from first grade (n = 14), second grade (n = 14), and fourth grade (n = 15) grade of two elementary school went through modified TGfU invasion games as an intervention program. Various components of pedagogical information from questionnaires including student motivation were measured as dependent variables. The results of the study showed the students with TGfU approach recorded higher motivation compared to the control group.

Research has demonstrated that enjoyment represents a key factor underlying the motivation for children and youth to maintain positive engagement in physical activity (Piipari et al., 2009). A study regarding the relationship between physical education and students motivational profiles was carried out by Piipari et al. (2009). The purpose of this study was to analyze students' motivational profile based on the self-determination theory and how this theory is related to physical activity. The participants in this study were 429 sixth-grade children (girls = 216; boys = 213) aged between 12 to 15 years old. Seventeen elementary schools took part in this study. The participants completed questionnaires on Sports Motivational Scale (SMS), Sports Enjoyment Scale (SES) and Physical Education Anxiety Scale (PESAS). Children completed the questionnaires in their classroom and teachers collected the response sheets. All the variables had internal consistency reliabilities above .80. The findings of the study suggested that students may be physically motivated toward physical education lessons both intrinsically, extrinsically, and still experience enjoyment in their physical education program.

Standage, Treasure, Duda, and Prusak (2003) in their study support that students' participation in physical activity depends on their motivation of engagement in that activity. Participants in this study were 114 sixth graders (n = 30; 16 boys and 14 girls), seventh graders (n = 30; 18 boys and 12 girls), and eighth grades (n = 54; 23 boys and 31 girls) public school students. Students participated in 90 minutes of physical education classes. Four surveys were used in this study. The Learning and Performance Orientation in Physical Education Classes Questionnaire (LAPOPECQ) is a 27-item questionnaire measuring the physical education goal (Papaioannou, 1994). Level of self determination motivation was measured with the Situational Motivation Scale with 16-item self-report inventory that assessed intrinsic motivation (Guay et al., 2000). A scale developed by Silverman and Subramanian (1999) was used to asses students' attitudes toward physical education and The Physical Activity Questionnaire for Children (PAQ-C) was used to measure of self-report level of physical activity. The result of this study showed that intrinsic motivation was positively associated with student learning outcome.

In another study Holt et al. (2002) showed that children reported games as being more fun than drills in the sport practice environment. The adoption of modified games that characterize teaching games for understanding may have numerous benefits for children's affective experiences. Facilitating more enjoyable experiences may in turn have implication for motivation and continued participation even after completion of schooling years (Holt et al., 2002).

A study by Allison and Thorpe (1997) was carried out to examine the effectiveness of two approaches to teaching games within physical education. The students were (n = 40), 9-year-old boys and (n = 56), 8-year-old girls randomly assigned to traditional skill based approach as a control group and Teaching Games for Understanding tactical approach as an experimental group for basketball and hockey games. Allison and Thorpe found that students who took part in the TGfU group reported better attitudes and showed increased enjoyment in physical education. On the other hand, low technical ability students in the traditional skill based approach students reported low scores in enjoyment.

Motivational variable from Self-Determination Theory could predict students' cognitive and affective experiences in a school physical education program. A study by Ntoumanis (2001a) examined whether the contextual and personal motivational variable can predict students' cognitive and affective experiences. The participants were 460 (boys, n = 315; girls n = 145) from eight schools in the north of England. Structural equation modeling analysis showed that the needed support provided by the physical education teachers was related to student need satisfaction. Multivariate analysis of variance test showed that those who opted for physical education (n = 171) compared with those who did not (n = 131) reported more motivational experience in the previous school year. The findings call for the promotion of self-motivation in physical education in order to enhance student positive experiences and participation rates.

Moreno et al. (2010) carried out a study to analyze the relationship between motivation and performance in physical education. The participants for this study were students aged 12 to 16 years. Habitual Physical Activity Questionnaire and Situational Motivational Scale Instruments (SIMS) were administrated. These instrument were not validated for the Spanish context; therefore, in this study confirmatory factor analysis was performed. The result showed that acceptable fit indicated. The result of this study showed that intrinsic motivation could result in better performance of students in physical education classes.

Light's (2003) study examined pre-service generalist primary school teachers' experience of teaching games for understanding through a games unit taught at one Australian University. Their responses to the TGfU approach were reported through interview and written report. The study was set to get insight into pre-service teachers' understanding and experiences of TGfU with the grounded theory approach. The study reported positive emotional experiences of games in which they participated. Their responses also indicated an understanding of the deeper structure of game playing. Their increased understanding led to empowerment and contributed to their enjoyment.

A study by Cai (1998) was carried out to investigate student enjoyment in three different teaching styles. Specifically the study examined the student's enjoyment of physical education class conducted by command (Style A), reciprocal (Style C) and inclusion (Style E) teaching style on college students for karate and racquetball classes. Subjects of the study consisted 98 (67 males and 31 females) students. The classes met three times a week for 8 weeks. The Physical Education Class Enjoyment Scale instrument was used in this study. The result of the study showed that in the inclusion style, student decision making increased and decisions made by the teacher were decreased.

Research by McKeen, Webb, and Pearson (2005) supported that increased enjoyment was shown by those exposed to the TGfU approach compared to the traditional skill approach. TGfU has been shown to give improved learning outcome for students.

Summary

This chapter has outlined the theoretical discussions, reviews of the status of knowledge by authorities, descriptions and evaluation of current practices that have been reported on the TGfU approach. The literature reviewed in this chapter provide insight and information on students' cognitive domain of tactical understanding and decision making; psychomotor domain of skill execution and overall game performance; and affective domain of motivation of game performance to a larger area of study of TGfU approach. The past research on cognitive domain of tactical understanding, decision making and problem solving by Allison and Thorpe (1997), Memmert and Konig (2007), Rovegno et al. (2001), Tallir et al. (2003); and Turner et al. (2001) are major contributions of significance of students learning outcome in primary physical education programs. Other studies on the cognitive domain of tactical understanding, decision making and problem solving are the focus on secondary school students and trainee teachers (Harvey, 2006; Jones & Farrow, 1999; Light, 2003; Mesquita et al., 2005). In Malaysia there is only one study contributing to the body of knowledge of TGfU approach by Sanmuga (2008). However, Sanmuga's study only focused on 13-year-old students in secondary school. The purpose of this research is to investigate the effects of the TGfU approach on student's game performance learning outcome in primary physical education class. Therefore, the current study intends to investigate using a quantitative approach the effects of the TGfU approach in improving students' game performance learning outcome such as in (a) cognitive aspect of tactical understanding and decision making, (b) psychomotor aspect of skill execution and skill test, and (c) affective aspect of motivation for participating in game performance. Further, with the qualitative approach the study intends to explore in depth how the TGfU approach affects student learning of decision making and problem solving in games.

Chapter 3: Methodology

Overview

The research methodology is described in detail in this chapter. The detail of the research methodology is expected to provide a deeper understanding about the data collection procedure involved in this study. This chapter consists of several sections, namely: introduction, research design, selection of sample, research procedures, interview, instrumentations, trustworthiness of qualitative approach, pilot study, data collection, and data analysis. The data collection was conducted systematically so as to attain the research objective by taking into account problems and suggestions made during the pilot study.

This study collected both quantitative and qualitative data to answer the research questions. Creswell (2008) has identified the type of research; one strategy used is to check whether there is an evidence for the chosen method in the research question. This study identified the research questions as the reason for collecting data during the study. Therefore, both quantitative and qualitative research technique were employed in this study.

The study answered the research questions in two phases. The first phase was the quantitative research approach to answer four research questions. A quantitative approach was needed to assess the effects of the intervention of TGfU on the students' learning outcome. Further a qualitative technique was used to explore in depth the process of intervention on students' learning outcome. Therefore, the second phase of qualitative data collection technique was employed to answer the last research question. Similar quantitative and qualitative data collection method had been used in other research in the local setting (Goh, 2004; Lam, 2004; Sanmuga, 2008). According to Creswell (2008) this method of collecting quantitative data and qualitative data is most popular in educational research.

Research Design

The first phase the study employed the quasi experimental nonequivalent control group design as it uses intact groups thus establishing its quasi-experimental nature (Campbell & Stanley, 1963; Cook & Campbell, 1979). This design was chosen as the study investigated using quantitative approach the effects of the TGfU approach on students' learning outcome such as in (a) cognitive outcome of tactical understanding and decision making, (b) psychomotor outcome of skill execution and 30 meter handball dribbling skill test, and (c) affective outcome of motivation of participation in game using an existing physical education class. In education, many situations occur that require the intact groups because the study cannot create groups for the experimental study. Randomly assigning students to the two groups would disrupt the classroom learning. Therefore, intact sampling method is appropriate in schools and colleges with quasi-experimental designs (Creswell, 2008). This justifies the reason for selecting the quasi-experimental nonequivalent pretest/posttest design in this study.

This design was selected as it was difficult to get the cooperation of the school administration to carry out full randomization of subjects due to administrative constraints even though permission was granted by the EPRD which is the gate keeper to do research in Malaysian schools. By using existing intact classes the study can maintain the natural setting of the students in physical education classes. A random reassignment of students might create an artificiality of the research setting with the student's knowledge of participation in an experiment. Therefore, the design has the advantage of utilizing the existing groups in an educational setting of schools such as studies by Allison and Thorpe (1997), Rovegno et al. (2001) and Tallir et al. (2003). Similar research design using intact groups was also reported in the local setting (Goh, 2004; Lam, 2004; Loh, 2002; Sanmuga, 2008; Sharipah, 2007).

Although it is quasi-experimental, the design in this study is relatively strong because it consists of experimental group and control group as a comparison group. This is to fulfill the criterion of a strong experimental design whereby the research must have, at least, a comparison group and one treatment group (Isaac & Michael, 1981; Johnson & Christensen, 2004). A pure control group is one that receives no treatment at all; however, it is rarely possible in educational research (Fraenkel & Wallen, 2008). The purpose of having treatment group and control group is to control for any confounding extraneous variable that will threaten the internal validity of the design (Fraenkel & Wallen, 2008; Johnson & Christensen, 2004).

Therefore, intact groups in this study were randomly assigned to experimental and control group. Pretest and posttest test group design were applied to see the effectiveness of the TGfU approach on students learning outcome. The experimental group receives the intervention of TGfU approach while the control group does not receive any intervention but follows the regular traditional physical education syllabus of handball game. The research design is illustrated in Table 1.

Table 1

Pretest and Posttest Quasi Experimental Design

	Pretest	Treatment	Posttest
Experimental Group	O1 (pretest) GPAI	X1	O2 (posttest) GPAI
Control Group	O1 (pretest) GPAI		O2 (posttest) GPAI (Game Performance Assessment Instrument)

Note. X1 = Treatment of TGfU Approach. GPAI = Game Performance Assessment Instrument.

A pretest of 3 versus 3 game situations was administrated in the first week before the first lesson to the experimental group and control group and the post gain showed the trends of the intended intervention. After the pretest, on the second week the experimental group underwent the lesson plan for chest pass, overhead passing and dribbling in handball game with TGfU approach as an intervention program for 4 weeks. On the sixth week, a posttest of 3 versus 3 game situations was administered using GPAI. The design also involved the control group as a comparison group. However, the control group is not a pure control group per se that receives no treatment at all. Pure control group is possible in the laboratory setting of pure sciences and medicine (Fraenkel & Wallen, 2008; Schumacher &

Mcmillan, 1993) but not in the educational research setting. In this study, the intact experimental group receives the experimental treatment of TGfU approach and another intact control group receives traditional teaching games as a comparison group. The control group is important in this study for two main reasons. First, the comparison group helped to control for various threats to internal validity such as history, maturation, and testing instrument (Campbell & Stanley, 1963; Fraenkel & Wallen, 2008). Second, it allowed comparisons to be made so as to determine the effects of the treatment on the experimental group using the TGfU approach.

In the second phase qualitative technique of interview was employed as the study intended to explore student learning experience of decision making and problem solving in games. Focus group interview questions were administrated on the sub group of the TGfU approach group and the traditional skill approach group to answer the last research question. Four research hypotheses were formulated for this study.

1. *Hypothesis One*: There is no significant difference in the cognitive learning outcome between students with TGfU approach and students with traditional skill approach.

2. *Hypothesis Two*: There is no significant difference in the psychomotor learning outcome between students with TGfU approach and students with traditional skill approach.

3. *Hypothesis Three*: There is no significant difference in total game performance learning outcome between students with TGfU approach and students with traditional skill approach.

4. *Hypothesis Four*: There is no significant difference in motivation between students with TGfU approach and students with traditional skill approach.

Selection of Sample

Sampling is the process of selecting a portion, piece or segment that is a representative of the whole group (Onwuegbuzie & Collins, 2007). In this study, Year-4 students from primary physical education class were selected as the population for this study. According to the Malaysian physical education syllabus, Year-1, Year-2, and Year-3 are categorized as Level 1 and Year-4, Year-5, and Year-6 are in Level 2. Students in Level 1 learn the fundamental movement skills of locomotors, non-locomotors and manipulative skills (Ministry of Education, 1998) before learning the sports skills in Level 2. The syllabus introduces games and sport skills at Level 2 after students have gone through the basic movement skills in Level 1 (Ministry of Education, 1998). Therefore, Year-4 students were selected as the population of the study because these students had some prior knowledge of basic movement and are at the beginning stage of learning game skill in Level 2.

The selection of sample design is illustrated in Figure 6.The sample was selected from the target population of one primary school in a district in Selangor. Target population of schools in this study is important, as other schools in Malaysia have the common defining characteristics. Physical education lessons were taught two times (40 minutes) a week for the Year-4, Year-5, and Year-6 students. Morning schools have the physical education lesson in the morning before the school recess time and the afternoon schools have the physical education lesson after the recess in the evening. One school was randomly selected from those having common defining characteristics in a district in

Selangor. According to school time table the physical education lesson were conducted by joining two classes. Boys from the two classes were grouped and taught by one teacher. And all the girls from the two classes were grouped and taught by another teacher. Therefore, for the purpose of this study, all 431 year four students are the population for the study. Out of a total of 12 classes, four physical education classes were randomly selected. Intact sampling method was applied where two classes were randomly assigned as the control group (*n* = 36) and another two classes as an experimental group (*n* = 36).

A total of 72 students (boys) from the control and experimental groups underwent primary physical education syllabus for handball as invasion game (Appendix K).The experimental groups underwent the TGfU approach as an intervention program. Before the first lesson, the experimental and the control groups were tested for their initial game performance learning outcome in 3 versus 3 game performances for overhead passing and dribbling in handball game with GPAI instrument as a pretest score. Two observers noted students' game performance learning outcome using the GPAI in a modified handball game of 3 versus 3 game situations. The observer recorded students' game performance such as in (a) cognitive outcome of tactical understanding and decision making, (b) psychomotor outcome of skill execution and skill test. The cognitive outcome includes tactical understanding of (a) adjust, (b) support, (c) cover, (d) guard, and (e) decision making. Students' psychomotor learning outcome includes skill execution in game performance and 30-meter handball dribbling skill test.

Further, with the qualitative approach the study explored student learning decision making and problem solving learning experiences in games. Therefore, purposive sampling method was used to select a subgroup for focus group interview from the experimental group and the control group. The subgroup of students consists of six members. Purposive sampling method for focus group interview is appropriate as the study tries not to generalize the findings but to understand the issue of the last research question. Therefore, the selected subgroups for focus group interview were based on predetermined criteria about the extent to which the selected subjects can contribute to the research study (Patton, 1990). The predetermined criteria are all the six members in a group are homogeneous and second can contribute to the success of focus group. The subgroup students were observed in the familiarization period of 2 weeks. One subgroup of students from the experimental group and one sub group of students from the control group who talked and communicated better during the physical education classes were chosen for focus group interview.

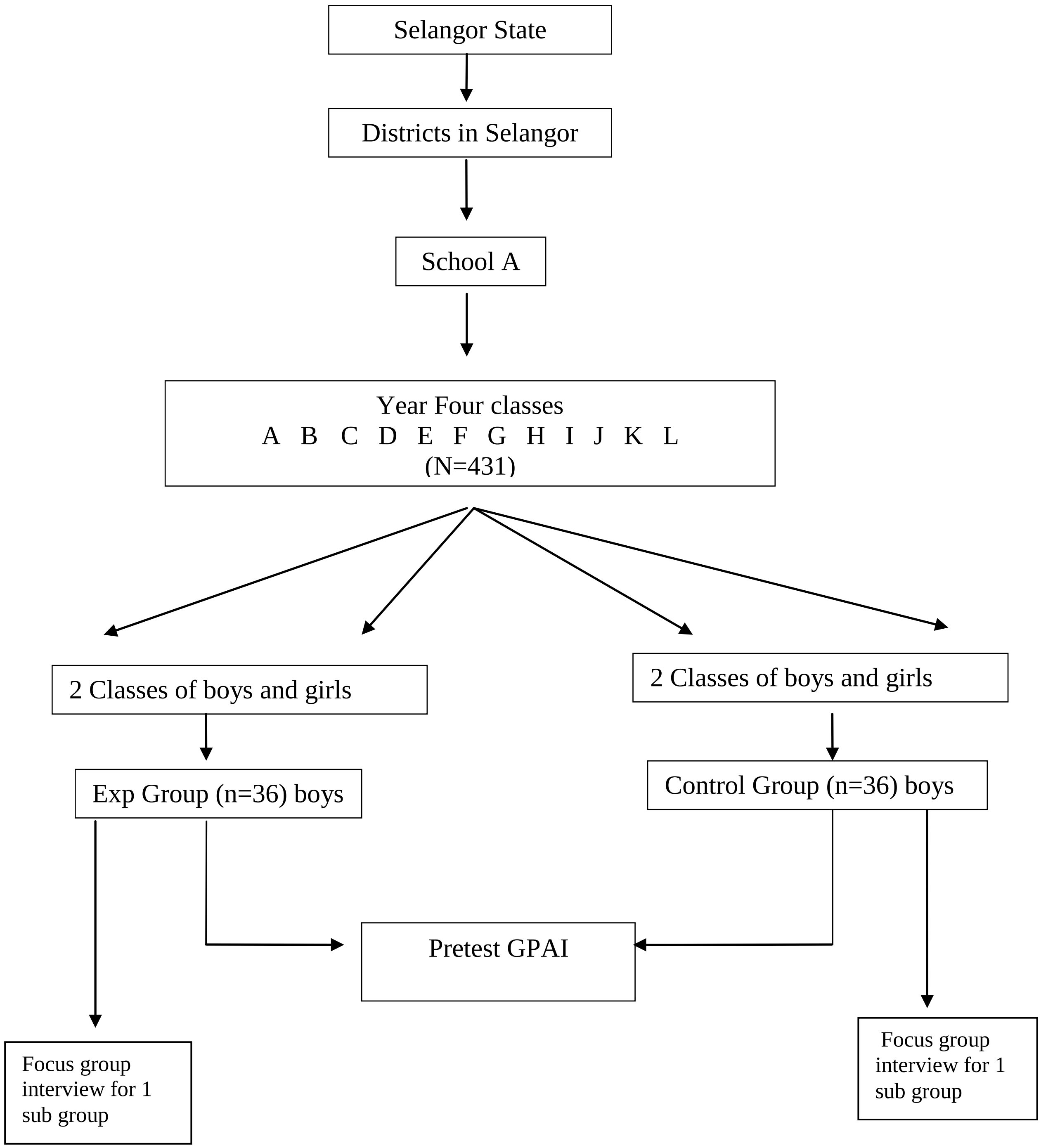


Figure 6. Selection of samples.

Research Procedure

The procedure of research began with identifying the target population. The study obtained permission from the Education Planning and Research Division (EPRD) of the Malaysian Ministry of Education (Appendix U) as the gate keeper of school research. After identifying and selecting of the target population, permission was obtained from the State Education Department and District Education Department to carry out the study in the school as illustrated in Figure 7. Randomly one district from Selangor was selected for the study. One school from the district was selected for the study. Then permission to carry out the research was obtained from the school head. Permission also was obtained from the parents of group participants in the research. The selected school was visited four times to familiarize with the school setting before the actual research and to brief the teacher involved about the TGfU module. This was to ensure that the presence of the researcher and the observers did not affect the students' behavior during the actual research. On the first visit the objective of the research was explained to the teachers and students to ensure the samples in the study are fit before initiating the research. Permission also was obtained from the school head on the pretest and posttest administration and procedures. The school head was also informed regarding student participation in the focus group interview session after the physical education game session which may prolong the physical education period.

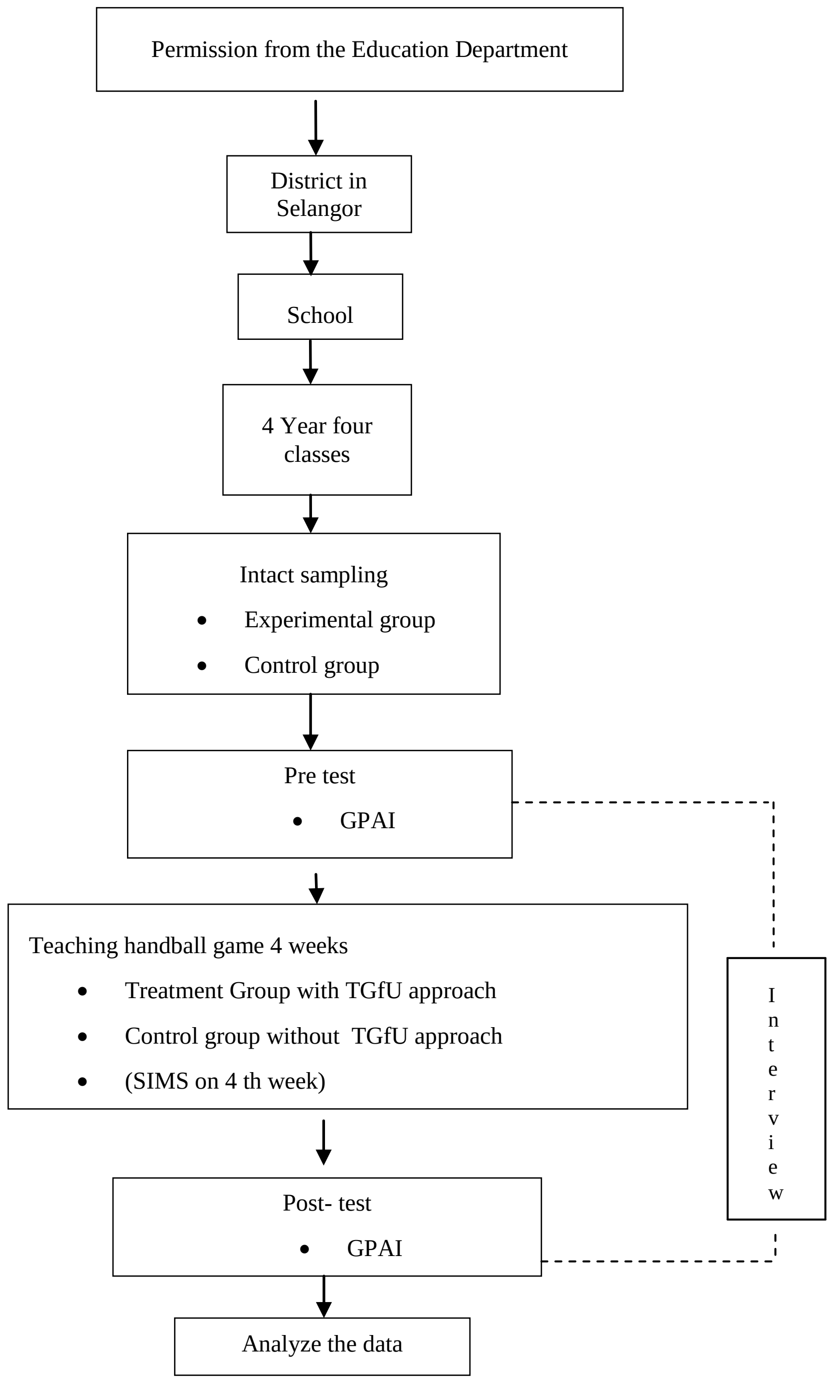


Figure 7. Research procedure for the study.

The teacher who was identified as physical education teacher to teach the experimental group has 6 years of working experience. He was familiar with the TGfU approach in teaching games. However, he was unable to use the method as the time table schedules require teacher to cover the teaching syllabus. Therefore, he was given briefing about the TGfU module which was conducted by the researcher one month before the intervention program. The workshop was aimed at introducing the TGfU approach and the proposed lesson module to the physical education teacher. The teacher was given explanation about the theory of constructivism and how the TGfU approach module developed for this research can be used in school. The briefing was done to justify that the teacher is familiar with the TGfU approach. The teacher was given the module on the handball game unit activities and games strategy on tactical understanding as described in Appendix J and K. He then used the proposed lesson modules to teach handball game in a different class in that school before carrying out the lesson plan in the actual study.

In this study, two observers were involved as inter-rater to collect data using the GPAI instrument. The two inter-raters have a master's degree in Physical Education and have more than 10 years of teaching experience in physical education programs. The results of the two inter-raters were needed when calculating the observer reliability, and not when considering the actual scoring of behaviour. In game performance scoring, the teacher is the expert. However, in research, having the opinion of the assessments of some observers is a better and fairer process. Especially in invasion games, it is often quite difficult to declare what constitutes an appropriate or effective performance (Memmert & Harvey, 2008). Therefore, the observers in this study were provided with the coding rubrics on what behaviors are to be observed based on the game performance outcome; that is, how the students' behaviors are to be coded and how often. The researcher was the third coder. Inter-raters also went through numerous practice sessions during the pilot study in a different school to familiarize them with the coding procedure before the actual study. This practice session also helped the inter-rater to observe and score actions similar to those involved in the actual study. Practice session using coding behaviors are most effective because segments which observers find difficult can be replayed for discussion and feedback. Estimates of inter-rater reliability were calculated periodically to determine the effectiveness of training and practice. Inter-rater reliability was calculated for level of agreement for each game lesson until the satisfactory level of 80% was obtained (Gay & Airasian, 2000). The observers were also present during the workshop when the teacher was briefed about the TGfU lesson module.

A modified handball game lesson plan was prepared for this study. A modified game is one in which the number of players, rules and the condition of the game are introduced which represent the rules and standards of the official game. The lesson objective designed for this study includes student learning outcome in the cognitive outcome of tactical understanding, decision making and problem solving; psychomotor outcome of skill execution and skill test and affective outcome of motivation. According to Mitchell (2005), the invasion game can facilitate the students' own inquiry and understanding for the essential skills as well as teach them the essential tactics of the game. The similarities are that in every invasive game, there is a rectangular playing area in which the players and the ball as a game object move. The players move in game using the space and try to score. The defense team on the other hand, is trying to block access to the space and prevent the offence from scoring (Turner & Martinek, 1995).

The field study started with the time table regulation set by the Malaysian Ministry of Education. There were 4 weeks of handball game units, which was carried out for both experimental and comparison group in a 10 x 5 meter field. The control group underwent learning of chest pass, overhead pass and dribbling in a handball game using the traditional skill approach without an intervention. The experimental group went through learning of chest pass, overhead pass and dribbling in handball game with the TGfU approach. After four lessons of handball game, the GPAI was administered the following week in a 3 versus 3 game situations. The GPAI instrument was used to observe students' cognitive learning outcome of tactical understanding such as adjust, support, cover, guard, and decision making. The psychomotor learning outcome of skill execution was also collected using the GPAI instrument. Data were also collected on student total learning outcome of cognitive and psychomotor on the posttest score.

Pretest

The pretest was administered to the control and experimental group to measure student learning outcome of game performance on overhead pass and dribbling skills in handball game using the Game Performance Instrument (GPAI) before the first lesson. The pretest has two purposes in this study. First, it was used to establish the equivalence of the treatment group and the control group as a randomization of the subjects. Second, the scores were used as covariate in Analyses of Covariance (ANCOVA) employed in this study in determining the effects of treatment. The pretest of 3 versus 3 handball game situations on 10 x5 meter field was administered in physical education class based on the school timetable. Permission was obtained from the school head to conduct the pretest using the physical education lesson. The GPAI was used by two qualified observers to collect data on students' learning outcome of game performance for both the control and the experimental group.

Handball Skill Test: 30-Meter Dribbling Test

The 30-meter handball dribbling skill test was administrated to test students' psychomotor skill performance in the first week before intervention. This skill was chosen to justify that all the year four students in this school were not exposed to handball dribbling skill before the study. However, students have used the handball game in their Level 1 physical education class activity. Students lined up according to their classes. There were seven skittles placed on the length of a 30-meter field. The first skittle is placed at a 6-meter distance from the starting line and the seventh skittle is placed at a 6-meter distance from the finishing line. There were another five cones set between these two cones at 3-meter intervals. The diagram in Figure 8 describes the 30-meter handball skill test. Students ran 30 meters while dribbling the ball in a regular team handball manner slaloming through the cones. The ball needs to be controlled by the student at all times from start to finish. Student was not allowed to throw the ball or catch it and run to the finishing line. Students' 30-meter dribbling time was taken with the stopwatch from the beginning until they came to the finishing line. Students' performances based on the time were later converted to rating scale from 1 to 5 based on Table 2. Similar 30-meter handball skill test was reported in a past study (Tuma, 2007).

Start Line							Finish Line
	X	X	X	X	X	X	X
6 meter		3 meter between each skittle					6 Meter

Figure 8. The 30-meter handball dribbling skill test.

Table 2

Rating Scale for Handball Skill Test

Time	Rating scale
12.0s to 13.9s and below	5
14.0s to 15.9s	4
16.0s to 17.9s	3
18.0s to 19.9s	2
20s and above	1

The 30-meter handball dribbling skill test was modified to suit the primary physical education students. The validity of the test was checked with five experts before using in this study. The total number of 36 students was tested for the suitability of handball dribbling skill test for the Year Four students. The result of the pilot study showed that the

30-meter handball dribbling skill test is appropriate to be carried out among Year Four students in the primary physical education program.

Control Group

During the first unit of handball game, the control group (*N*= 36) underwent the regular physical education syllabus using the traditional skill approach. The lesson began with 3 minutes of warm up activities and teaching of handball lesson with the planned lesson plan for 30 minutes (Appendix J). This group continued with demonstration of chess passes by teacher. Then the students practiced the skill drills in the class activity for 3 minutes. The lesson continued with practice of chess pass skill drills in development lesson for 10 minutes in a group activity. After the skill practice in group, students then played a game of 3 versus 3 in a modified handball game for 7 minutes in a 10 x 5 meter field. At the end of the lesson, cool down activities were carried out for 2 minutes. A subgroup of students was selected to be interviewed with semi-structured interview questions for 20 minutes. More details of the control group lesson plan are in Appendix J C1. The research continued for another three lessons of handball game unit of overhead pass and dribbling (Appendix J, C2, C3, and C4). At the end of the fourth game lesson, the Situational Motivational Scale (SIMS) Instrument was administered to find out students' motivation toward participating in game performance. A summary of 4 weeks lesson plan were presented in Table 3.

Table 3

Summary of 4 weeks Lesson Plan for Control Group

Week	Title/Skill	Learning Outcome	Remarks
1	Chest pass	CLASS ACTIVITY: Introduction, demonstration of the chest pass skill GROUP ACTIVITY: practice skill drill to master the chest passing GAME: Apply the chest pass skills in a modified 3 vs. 3 game situation	30 min 20 h/ball 24 skittles 12 hula hoop
2	Overhead pass	CLASS ACTIVITY: Introduction, demonstration of the overhead pass skill GROUP ACTIVITY: practice skill drills to master the overhead passing GAME: Apply the overhead skill learned in a modified 3 vs. 3 game situation	30 min 20 h/ball 24 skittles 12 hula hoop
3	Dribbling	CLASS ACTIVITY: Introduction, demonstration of passive dribbling skill GROUP ACTIVITY: practice passive dribbling skill to master the dribbling GAME: Apply the dribbling skills learned in a a modified 3 vs. 3 game situation	30 min 20 h/ball 24 skittles 12 hula hoop
4	Dribbling	CLASS ACTIVITY: Introduction, demonstration of the active dribbling skill with opponent GROUP ACTIVITY: practice dribbling skill drill with opponent to master the dribbling GAME: Apply the dribbling skills learned in a 3 vs. 3 game situation	30 min 20 h/ball 24 skittles 12 hula hoop

Experimental Group

The lesson for experimental groups began with three minutes of warm up activities (Appendix K). The lessons continued with demonstration of chest pass by teacher. In the class activities students played the passing game with modification of strategy from 2 players versus 1 defender in a 10 x 5 meter field. The developmental activity continued with chess passing of 2 opponents versus 2 defenders. This group explored tactical understanding of passing game with strategy of 2 versus 1 to 2 versus 2. With understanding from 2 versus 1 and 2 versus 2 in previous game situation, students applied the chess passing, tactical understanding of the game and the decision making in another game situation of 3 versus 3 of passing skill for 10 minutes.

Table 4

Summary of 4 weeks Lesson Plan for Experimental Group

Week	Title/Skill	Learning Outcome	Remarks
1	Chest pass	CLASS ACTIVITY: Introduction, play chest passing game of 2 vs. 1 GROUP ACTIVITY: Modified handball game 2 vs. 2 and 3 vs. 3 game situation GAME: Apply the chest passing skill learned in a 3 v.s 3 modified handball game situation	30 min 20 h/ball 24 skittles 12 hula hoop
2	Overhead pass	CLASS ACTIVITY: Introduction, play overhead pass game of 2 vs. 1 GROUP ACTIVITY: Modified handball game 2 vs. 2 and 3 vs. 3 game situation GAME: Apply the overhead passes and chest passes in a 3 vs. 3 modified handball game situation	30 min 20 h/ball 24 skittles 12 hula hoop
3	Dribbling	CLASS ACTIVITY: Introduction, play dribbling in group GROUP ACTIVITY: Modified handball game of 2 vs. 2 and a 3 vs. 3 with dribbling skill GAME: Apply the overhead passes ,chest pass and dribbling in a 3 vs. 3 modified game situation	30 min 20 h/ball 24 skittles 12 hula hoop
4	Dribbling	CLASS ACTIVITY: Introduction, play dribbling in group with opponent GROUP ACTIVITY: Modified handball game of 2 vs. 2 and a 3 vs. 3 with dribbling skill GAME: Apply the overhead passes ,chest passes and dribbling in a 3 vs. 3 modified game situation	30 min 20 h/ball 24 skittles 12 hula hoop

The experimental group played a modified handball game of 3 versus 3 game situation for 7 minutes in a 10 x 5 meter field. After the modified game session, cool down activities were carried out for 2 minutes. A subgroup of students was selected to be interviewed with semi-structured interview question for 20 minutes. The research continued with other lessons of handball game with the school time table (Appendix K, E2, E3, and E4). At the end of the fourth lesson of game session the Situational Motivational Scale (SIMS) Instrument was administered to find out students' motivation toward participating in game performance. A summary of 4 weeks lesson plan for experimental group are described in Table 4.

Posttest

The posttest on student's game performance on overhead pass and dribbling in handball were carried out in the fifth lesson using the GPAI instrument. GPAI was administered by two observers to collect data on student's game performance outcome in 3 versus 3 game situations for the handball game. GPAI instrument was used to collect data on students' cognitive aspects of tactical understanding such as adjust, cover, support, guard and decision making psychomotor outcome of skill execution. Data collected on students' game performance learning outcome with GPAI were recorded as a posttest score. Figure 7 illustrates the research procedure to be followed in this study. After the fourth lesson of the game session the Situational Motivational Scale (SIMS) Instrument was administered to find out students' motivation toward participating in game performance as an affective outcome.

Instrumentation

There were two types of instruments in this study. The first instrument is the GPAI (Game Performance Assessment Instrument) which was used to measure "game performance that demonstrate tactical understanding, as well as the player's ability to solve tactical problems by selecting and applying appropriate skills" (Oslin et al., 1998, p.234). The observer observered students' game performance outcome in 3 versus 3 modified handball game. According to Gay and Airasian (2000), assessment as an instrument is a broader term than test which encompasses the general process of collecting, synthesizing and interpreting information whether formal or informal. Measurement is the process of quantifying a person's performance on assessment. Gay and Airasian (2000) also stated that in educational research, scales such as Likert, semantic differential and rating scales can be used for observing performance and judging teaching competence.

To measure the component of game performance, Mitchell et al. (2006) together with other experts have indicated seven tactical components (base, adjust, decision made, skill execution, support, cover, guard/mark) associated with effective game performance. Two benefits of using the GPAI to assess performance are that (a) it can be adapted to various sports and game activities, and (b) it has the ability to measure the on-the-ball skills and also off-the-ball skills (both offensive and defensive) (Mitchell et al., 2006).

Table 5

Game Component Observed in the GPAI (Generic Definition)

Game components	Description
Decision making	Makes appropriate decision about what to do with the ball during a game
Skill execution	Efficient execution of selected skills
Adjust	Movement of the performer, either offensively as necessitated by the flow of the game
Cover	Provides appropriate defensive cover, help, backup for a player making a challenge for the ball
Support	Provides appropriate support for a teammate with the ball by being in a position to receive a pass
Guard / mark	Appropriate guarding /marking of an opponent who may or may not have the ball
Base	Appropriate return of the performer to a recovery (base) position between skill attempts.

Mitchell et al. (2006) detailed two methods of scoring game performance assessment by using GPAI. A tally method and 1 to 5 Likert Scale ranking method for scoring the game performance assessment instrument. In this study, a five-point Likert Scale method was applied. It was be coded as:

1 = *Very weak performance*

2 = *Weak performance*

3 = *Moderately effective performance*

4 = *Effective performance*

5 = *Very effective performance*

When coding for GPAI, the game performance assessment components were coded with points of Likert scale of 1 to 5. The tick for each component summed up for a total score. The total cognitive score of the game performance was computed by subtracting the pretest scores from the posttest scores. Six components such as adjust, cover, support, guard, decision making and skill execution were used in this study. When measuring a variety of game performance components beyond skill performance, one should provide an objective to measure of participation, rewarding students who engage in game play both on and off the ball. Students who have not had many opportunities to develop skill can be rewarded for moving into position to receive a pass (support play), making good decision such as when to pass, when to shoot, or appropriately marking players to keep them from scoring or gaining possession of the ball (Oslin, 2005).

Content Analysis

The primary physical education curriculum in the Malaysian syllabus comprises three important aspects such as fitness, games and sport skills and sports related issues. Students are given opportunity to gain skill knowledge and experience with the planned activity. Students' active participation will express their emotion, develop their mental processes, foster their healthy relationship with friends and enable physical activity in a safe and conducive environment (Ministry of Education, 2002). More specifically teaching approaches proposed in Primary Physical Education syllabus in Malaysia are:

- Students' active participation
- Creative interaction with friends and environment
- Keep the records of students learning (Ministry of Education, 2002).

All primary schools in the country follow a standardized physical education curriculum and suggested goals formulated by the Centre of Curriculum Development in the Ministry of Education. All the schools are required to teach a number of hours per week as required by the Time-Table Regulation (Ministry of Education, 2002). The scheduling of physical education periods in the school time table is at the discretion of the individual school. Teaching approaches and pedagogies are the responsibility of the respective schools (Ministry of Education, 2002).

According to the Malaysian physical education syllabus, Year One, Two and Three are in Level 1 and Year Four, Five, and Six are in Level 2. Students in Level 1 learn the fundamental movement skills of locomotors, non-locomotors and manipulative skills (Ministry of Education, 1998). The syllabus introduces games and sport skills at Level 2 after students have gone through the basic movement skills in Level 1 (Ministry of Education, 1998). Suggested games in Year Four syllabus are football, netball, basketball, handball and hockey. Therefore the handball game was chosen because it is in the content of Year Four syallabus and most of the students had not played handball in the beginning of Year Four. Students had experience of playing football and basketball in school and after school as these games are considered favorite games among students in primary school.

Therefore, students'learning outcome on handball game will be a new experience for students.

Validity of GPAI

Validity refers to the researcher's ability to draw meaningful and justifiable inferences from scores about the same population (Creswell, 2008). According to Cook and Campbell (1979), validity of instrument refers to the extent to which the instrument measures what it is supposed to measure. The Game Performance Assessment Instrument (GPAI) was used as one of the instruments in this study. The components in the instrument such as decisions made, skill execution, support, adjust, and game performance have previously been validated in the games of soccer, basketball, and volleyball (Oslin et al., 1998). Oslin et al. (1998) highlighted that components of GPAI can distinguish between students ranked very effective to very weak in game situation by their teacher. Oslin et al. also stated that some psychometrical problems can arise regarding observation and calculation by means of the GPAI. The validity of the instrument with a Cronbach alpha value from .80 to .90 was recorded from the past study (Oslin et al., 1998).The validity of the GPAI was achieved through face validity, content validity, and construct validity. According to the construct validity, in 66% of the cases the results of the GPAI components can be distinguished for students ranked high or low in game performance by their teachers (Oslin et al., 1998).

In a most recent study by Memmert and Harvey (2008) seven tactical problems were validated factorially using confirmatory factor analysis ($\chi^2 = 247$; $df = 168$; $\chi^2/df = 1.472$; RMSEA = .071; CFI = .98; AIC =415; Bollen, 1989). The squared multiple correlation coefficients of the manifest variables are between .20 and .91 for five out of the seven factors. For only two game tactics, the variances of two out of the six indicator variables appear to be too low (< .20). Selected components of the GPAI such as decision making, skill execution, support, adjust and cover have also previously been validated in the games of soccer, basketball, and volleyball (Harvey, 2006; Harvey, Bryan, Wegis, & Van der Mars, 2007; Tallir et al., 2005). However, Memmert and Harvey (2008) also suggest for further validation and testing on the off-the-ball components of the GPAI, such as adjust, cover, guard/mark, base, and support.

In this current study the GPAI instrument was piloted and validated before it can be used. The objective of this evaluation was to see whether the instrument is suitable for integration with the current primary physical education curriculum in Malaysia. Panels of experts consisting of five physical education experts in this country who have experience in the primary physical education syllabus were approached for the validation.

The GPAI instrument was given to the panel of five experts to validate the instrument. One of the experts is a physical education lecturer from Sultan Idris University of Education with Ph.D. qualification in physical education. He has experience in the concept of TGfU and has validated the GPAI instrument. Another expert is a senior lecturer with a Ph.D. in Physical Education from University of Malaya. Two of the other experts are lecturers with Masters in Physical Education from the Teacher Training Institute who suggested continuing with the instrument. The instrument was also presented to physical education teachers for validity assessment.

Inter-Rater Reliability

Gwet (2008) describes that inter-rater reliability quantifies the closeness of scores assigned by a pool of raters to the same study of participants. The closer the scores of the raters recorded the higher the reliability of the data collection method. Hence inter rater reliability refers to the consistency between two or more raters evaluate the same data using the same scoring criteria Gwet (2001). Hayes and Hatch (1999) reported that inter rater reliability should be established outside the measurement of the actual study. It is best to do the inter rater reliability through the pilot study. Inter rater reliability can be established through the percentage of aggrement over correlation because it is simpler and easier to compute. However some reseachers argue that the percentage of agreement between the rater is not the best measure (Grayson & Rust, 2001: Hayes & Hatch, 1999).

Cohen (1960) proposed kappa coefficient to improve upon the limitation found in percentage of agreement. Determination of agreement is important in order to examine the quality of rating using rubric in this study. Kappa is preferred statistic in this study because it estimates the interobserver agreement for nominal and ordinal scale data. As data in this study is in ordinal scale therefore kappa statistic was computered to analyse the interrater reliability of the observers. Theoretical Kappa values range from -1 to +1. A value approximately zero is interpreted as close to chance agreement wheres values less than zero is interpreted as worse than chance agreement. Landis and Koch (1977) inpreted Kappa values as follows:-

Kappa	**Interpretation**
<0	Poor agreement
0.0-0.20	Slight agreement
0.21-0.40	Fair agreement
0.41-0.60	Moderate agreement
0.61-0.80	Substancial agreement
0.81-1.00	Almost perfert agreement

A total number of 36 students were observed in pilot studt by two observers using the GPAI instrument. The data were collected on students'game performance in 3 versus 3 game situations in ordinal scale of 1 to 5 for cognitive component of adjust, support, cover and guard by the two observers based on the rubric.

The table 6 shows the distribution of the observers' pre test pilot data. The data from these observations were used to determine the inter-rater reliability. The inter-rater reliability was computed on total tactical game performance between observer 1 and observer 2. The inter-rater reliability using the Kappa statistic was performed to determine the consistency among the the two observers.

Table 6

Distribution of observers pilot pre test data

GPAI	Experimental Group (N=18)		Control Group (N=18)	
	Observer 1	Observer 2	Observer 1	Observer 2
Adjust	24	24	21	22
Support	27	27	23	22
Cover	32	34	28	29
Guard	28	27	25	25
Decision Making	30	29	23	24
Skill Execution	34	31	35	32

Table 6 shows the data for the interrater reliability for pilot study was on the pre test adjust variable between the Observer 1 and the Observer 2.

Table 7

Coefficien kappa reliability of observers pilot pre test data

Adjust Ob1pre * Adjust Ob2 pre Crosstabulation

		Adjust Observer 2		
		Very weak performance	Weak performance	Total
Adjust Observer 1	Very weak performance	25	2	27
	Weak performance	1	8	9
	Total	26	10	36

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Measure of Agreement	Kappa	.786	.118	4.726	.000
	N of Valid Cases	36			

a. Not assuming the null hypothesis.
b. b. Using the asymptotic standard error assuming the null hypothesis

The result of the interrater analysis are Kappa = 786 with $p<0.001$. The measures of agreements statistically and marginally are convincing. As supported by Landis and Koch (1977), the value of .79 is substantial. Analysis of inter rater reliability were also computed in actual study on the adjust variable. The result of the the interrater reliability was reported in Table 8:-

Table 8

Coefficien kappa reliability of observers from actual study on adjust variable

Adjust Ob1pre * Adjust Ob2 pre Crosstabulation

Group			Adjust Ob2 pre Very weak performance	Adjust Ob2 pre Weak performance	Total
Experimental	Adjust Ob1pre	Very weak performance	16	2	18
		Weak performance	2	16	18
		Total	18	18	36
Control	Adjust Ob1pre	Very weak performance	26	2	28
		Weak performance	0	8	8
		Total	26	10	36

Symmetric Measures

Group			Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Experimental	Measure of Agreement	Kappa	.778	.105	4.667	.000
		N of Valid Cases	36			
Control	Measure of Agreement	Kappa	.852	.100	5.171	.000
		N of Valid Cases	36			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.

The result of the interrater analysis are Kappa = 776 with p<0.001 for the Experimental group and .852 with p<0.001 for thr control group. The measures of agreements statistically and marginally are convincing. As supported by Landis and Koch (1977), the value of .79 is substantial.

The reliability of GPAI instrument had been reviewed in a previous study by Oslin et al. (1998). The inter-rater reliability was calculated with the event-recording method. The reliability of the GPAI instrument has been reported at more than .75 in other studies by Liu (2003) and Blomqvist (2001). Similar reliability of GPAI with a Cronbach alpha value of .85 was reported in a local study by Sanmuga (2008).

Reducing Observation Bias

Observers were made aware of observer bias and observer effects. Observer bias refers to invalid observation of result from the way in which the observers observe. Observer effect refers to invalid observation that results from the fact of those being observed. Having more than one observer recording independently helps to detect the presence of bias but does not eliminate it. Therefore, in this study two observers were used to record data on the GPAI.

Observer’s observation are checked and verified whenever possible by comparison with the other competent observer by the researcher. Observations were carefully and expertly recorded. Observers used appropriate instruments such as a rubric to systematically quantify, and preserve the results of their observation. Training and practice in piloting helped to reduce the observer bias. Observation procedure was carried out systematically to reduce the observational bias.

Internal Validity

Before the study the researcher ensured both the experimental and control group were not exposed to games learning or any historical events that can affect the internal validity of observation. The group maturation can affect the research result (Cook & Campbell, 1979). If a new practice is introduced in one of the groups then the treatment group will outperform the control group during the pretest. If the treatment increased ability, we would expect the posttest difference between groups to be larger. Therefore, in this study the actual research took place in the month of July after the school sports as both the groups will have the same selection maturation.

Situational Motivational Scale (SIMS)

The Situational Motivational Scale (SIMS) is another instrument used in this study. The instrument has 16 items which were used to evaluate students' situational motivation in this study (Guay et al., 2000). The SIMS has shown to be a valid and reliable tool for measuring self-determination index on many accounts (factorial validity, internal consistency, and multi group invariance) in many physical activity contexts (Standage et al., 2003). The SIMS was administered for both the control and experimental group. At the end of the fourth lesson SIMS was given to the students. Students were asked to share their feelings about the games unit by answering the questions on the instrument. The instrument has four subscales which are intrinsic motivation, identified regulation, external regulation and amotivation. Each one of the items from the instruments respond to the question: "Why are you performing this activity at this time?" and it was rated on a Likert scale, with 1 corresponding to "*not at all*," 2 "*a little*," 3 "*moderately*," 4 "*enough*," and 5 as corresponding to "*exactly*." Items 1, 5, 9, and 13 are for intrinsic motivation, Items 2, 6, 10, and 14 for identified regulation. Item 3, 7, 11, and 15 for external regulation. The last construct for amotivation are items 4, 8, 12, and 16.

Validity of SIMS

In past research on the relationship between situational motivation and sports setting carried out by Blanchard, Maska, Vallerand, Sablonnie, and Provencher (2007), student's situational motivation during the game was assessed immediately after game 1 and game 2. Cronbach's alpha coefficient was calculated for each subscale and then averaged to yield from .70 assessed after the game 1 and .82 assessed after game 2. In another study, Martin-Albo, Nunez, and Navarro (2009) carried out reseach to validate the SIMS instrument. The internal consistency of the scale was assessed with Cronbach's alpha. The result showed the value of .91 in the intrinsic motivation subscale, .78 in the identified regulation subscale, .80 in the external regulation subscale and.80 for the amotivation subscale. In a recent study on motivation and performance in physical education carried out by Moreno et al. (2010), the SIMS instrument was used to evaluate students' intrinsic motivation with a Cronbach's alpha value of .88. As the instrument had not been validated for the Spanish context, a confirmatory factor analysis was performed and the result showed acceptable fit indicates: χ^2 = 363; *df* =5.60, *p* > .05; ^{2}/d.f.=2.80; CFI = 0.99; IFI = 0.99; TLI = 0.99; RMSEA = 0.07; SRMR = 0/01. The standardized regression weight was obtained at 0.83, 0.81, 0.80, and 0.80.

Table 9

Summary of Several Studies on the SIMS Instruments

Study authors	Research setting	Study samples	Instrument	Analysis and finding
Blanchard et al. (2007)	After game 1 and game 2	High school student from 13 to 18 years	SIMS	Cronbach alpha.70 after game 1 .82 after game 2
Martin-Albo et al. (2009)	In the library	University students	SIMS	Cronbach alpha.91 intrinsic, .78 identified regulation, .80 external regulation, .80 amotivation
Moreno et al. (2010)	Physical education class setting	12 to 17 year old students	SIMS	Confirmatory factor analysisi CFI = 0.99, TLI = 0.99, RMSEA = 0.07; SRMR = 0/01

In this study, the Situational Motivational Scale (SIMS) questionnaire was adopted, adapted and translated into the National Language (Bahasa Melayu) and was given to physical education experts for validation before being used in the pilot study. Two of the experts were lecturers with doctoral degrees in physical education. Another two experts were lecturers with master degree in physical education. The language expert had back translated the English version to Malay. The language expert has a master degree in Malay Language. She checked the content and the meaning of the Situational Motivational Scale items in both languages.

The original version of the instrument had 16 items with a six-point Likert scale from 1 = *Strongly disagree*, 2 = *Disagree*, 3 = *Somewhat disagree*, 4 = *Somewhat agree*, 5 = *Agree*, and 6 = *Strongly agree*. The instrument was piloted among 49 students in a school after a game situation. The pilot study found that students had difficulty answering the questions. Students also spent more time to answer the questions. Therefore, the original version of the instrument was adopted and adapted with 16 items but with a five-point Likert scale and back to back translated. Then the new version of the validated instrument was piloted among 200 students in a physical education class in a school in Selangor. The result from the pilot study showed that student understanding improved and they could be able to answer all the items within 20 minutes.

A confirmatory factor analysis was conducted on the hypothesized four factor model using AMOS graphic 16. To assess the fit of the 16-item measurement model, the analysis relied on a number of fit indices, which included the (a) minimum value of discrepancy between the observed data and the hypothesized model by the degree of freedom (CMIN/df), (b) goodness of fit index (GFI) and its adjusted value (AGFI), (c)

Tucker-Lewis coefficient (TLI), and (d) root mean square error of approximation (RMSEA). Arbuckle and Wothke (1995) point out that first the CMIN value between 2 and 5 is considered acceptable. GFI, AGFI and TLI range from 0 to 1, with value close to one demonstration is considered a good fit. Finally, the RMSEA of .08 or less is a reasonable error of estimation.

In this study confirmatory factor analysis with Amos 16 was conducted by the researcher after the data screening of SIMS items from the pilot study. 326 primary year four students from a school were selected. The SIMS instrument was administrated after a game session. The confirmatory factor analysis result was χ^2 =326, CMIN = 4.60, $p > .05$; df = 98; CFI = 0.85; IFI = 0.85; TLI = 0.82; RMSEA = 0.07 (Appendix F). RMSEA value of 0.10 is not encouraging; however, the CMIN/df result was 4.6. According to Arbuckle and Wothke (1995), CMIN between 2 to 5 is considered an acceptable model. Therefore, in this confirmatory factor analysis, the value of CMIN 4.6 is considered good and it meets the requirement of the model fit.

Reliability of SIMS

In a research study, Standage et al. (2003) determined the reliability of the SIMS questionnaires with the Cronbach alpha and the internal consistencies exceeded the criterion of .70 to represent acceptable reliability. In this study also the instrument was also analyzed for Cronbach’s alpha for the internal consistency and reliability for each subscale of SIMS. The overall reliability score for the instrument was .70. Therefore, with this internal consistency value, the instrument can be used in the actual study.

Focus Group Interview

In the second phase of the study qualitative technique with focus group interview questions were employed with one of the sub groups from the TGfU approach and one group from the traditional skill approach. In this study a focus group interview was applied to obtain specific data from group participants. According to Creswell (2008) qualitative interview occurs when the researcher asks one or more general question and records the answer. A focus group interview is a process of collecting data through interview with a group of four to six people (Creswell, 2008). In this study focus group interview was used to answer the last research question on students' learning experience in 3 versus 3 game situations. The six research questions intended to explore students' learning experience of decision making and problem solving in game situation. Therefore, focus group interview can be used to collect data on shared understanding from several individuals (Creswell, 2008). According to Rabiee (2004) the advantages of focus group interview are:

1. Comments of one participants can generate comments from others,
2. Ideas and opinions can be developed and explored more than in individual interview,
3. These types of discussion can be productive,
4. Researchers and interviewers can benefit from the ideas generated in the focus group discussion,
5. In short amount of time a large quality of information can be collected often more quickly and at lesser cost than individual interview.

Krueger (1994) suggest that focus group interview participants should share similar characteristic: gender, age range, ethnic and social class background. Since the literature advocates a student centered approach and the game performance involves a group of three versus three in a game situation, a predetermined group of 6 students in a group were selected as a focus group interview in this study. The group members, therefore, feel comfortable with each other and engage in discussion. According to Rabiee (2004) the success of focus group depends on the homogeneous group. Since the predetermined group selected for this study is homogeneous, the focus group can contribute to the success of focus group interview data.

A focus group interview was carried out after the 3 versus 3 game situations of each lesson. A subgroup of 6 students was interviewed for duration of 30 minutes using semi-structured interview questions. An interview protocol procedure was used to collect data from the interview (Appendix I). When an interview session was on, the researcher audio-taped participants’ responses to the questions to get useful information regarding their learning experiences. During the interview session the researcher also used probes to obtain additional information. Probes are sub questions under each question that the researcher asked to elicit more information. The probes used to clarify points on students’ cognitive understanding of decision making and problem solving in game situation. The research procedure for interview is presented in Table 10.

Table 10

Summary of Interview Procedure

Interview element	Focus group
Format	Group session
Place	Field (after 3 versus 3 game situation)
Length	30 minutes each session
Number of session	4 session * depend on saturation
Participants	6 (each group)
Forms of data	1. Conversion
	2. Silence
	3. Body language
Data collection	Audiotape
Forms of reporting	1. Selection of quotation
	2. Analysis of repeated themes

Trustworthiness of Qualitative Approach

In the qualitative approach section the researcher used strategies that ensured the reliability or trustworthiness of the qualitative approach. The term trustworthiness is parallel with rigorous. The word trustworthiness in qualitative research is described as the criterion to test the quality of the research design. According to Lincoln and Guba (1985) trustworthiness criterion consists of credibility (in place of internal validity), transferability (in place of external validity), dependability (in place of reliability) and conformability (in place of objectivity). Therefore, the researcher explained how the qualitative research approach was systematically used in this study to collect data in depth on student learning experience of decision making and problem solving in games.

Credibility

The term criterion of credibility is refers to the internal validity in research. Lincoln and Guba (1985) have identified five strategies to ensure credibility such as (a) activities increasing the probability that credible finding will be produced, (b) peer debriefing, (c) analysis of negative cases, (d) referential adequacy and (e) members check. This study is undertaken to explore in depth about students' learning outcome in game performance. Therefore, two strategies described by Lincoln and Guba in qualitative research were applied in this study.

The first strategy will be "activities increasing the probability that credible finding will be produced" (Lincoln & Guba, 1985, p.137). Lincoln and Guba projected three important techniques in the qualitative research approach. They addressed these as prolonged engagement, persistent observation and triangulation of the research. For the purpose of this study the researcher was engaged in all 6 weeks of study to obtain the qualitative data of student's experience by observation method of problem solving while playing game data from focus group interviews. Triangulation technique was used in this study. Triangulation is defined as a condition which involves the use of different method, different investigation and different source of data (Flick, 2007) in a qualitative research. The researcher did triangulation on the sources of interview data from the experimental group and control group. Triangulation of data was also done on the different interview session.

In the second technique to ensure the credibility, the researcher used peer debriefing. Peer debriefing is a process whereby the researcher exposes her finding to other people not involved in this study (Lincoln & Guba, 1985). The purpose for this strategy is to disclose the researcher's "blind spot," discusses the outcome of the study, whereby the researcher is able to clear the emotion that might influence the outcome of the study. Therefore, in this study the researcher consulted with two Ph.D. physical education candidates and a senior lecturer from the physical education field regarding her interview questions, interview procedure and qualitative data analysis. The objective of this peer debriefing is to see whether the interview questions and the module are suitable for integration with the current primary physical education curriculum in Malaysia. The peers were asked to rate the interview question and the lesson plan on a Likert scale of 1 to 5 to ensure the credibility of this study. Fellow Ph.D. students in the Qualitative research design were also approached to check on the data analysis on (a) difficulty encountered, (b) ways to resolve coding problems and (c) other interesting themes from the interview data. The Ph.D. students and the researcher agreed on the emerging new themes from the students learning experience. The peer debriefing with the qualitative research candidate help to increase the validity of the study as the researcher had four session before the data analyses and after the data analyses (Appendix N).

Transferability

Transferability in a study is aimed to address to what extent the outcome of the study can be applied to other situations (Maxwell, 2005; Onwuegbuzie & Leech, 2006). In this study even though there is only one research question on a qualitative approach the researcher plans to prepare a rich and thick description of the fieldwork of the study of collecting the observation protocol, interview data and triangulation data. This is to ensure the readers are able to do an evaluation and examine whether the outcome of the study can be applied and practiced in other physical education research situations.

Dependability

The criterion of dependability in trustworthiness is aimed at addressing the issue of reliability of the qualitative approach (Lincoln & Guba, 1985). The dependability can be examined through a process of audit trail (Flick, 2007). Audit trail is a technique that involves the presentation of all data, collection techniques and experiences, assumptions made, decision taken, meaning interpreted and influence of researcher of the study. In this study, the researcher ensured all the obtained sources of interview protocol, transcriptions were systematically transcribed, coded and analyzed. This action remained true to obtained data from the audit trail using the Nvivo data analysis (Flick, 2007).

Conformability

Finally, the last criterion of trustworthiness is conformability of the research. The notion of conformability is to address the researcher's objectivity of the study (Flick, 2007; Merriam, 2001). In this study as the researcher only intends to answer the research question on how the students experience of decision making and problem solving in games through the focus group interview data. Therefore, interview question that the researcher prepared only looked for the behavior that is described in the interview questions. This is to ensure the researcher recorded the data according to the research question and not other data which is irrelevant to the study.

Pilot Study

The pilot study was intended to investigate any weakness in the research design. The pilot study was conducted under the same condition using similar respondents and the same instruments planned for the study. The pilot study was also intended to test how well the design can be applied in the field, to find errors in data collecting instruments and protocol and to locate errors in the interpretation of the data collected. Light, Singer, and Willett (1990) describes that the objective of pilot study is to determine if the researcher can administer an intervention and how the intervention will be received. Teijlingen, Rennie, Hundley, and Graham (2001) defined pilot study as feasibility study which are small scale version, or trial done in preparation for the major study. They further explained that the purpose of the pilot study is to determine how the study can go forward even more strongly and if there are any inadequacies to correct in the actual study.

A school in one of the districts in Selangor State was selected for the pilot study. The school has the same characteristics as the school in the actual study. Two classes of 10 years old Year 4 primary physical education students were randomly selected as an intact group for the study. One class was randomly assigned as comparison group and another class as experimental group. There were 25 subjects in the sample (N = 25) in the comparison group and 24 (N = 24) in the experimental group. The objectives of pilot study are:

1. To get the reliability of GPAI and SIMS in local setting
2. To improve data collection and scoring techniques
3. To determine if the data patterns are as the researcher might have expected
4. To identify the problems faced by the researcher before carrying out the actual research
6. To establish the sensitivity of the instruments in collecting the data needed for analysis.
7. To establish the soundness of the overall procedures; in other words, does the design do what it was intended to do (validity of the overall study).

In this pilot study the researcher used intact groups because she was unable to create groups for the experiment in the education setting as the classes are arranged according to the school time table regulation. Before the treatment both the experimental group and the control group were tested on the GPAI instrument for pretest score on game performance for handball game. The intervention of TGfU approach was carried out in teaching of chest pass, overhead pass and dribbling in handball game unit for four weeks followed by a posttest. In the pilot study the researcher used two observers to code the observation using the GPAI for pretest and posttest. The research was carried out with four lessons of handball game unit for Year Four syllabus for both control group and experimental group (Appendix J and K). A subgroup from the experimental group was selected for the interview session. The interview questions were checked for student understanding.

SIMS questionnaires also were administered on the fourth lesson to get data on the students' motivation of participating in a game session. Both the experimental and control group took 15 to 20 minutes to answer all the 16 items in the SIMS questionnaires. The researcher also checked with the students whether they understood the SIMS questions. The researcher collected the data from the two observers to justify the scores using the GPAI instrument. According to Creswell (2008), inter-rater (intertester) reliability is a procedure used when making observation of behavior. It involves observation made by two or more individuals or several individuals' behavior. The observers recorded their scores of the behavior and then compared the scores to see if their scores are similar or different. The advantage of this observational method of scoring is that it negates any bias that any of the individuals might bring to scoring of the GPAI. According to Gay and Airasian (2000) determining reliability of an observational checklist requires at least two independent observers to make observation so that their recorded judgment can then be compared to determine agreement. Sometimes it is not possible to observe the same situation at the time.

The important effects on the reliability and validity in this study depend on the observers. Therefore, the pilot study involved two observers who are familiar with the observational procedure used. Both observers used in this pilot study are trained in the observing procedures of GPAI. They are trained on what behaviors are to be observed based on the game performance outcome by using the rubric; that is, how the participants' behaviors are to be coded and how often. Observers also go through numerous practice sessions during which they observed and scored actions similar to those involved in the study. Practice session using recording behaviors are most effective because segments which observers find difficult can be replayed for discussion and feedback. Estimates of observer reliability should be calculated periodically to determine the effectiveness of training and practice. Observer reliability was used for each session of the game lesson until the satisfactory level of 80% was obtained (Gay & Airasian, 2000).

In the pilot study, the GPAI items were analyzed for Cronbach's alpha and a value of .78 was recorded for the internal consistency and reliability. SIMS questionnaires were also analyzed for Cronbach's alpha for the internal consistency and reliability for each subscale of SIMS. The overall reliability score for the instrument was .70.The pilot study showed result of students learning outcome of game performance in handball game. The mean and the standard deviation of the group's game performance with GPAI were analyzed with the descriptive statistic by SPSS. Data collected in this pilot study suggest that the pattern of the intervention can show effects on the students' learning outcome in game performance. Therefore, the pilot result conducted in a small scale can show the anticipated direction of the actual study.

The researcher encountered a few problems during the pilot study. In the first lesson the control and experimental groups were having lessons at the same time. The observer had problem coding with GPAI at the same time for the two groups during the modified game play. But during the second lesson when the classes were at different times the observations were done better and not in a rush. On the consecutive lesson after two lessons, they were able to record the score better. The researcher planned to overcome this problem by using video recording in the actual research. The researcher also faced problems when carrying out the Situational Motivation Scale Instrument as the Year Four students take a long time to answer the six scale instrument. Therefore, the instrument will be validated with five-point Likert scale and will be piloted before the actual study.

Data Analyses

The quantitative data were analyzed with the Statistical Package for the Social Sciences Personal Computer (SPSS/PC) for Windows 16. Means and standard deviation were computed as descriptive statistic for all the dependent variable of game performance outcome. Frequencies and Standard Deviation (*SD*) were computed to describe the demographic data of the control group and experimental group in this study. Further ANCOVA test were carried out to determine the significance of the mean difference between the control and experimental group on the cognitive and psychomotor performance outcome. ANCOVA statistic was selected for a number of reasons. ANCOVA test is the best instrument for analysis that is based on an adjusted pretest mean scores using posttest measures. ANCOVA can test the significance of differences among means of final experimental data. It also removes the effects of any environmental source as such variation that could inflate the environment error. Thus the researcher in this study used ANCOVA statistic to ensure that the results were not attributed to other teaching approaches during the experiment.

As for the survey instrument, the Situational Motivational Scale was administered to ascertain the students' motivation participating in game performance and whether there any significant differences between the experimental and the control group. For this data the Man Whitney *U* test was employed because the data were not having normal distribution and in ordinal scale. All the results of descriptive analyses and inferential analyses were presented and discussed.

As for the qualitative data collection, interview data were transcribed and coded.

The quantitative- qualitative analysis approach is adopted as a systematic approach to answer the research design. As stated in Miles and Huberman (1994) the reason to link the quantitative and qualitative is for three reason: (a) to enable conformation of each other triangulation, (b) to elaborate or develop analysis, providing richer detail, and (c) to initiate new lines of thinking through attention to surprise or “turning ideas around” providing fresh insight. Similarly, Firestone (1987) implies that, on one hand the quantitative data analysis persuades the reader by emphasizing individual judgment and stressing the use of certain procedures, leading to generalized results. On the other hand, the qualitative data analysis persuades through rich description and strategic comparison across cases. Therefore, systematic integration of collection of both quantitative and qualitative data needed to understand the case at hand.

1. *Hypothesis One*: There is no significant difference in the cognitive learning outcome between students with TGfU approach and students with traditional skill approach.
2. *Hypothesis Two*: There is no significant difference in the psychomotor learning outcome between students with TGfU approach and students with traditional skill approach.
3. *Hypothesis Three*: There is no significant difference in total cognitive and psychomotor learning outcome between students with TGfU approach and students with traditional skill approach.

Below are the research questions and how the data were analyzed:

Research Questions

Research question 1. Are there any significant differences in cognitive learning outcome between students who were exposed to the TGfU approach and students with traditional skill approach?

Parts of Research Question 1 are analyzed below:

a. Do students with the TGfU approach perform better in tactical understanding such as (a) adjust, (b) cover, (c) support, and (d) guard in a 3 versus 3 game situation compared to students with traditional skill? Test used: Descriptive statistics.

b. Do students with the TGfU approach perform better in decision making in a 3 versus 3 game situation compared to students with traditional skill approach? Test used: Descriptive statistics.

c. Are there any significant different in cognitive learning outcome between students who were exposed to TGfU approach and students with traditional skill approach. Test used: Assumption test and ANCOVA.

Research question 2. Are there any significant differences in psychomotor learning outcome between students who were exposed TGfU approach and students, with traditional skill approach? Parts of Research Question 2 are analyzed below:

a. Do students with the TGfU approach perform better in skill execution compared to students with traditional skill approach? Test used: Descriptive statistics.

b. Do students with the TGfU approach perform better in 30-meter handball dribbling skill test compared to students with traditional skill approach? Test used: Descriptive statistics.

c. Are there any significant different in psychomotor learning outcome between students who were exposed to TGfU approach and students with traditional skill approach. Test used: Assumption test and ANCOVA.

Research question 3. Are there any significant differences in total game learning outcome between students who were exposed to the TGfU approach and students with traditional skill approach? Parts of Research Question 3 are analyzed below:

a. Are there any significant different in total game learning outcome between students' who were exposed to TGfU approach and students with traditional skill approach? Test used: Assumption test and ANCOVA.

Research question 4a. What are the student's motivations toward participation in game performance?

Parts of Research Question 4a are analyzed below:

Do students with the TGfU approach better motivated compared to students with traditional skill approach? Test used: Descriptive statistics.

Research question 4b. Is there any significant different in students' motivation between the TGfU approach group and traditional skill approach group?

Parts of Research Question 4b are analyzed below:

Are there any significant different in motivation between students' who were exposed to TGfU approach and students with traditional skill approach? Test used: Assumption test and Man Whitney *U* test.

Research question 5. What are the students' problem solving and decision making learning experience in 3 vs. 3 game situations? Process of data analyses are described below:

The fifth research question intended to yield students' decision making and problem solving learning experience of playing game in 3 versus 3 game situations. The qualitative data were intended to draw insight of students' experience of playing game. Therefore, semi-structured interview questions were asked from the TGfU approach and traditional skill approach focus group students after each game session for 4 weeks. The researcher would like to know the applicability of the finding of *what* and *how* of students' experience to other similar settings. Particularly it enhances what went on during the game playing session and how students experience playing the game. The data were analyzed with the interview questions. The comparative descriptions data are based on the similarities and differences discovered in the TGfU approach group and traditional skill approach group students experience based on the codes.

Comparative cross case analyses were employed in this study to analyze the focus group interview data. According to Miles and Huberman (1994) the cross case analysis is an appropriate way of analyzing data because it enhances generalizability. Miles and Huberman (1994) also explained that one reason for quantifying the qualitative data is a form of triangulation. Although Guba and Lincoln (1981) argued that the goal of analyses is inappropriate for qualitative study; however, the question does not go away. When cross case analysis is analyzed carefully, it can help to answer reasonable questions. Especially in this study the data explained how students experienced playing game in the Traditional skill approach and TGfU approach.

The first level of data analyses started when transcription of the first interview data was carefully collected with Sony IC Recorded ICD-UX200F and analyzed with the interview questions (Appendix O). The audio verbatim were then transcribed in Microsoft Word 93 (Appendix P). Initial data management consisted of organizing the data, transcribing the interview, typing the transcription notes and making decision to analyze the data by computer. Then the researcher listened to the audio and read text several times. Then the word transcription was uploaded as Source in Nvivo 8 (QRS International, 2008). The transcribed data in Source then coded further for free notes and tree notes. The analysis process applied after each interview data were transcribed. After information were gathered as category (free node and tree node), the data further analyzed with cross case analyses.

The second level of analyses was done after all the interviews were collected and transcribed. In this study eight focus group interviews were recorded and transcribed. The data were analyzed line by line for the codes that emerged in the transcription. According to Miles and Huberman (1994) the codes are the tag that describes units of information. The coding process is labeling the codes into a unit. In this study after all the interview data were screened they were then uploaded in the Nvivo 8 as a source data. The source data were uploaded as the Internals in Nvivo 8 (Appendix P). The data in the source units were then managed as codes in Nvivo 8. According to Straus and Corbin (1998) there are few stages of analyzing the codes into categories, from the open coding, axial coding and selective coding. The open coding is the first level of analyzing the categories where the data were selected from a source to be labeled as one of the unit. The axial coding is where different codes were labeled in categories. As in this study the labeling is done with the Nvivo 8 program the term of open coding is called as free nodes and axial coding is called as tree nodes. The selective codes involved selecting category or cases that has been formed in Nvivo systematically to link them with the framework of the study.

Summary

This chapter systematically described how the research was carried out using quasi experimental design. The study utilized quantitative as well as qualitative interview data collection method. The data were collected based on the research procedures described in this study. The pilot study served as an indicator to help the researcher ensure reliability of the instrument which was used in actual study. For quantitative data, the study used Game Performance Assessment Instrument (GPAI) and Situational Motivational Scale Instrument. SPSS software was used to analyze qualitative data using ANCOVA and Man

Whitney *U* test analysis.For qualitative data, focus group interview method was employed to get in depth of students experience playing game. Nvivo 8 software (QRS International, 2008) was used to analyse the qualitative data.

Chapter 4: Results

Overview

This chapter presents the description of the result of the study. The results were presented on the effects of teaching games for understanding on students learning outcome. First the finding of the study answered the overall students' performance on learning outcome in 3 versus 3 game situations. Secondly the study reported the findings of all the variable of cognitive, psychomotor and affective learning outcome. In addition, the study also described the qualitative findings of students' decision making and problem solving experiences in game situation.

The purpose of this research is to investigate the effects of the TGfU approach on students' learning outcome in primary physical education class. Specifically, the aim of this study is to investigate using a quantitative approach the effects of the TGfU approach to improve students' game performance learning outcome such as in (a) cognitive aspect of tactical understanding and decision making, (b) psychomotor aspect of skill performance, and (c) affective aspect of motivation for participating in game performance. Further with the qualitative approach the study intends to explore in depth what are the students' learning experience of problem solving and decision making in 3 versus 3 game situations.

1. Are there any significant differences in cognitive learning outcome between students' with the TGfU approach and students' with traditional skill approach?
2. Are there any significant differences in psychomotor learning outcome between students' with the TGfU approach and students' with traditional skill approach?
3. Are there any significant differences in total game learning outcome between students' exposed to the TGfU approach and students with traditional skill approach?
4. (a) What are the students' motivations toward participation in game performance?

   (b) Is there any significant difference in students' motivation between the TGfU approach group and traditional skill approach group?
5. What are the students' problem solving and decision learning experiences in 3 versus 3 game situations?

Research Question 1: Are there any significant differences in cognitive learning outcome between students' who were exposed to the TGfU approach and students' who were exposed to the traditional skill approach?

To answer the research question 1, the means and standard deviation of the cognitive measures were computed as descriptive statistic. Firstly the entire variables were computed for the means and standard deviation. The raw data reported in Appendix C.

Table 11

Mean Score and Standard Deviation Overall Tactical Understanding Learning Outcome

Dependent measure		Control (n = 36)		Experimental (n = 36)	
		Mean	*SD*	*Mean*	*SD*
Tactical	Pretest	1.41	.19	1.55	.18
understanding	Posttest	2.26	.25	3.22	.36
	Gain	.85		1.67	

Table 11 shows the descriptive statistics of mean score (*M*) and standard deviation for the experimental group and the control group. The cognitive domain components consist of tactical understanding and decision making. The tactical understanding components consist of variables such as adjust, support, cover and guard. The tactical understanding pre test mean score for the control group is M =1.41 with SD= .19 and the experimental group mean score is M=1.55 with SD = .18. The mean score for the control group and the experimental group showed an increment in the posttest score. The mean score of control group for the posttest is M= 2.26 with SD= .25, where the difference is .85. The experimental group also showed increment in the posttest mean score of M= 3.22 with SD = .36. Both the control group and the experimental group showed increment in the posttest mean score which are M=2.26 and M=3.22. The control group showed the mean score gain of 0.85 and the experimental group showed the mean score gain of 1.67. The experimental group showed higher mean score gain of 0.82 differences on posttest compared to the control group. The result suggested that the independent variable of TGfU approach of the experimental group did show effect on students' tactical understanding variable of learning outcome. To answer to what extent did the TGfU approach improve students' learning outcome, details of the descriptive statistical test were carried out on the tactical components of adjust, cover, support and guard. The details of the statistical results are presented in Table 12.

Table 12

Mean Score and Standard Deviation of the Tactical Understanding Variables

Dependent Measure		Control (*n* = 36)		Experimental (*n* = 36)	
		Mean	*SD*	*Mean*	*SD*
Adjust	Pretest	1.21	.35	1.28	.33
	Posttest	1.96	.40	2.70	.67
	Gain	0.75		1.42	
Support	Pretest	1.32	.36	1.56	.41
	Posttest	2.35	.41	3.46	.61
	Gain	1.03		1.90	
Cover	Pretest	1.43	.38	1.36	.61
	Posttest	2.17	.48	3.17	.53
	Gain	0.74		1.80	
Guard	Pretest	1.29	.35	1.47	.38
	Posttest	2.08	.48	3.33	.50
	Gain	0.79		1.86	

Table 12 also provided the descriptive statistic of mean score (M) and standard deviation of the experimental group and the control group for all the tactical understanding measures. The pretest mean score for adjust for the control group is $M = 1.21$ with $SD = .35$ and the experimental group $M = 1.28$ with $SD = .33$. The mean score for the control group and the experimental shows an increment in the posttest. The mean score of posttest of adjust variable for the control group is *M* = 1.96 with *SD* = .40 where the difference is 0.75. The experimental group also showed increment in the posttest mean score of *M* = 2.70 with *SD* = .67. Both the control group and the experimental group showed increment of mean score in the posttest score *M* = 1.96 and *M* = 2.70. The control group showed the difference of 0.75 and the experimental 1.42. The experimental group showed higher mean score gain of 0.67 differences on posttest score compared to the control group. The result indicated that the variable of adjust of the tactical understanding from the TGfU approach group did show effect on students' learning outcome in game performance.

The descriptive statistic also shows the mean score and standard deviation of the experimental group and the control group for the support variable of tactical understanding. The pretest mean score for support of the control group is *M* = 1.32 with *SD* = .36 and the experimental group is *M* = 1.56 with *SD* = .41. The control group and the experimental showed an increment in the posttest mean score. The posttest mean score of support variable for the control group is *M* = 2.35 with *SD* = .41 where the difference is 1.03. The experimental group also showed increment in the posttest score of *M* = 3.45 with *SD* = .61. Both the control group and the experimental group showed increment of mean score in the posttest score are *M* = 2.35 and *M* = 3.46. The control group showed a difference of 1.03 and the experimental 1.90. The experimental group showed higher mean score gain of 0.87 differences on posttest score compared to the control group. The result suggests that the independent variable of support of tactical understanding of the TGfU approach did show an effect on students' learning outcome in game performance.

The pretest mean score for the cover variable of the control group is *M* = 1.43with *SD*= .38 and the experimental group is *M* = 1.36 with *SD*= .61. The mean score for the control group and the experimental showed an increment in the posttest. The mean score of posttest for cover variable for the control group is *M* = 2.17 with *SD*= .48 where the difference is 0.74. The experimental group also showed increment in the posttest score of *M* = 3.17 with *SD*= .53. Both the control group and the experimental group showed increment of mean score in the posttest score are *M* = 2.17 and *M* = 3.17. The control group showed the mean score different of 0.74 and the experimental 1.80. The experimental group showed higher mean score gain of 1.06 different on posttest score compared to the control group. The result suggested that the independent variable of cover of tactical understanding of the TGfU approach did show an effect on students' learning outcome in game performance.

Table 12 also reported the descriptive statistic of mean score and standard deviation for guard variable of tactical understanding. The pretest mean score for the guard variable for the control group is *M* = 1.29 with *SD* = .35 and the experimental group is *M* = 1.47, with *SD* = .38. The mean score for the control group and the experimental showed an increment in the posttest. The mean score of posttest for cover variable for the control group is *M* = 2.08 with *SD* = .48. where the difference is 0.79. The experimental group also showed increment in the posttest score of *M* = 3.33 with *SD*= .50. Both the control group and the experimental group showed increment of mean score in the posttest score are *M* = 2.08 and *M* = 3.33. The control group showed the mean score different of 0.79 and the experimental 1.86. The experimental group showed higher mean score gain of 1.07 different on posttest score compared to the control group. The result suggested that the independent variable of guard of tactical understanding of the TGfU approach did show an effect on students' learning outcome in game performance.

Table 13

Mean Score and Standard Deviation for Student Decision Making

Dependent Measure		Control (n = 36)		Experimental (n = 36)	
		Mean	*SD*	*Mean*	*SD*
Decision making	Pretest	1.19	.25	1.42	.33
	Posttest	2.07	.52	3.35	.75
	Gain	0.88		1.93	

Table 13 shows the mean score and standard deviation for the decision-making component of the cognitive domain. The mean score of pretest for decision making of the control group is M = 1.19 with SD = .25 and the experimental group is M = 1.42, SD = .33. The mean score for the control group and the experimental group shows an increment in the posttest. The mean score of control group for the posttest is M = 2.07 with SD = .52. The experimental group also showed increment in the posttest score of M = 3.35 with SD = .75. Both the control group and the experimental group showed increment of mean score gain in the posttest of M = 2.07 and M = 3.35. The control group showed the difference of 0.88 and the experimental group 1.93. The experimental group showed a higher mean score gain of 1.05 different on the posttest score compared to the control group. The result suggested that the independent variable of decision making of the TGfU approach did show an effect on students' learning outcome in game performance.

The result of the descriptive statistic of all the cognitive component of tactical understanding and decision making revealed that the TGfU approach group performed better than the traditional skill approach group. When compared to the details of the mean score, the variable of decision making showed higher mean score gain which is $M = 1.07$ as compared to other variable in the cognitive domain. When compared to tactical understanding component TGfU approach group compared to traditional skill group, cover which is $M = 1.05$ and guard $M = 1.06$ of the TGfU group showed higher improvement as compared to the other variable.

Further ANCOVA statistic analysis was computed to answer whether there are any significant effects of the cognitive dependent variable. The research design is quasi experimental pretest-posttest design with non equivalent group. The design is needed when the researcher strongly suspects that the pretest measurement will affect the post test responses in a way that could easily lead to inccorect inferences about the cause (Cook & Campbell, 1979). Therefore Analysis of covariance (ANCOVA) is used to test the main and interaction effects of categorical variables on a continuous dependent variable, controlling for the effects of selected other continuous variables, which co-vary with the dependent. To run the ANCOVA statistical analysis there are few assumptions need to be met. When we wish to control for the influence of a covariate to get a more powerful test of group differences, we require the homogeneity of regression slopes assumption to be satisfied. Interestingly, when our purpose is prediction or when we are explicitly interested in the interaction effect, it ceases to be an assumption. Rather, analysis of homogeneity of regression slopes becomes a substantive question of interest in its own right. What we are testing is just another form of interaction effect. Does the covariate (pretest) moderate the relationship between a covariate and the posttest.

The assumptions are:

1. The normality of data
2. Homogeneity of variance (Levene's test)
3. Linearity between CV & DV (Scatterplot)
4. Homogeneity of regression (Scatterplot—Compares slopes of regression lines)

Test of Normality

The primary threat to internal validity of this study is the use of intact group to compare the group differences on the posttest scores. The posttest score can attribute to preexisting group especially in relation to the dependent measure of game performance learning outcome. Therefore, the tests of equivalence on the measure of dependent variables of game learning outcome were determined. Normal distribution of the pretest mean score and posttest mean score indicated that no violation of normality assumption for all the dependent measures. Therefore, pretest mean scores and posttest mean scores for all the cognitive dependent variables were analyzed for normality of distribution for the experimental group and the control group. Normality refers to the shape of the data distribution that corresponds to the normal distribution. Normality for the variables can be assessed by statistical and graphical means. Graphical methods include the histogram and normality plot. Figure 9 shows the normality of the data of total cognitive pretest score for the experimental group.

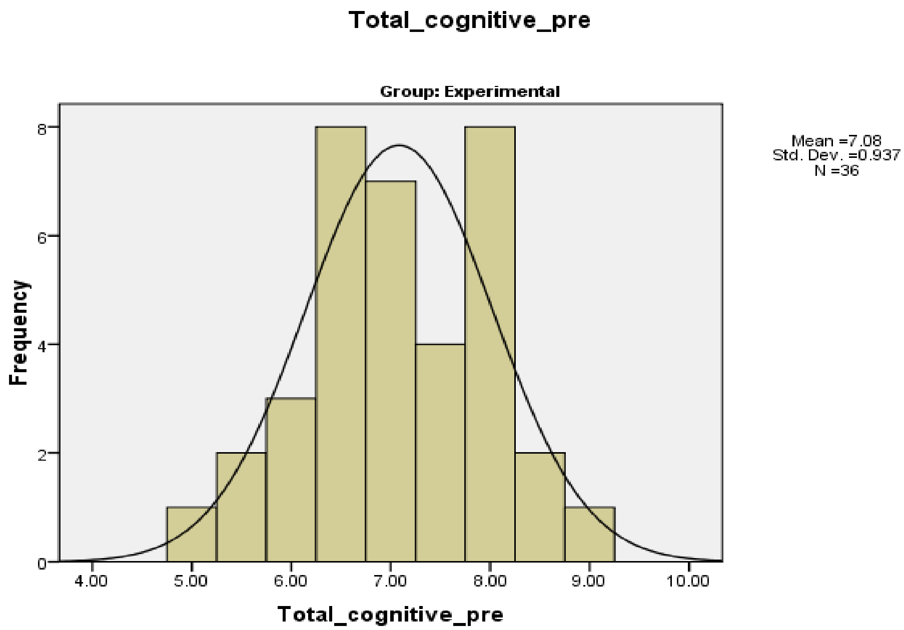


Figure 9. Graphical representation of total cognitive pretest data for experimental group.

The result on frequency and histogram graph showed normal distribution of the total cognitive pretest data for the experimental group. Therefore, the ANCOVA assumption is met.

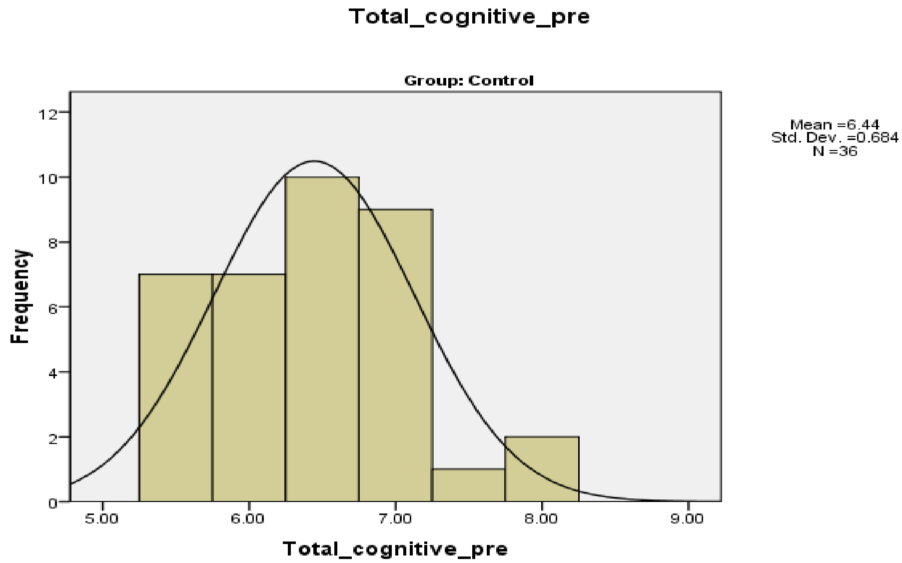


Figure 10. Graphical representation total cognitive pretest data for control group.

Total cognitive pre mean data for the control group were analyzed for normality of distribution dependent measures of cognitive. The result on frequency and histogram showed normal distribution of pretest score for control group. Figure 10 indicates the normality of the total cognitive pretest score for the control group. Therefore, the ANCOVA assumption is met.

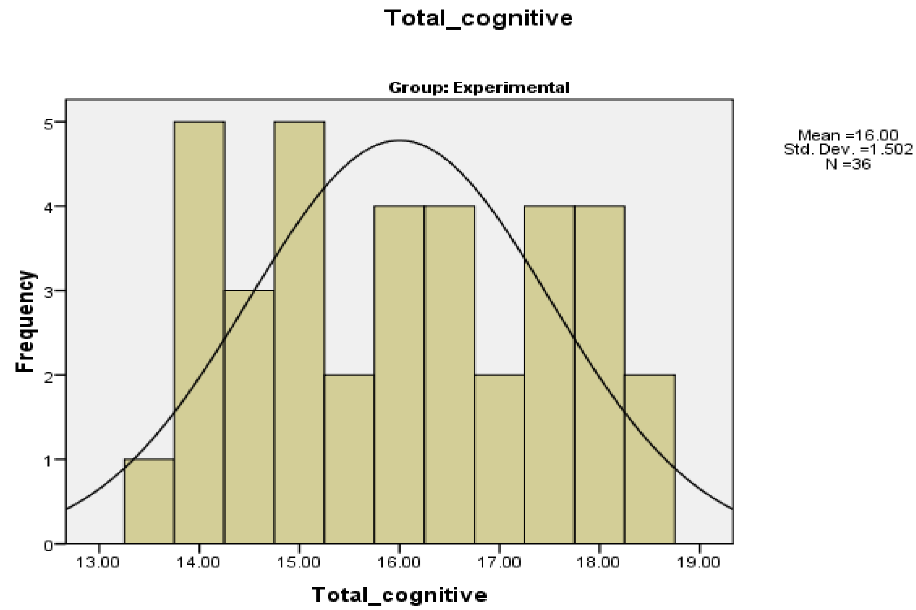


Figure 11. Graphical representation of total cognitive posttest data for experimental group.

Total cognitive posttest means score data for the experimental group were also analyzed for normality of distribution. The result on frequency and histogram showed normal distribution for the experimental group. Figure 11 presents the normality of the total cognitive posttest score. Therefore, the ANCOVA assumption is met.

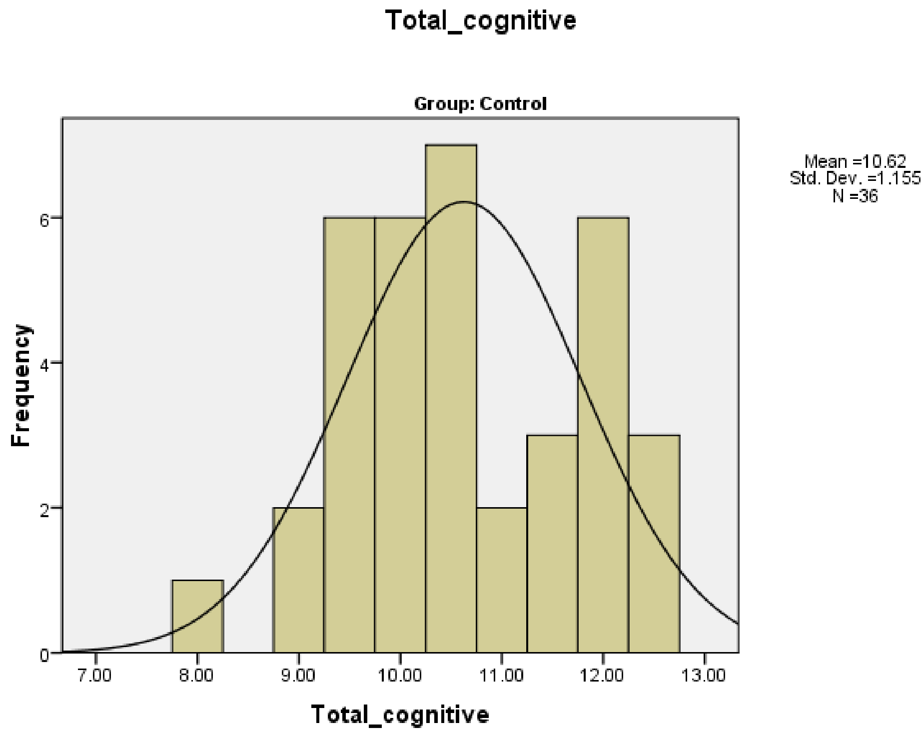


Figure 12. Graphical representation of total cognitive posttest data for control group.

Total cognitive posttest means score data were analyzed for normality of distribution on total measures of cognitive for the control group. The result on frequency and histogram showed normal distribution for control group. Figure 12 presents the normality of the total cognitive posttest score. Therefore, the ANCOVA assumption is met.

Test of Homogeneity

Equal variance across the sample is called Homogeneity of variance. Levene's test is used to check if the two groups have equal variance. The test result as shown from Table 14 indicates the cognitive score (F (1, 70) = 2.53, p > .05). The result reveals that there is no significant difference between the experimental group and the control group. This result indicating that the assumption of homogeneity of variance was not violated. Therefore, the two groups are equal before the treatment. Therefore, the scores of students with the TGfU approach and traditional skill approach were analyzed using ANCOVA analysis.

Table 14

Levene's Test of Equality of Error Variances for Cognitive Score

Levene's Test of Equality of Error Variances[a] Dependent Variable: Total_cognitive			
F	df1	df2	Sig.
2.532	1	70	.116
a. Design: Intercept + Total_cognitive_pre + Group			

ANCOVA Analysis

To determine the effects of TGfU approach on the cognitive game performance outcome, students score were analyzed using the ANCOVA analysis. An ANCOVA analysis was conducted after all the ANCOVA assumptions were met to evaluate the effects of the TGfU teaching approach and traditional skill teaching approach on students' learning outcome. The results of ANCOVA analysis are presented in Table 15.

Tests of Between-Subjects Effects

Table 15

Analysis of Covariance of Mean Score of Student's Cognitive Game Performance Outcome

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Corrected Model	539.124[a]	2	269.562	174.490	.000	.835
Intercept	82.425	1	82.425	53.354	.000	.436
Total_cognitive_pre	19.093	1	19.093	12.359	.001	.152
Group	384.414	1	384.414	248.835	.000	.783
Error	106.595	69	1.545			
Total	13405.750	72				
Corrected Total	645.719	71				

a. R^2 = .835 (Adjusted R^2 = .830)

Table 15 presents the ANCOVA results. The results reveal that there is a significant main effect difference between the experimental group and the control group in the posttest total cognitive score. (F (1, 69) = 248.83, p < .05). Consequently the null hypothesis was rejected. This implies that the experimental group with TGfU has significant main effects on student's cognitive game performance learning outcome. The overall cognitive game performance outcome of students with TGfU approach (Adjusted mean *M* = 15.79) was significantly better than students with traditional skill approach (Adjusted mean *M* =10.82).

Table 16

Estimated Marginal Means on Cognitive Game Performance Outcome

Dependent Variable:Total_cognitive

Group	Mean	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Experimental	15.797[a]	.215	15.368	16.226
Control	10.828[a]	.215	10.399	11.257

a. Covariates appearing in the model are evaluated at the following values: Total_cognitive_pre = 6.7639.

Table 16 of the estimated marginal means for the cognitive learning outcome explained the result presented in the ANCOVA Table 15. The table includes the adjusted means for the control and experimental group, their standard errors and 95% confidence intervals. As shown in the table 16, the actual mean marked with X. The result reveals that the experimental group with TGfU approach performed better (X15.80) than the control group (X10.82) on cognitive learning outcome.

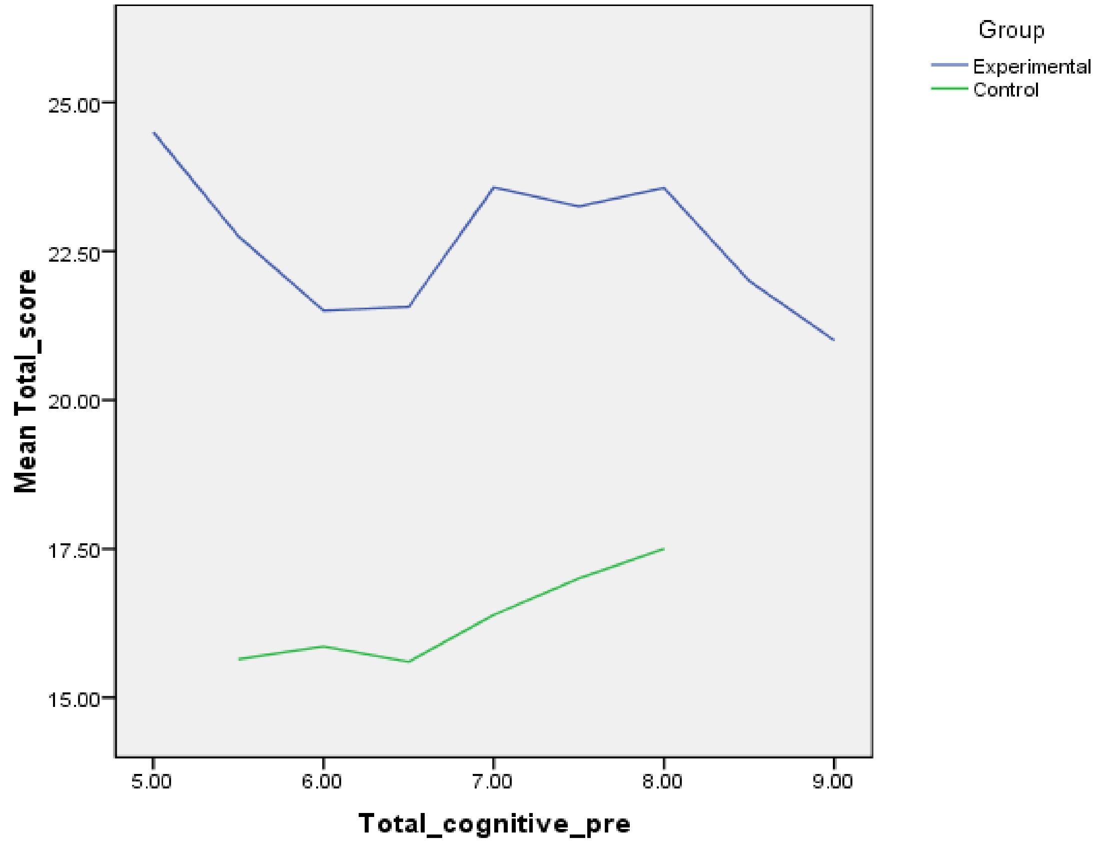


Figure 13. Total cognitive mean score of the experimental and the control group.

The scatter plot graph in Figure 13 demonstrates the differences in distribution of the total cognitive mean score by experimental group and the control group. Experimental data is plotted in blue and the control group data is plotted in green. Pretest data is the measurement score taken before the treatment and posttest data measured with dependent variable of posttest score. Each point on the scatter plot represents the paired pre and posttest measures for each subject. In sum, the students with TGfU approach group perform significantly better in total mean score compared to students with traditional skill approach.

Research Question 2: Are there any significant differences in psychomotor learning outcome between students' who were exposed to TGfU approach and students', with traditional skill approach? Parts of Research Question 2 are analyzed below:

Table 17

Mean Score and Standard Deviation of Students' Skill Execution

Dependent Measure		Control (n = 36)		Experimental (n = 36)	
		Mean	*SD*	*Mean*	*SD*
Skill Execution	Pretest	1.92	.45	1.93	.45
	Posttest	2.65	.41	3.40	.39
	Gain	0.73		1.47	

Table 17 shows the mean score (*M*) and standard deviation for the skill execution of student's game performance of psychomotor domain in game situation. The mean score of pretest for skill execution of the control group is M = 1.91 with SD = .45 and the experimental group is M = 1.93 with SD = .45. The mean score for the control group and the experimental shows an increment in the posttest. The mean score of control group for the posttest is M = 2.65 with SD = .41. The experimental group also showed increment in the posttest score of M = 3.40 with SD = .39. Both the control group and the experimental group showed increment of mean score in the posttest of M = 0.73 and M = 1.47.

The control group showed the difference of 0.73 and the experimental group 1.47. The experimental group showed slightly higher mean score gain of 0.74 differences on the posttest score compared to the control group. The result suggested that the independent variable of skill execution of the TGfU approach did show an effect on students' learning outcome in game performance.

Table 18

Mean Score and Standard Deviation of Students' Handball Dribbling Skill Test

Dependent Measure		Control (n = 36)		Experimental (n = 36)	
		Mean	*SD*	*Mean*	*SD*
Handball dribbling skill test	Pretest	2.64	1.33	2.89	1.39
	Posttest	2.72	1.30	3.33	1.43
	Gain	0.08		0.44	

Table 18 reveals the mean score (*M*) and standard deviation for the handball dribbling skill test component of the psychomotor domain of 30 meter handball dribbling skill test. The pretest mean score for handball skill test of the control group is *M* = 2.64 with *SD* = 1.33 and the experimental group mean score is *M* = 2.89 with *SD* = 1.39. The mean score for the control group and the experimental shows an increment in the posttest. The mean score of control group for the posttest is *M* = 2.72 with *SD* = 1.30. The experimental group also showed increment in the posttest score of *M* = 3.33 with *SD* =

1.43. Both the control group and the experimental group showed increment of mean score in the posttest of *M* = 2.72 and *M* = 3.33. The control group showed the difference of 0.08 and the experimental group 0.44. The experimental group showed slightly higher mean score gain of 0.36 differences on the posttest score compared to the control group. The result suggested that the independent variable of handball dribbling of the skill test of students in TGfU group did show an effect on students' learning outcome in game performance.

The result of the descriptive statistic of the psychomotor component of skill execution and handball dribbling skill test revealed that the TGfU approach group performed better than the traditional skill approach group. When compared to the details of the mean score of the TGfU group, the variable of skill execution in game performance showed higher mean score gain of *M* = .74 as compared to other handball dribbling skill test of *M* = .36. Therefore, we can conclude that the overall psychomotor game performance only shows slight improvement in the TGfU approach group and the traditional skill approach group. Further statistical analyses were administrated to find out the significant differences. To run the ANCOVA statistical analysis the data were analyzed for the assumption test of normality, homogeneity of variance (Levene's test), linearity between CV & DV (Scatterplot) and homogeneity of regression (Scatterplot—Compares slopes of regression lines).

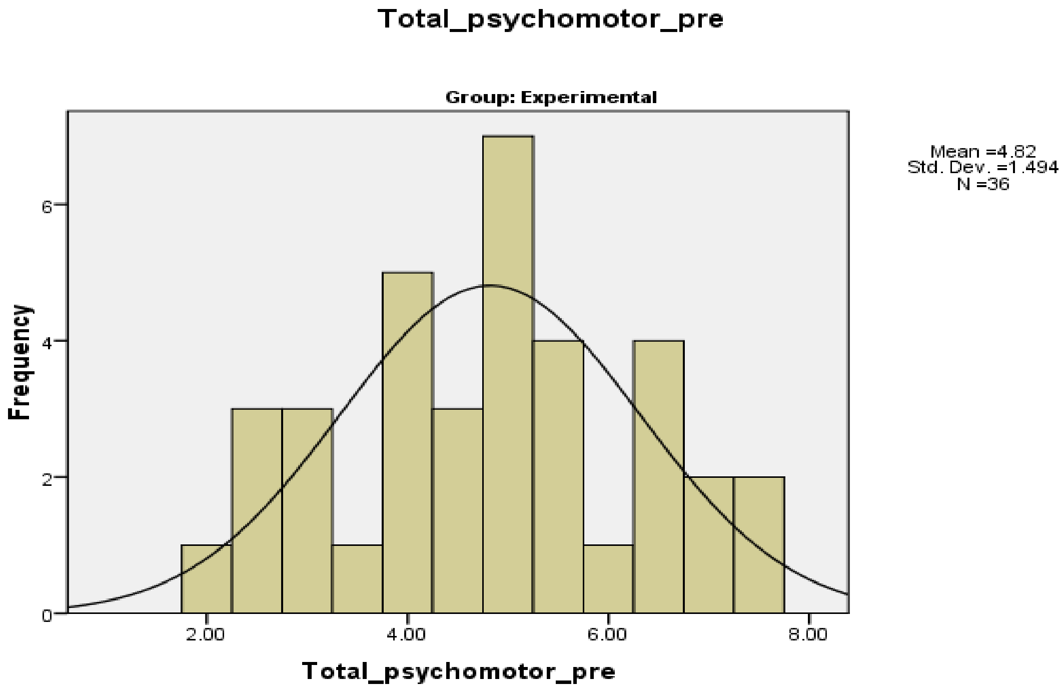


Figure 14. Graphical representation of total psychomotor pretest data for the experimental group.

Pretest mean score were analyzed for normality of distribution on total dependent measures of psychomotor for the experimental group. The result on frequency and histogram showed normal distribution of the total psychomotor pre data for experimental group. Figure 14 shows the normality of the total psychomotor pretest score for the experimental group. Therefore, the ANCOVA assumption is met.

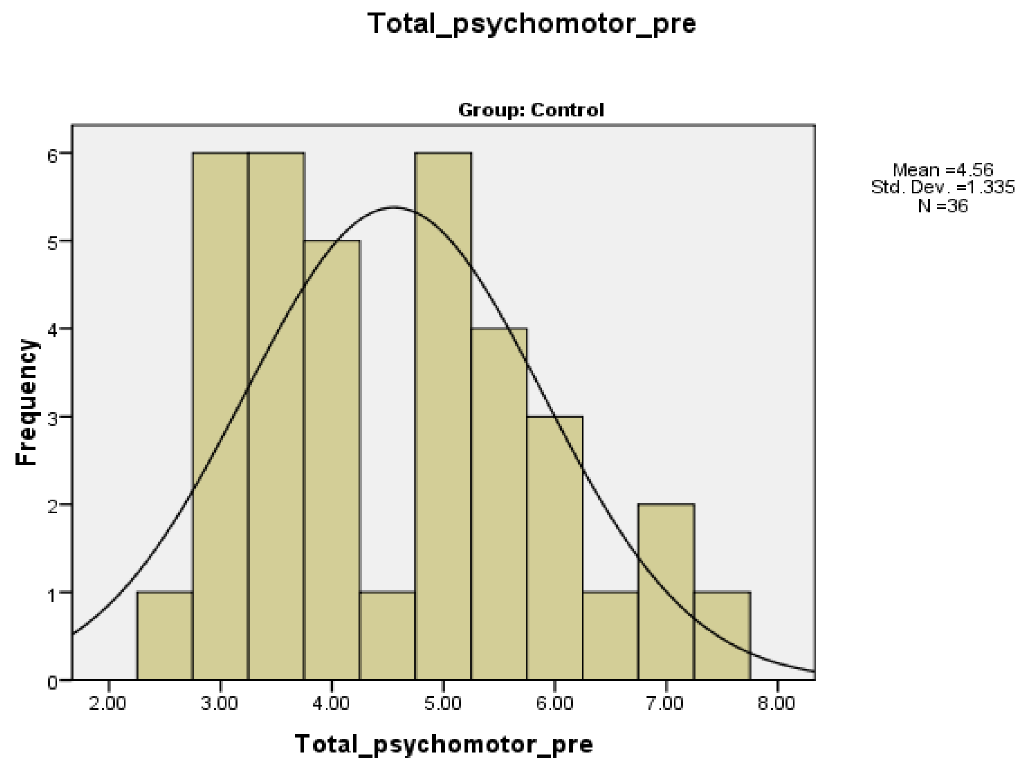


Figure 15. Graphical representation of total psychomotor pretest data for the control group.

Total pretest mean score were analyzed for normality of distribution on total measures of psychomotor measures for control group. The result on frequency and histogram showed normal distribution for control group. Figure 15 shows the normality of the total psychomotor pretest data for the control group. Therefore, the ANCOVA assumption is met.

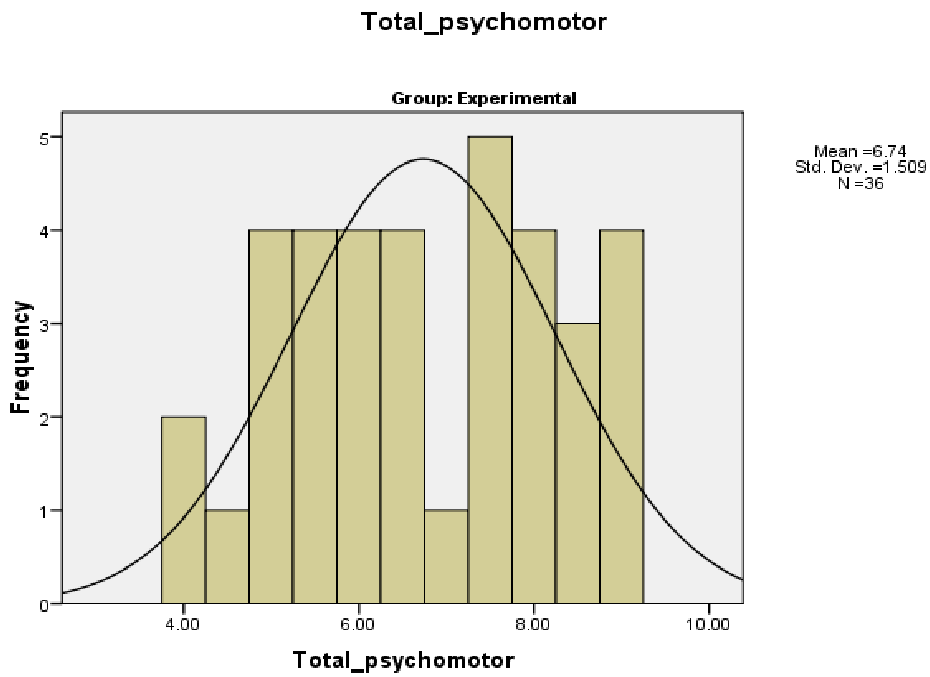


Figure 16. Graphical representation of total psychomotor posttest data for the experimental group.

Posttest test mean were analyzed for normality of distribution on total dependent measures of psychomotor for the experimental group. The result on frequency and histogram showed normal distribution for control group. Figure 16 shows the normality of the total psychomotor posttest score for experimental group. Therefore, the ANCOVA assumption is met.

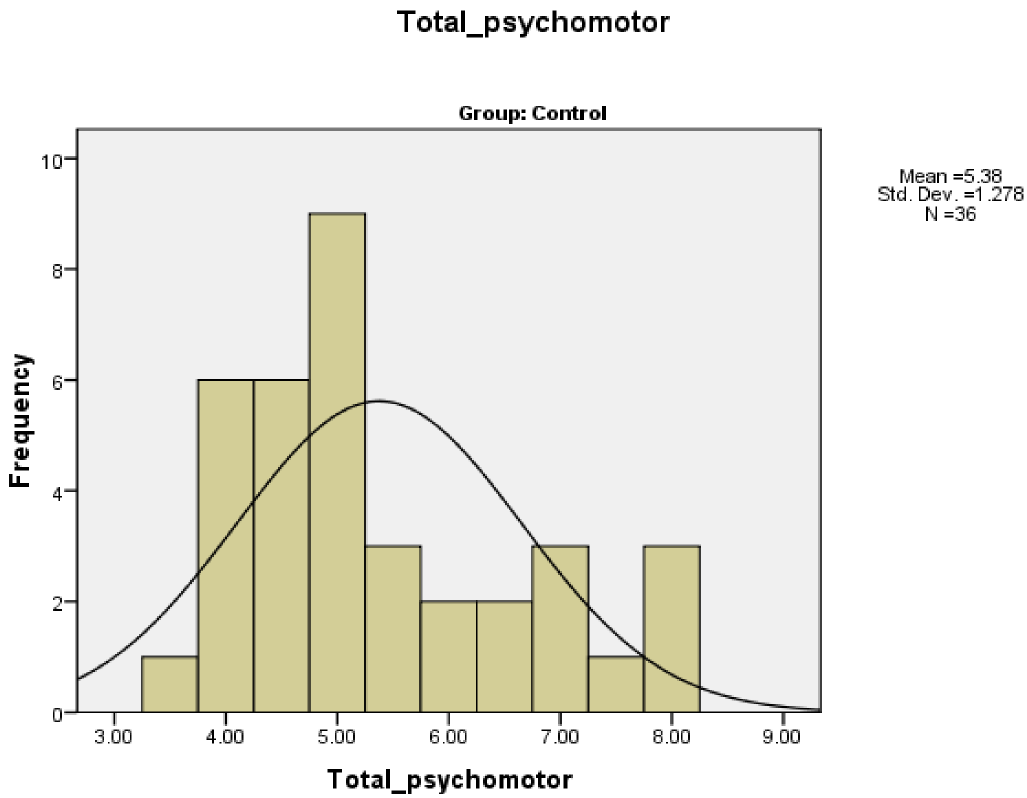


Figure 17. Graphical representation of total psychomotor posttest data for control group.

Total posttest mean score were analyzed for normality of distribution on total measures of psychomotor measures for control group. The result on frequency and histogram showed normal distribution for experimental group. Figure 17 shows the normality of the total psychomotor posttest score for control group. Therefore, the ANCOVA assumption is met.

The normal distribution of the pretest mean score data and posttest mean score data on psychomotor measures result indicated there were no violation of normality assumption for all the dependent measures. Therefore, further assumption test were carried out for analysis of ANCOVA statistic.

Table 19

Levene's Test of Equality of Error Variances for Psychomotor Score

Levene's Test of Equality of Error Variances[a]
Dependent Variable: Total psychomotor

F	df1	df2	Sig.
1.403	1	70	.240

Note. Tests the null hypothesis that the error variance of the dependent variable is equal across groups.
a. Design: Intercept + Total_psychomotor_pre + Group l.

Table 19 presented the psychomotor score for Levene's test showed (F (1, 70) = 1.40, $p > .05$. The result revealed that there was no significant difference between the two groups. Therefore, the two groups were equal. This result indicated that the assumption of homogeneity of variance was not violated. Therefore, the scores of students in the two groups can be analyzed using ANCOVA.

To determine the effects of TGfU approach on the psychomotor game performance outcome, students score were analyzed using ANCOVA and the results are displayed in Table 20.

Table 20

Analysis of Covariance of Mean Score of Students' Psychomotor Game Performance Outcome

Tests of Between-Subjects Effects

Dependent Variable:Total_psychomotor

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	127.146[a]	2	63.573	101.702	.000	.747
Intercept	29.068	1	29.068	46.503	.000	.403
Total_psychomotor_pre	93.799	1	93.799	150.057	.000	.685
Group	23.409	1	23.409	37.449	.000	.352
Error	43.131	69	.625			
Total	2810.500	72				
Corrected Total	170.278	71				

a. R Squared = .747 (Adjusted R Squared = .739).

Table 20 reveals that there is a significant main effect difference between the experimental group and the control group in the posttest total psychomotor score (F (1, 69) = 37.44, p < .05). This implies that the experimental group with TGfU has significant main effect on student's psychomotor game performance outcome.

Table 21

Estimated Marginal Means on Psychomotor Game Performance Outcome

Estimates

Dependent Variable:Total_psychomotor

			95% Confidence Interval	
Group	Mean	Std. Error	Lower Bound	Upper Bound
Experimental	6.628[a]	.132	6.365	6.892
Control	5.483[a]	.132	5.219	5.746

a. Covariates appearing in the model are evaluated at the following values:

Total_psychomotor_pre = 4.6875.

Figure 21 presents the result of estimated marginal means. The experimental group with TGfU approach performed better (X6.62) than the control group (X5.48).

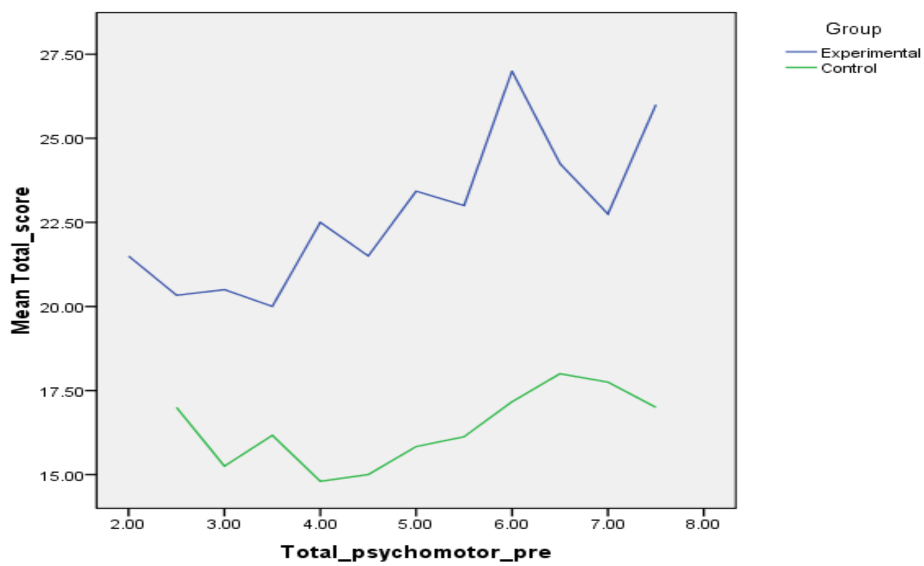


Figure 18. Total psychomotor mean score of the experimental and the control group.

Differences in distribution of the total psychomotor mean score by both TGfU approach group and the traditional skill approach group are shown graphically in Figure 18. In sum, the students with TGfU approach group perform better in total mean score compared to students with traditional skill approach.

Research Question 3: Are there any significant differences in total game learning outcome between students who were exposed to the TGfU approach and students with traditional skill approach?

To answer this research question, Analysis of covariance (ANCOVA) statistic was employed.ANCOVA is used to test the main and interaction effects of categorical variables on a continuous dependent variable, controlling for the effects of selected other continuous variables, which co-varywith the dependent. The control variables are called the "covariates." There are few assumptions of

ANCOVA statistical analysis need to be met before can run the test. The assumptions are:

1. The normality of data
2. Homogeneity of variance (Levene's test)
3. Linearity between CV & DV (Scatter plot)
4. Homogeneity of regression (Scatter plot—Compares slopes of regression lines)

Test of Normality

In this study the primary threat to internal validity is the use of intact group to compare the group differences on the posttest scores. The posttest score could be attributed to preexisting group especially in relation to the dependent measure of game performance learning outcome. Therefore, the tests of equivalence on the measure of dependent variable of game performance were determined. Normal distribution of the pretest mean score and posttest mean score indicated that there was no violation of normality assumption for all the dependent measures. Therefore, pretest mean scores for all the dependent variables learning outcome were analyzed for normality of distribution for the experimental group and the control group. Normality refers to the shape of the data distribution that corresponds to the normal distribution. Normality for the variables can be assessed by statistical and graphical means. Graphical methods include the histogram and normality plot. Total dependent variable of game performance for the experimental group and the control group was analyzed for normality distribution.

Figure 19 showed the normality of the total game performance learning outcome of posttest score data of experimental group. The result on frequency and histogram graph showed normal distribution. Therefore, the ANCOVA statistic assumption was met for the experimental group on total game performance score.

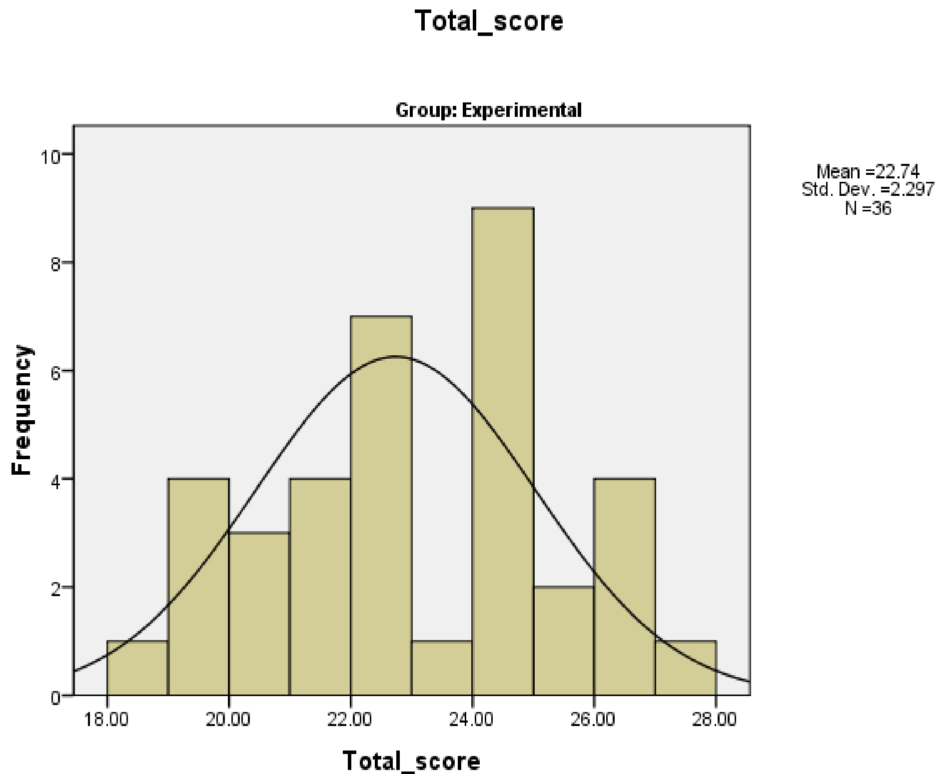


Figure 19. Graphical representation total posttest for experimental group.

Figure 20 shows the normality of the total game performance learning outcome of posttest score data of the control group. The result on frequency and histogram graph showed the normal distribution. Therefore, the ANCOVA statistic assumption was met for the control group on total game performance score.

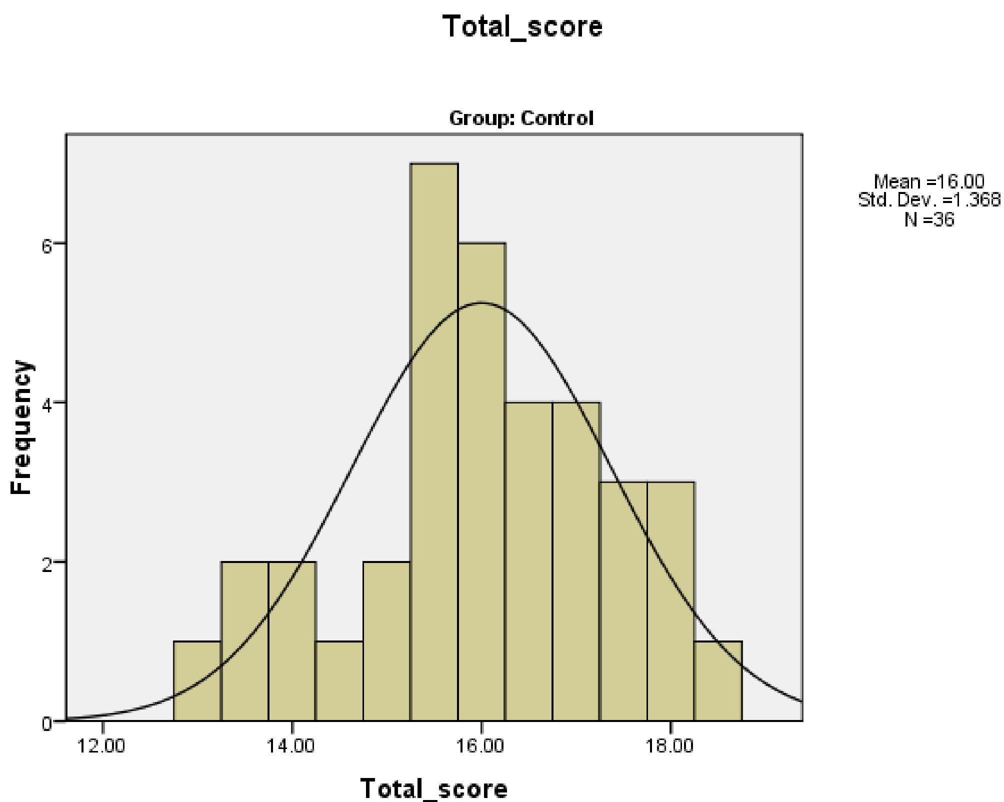


Figure 20. Graphical representation of total posttest data for control group.

Test of Homogeneity

Equal variance across the sample is called Homogeneity of variance. Levene's test is used to check whether the samples have the equal variance. The result in Table 22 showed on total score (*F* (1, 70) = 5.43, $p > .05$). The result reveals that there was no significant difference between the TGfU approach group and the traditional skill approach group. This result in Table 19 indicates that the assumption of homogeneity of variance was not violated. The two groups are equal. Therefore, the scores of students in the TGfU approach group and traditional skill approach group were analyzed using ANCOVA statistic.

Table 22

Levene's Test of Equality of Variances

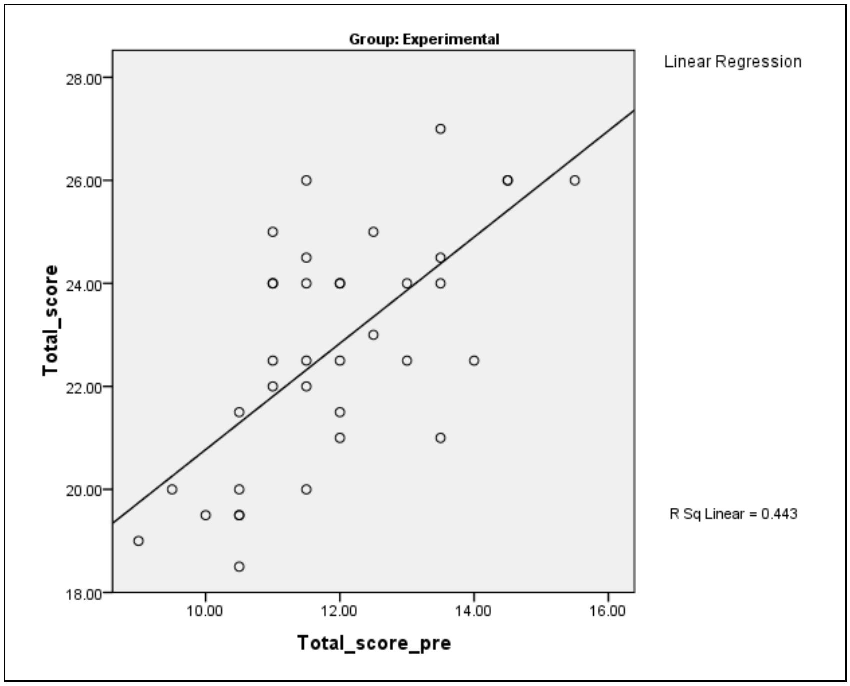
Dependent Variable: Total_score			
F	df1	df2	Sig.
5.434	1	70	.023

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Total_score_pre + Group

Finally for analyses of ANCOVA assumption to be met there should be linear relation between the covariate (X) and the dependent variable (Y). The purpose of using the X variable in the analysis of covariance is to use the information about X to reduce the variation in Y and thus increase the chance of detecting differences between the treatments. If there is no linear relation between X and Y, then the analysis of covariance offers no improvement over the analysis of variance in detecting differences between the group means. Test of linearity between the pretest score and the posttest score in Figure 21 showed that there was linearity between the pretest and posttest data. Therefore, the ANCOVA assumption was met.

Linearity between covariate and dependent variable



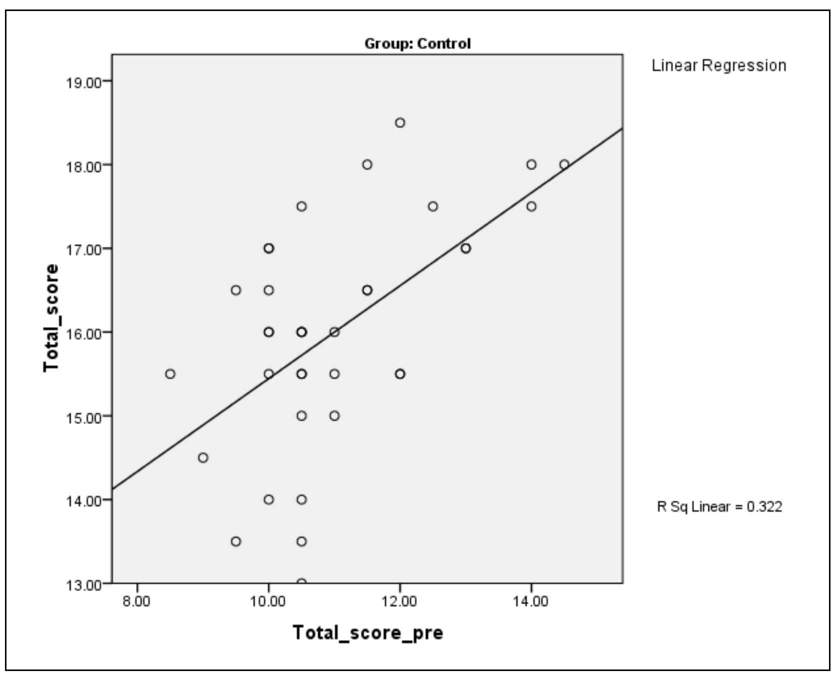


Figure 21. Linearity between the total pretest score and the posttest score.

Homogeneity of Regression Line

Further test of regression of slopes assumption evaluates the interaction between the covariate (pretest score) and the dependent measure was carried out. The 3-D scatter plots revealed that the linear relationship between the total posttest and the pretest scores for all the groups was not significantly violated as shown in Figure 22. Test of regression slopes assumption yield non-significant interaction between pretest scores and the total score. The result showed that there is no significant.

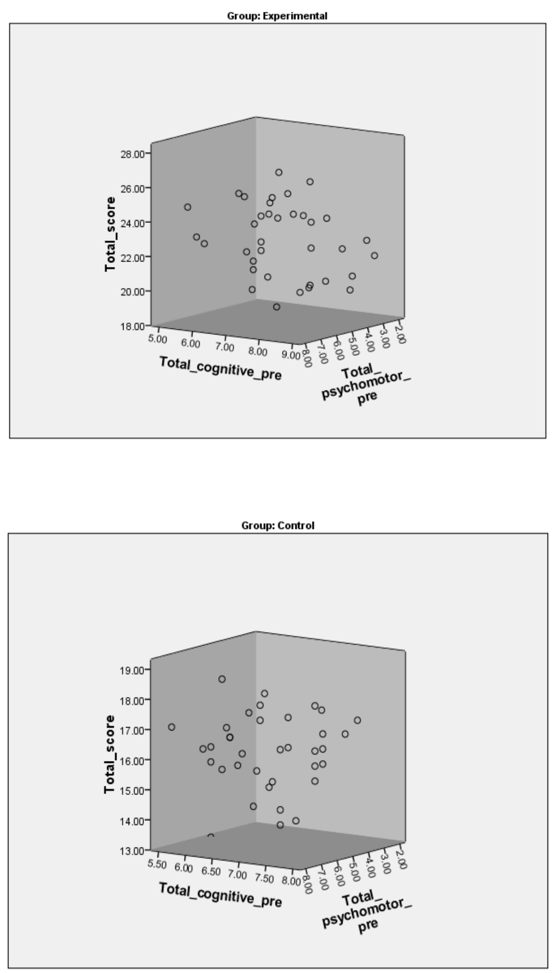


Figure 22. Homogeneity between the total pretest score and the posttest score.

Sample Size

The determination of sample size is important in for an ANCOVA analyses to be met. Hair, Anderson, Tatham, and Black (1998) recommended between 15 to 20 observation sample for each independent variable (IV) for sample size and statistical power. As for this study the sample size is 36 in experimental and 36 in control. Therefore, it was sufficient sample size for ANCOVA analysis in this study.

Table 23

Analysis of Covariance (ANCOVA) Total Game Performance Learning Outcome

Tests of Between-Subjects Effects
Dependent Variable: Total_score

Source	Type III Sum of Squares	df	Mean Square	*F*	Sig.
Corrected Model	911.420[a]	2	455.710	202.113	.000
Intercept	112.024	1	112.024	49.684	.000
Total_score_pre	94.667	1	94.667	41.986	.000
Group	590.125	1	590.125	261.728	.000
Error	155.576	69	2.255		
Total	28075.750	72			
Corrected Total	1066.997	71			

a. R^2 Squared = .854 (Adjusted R^2 = .850).

Table 23 reveals that there is a significant main effect difference between the experimental group and the control group in the posttest total score (F (1, 68) = 261.73, p <

.05). This implies that the experimental group with TGfU has significant main effects on student's total game performance learning outcome compared to students with traditional skill approach.

Table 24

Estimated Marginal Means of Total Game Performance Outcome

Group
Dependent Variable: Total_score

Group	Mean	Std. Error	95% Confidence Interval Lower Bound	Upper Bound
Experimental	22.372[a]	.256	21.860	22.884
Control	16.364[a]	.256	15.853	16.876

a. Covariates appearing in the model are evaluated at the following values:

Total score pre = 11.4514.

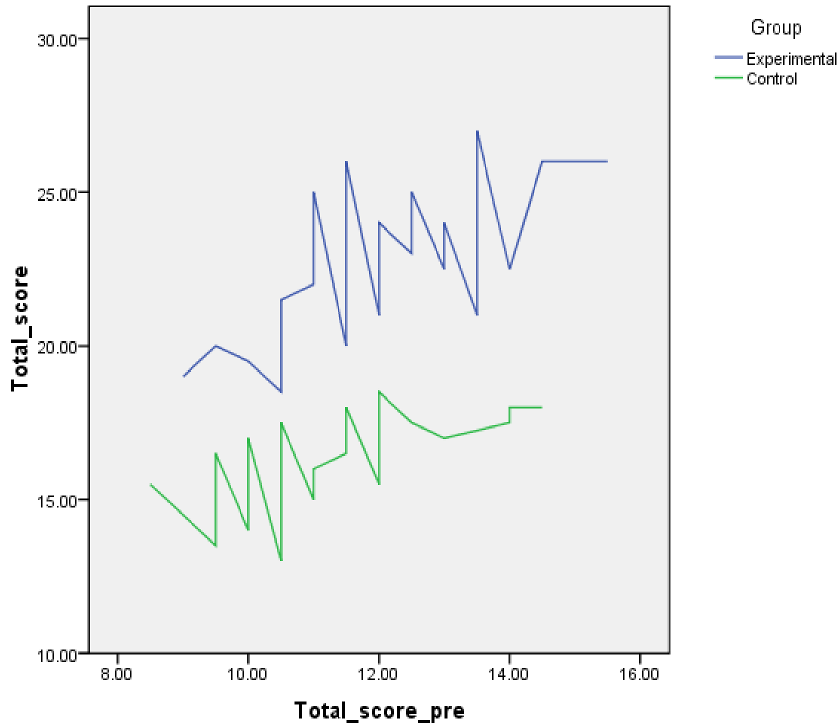


Figure 23. Total game learning outcome mean score of the experimental and the control group.

The result of estimated marginal means for total game learning outcome is presented in Table 24. The experimental group with TGfU approach performed better (X22.37) than the control group (X16.36). Differences in distribution of the total game learning mean score by both TGfU approach group and the traditional skill approach group are shown graphically in Figure 23. In sum, the students with TGfU approach group perform better in total mean score compared to students with traditional skill approach.

Research Question 4a and 4b : 4. (a) What are the student's motivations toward participation in game performance? (b) Is there any significant difference in students' motivation between the TGfU approach group and traditional skill approach group?

Table 25

Mean Score and Standard Deviation of Students' Motivation in Game Performance

Dependent measure	Control (*n*=36)		Experimental (*n*=36)	
	Mean	*Mean*	*Mean*	*SD*
Intrinsic motivation	10.50	.97	19.38	.64
Identified Regulation	9.61	1.10	18.16	.97
External Regulation	16.38	.90	9.69	.57
Amotivation	14.02	1.15	8.30	.95

Table 25, presents the overall descriptive statistics of mean score (*M*) and standard deviation of students' motivation for participation in game performance of experimental group and control group. The mean score of intrinsic motivation of the control group is *M* = 10.50 with *SD* = .97 and the experimental group is *M* = 19.38 with *SD* = .64. The experimental group showed of 8.88 differences in the mean score compared to the control group. The result indicates that the experimental group with TGfU approach showed higher mean score in intrinsic motivation compared to the control group with traditional skill approach.

Identified regulation variable of students' participation in game performance also was reported in Table 25. The mean score for identified regulation of the control group is *M* = 9.67 with *SD= 1.10* and the experimental group is *M* = 18.16 with *SD* = .97. The experimental group showed a difference of 8.49 compared to the control group. The result showed that the experimental group with TGfU approach showed higher mean score in identified regulation subscale of motivation compared to the control group with traditional skill approach.

Table 25 shows the mean and standard deviation of external regulation of students' participation in game performance. The mean score of external regulation of the control group is *M* = 16.38 with *SD* = .90 and the experimental group is *M* = 9.69 with *SD* = .58. The experimental group with the Teaching games for understanding approach showed lower score in the external regulation compared to the control group with traditional skill approach.

The descriptive statistic of amotivation for students' participation in game performance is presented in Table 25. The mean score of amotivation of the control group is *M* = 14 with *SD* = 1.15 and the experimental group is *M* = 8.30 with *SD* = .95. The result indicated that the experimental group with TGfU approach showed decreased in the amotivation subscale compared to the control group with traditional skill approach.

To conclude, from the descriptive statistics the intrinsic motivation and identified regulation subscale of the TGfU approach group showed positive motivation for participation in game performance compared to the traditional skill approach group. However, the external regulation and amotivation of the TGfU approach group showed negative motivation of participation in game performance. Therefore, further statistical analysis was undertaken to investigate whether there are differences in student's motivation toward participation in game performance. The Mann Whitney *U* test was employed for the purpose of this study. The Mann Whitney *U* test is a non-parametric test; it is appropriate in this study because:

1. It is used to determine if the differences exist between two groups
2. Random selection of samples in respective group (in this study random selection of students was assigned to experimental group and control group);
3. Data are in ordinal scale
4. Normal distribution of data not necessary

The data collected for the instrument in this study are in the ordinal scale. When the data were analyzed for normality, it showed skewness. Normality is the shape of data distribution that corresponds to the normal distribution. Two statistical components of normality are skewness and kurtosis. Skewness has to do with the symmetry of distribution. A skewed variable is where the mean is not in the center of distribution. Kurtosis has to do with the peakness of distribution of the data; a distribution is either peaked or too flat. The normality was assessed by statistical and graphical means. The graphical analyses were conducted by visually checking the histogram that compared data values with distribution. The result of the graph shows that the data is not of normal distribution. The data seem to display a slight negative skewness as shown in Figures 24, 25, 26, and 27.

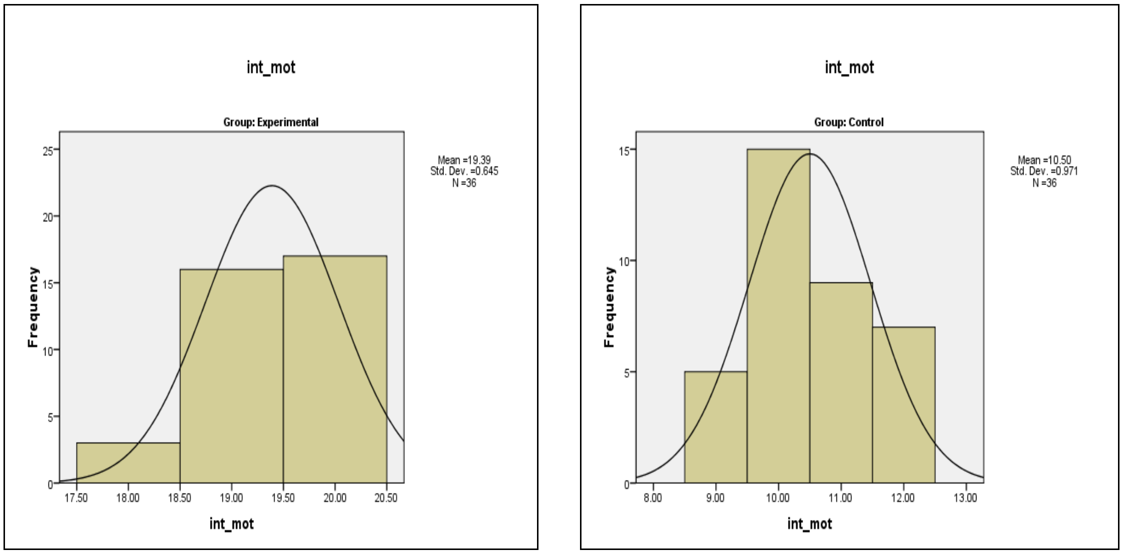


Figure 24. The graphical distribution of intrinsic motivation data.

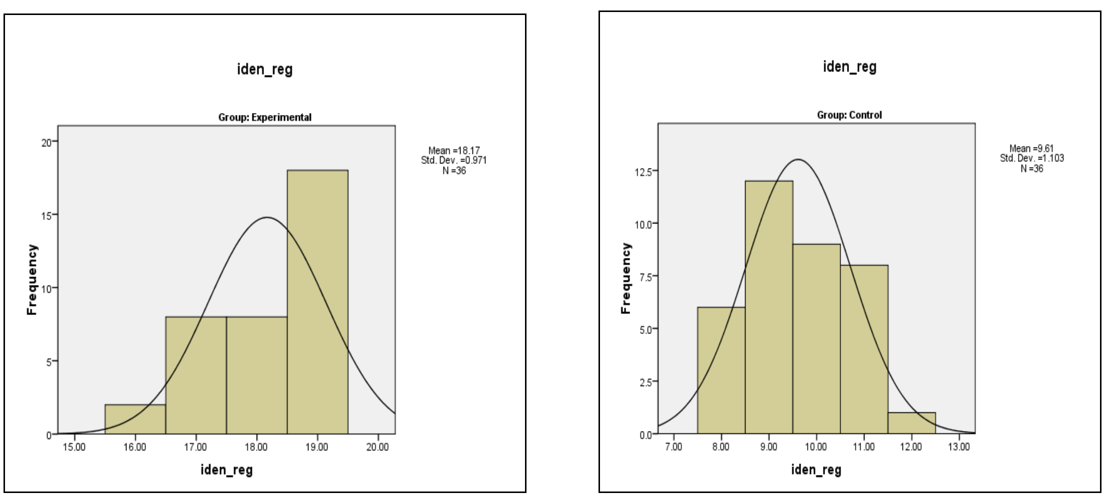


Figure 25. The graphical representation of indentified regulation data.

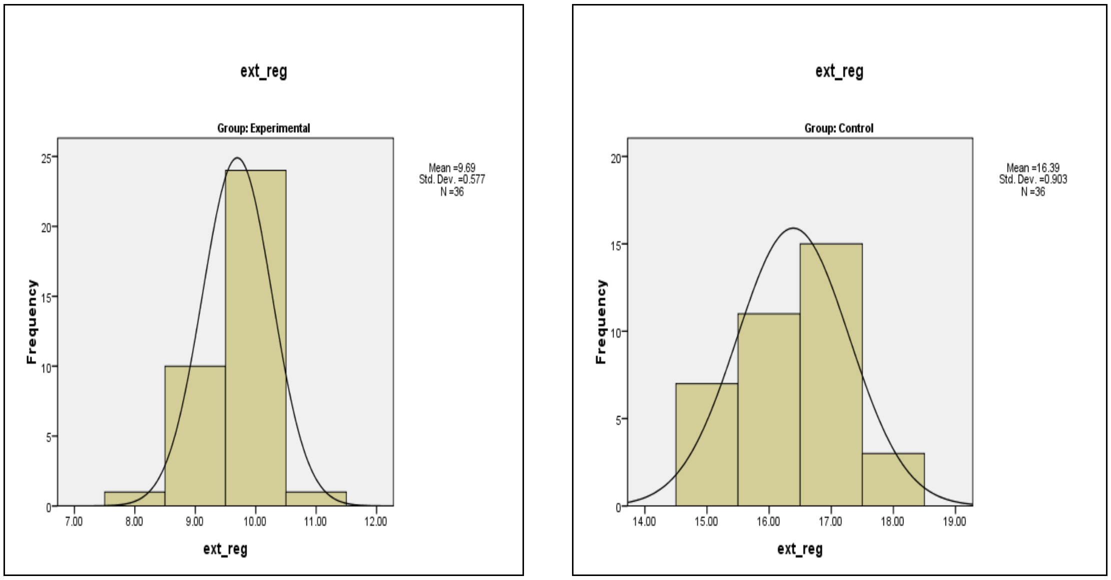


Figure 26. The graphical distribution of external regulation data.

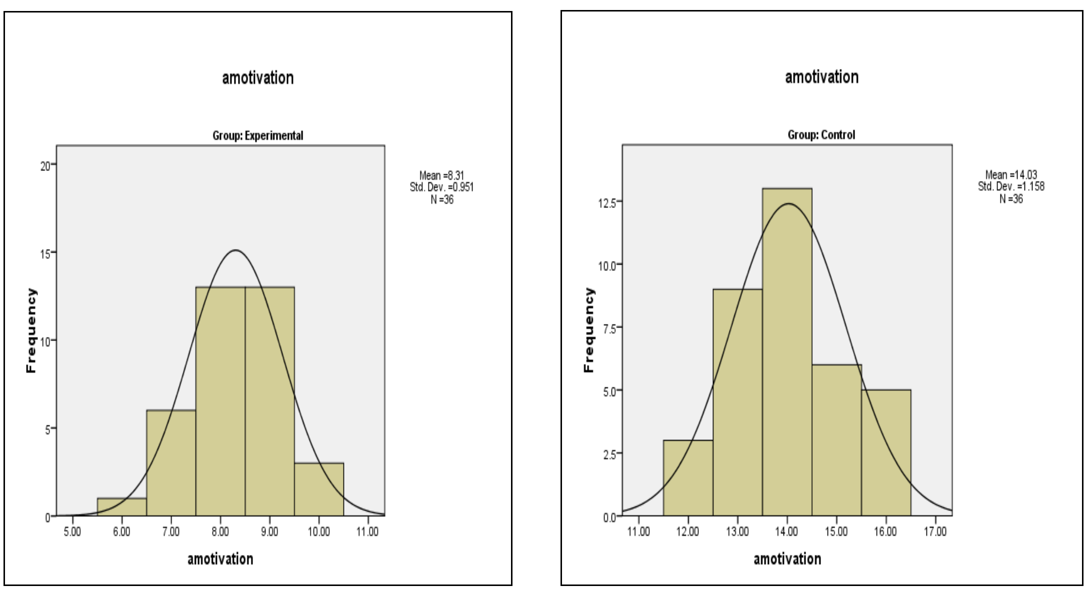


Figure 27. The graphical distribution of amotivation data.

The Mann-Whitney *U* test then evaluates whether the mean ranks for the two groups differ significantly from each other.

Ho: Both experiment and control groups students' motivations for participating in game performance are same.

Table 26

Mean Rank of Students' Motivation for Participation in Games Performance

	Group	*N*	Mean Rank	Sum of Ranks
Motivation	Experimental	36	53.51	1926.50
	Control	36	19.49	701.50
	Total	72		

Table 27

Mann Whitney U Test Result

Test Statistics[a]

	Motivation
Mann-Whitney *U*	35.500
Wilcoxon *W*	701.500
Z	-6.947
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: Group.

A Mann-Whitney *U* test was conducted to evaluate the hypothesis that both experimental and control groups students' motivation for participation in game performance were same. The result in Table 27 revealed that $U = 35.5$, $z = -6.95$, $p < .05$. The *p*-value < .05; therefore, the null hypothesis is rejected. The mean rank in Table 26 indicated that the two groups' motivation for participation in game were not the same. The experimental group had an average mean rank of 53.5, while the control group had an average mean rank of 19.40. Interestingly there is a significant difference in student's motivation for participation in game performance between experimental group with TGfU approach and control group with traditional skill approach. The individual subscales were analyzed in detail to observe which item have contributed to the significant difference.

Table 28

Mann Whitney U Test Result of Intrinsic Motivation of Participation in Game Performance

Test Statistics[a]	Because I think that activity is interesting	Because I think that this activity is pleasant	Because this activity is fun	Because I feel good when doing this activity
Mann-Whitney *U*	4.000	7.500	.000	.000
Wilcoxon *W*	670.000	673.500	666.000	666.000
Z	-7.603	-7.875	-7.966	-8.000
Asymp. Sig. (2-tailed)	.000	.000	.000	.000

a. Grouping Variable: Group.

On the basis of findings presented in Table 28 on the Mann Whitney *U* test, items 9 and 13 seem to yield significant corresponds toward the total score. The result for intrinsic motivation subscale are (U = 4.0, z = -7.60, $p < .05$), (U = 7.50, z = -7.87, $p < .05$), (U = .00, z = -7.97, $p < .05$) and (U = .00, z = -8.60, $p < .05$) respectively.

Table 29

Mean Rank of Intrinsic Motivation for Participation in Game Performance

	Group	*N*	Mean Rank	Sum of Ranks
Because I think that activity is interesting	Experimental	36	54.39	1958.00
	Control	36	18.61	670.00
	Total	72		
Because I think that this activity is pleasant	Experimental	36	54.29	1954.50
	Control	36	18.71	673.50
	Total	72		
Because this activity is fun	Experimental	36	54.50	1962.00
	Control	36	18.50	666.00
	Total	72		
Because I feel good when doing this activity	Experimental	36	54.50	1962.00
	Control	36	18.50	666.00
	Total	72		

Table 29 shows the detailed result of each item from the intrinsic motivation subscale. Four statements reflected students' intrinsic motivation. Item 9 "because this activity is fun" and item 13 "because I feel good when doing this activity" contribute to higher mean rank of 54.50 among the four items for the TGfU approach group as compared to the Traditional skill approach group.

Table 30

Mann Whitney U Test Result of Identified Regulation of Participation in Game Performance

Test Statistics[a]	Because I am doing it for my own good	Because I think this activity is good for me	By personal decision	Because I believe this activity is important for me
Mann-Whitney *U*	74.000	.000	.000	.000
Wilcoxon *W*	740.000	666.000	666.000	666.000
Z	-6.897	-7.781	-8.121	-7.674
Asymp. Sig. (2-tailed)	.000	.000	.000	.000

a. Grouping Variable: Group.

The finding presented in Table 30 on the Mann Whitney *U* test, there seem to be items 6, 10, and 14 yield significant correspond toward the total score for the identified regulation subscale. The result for identified regulation subscale are (U = 74.00, z = -6.89, p < .05), (U =.00, z = -7.78, p < .05), (U = .00, z = -8.12, p < .05) and (U = .00, z = -7.67, p < .05) respectively.

Table 31

Mean Rank of Identified Regulation of Participation in Game Performance

	Group	*N*	Mean Rank	Sum of Ranks
Because I am doing it for my own good	Experimental	36	52.44	1888.00
	Control	36	20.56	740.00
	Total	72		
Because I think this activity is good for me	Experimental	36	54.50	1962.00
	Control	36	18.50	666.00
	Total	72		
By personal decision	Experimental	36	54.50	1962.00
	Control	36	18.50	666.00
	Total	72		
Because I believe this activity is important for me	Experimental	36	54.50	1962.00
	Control	36	18.50	666.00
	Total	72		

Table 31 shows the detailed result of each item from the indentified regulation subscale. All the items in the identified subscale showed the higher mean rank for the experimental group with TGfU approach as compared to the control group with traditional skill approach. However, the item 6 “Because I am doing it for my own good” showed a higher mean rank of (20.56) among the four items for the control group with traditional skill approach.

Table 32

Mann Whitney U Test Result of External Regulation of Participation in Games

Test Statistics[a]	Because I am supposed to do it	Because it is something that I have to do	Because I don't have any choice	Because I feel that I have to do it
Mann-Whitney *U*	170.000	.000	.000	.000
Wilcoxon *W*	836.000	666.000	630.000	666.000
Z	-6.323	-8.173	-8.017	-7.617
Asymp. Sig. (2-tailed)	.000	.000	.000	.000

a. Grouping Variable: Group

The Mann Whitney *U* test in Table 32 revealed that item 7 "because it is something that I have to do," item 11 "because I don't have any choice" and item 15 "because I feel that I have to do it" contributed significantly to the total external regulation subscale. The result for external regulation subscale are (U = 170.00, z = -6.32, p < .05), (U =.00, z = -8.17, p < .05), (U = .00, z = -8.01, p < .05) and (U = .00, z = -7.61, p < .05) respectively.

Table 33

Mean Rank of External Regulation of Participation in Game Performance

	Group	*N*	Mean Rank	Sum of Ranks
Because I am supposed to do it	Experimental	36	23.22	836.00
	Control	36	49.78	1792.00
	Total	72		
Because it is something that I have to do	Experimental	36	18.50	666.00
	Control	36	54.50	1962.00
	Total	72		
Because I don't have any choice	Experimental	35	18.00	630.00
	Control	36	53.50	1926.00
	Total	71		
Because I feel that I have to do it	Experimental	36	18.50	666.00
	Control	36	54.50	1962.00
	Total	72		

Findings presented in Table 33 shows the result for the external regulation subscale. All the items show that the control group with traditional skill approach has attained the higher mean rank compared to the experimental group with TGfU approach. Item 7 “Because it is something that I have to do” and item 15 “because I feel that I have to do it” showed the higher mean rank among the four items in the control group. However, the

TGfU group corresponds negative to these items with lower mean rank of (18.0, 18.5, and 18.5).

Table 34

Mann Whitney U Test Result of Amotivation of Participation in Game Performance

Test Statistics[a]	There may be good reasons to do this activity but personally I don't see any	I do this activity but I am not sure it is worth it	I don’t know: I don't see what the activity brings me	I do this activity, but I am not sure it is a good thing to pursue it
Mann-Whitney *U*	441.500	17.000	.000	200.000
Wilcoxon *W*	1107.500	683.000	666.000	866.000
Z	-3.006	-7.474	-8.039	-5.675
Asymp. Sig. (2-tailed)	.003	.000	.000	.000

a. Grouping Variable: Group.

Results of the Mann Whitney *U* test in Table 34 reveal that all the items contributed significantly to the total external regulation subscale with (U = 441.50, z = -3.00, p < .05), (U = 17.0, z= -7.47, p < .05), (U = .00, z = -8.03, p < .05) and (U = 200.00, z = -5.67, p < .05) respectively.

Table 35

Mean Rank of Amotivation of Participation in Game Performance

	Group	*N*	Mean Rank	Sum of Ranks
There may be good reasons to do this activity but personally I don't see any	Experimental	36	30.76	1107.50
	Control	36	42.24	1520.50
	Total	72		
I do this activity but I am not sure it is worth it	Experimental	36	18.97	683.00
	Control	36	54.03	1945.00
	Total	72		
I don't know: I don't see what the activity brings me	Experimental	36	18.50	666.00
	Control	36	54.50	1962.00
	Total	72		
I do this activity, but I am not sure it is a good thing to pursue it	Experimental	36	24.06	866.00
	Control	36	48.94	1762.00
	Total	72		

Table 35 reports the result of each item from the amotivation subscale. All the items corresponds higher mean rank for the control group. However, that item 12 “I don’t know: I don’t see what the activity brings me contributed to the higher mean rank for the control group (54.50). The other three items 8, 12 and 16 showed higher mean rank for the control group (54.03, 48.94, and 42.24). However, for the experimental group all the items showed lower mean rank.

Research Question 5: What are the students' problem solving and decision making learning experiences in 3 versus 3 game situations?

Comparative cross case analyses were employed in this study to analyze the focus group interview data. Students were interviewed as a focus group after the 3 versus 3 game situations. Focus group interview data were recorded with after each game session for the experimental and the control group. More specifically finding on how students experience of playing game and what went on during the playing game in 3 versus 3 game situations.

Eight focus group interview data were recorded with Sony IC Recorded ICD-UX200F (Appendix O). The audio verbatim data then transcribed in Microsoft Word 93 transcribed with Word 93-2003. In this study eight focus group interviews were recorded and transcribed as shown in Table 36.

Table 36

Total Number of Interviews

Group	Duration of interviews	Week	Total interview
Traditional skill approach	30 minutes	4	4
TGfU Approach	30 minutes	4	4

In the first stage the codes which was grouped as the traditional skill approach group and TGfU approach group were described as a unit of analyses by answering all the interview questions. The focus group interview questions were:

1. What do you do when you have the ball?

2. What you do after you throw the ball?

3. Where should you go after you throw the ball

4. What does the defender do?

5. What is the best way to beat the defender?

Focus group students in the traditional skill approach group and the TGfU approach group were interviewed after they have finished their 3 versus 3 game situation and were asked to respond to the question on “What do you do when you have ball” in 3 versus 3 game situation as a first interview question. The data gathered from the TGfU approach group and traditional skill approach was presented in Table 37.

Table 37

Descriptive Matrix for What Students Do When They Have the Ball

1. What do you do when you have the ball?	
Traditional skill approach	TGfU Approach group
• Pass it to a friend • Find a space to pass the ball • Dribble the ball • Pass the ball to keeper	• Pass it to my friend • Pass to my teammates • Look for space and pass to your friend • Dribble the ball • Dribble and throw at the goal

The Traditional skill approach students were questioned during the interview session on what they do when they have the ball in 3 versus 3 game situation? The traditional skill approach group students described their experience as "pass the ball to a friend."

On the second week, the Traditional skill approach students' were interviewed on the same question, they described that they "find a space to pass the ball" to their friends in game situation. In the third week of interview they described their experience that they "dribble the ball." In the final week interview the traditional skill approach students described their experience as "pass the ball to keeper." While the TGfU approach students' described their experience to the first interview question as "pass it to my friend". In the second week interview session the TGfU approach group students' responded to the same interview question as "pass to my teammates." In further interview they describe their experience as "look for space and pass to my friend" and in final interview question they described as "dribble the ball and throw at the goal."

The data then were carefully analyzed as cross-case data between students in the traditional skill approach and students with TGfU approach on the first interview question.

I: What do you do when you have the ball just now in game situation?

Amirul Asri: Pass it to a friend.

I: Who answered, Amirul Asri?. Pass it to friend. Who is your friend?

What is your bib number?

Amirul: Number 2.

(FGI/CG /2/26/10/2010/19-23)

The excerpt explains that the focus group interview was administrated on the control group, second interview which was done on 26 October 2010 from line 19 to 23. The traditional skill approach group which was the control group students' explained their experience in game situation as passing to friend and find where their friends were to pass the ball in 3 versus 3 game situations. When they were probed on who were their friends, they described their friend with the bib number. The traditional skill approach group students' looked for their friends to pass the ball.

However, the TGfU approach group students' experiences were analyzed as they were looking for their teammates. Passing the ball to teammate's codes appeared in the three interview sessions. The TGfU approach group also described their experiences as to look for space before passing the ball to their teammates in game situation.

I: What do you do when you have the ball just now?

Darsan: Pass to my teammates.

Yaswer: Dribble the ball

I: You will dribble . . . Ha, okay, What else you do when you have the ball?

Yashwer: Try to score

(FGI/EG /4/11/11/2010/18-22)

The excerpt explains that the focus group interview was administrated on the experimental group, fourth interview which was done on 11 November, 2010 from line 18 to 22. The TGfU approach group as the experimental group students looked for teammates before passing the ball and also identifies space as where to pass the ball in 3 versus 3 game situations.

Second interview question was “What you do after you throw the ball?” in game situation. The collected interview data were transcribed and coded as case nodes presented in Table 37.

Table 38

Descriptive Matrix for What You Do After You Throw the Ball

2. What do you do after you throw the ball?	
Traditional skill approach	TGfU approach
• Help my friend who is having problem • Go near the goal • Go to the goal keeper • Find a space	• I support my player • Going further out away from opponent to receive the ball • Go towards goal • Support my player • going further out away from opponent to receive the ball • Look for space • Support your teammates • Support your team • Look for space and support your teammates • Find a space • Find a space to score goal • Support your teammates • Pass to your teammates and help them to score

Table 38 shows the display codes of what the focus group students did after they throw the ball in 3 versus 3 game situations. The traditional skill approach group students described their experiences as “go near the goal.” In another situation they described as “go to goal keeper.” The traditional skill approach group students also described their experience as “help my friend who is having a problem” and in final interview they respond as “find a space.” While the TGfU approach group group students described their experiences to this question as “I support my player.” When they were probed on how they support their player, they explained as “by going further out and away from the opponents to receive the ball.”

In the second interview the TGfU approach students responded to the second question as “go towards goal” and there were also some students responded as “support my player” and when were probed their answer were by going further out and away from their friend to receive the pass. In the third interview the TGfU approach students described their experience as “look for space” after they throw or dribble ball in game situation. Some students also described their experience as “support my teammates” and “support my team.” To further probe they explained that they looked for space to run, to support their teammates. In the final interview with the TGfU approach group students on the second question they described their experience as “find a space to score goal,” “help my teammates,” “and support my teammates.” When they were probed on how they support they explained as “pass to your teammates and help them to score a goal.”

All the coded data were carefully analyzed for similarity and differences as cross case analyses. The traditional skill approach group students described their experience as they know that their teammates were having problem in game situation. They also described that when they do not have the ball in game situation they went near the goal to score goal. However, when the traditional skill approach students were probed to find out more about what was the problem facing their friends and how they can help to support their friend? The traditional skill approach students were not able to describe the situation on the probing question. However, when the TGfU approach group students were probed on how they can offer support to their friends; they described that they looked for space to run and receive the ball from whoever is having the ball. They also explained that they need to space out and use the empty places in game situation as a team so that their teammates can pass the ball to them.

The third interview question was "Where you should go after you throw the ball?" Both the focus group students experienced were coded in Table 39.

Table 39

Descriptive Matrix for Where You Should Go After You Throw the Ball

3. Where you should go after you throw the ball?	
Traditional skill approach	TGfU Approach
• Find a space • Go near the goal keeper • Go to the goal keeper • Go to empty space to score goal	• I go to the goal • Towards the goal post • I support my player • look for space, support your team mates • Go to empty space so that team mates can pass the ball to you

Table 39 shows the display codes of where the student should go after they throw the ball in 3 versus 3 game situations. Students in the traditional skill approach described their experiences as they “Find a space.” When they were probed on “Find a space for what?” They explained that they find a space so that their friend can pass the ball to them. In the second week interview, the traditional skill approach group students described that they “Go to the goal keeper.” When probed on why they go near the goal post, they reply that they want to score a goal. On the third interview also students responded the same as in the second interview that they will go to goal keeper to score a goal. Their experiences were little different on the fourth week as the traditional skill approach students responded as “Go to empty place to score goal.” When the same question was asked on the TGfU approach group students: they explained their experiences as “I go to the goal” in the first interview. In the second interview the students described their experience as “Go towards the goal post.” When they were probed on why they go towards the goal post, the students explained that the goal post were in front of them. In this interview students also responded that after they throw the ball they run in front so that their friends can pass the ball to them. In the third interview, the TGfU students described that after they throw or dribble the ball, they “Go forward,” “Go to empty space so that friend can pass the ball back to you.” In the third week of interview, students described their experience as “Go to empty space,” “Go near the goal,” “Go forward.”

In the forth interview they describe as “Go to empty space,” “Go near the goal.” Some students also described as “defend” after they throw the ball. The TGfU group students had the concepts that related to team sports that they must support their teammates and to utilize the space as a factor of supporting their teammates. The cross case analysis data can be described as showing that students in the TGfU group had more tactical understanding of what do when they do not have the ball. In addition the TGfU approach students also understand the space awareness in the 3 versus 3 game situations as compared to the traditional skill approach.

The fourth interview question asked what the defender does. The data displayed in Table 37 show the codes of what the traditional skill approach group students and TGfU approach group students explained their role as defender in 3 versus 3 game situations.

Table 40

Descriptive Matrix for What the Defender Does

4. What does the defender do?	
Traditional skill approach	TGfU Approach
• Try to get the ball • Catch the ball • Defend the ball from the opponent team • Defender try to catch the ball • Try to stop the ball from goal	• Mark the player and give pressuring to the one who is having the ball • Block the ball from going through the goal post • block the ball from going through the goal post • Protect the ball from the opponent • Don’t let the opponent team score goal • Putting hand up

Students in the traditional skill approach group described their experiences as “Try to get the ball.” When the group was probed on how the defender tries to get the ball, they responded that they defended the opponent from getting the ball. When they were further probed on how the defender defends from the opponent, they were unable to explain. In the second week of interview, they described their experience as “Defend the opponent from getting ball.” On the third week of interview session the traditional skill approach students explained that “When the opponent throws the ball, we try to catch it.” When the group students were probed on what else the defender does, students explained that “Defender try to stop the ball from goal.” The traditional skill approach students described their experience as defender as being associated with the movement of the ball in game situation. Their pattern of play as defender so much related to the ball control. When compared to the TGfU approach group students, they responded that their experiences as a defender was to “Mark the player and give pressuring to the one who is having the ball” and “Defender try to take ball.” In second week of interview, the TGfU approach group students described their experience as “Block the ball from going through the goal post” and “Protect the ball from the opponent.” In the third week of interview, the TGfU students group students’ responses were same as “Block the ball from going through the goal post” and “Protect the ball from opponent.” When the TGfU students were probed on what they do to protect the ball they responded by “Putting our hands up to protect.” The TGfU group students described their experience as not only getting the possession of the ball but what are the strategies as “Don’t let the opponent team score goal.” The data gathered explained that the TGfU group students can set up the strategy in a 3 versus 3 game situations to block the opponent team from winning the game by blocking with their hand. In sum, it can be concluded that TGfU group students described more experience regarding the defender's role and students can describe their tactical understanding aspect of how to defend the ball in 3 versus 3 game situations as compared to students in the traditional skill approach group.

Table 41

Descriptive Matrix for the Best Way to Beat the Defender

5. What is the best way to beat the defender?	
Traditional skill approach	TGfU Approach
• Observe the movement of defender • When the opponent throw the ball we, try to catch • defend the ball from the opponent team to score goal	• By passing the ball • Trick opponent • Go left, go right • Block the ball from going through the goal post • Don't let other opponent team take the ball • By keeping the ball with our teammates

The fifth interview question was "What is the best way to beat the defender?" The cross case analysis data in Table 41 shows the display codes of what is the best way to beat the defender in 3 versus 3 game situations. The traditional skill approach group students described their experience as "Observe the movement of the opponent." On being further probed on how to observe the movement, they explained that they observe the movement of the opponent team on how to score goal. In the second week interview also the student gave the same answer as the first week interview that was "Observe the movement of opponent." In the third week of interview and fourth week of interview, the traditional skill approach students gave the same answer as “When the opponent throws the ball we try to catch.” When the students were probed more on the best way to defend, they described that “Don’t let the opponent team to score a goal.” When the same question was asked from the TGfU approach group students, they responded their experience as “By passing the ball,” “To trick the opponent.” When the TGfU students were probed on the best way to beat the defender, they explained their experience as to trick the opponent team. To a further probe on how to trick the opponents, the TGfU approach group students’ explained that by going left and right and blocking the opponent team. This is the tactical understanding aspect that they have based on their experience that by giving pressure to the opponent team they can get possession of the ball.

In the second interview, the TGfU students explained more experience such as “Don’t let the other people take the ball.” When they were probed how they make the other people not take the ball they explained “By jumping and blocking,” “Don’t let the ball pass us,” and “By keeping the ball with our teammates.” In the third week of interview, the TGfU approach group students explained that “Don’t let the other people take the ball,” “By keeping the ball with our teammates.” When the students were probed on the best way to beat the defender, they explained by jumping and blocking and do let the ball pass them. In the fourth week of interview, the TGfU approach students explained their experience to the question as “By taking the ball from opponent” and “Trick them nicely.” When the students were probed on how to trick the opponent, they explained “That two people go in front and pass the ball” and “two people go in front and counter attack.” Further probed on how they can do this, the students explained that they plan a “strategy” to move left and right by dribbling the ball and made the opponent team confused with their strategy. The

TGfU approach group students can plan the strategy to defend the ball from the opponent team; they also had the good strategy that is by keeping the ball with their teammate. These students' experiences showed that the TGfU approach students experience more situation of how to offer an appropriate defense in the game situation. In sum, TGfU group students had more experience and responses as they can understand and relate their tactical understanding of how to keep possession of the ball in game situation as compared to the traditional skill approach group. The free nodes generated from the interview data were further analyzed for categories to yield more information on students' experience of playing game in 3 versus 3 game situations. The free notes then were synthesized for tree notes. There were five categories identified from the tree nodes; tactical understanding, decision making, problem solving, teamwork and fun and exciting. The tactical understanding, decision making and problem solving category were related to the conceptual framework of this study. However, the teamwork, fun and exciting were the new themes emerged as outcome of this study. The analyses were compared in cross case analyses and presented in the matrix coding table. Table 42 shows the matrix coding for tactical understanding variable.

Table 42

Matrix Coding of Tactical Understanding

Tactical understanding	TGfU group	Traditional skill approach group
Adjust	4	4
Cover	4	1
Guard	4	3
Support	4	1

Summaries generated from the tactical understanding category were described in Table 42. The concepts of adjust, cover, guard and support are the components in the conceptual framework of the study. The table showed that the TGfU approach group students showed more experience on the tactical understanding aspects of adjust, support, cover and guard components compared to traditional skill approach students. From the analyses above, both the traditional skill approach group students' and TGfU approach group students' described well their experience of adjust component when they have ball in the game situation as “pass it to a friend” and “pass it to my teammates” These were the similar codes in the traditional skill approach group and TGfU approach group students. The guard components for the TGfU approach group were coded four times compared to three times for the traditional skill approach group students'. The cover and support variable showed only once experience was coded for the tradition skill approach students. However, the TGfU approach group students' data showed that the guard component was coded four times. The TGfU approach group students were able to explain their experience of not only of the appropriate movement of the ball of movement when they have a ball in game situation but they were able to offer appropriate support and cover to their teammates during the 3 versus 3 game situation.

Table 43 shows the summaries generated from the decision making category in matrix coding. The component in the decision making categories are off the ball movement, on the ball movement, Strategy and the right things to do.

Table 43

Matrix Coding of the Decision Making Category

Decision making	TGfU group	Traditional skill approach group
Off the ball movement	4	1
On the ball movement	4	3
Strategy	3	0
The right thing to do	4	0

As observed from the collected codes, under the TGfU approach group students showed more on decision making component as compared to the traditional skill approach students. The TGfU approach group showed more decision making experience like on the ball movement, off the ball movement, strategy and the right thing to do when they have the ball and when they don’t have the ball. But the traditional skill approach group showed less experienced were coded on the off the ball movement. However, the traditional skill approach students showed that they were able to identify what to do with the ball which was coded as on the ball movement. However, on the strategy of the game and what the right thing to do in game situation they were unable to explain their experience. During the off the ball movement they explained their experiences as “Help my friend who is having a problem.” When they were probed on how they were able to help their friend, they were unable to give reason for the decision making. Their decision making choices were very limited.

However, the data from TGfU approach group students yield numerous student experiences. The TGfU approach group students’ described on the ball movement as when they have the ball as “Pass it to my friend,” “See where the teammates standing then pass the ball to them.” They can also use other skills when they have the ball like, “By dribbling left and right,” “Dribble and throw at goal.” These experiences developed after the third game session. The TGfU approach group students also can describe their off the ball experience to support their teammates “Go to empty space so that your friend can pass to you,” “By going further out away from the opponents to pass the ball.”

Table 44

Matrix Coding of Problem Solving

Problem Solving	A : TGfU group	B : Traditional skill approach
1 : Able to identify obtacles	4	1
2 : Draw conclusion	3	0
3 : Space awareness	4	1

Table 44 describes the problem solving theme emerging from the codes. This theme explains how the students understand the problems in 3 versus 3 game situations and what action needs to be taken to solve the problem. Collective team cooperation presents this opportunity to problem solving in 3 versus 3 game situations. In certain situation the students need to interpret game play to realize the need for specific useful action.

The traditional skill approach group described their experience of problem solving as to observe the movement of the opponent and catch the ball. They have experience of offensive ball controlling movement. As compared to the traditional group, the TGfU group can relate the problem not only to be offensive to get the ball, but also to keep possession of the ball to score goal with team problem solving strategy. They can relate their experience as “Dribble ball left and right . . . make the defender confused” and two people go in front and pass the ball.

Table 45

Matrix Coding of New Category

Emerging Category	A : TGfU group	B : Traditional skill approach
Teamwork	4	0
Exciting	1	0
Fun	1	0

These are other categories emerging from the data presented in Table 45. Both the traditional skill approach group and the TGfU approach group describe the team work. The TGfU approach group students' however, described their team work with words like "teammates," "teamwork," "support my player" very often in all the interviews as compared to the traditional skill approach group students'. Another category also emerges in this interview data. When probed more with a question such as "You got anything else to say?" the TGfU approach group students' described their experience of playing games in game situation as "fun" and the "it is very exciting" compared to the traditional skill approach group. This shows that the TGfU group students enjoyed during the 3 versus 3 game sessions when compared to the traditional skill approach group.

Summary

This chapter reports the result of the quantitative data analysis and qualitative data analyses that address the research questions.

Quantitative result summary.

1. The TGfU approach group has highest overall mean score on cognitive component compared to the Traditional skill approach group.
2. The TGfU approach group has highest overall mean score on psychomotor component compared to the Traditional skill approach group.
3. The TGfU approach group has highest overall game performance mean score compared to the Traditional skill approach group.
4. The decision making variable of the TGfU approach contributed the most unique to students' game performance outcome.
5. The TGfU students can relate the problem solving experience as not only to be offensive to get the ball, but also to keep possession of the ball to score goal with team problem solving strategy.
6. There were significant differences in game performance outcome between TGfU approach group and the Traditional skill approach group.
7. There were significant differences in students' motivation between the TGfU approach group and the Traditional skill approach group.

8. The intrinsic motivation subscale of the TGfU approach group contributed highest to the students' overall participation in game performance.

Qualitative result summary.

9. Students' with TGfU approach have ability to make appropriate decision in 3 versus 3 game situations.
10. The TGfU students can relate the problem solving experience as not only to be offensive to get the ball, but also to keep possession of the ball to score goal with team problem solving strategy.
11. This description codes explained that TGfU students can relate their experience of playing game as they can understand the concepts of space and tactical understanding.
12. New categiries such as teamwork, exciting and fun emerge from this study.

Chapter 5: Discussion, Recommendation, and Conclusion

Overview

This chapter presents a discussion and conclusion based on the findings presented in the previous chapter. This chapter first discusses and synthesizes the findings as well as linking them back to the literature review. The discussion is followed by highlights on the significance and pedagogical implications of the findings. The final section of this chapter discusses the limitations of the study, suggestions for future research and summary conclusion.

Past studies have reported problem faced in the poor implementation of the physical education curriculum, specifically in game teaching (Dyson, et al., 2004: Webb & Pearson, 2008; Webb et al., 2006; Werner et al., 1996). Physical education researchers in Malaysia also have debated the role and function of the physical education game curriculum and how the pedagogy needs to be taught in primary school (De Vries, 2008; Julismah, 2000; Rengasamy, 2006; Salleh, 1997; Wee, 2001). Munira (2010) in her research recommendation has highlighted the need for taking teachers and students views into consideration in implementing the physical education curriculum in Malaysia. The preliminary study undertaken also showed the need for different approach of game teaching than the traditional skill approach (Balakrishnan, 2009). Therefore, a new intervention in learning pedagogy is needed to make physical education more interesting for students' learning outcome. Hence, this study investigated the effects of the Teaching Games for Understanding (TGfU) approach on student learning outcome in the Malaysian primary physical education program.

Specifically, the aim of this study is to investigate the effects of the TGfU approach in improving students' learning outcome such as in (a) cognitive aspects of tactical understanding and decision making, (b) psychomotor aspects of skill performance, (c) affective aspects of motivation of participation in games. Further the study explored what are students' decision making and problem solving learning experience in games. Physical education teachers, physical education and sports teacher trainers, physical education policy makers and researchers are the intended readers who will benefit from the findings of this study.

Discussion of the Research Findings

The major findings of the study reported that there were significant differences in students' cognitive learning outcome between students' who were exposed to TGfU approach as compared to students with traditional skill approach. Review of literature has shown that cognitive learning outcome was a difficult task for the physical education teacher to facilitate in a game lesson (Bunker & Thorpe, 1986b; Chow et al., 2007; Hopper, 2002; Thorpe, 1990). This is because the cognitive process involves active engagement of students to reconsider their prior knowledge with the presence of new information. As mentioned in the past literature, students who were facilitated with the TGfU approach showed significant improvement on tactical understanding aspects. Results of this study support Jones and Farrow (1999) who found that, in a study also involving four weeks of intervention, the experimental group with TGfU approach performed significantly better on tactical understanding components compared to the control group in an invasion game. The finding of the current study are also consistent with Bunker and Thorpe (1982), that the TGfU approach would aid students' tactical understanding regardless of successful implementation of the skill performance. When the tactical understanding aspect of adjust, support, cover and guard was continuously applied with the TGfU approach in a modified game situation, students progressively understand their tactical aspects as prior knowledge. Then the students applied the tactical knowledge in a new game situation. The findings of the current study are in agreement with Griffin et al. (1997) that the tactical aspects of TGfU, when taught in progressive related activity, facilitates what students experience in their activity and their understanding in the new game situation. Researchers such as Hopper (2002) and Mitchell (2005) also uphold that once tactical understanding was realized by the students, they can apply these strategies in other game situations.

This study found that among the four components of tactical understanding aspects measure, cover and guard components showed higher improvement among the students with the TGfU approach. The possible explanation for this are cover is the defensive movement that student offered to support their team members who are making a play on the ball movement in the game situation. Guard is the defending of an opponent of a student in game situation who may or may not have the ball. These movements are off the ball movements where while playing students need to decide to mark the opponents team from scoring or gaining possession of the ball. In the game situation students supported their team members in marking the opponent team member who is having the ball. This action reduces the chances of the opponent team getting possession of the ball. These are the tactical aspects of game situations that the students with the TGfU approach showed as a finding of this study. The students with TGfU approach were not only getting possession of the ball but also gave pressure to the opposing team so that the opponent team loses possession of the ball. Therefore, the findings of this study had shown that students with the

TGfU approach performed better in defending movement of tactical understanding aspects of cover and guard movements as compared to students with the traditional skill approach. Students exposed to TGfU approach understand off the ball movement better than students taught with the traditional skill approach. This was because students trained under the TGfU approach had more learning experience with the tactical understanding activity as compared to students who were exposed to the traditional skill approach. Therefore TGfU approach facilitated primary physical education students' tactical understanding of game performances compared to the traditional skill approach students.

One of the most significant findings emerged from this study was that students' decision making with TGfU approach have contributed the most to their cognitive learning outcome. Decision making is considered as appropriate choices about what to do with the ball during game situations. Students' decision making is considered as the difficult task for physical education teachers to facilitate in the primary physical education lesson (Light, 2002a; Sanmuga, 2008). This is because in traditional skill approach, students need to master the skills in a few practice sessions in isolation before they are exposed to modified game situation. Only during the game situation can students make decisions on what to with the ball depending on the game situation. Therefore, the findings of this study revealed that when the decision making in modified game activities were planned for students with TGfU approach with the tactical aspects of 2 versus 2 to 3 versus 3, students had the opportunity to make decision of what to do with the ball in modified game activity before going to the game situation. In a few modified game situations, students' experience of playing games in activity that provided them creative decisions on how to challenge themselves and each other much like how they make decision in when they are playing a real game. The result of this study support those of Capel (1991) and Sanmuga (2008) that when students were taught with TGfU approach they performed better in decision making compared to students taught with the traditional skill approach. The findings of this study was evidence that the traditional skill approach students experience less decision making activities as compared to students with TGfU approach. The traditional skill approach lessons provided less activity for students' decision making process to take place. The traditional lesson plans were focused on structured lesson plan where students were busy being drilled in their skills. The students with traditional skill approach were focused on skill mastery and the practice session was in isolation. Therefore the traditional approach students had less opportunity to make decisions on what to do with the ball in game situations. Therefore, the students' with traditional skill approach decision making in game situation were only on executing the ball to target as their main objective of the game. The students did not have much experience of decision making of what to do with the ball in their practice session. Therefore, the finding of this study is considered important to give information about the primary students' decision making using not only with the TGfU approach but also the traditional skill approach.

The findings from past study by Capel (1991) and Sanmuga (2008) had shown the result of middle school students' above 12 years old decision making in game. However, these studies focused on students above 12 years old. Therefore, the result of the present study is important and significant because it adds knowledge about 10-year-old primary students' decision making in games. The students were actively involved in the decision making process in the modified game activity session and game session. Therefore, students' decision making in game situation can be facilitated. Findings from Rovegno et al. (2001) and Tallir et al. (2003) also supported that primary school students' decision making process in game situation can be enhanced in physical education lesson using the TGfU approach.

The most interesting finding from the interview data related to the students' problem solving experience. Students' taught using TGfU approach reflected their problem solving experience in game situations in more detailed experience as compared to students' with the traditional skill approach. The students with the TGfU approach were cognitively engaged in problem solving situations offered to them. They were engaged in cognitive process of what to do when they have a ball in the game situation. Students' previous experience in modified game activity also facilitated their understanding on how to support their team members when they do not have the ball.Support the team members is a important aspect of off the ball movement strategies that a team can provide to team member to gain possession of the ball. Therefore, the findings of this study were similar to the past studies by Mesquita et al. (2005) and Nevett et al. (2001).

Very little was found in the past research on primary students' problem solving in game situations. There is one recent research by Chao et al. (2010) on students' problem solving ability in games. However, the Chao et al. (2010) research finding was established with quantitative data using the GPAI instrument and Sport Problem Solving Ability Assessment in Team Sport (GPATS). There was no evidence from the students' meaning of game playing experience of problem solving situation. Recent research initiatives by Munira (2010) highlighted the importance of students needs to be considered by teachers in planning a lesson in physical education. Therefore, the current study is important as it provided knowledge on students' voice as it showed students' meaning of problem solving in game situation with qualitative data using focus group interview. This is a new finding from this study as it provides evidence of students' problem solving experience in the primary physical education lesson.

Another important finding was that there were significant main effects of TGfU approach on students' psychomotor learning outcome. Psychomotor learning outcome in this study includes the skill execution in three versus three game situation and 30-meter handball dribbling skill test. The findings revealed that students with TGfU approach had higher score on psychomotor learning outcome compared to students with Traditional skill approach. Therefore, it can be concluded that the TGfU approach affects students' psychomotor learning outcome. This result may be explained by the fact that students with the TGfU approach went through modified activities as a skill practice. The technical skills developed within the context of game and not in isolation. Therefore, these activities would have improved their skill execution in the game situation and skill test. Students have increased understanding of when, where and why these skills need to be executed in games. Past literature analyses showed that students' skill performanc improved with the TGfU approach (Allison & Thorpe, 1997; Capel, 1991; Rovegno et al., 2001; Sanmuga, 2008; Turner et al., 2001). Hence, from all these findings, only the Allison and Thorpe (1997) and Rovegno et al. (2001) studies reported primary school students' skills execution in games. Therefore, the findings of this study will contribute to knowledge about the primary students' execution in game learning outcome.

Contrary to expectations, students with the TGfU approach performed better in 30 meter handball skill test as compared to students with traditional skill approach. This is an interesting finding in this study that students with TGfU approach showed significant result in 30-meter handball dribbling skill test compared to students with traditional skill approach. Past research on TGfU has produced some positive learning outcome for students in skills execution (Harvey, 2006; Harvey et al., 2007; Rink et al., 1996). The result of the present study showed that students with TGfU approach performed better in 30 meter handball dribbling skill compared to students with traditional skill approach.

The finding of the this study are supported by results of past studies (Bloomqvist et al., 2001; French et al., 1996a; French et al., 1996**;** Turner et al., 2001). Yet a study by Harrison et al. (2004) showed that students in both the TGfU group and the traditional skill group showed improvement on the posttest score. Thus all the studies uphold the notion that playing games do not make the skills worse, as concern of physical education teachers who may worry that students exposed to TGfU approach may be losing skills by playing too many games.

The result of this study also indicated that students with the TGfU approach performed better in overall game performance in the cognitive and psychomotor aspects compared to students taught with the traditional skill approach. Students in the traditional skill approach did not play well as a team compared to students with the TGfU approach. The findings from the qualitative interview data of the traditional skill approach explained the insight of students' game learning experience. The focus group interview data showed that the traditional skill approach students explained their experience of playing game was for scoring. They tried to score goals by applying skills that they practice in class activity. Therefore, during the game session students in the traditional skill approach were executing skill which was their main aim. On the contrary, students with the TGfU approach showed teamwork by setting up an attack, passing to their teammates, mobilizing the space to pass to their teammates and exhibited space awareness. The students with TGfU approach had better understanding of tactical aspects of adjust, support, cover, guard, strategy and teamwork. Therefore, the students with TGfU had better overall game performance than students with traditional skill approach. The finding of this overall game performance outcome result was similar with the past result of Blomqvist (2001), Harvey (2006), Liu (2003), Memmert and Konig (2007), and Tallir et al. (2003). However, the past studies have looked at the GPAI instrument to collect the data on students' overall game performance. There were fewer studies which focused on students' overall game performance in cognitive and psychomotor learning outcome. Therefore, the result of this study was essential as the study not only reported the overall game performance using the Game Performance Assessment Instrument (GPAI) but also reported the findings of students' skill execution and 30-meter handball dribbling skill test.

The findings of this study reported on the primary school Year Four students' motivation for participating in three versus three handball game situation using the Situational Motivational Scale (SIMS) instrument. Situational motivational scale refers to motivation that students experience when there are engaged in a game learning activity. The Mann-Whitney *U* test result revealed that students' participation in game learning affects their motivation to engage in the activity as in the expected direction and significant. The result of this study revealed the four constructs of students' motivation were related to Self-Determination Theory. It is interesting to note that in all four motivation subscales of the study intrinsic motivation and identified regulation of students with TGfU approach showed significant difference compared to the students with the traditional skill approach. Findings of this study reported that the treatment of TGfU approach showed more positive association with intrinsic motivation and identified regulation compared to students with the traditional skill approach. Students with the TGfU approach actively participate in the game activity to enjoy their learning outcome. The feeling of being related to one's teammates and feelings of autonomy are important experiences students go through as intrinsic motivation and identified regulation. These feelings hinder the feeling of amotivation of participation in games. Therefore, it can be concluded that the TGfU approach enhances students' motivation for participation in games compared to the traditional skill approach. This study produced results which corroborate the findings of a great deal of previous similar studies (Guay et al., 2000; Memmert & Konig, 2004; Moreno et al., 2010).

This result may be explained by the fact that students participating in the activities enjoyed their participation in game situations. The students experiencing stimulation situation derived from their previous experience in modified game activity. The situation of participation in modified game activity as practice provided useful understanding for their self-regulatory process. One of the goals of the physical education program is to promote physical activity in school. Therefore, it is important for physical education teachers to explore ways to accomplish this goal. Hence, the findings of this study can support the theoretical framework related to motivating students to continue participating in physical education lessons.

The findings from the qualitative data showed that students with TGfU approach not only showed positive motivation when participating in three versus three game situations but also enjoyed their participation in game situations. The focus group interview data yield students' experience of participating in game situation. Students with the TGfU approach expressed that they had fun and that the activities in game situations were interesting. Students with TGfU approach were intrinsically motivated because the behavior derived from the activity they played for their own pleasure and satisfaction. The finding of this study seems to be consistent with other research found in the past which have reported that students' enjoyment for participating in games by Allison and Thorpe (1997); Cai (1998); Ntoumanis (2001a); Piipari et al. (2009); and Standage et al. (2003). Therefore, the finding of this study enhances our understanding of primary students' motivation for continued participation in game situations.

Findings from this study also have methodological implications as the SIMS instrument not only assesses students' intrinsic motivation for participation in game performance but also showed different types of motivation that includes external regulation and amotivation. This is important as motivational research goes beyond the intrinsic motivation such as extrinsic motivation and amotivation. The SIMS instrument allowed the study to examine this possibility as the outcome in this study.

The Contribution to Theory

The aim of this study was not only to compare the effects of the TGfU approach on student learning outcome but also to explore in depth students learning experience in the game situation. The research design of this study was guided by student centered constructivism learning theory in physical education. The TGfU approach focuses students learning environment with constructivism learning. The activities organized for students in game situation were in a small group, task based where the focus was on tactical aspect of game learning outcome. The constructivism learning approach focused on students' tactical movement of decision making in games activity based on the playing environment and not by students' standing in a row and waiting for their turn for skill practice as seen in the traditional skill approach. The modified activity in game situation required students' to actively participate to reconsider their prior knowledge that they have in presence of the new information. The students' had more practice opportunity which allowed them more ball touches. These practices make the students' actively involved in games. Students' used their experiences in modified games to create cognitive structure of the new information and deep understanding of the new knowledge occurred. In the playing game situation of 3 versus 3 game situations, students' skill was in negotiating, compromising and learning developed through team work.

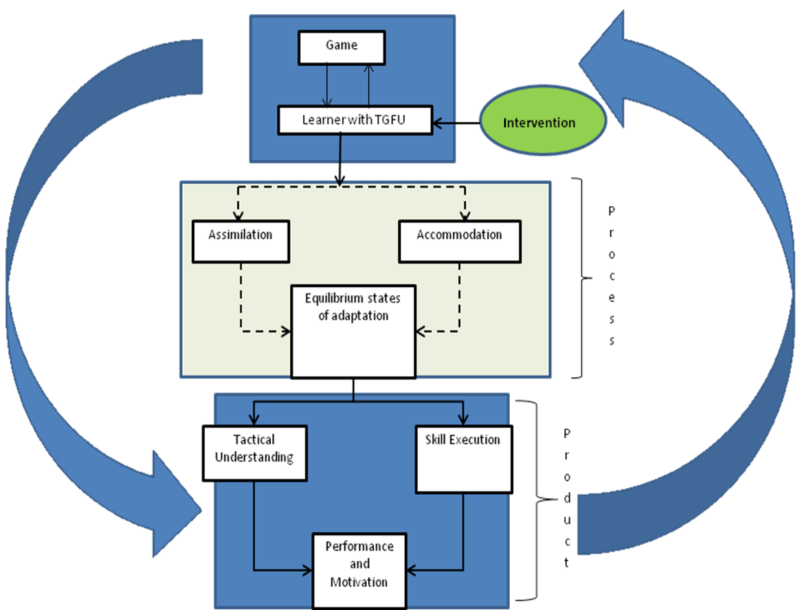


Figure 5. Theoretical framework of the study.

The framework in Figure 5, as an intervention was developed for this study. Students' with the intervention ofTGfU approach were exposed to games by introducing a handball game which was modified from the adult game to present students' with tactical problems. In the modified game situation the number of players, rules and the conditions of handball were modified according to primary physical education students' levels. During the class activity of chess passing as a modified game of 2 versus 1 was introduced to students as the tactical aspects. The activity provided engaged the students in a state of disequilibrium of what to do with a ball. The disequilibrium of the tactical aspects was the new experience for students. Students' past experience in previous years was passing to partner as target as their prior knowledge. The students assimilated the new experience with game tactics of 2 versus 1 into their schema of knowledge. The students' then fit in the new experience of the tactical knowledge through the process of assimilation. The students' understand and adapt the passing with obstacle as tactical aspects with a question "What must I do to succeed in this situation?" Then the student resolved the disequilibrium by changing their cognitive structure to incorporate the new experiences of passing of 2 versus 1 by accommodating the new experience. Students continued to resolve the assimilation and accommodation of tactical understanding knowledge until the state of equilibrium. Then the students' adaption of the tactical understanding and decision making developed in the modified game situation.

With the intervention of TGfU approach students were exposed to varieties of tactical problem solving activity of 2 versus 2 and 3 versus 3 in different modified activity. With the new tactics of 2 and 3 opponents and defenders the students adapted the game learning of passing. Students then applied this experience in the 3 versus 3 game situations. The students confronted their understanding of what they encountered in the new learning situation. When what they encountered was inconsistent with their current understanding, they then change their cognitive knowledge to accommodate the new experience. The students' remain active throughout this process of game learning experience. They applied the current understandings, and note relevant elements in the new learning experiences. During the game situation students' were able to react to the unexpected situation which they may not practice during training sessions. The TGfU approach provided an appropriate action to be taken by the students in actual game playing situation based on their prior knowledge in modified game situation.

Based on the constructivist theory, students learn best when actively engaged in the learning process by connecting their prior knowledge to new knowledge and making meaning in real world experience. This study represents one such program whereby the pedagogy of TGfU approach and particular elements of constructivism are incorporated in games learning experiences to improve students' learning outcome and motivation (Chen et al., 2002; Griffin & Placek, 2001). Within the structure of the TGfU approach, the learning environment produced for students was not in isolation from their peers or teachers as compared to the traditional skill approach as claimed in past studies (Hopper, 2002). The TGfU approach focused on learning experiences for students to acquire tactical understanding of major games through playing modified versions of the games in a game situation. Students had opportunity to create and modify games to display skills such as leading, following and decision making (Pangrazi & Casten, 2007). Students were actively engaged in learning experiences which provided them with appropriate information for their own learning (Kirk & MacPhail, 2002; Light, 2002a; Light & Wallian, 2008).

This study also adds knowledge to Self Determination theory as students are more likely to be engaged in behavior when they are self-determined. This result supported by past study that students' are more determined when they are engaged in activity that they like (Ntoumanis & Standage, 2009). Students changes in feeling of competence resulted as an outcome of the study whether increased or decreased are often directly linked to changes in intrinsic motivation (Vallerand & Rousseau, 2001). Self-determination theory attempts to understand why students do what they do and ties it to the fact that they consistently attempt to integrate new views and interest within their self-determination (Ntoumanis, 2001b). The theory explains in this study of the “what and why” of children’s determination for goal pursuit by understanding how to structure the motivational environment to foster a higher level of self-determination among students as found in past study (Deci & Ryan, 2000). Therefore the finding of the study reported the TGfU approach students’ were more motivated compared to the traditional skill approach.This is due to, in traditional skill approach teacher spend much time on how to deliver the lesson, demonstrates, clarity of voice and technical analysis and neglets how the students’ learn and what motivates them to continue to participate in lesson.

Hence, the finding of this study reported that the TGfU approach enhanced students’ motivation for participation in games compared to the traditional skill approach. The finding from the past study reported that TGfU approach provided positive interaction among peers and between student’ and teacher; it was noted that student enjoyment of participation and motivation increased (Holt et al., 2002; Hopper & Kruisselbrink, 2002). Therefore, it can be concluded that to generate a whole child concept with cognitive, psychomotor and affective domain, TGfU approach is an effective method.

Theoretical Significance

The findings of this study are similar with Kirk (2005a) as it also reported the result of comparative theoretical framework of TGfU approach with traditional skill approach.

Nevertheless the past studies have compared the traditional approach of teaching games with constructivism approach. However, the results of the studies were inconsistent (Allison & Thorpe, 1997; Chow et al., 2007; Rink, 1996; Turner & Martinek, 1995). What was significant in this study was the experiment conducted in the naturalistic setting and data were collected in natural setting which provided detailed information on primary students' game learning environment in a school setting.

The qualitative data reported in this study provided an insight into how the student's cognitive aspects of tactical understanding and decision making affect their learning outcome. This study supports the past study which has used the constructivism theory (Griffin & Sheehy, 2004; Rovegno & Dolly, 2006; Sanmuga, 2008; Turner et al., 2001; Webb & Pearson, 2008; Webb, Pearson & McKeen, 2005). The study reported that when students under TGfU participated in a game of 3 versus 3 game situations, their game performance such as tactical understanding, decision making, problem solving and skill execution improved. Students were able to apply the previous knowledge of playing games in practice to the real game situation. The findings of this study not only contributed to constructivism theory but also gave information about students' motivation for participation in games. The study provided a more holistic theoretical framework to explain students' learning outcome in the primary physical education lesson. With constructivism theory, self determination theory had provided students' learning outcome in cognitive, psychomotor and affective aspects.

Research initiatives in Malaysia also reported encouraging results with a constructivism based environment (Abtar, 2001; Sharifah, 1999). Yet these studies were not in the physical education game setting. Therefore, the result of this study proved that physical educators can utilize the TGfU approach to provide primary students with appropriate and effective tools to enhance game performance learning outcome in physical education. This study meets the expectation of the Curriculum Development trend in 2003 which proposed for innovative strategies in teaching and learning.

Pedagogical Implications

The results of this study establish that physical educators can source out effective ways of utilizing the TGfU approach as a tool for enhancing students' learning outcome in game performance. As supported by past studies, learning involves active engagement of students with their environment (Chow et al., 2007; Kirk & MacPhail, 2002; Rovegno & Dolly, 2006; Sanmuga, 2008; Webb & Pearson, 2008). Students actively experience appropriate information and thus become authors of their own learning (Kirk & MacPhail, 2002; Light, 2002a). It is possible for this pedagogical implication as students in this study played in a small group of six as explained by the constructivist environments work in small groups. Therefore, the learning environment can support their active engagement with learning activities (Dyson et al., 2004**).** Mandigo and Holt (2004) argued more holistically that with the TGfU approach teachers can teach students how to play games based on behavioral, cognitive and affective outcome. Therefore, the approach was manageable by primary physical education teachers to facilitate in school setting.

Successful transfer of theory to practice is the major challenge for physical educators in implementing the physical education program in school especially in a primary school. The results of this study have shown that the Game Performance Assessment Instrument (GPAI), handball dribbling skill test and Situational Motivational Scale (SIMS) can be used as tools to collect quantitative data on students' game performance learning outcome in the primary physical education program.

The findings of this research add knowledge that students' learning outcome in games, particularly related to student centered learning. Since 65% of time in physical education is allotted to games, they are considered important components in the physical education curriculum (Werner et al., 1996). The present study reported how the TGfU approaches to teaching games can affect students' learning outcome in a modified handball game situation. Therefore, the findings of this study will enlighten the physical educators of how the TGfU module may be used as an innovative alternative approach to cater for student needs in all components of cognitive, psychomotor and affective domain in the primary physical education lesson. In other words the study revealed the ways in which learning in the cognitive, psychomotor and affective domain can be enhanced with the TGfU approach in primary physical education class. The result of this study give important information as it is crucial in the planning of game lessons in large classes and where learners are of different ability based on the Malaysian physical education curriculum. Therefore, the findings of this study will be of interest to educators and researchers who wish to use the TGfU approach to cater for student needs in planning their lesson plan.

Based on the results, it was found that students in the traditional skill approach learn the technique of passing and dribbling in the skill practice session. The traditional skill approach focused on the mastery of the skill during practice and group practice session. Therefore, the teaching focused on level of skill to be successfully mastered and concentrate during the practice and not the tactical aspects or decision making. The skill learning was in isolation offered only executing the skills in game session. Therefore, the students did not have the opportunity to problem solve or make decision to get possession of the ball. They do not have the experience of what to do without the ball. Therefore, they cannot offer the support to team members in the game situation. They were only focused on what to do when they have the ball. That is to pass to target to score the goal. That was the learning environment created for them in the practice session. Therefore, the study found that students' decision making and problem solving ability under the traditional approach was not as much as the experience the students gained under the TGfU approach. The amount of practice in a game session for the students in the traditional skill approach also was not enough to give them experience to problem solve and make decisions.

What remain unresolved in this study were the primary students answering the interview questions. As the students were from the primary Year Four, their answers to the interview questions were limited and short. When they were probed for explanations they were unable to answer; they only shake their head to say no. Therefore, the answers for the interview questions were limited.

Limitations of the Study

Educational research is carried out with the cooperation of respondents who agree to provide the researcher with data. Because the researcher deals with human beings, a number of ethical concerns need to be considered. In this case the researcher has to deal with 10-year-old Year-Four students in the primary physical education class. Therefore, a number of limitations need to be considered.

In the first phase of the study quasi experimental design was applied as a quantitative research approach to answer four research questions. The second phase of interviews was conducted as a qualitative data collection to answer the fifth research question. The quasi-experimental design limits the internal validity as compared to true experimental study. This is because the current study was unable to randomly assign the participants of this study to control group and experimental group.

Individuals in this study were not randomly assigned to control and experimental condition. Therefore, samples in this study cannot be selected individually but need to depend on the nature of the intact sampling method. From four intact classes random sampling method was applied where two classes were randomly assigned to either the control or experimental group. Therefore, sampling used in this study also limits the generalizability of the findings. The study was conducted in a randomly selected school in a district in Selangor. However, students were randomly assigned to their respective classes at the beginning of the year. Hence, findings of this study will be applicable to this school only. However, the results are likely to have some bearing on the Malaysian Ministry of Education programs in general since the school implements a centralized physical education curriculum which is monitored by the Curriculum Development Centre. The finding from the qualitative research question also may not be generalized to other settings as the interview only involves one focus group from the experimental group and one focus group from the control group.

The potential threats of maturation, selection, mortality and the interaction of selection of other threats were also possible in this study. Students assigned to the groups may have selection factor that go uncontrolled during the experiment. Because we compare the two groups, the treatment of TGfU approach threats may also be present in this study. Therefore, the pretest-posttest design was used; additional threats of history, instrumentation and testing also may have occurred during the experiment.

This study was only focused on handball game of Year Four physical education games syllabus. Therefore, the findings of the study were limited to this game only. Moreover, the time allocated for teaching sports skill in second grade (Grade 4) are only four teaching periods for one game unit. Therefore, in this study the lesson module prepared for students only focused on the chest pass, overhead passing and dribbling skills in handball game. The other handball skills were unable to be introduced to students.

The TGfU approach of teaching was designed to allow for students with different abilities to meet their needs in a game lesson (Thorpe, 1990). However, in the Malaysian physical education program classes were divided according to gender depending on the planning of the school setting. Therefore, for the purpose of this study only the Year Four boys were selected from the intact sampling group. During the intervention session the control group students and the girls from the same class were not given the intervention. However, the teacher carried out the intervention to these groups after the data collection to allow these students to experience the learning outcome with the TGfU approach.

The GPAI observational instrument has several limitations as it uses the rating scale of the observable measures. The observer may have a tendency to rate a person who has a pleasing personality high on the other traits. The halo effect is likely to appear when the raters were asked to rate many factors on a number for which there is no evidence for judgment. This suggests the advisability of keeping at a minimum the number of characteristics to be rated. Another limitation of rating was the observer's tendency to be too generous. A number of studies have verified the tendency to rate 60% to 80% of an unselected group above average in all traits. Rating scales carry the suggestion that the observer omits rating of characteristics that they have no opportunity to observe. Therefore, there is a need to have more than two observers. However, due to practical constraint, the study was only able to get two physical education experts as the inter-raters in this study.

The original version of the Situational Motivational Scale used the seven point Likert scale. The SIMS items were back to back translated. However during the pilot study the primary Year Four students had difficulty answering the questionnaires. The students were unable to answer all the questions in thirty minutes. They were very restless to answer the seven-point Likert scale. Therefore, the original instrument was modified to a five-point Likert scale. Some of the items also made the students confused. Therefore, the items were modified and adopted to meet the students' understanding. Then the instrument was given to five experts for validation. After the validation of the instrument, it was then given to students in a different school and they could answer the items within 20 minutes.

Finally, the study applied quantitative approach and qualitative technique of data collection method. Therefore, qualitative data collection involved only 4 weeks of interviews after the game sessions. The research limits the rich qualitative data collection method. The quantitative approach and qualitative technique of data collection design took more time to collect and analyze the data compared to only one research approach. Therefore, data analysis process was time consuming. However, the researcher received professional help in collecting and analyzing the quantitative and qualitative data. This is because the findings of this data can provide stronger evidence for conclusions through corroborating of findings from this study.

Despite the positive outcome of the treatment group the study was limited by the duration of intervention of only 4 weeks, where a longer period of intervention might minimize possible novelty effects. However, Slavin (1995) in reviewing the effectiveness of intervention, considered an experimental treatment of four weeks as sufficient for determining educational significance in such studies. Furthermore the use of longer treatment is not in accordance with the common objective and contents within the scope of a Year 4 national physical education curriculum.

More schools and classes in turn would create new problems, because different teachers, different schools and different condition would make things even more complicated when it comes to comparing the result of the groups. It was found in this study that the control group had also shown improvement in the game performance learning outcome in the posttest. However, further studies could be carried out to replicate the effectiveness of the TGfU approach with the control group at different grade level.

Overall Significance of the Study

The TGfU approach places students in a game situation where the cognitive function of tactical understanding, decision making, problem solving and skill were developed at the same time. Cognitive aspects of tactical understanding, decision making and problem solving were combined with skill development within a modified game to provide a meaningful experience for the students. Therefore, the students with the TGfU approach were more motivated in the activity compared to students with the traditional skill approach. A study by Light (2002b) stressed that it was difficult for physical education teachers to address cognition in games. Chow et al. (2007) also explained that decision making is the higher order thinking skill that at micro level was difficult to investigate. Students' need to make decision on what to do, and how to do it involves recognizing cues and predicting outcome. How to do it requires students' to choose an appropriate response in a particular given environment. The findings of this study make a significant contribution to the primary school physical education program. This study confirmed that that the cognition aspects of tactical understanding, decision making and problem solving in games can be facilitated with the TGfU approach in primary school.

Physical education teachers are facing the challenge of how to design physical activity to increase primary students' participation in games as stated in past research by Cale and Harris (2006). Therefore, the results of this study proved students' motivation for participation in games improves with the TGfU approach. Essentially by focusing on the game, not necessarily the full game, students were encouraged to develop understanding of the game being played. Therefore, primary school physical education teachers can plan modified activity with TGfU approach in teaching game skills which involve Year Four, Five and Six students. An effective response reported in this study has shown that enjoyment and fun are important factors determining student's future involvement in game activity. Mini modified games were fun using a TGfU approach. This modified game activity can be incorporated in physical education class to upgrade students' involvement in games. Primary school students participate in a range of activities and their main motivation for participation is fun and enjoyment. Therefore, the findings of this study uphold the findings of other researchers (Kirk, 2005b) on the importance of early learning experience for lifelong participation in games. The finding of this study proved that the TGfU approach enhance students' motivation to continue participate in physical education lesson in primary school. Therefore these early experiences in games will motivated them to continue participates in secondary school physical education lesson.

Recommendations for Future Research

The findings of the study have a number of important implications for future practice. The outcome of the study proved that the teaching games with understanding approach (TGfU) is more effective than the traditional skill approach of teaching games in primary physical education.

Firstly, the study was conducted in a primary school physical education program. The result of the study has shown significant learning outcome for students. However, the study was only focused in a primary school in one district in Selangor. Even though the study may have some bearing on other schools because of the characteristic of the school, more research is essential to prove further the effectiveness of the TGfU approach before its implementation in school. The experiment may need to be extended to other primay schools and districts. Comparative study may be undertaken with reference to rural and urban, lower skill ability students and higher skill ability students and between male and female.

Secondly, the study was only conducted for the duration of 6 weeks, with the intervention of handball game unit in an invasion game for 4 weeks only. The result of the study has proven that the theory is successful to link student knowledge of cognitive understanding learning experiences in games. As the demand from the education innovation is to yield successful learning outcome for students with the educational theory, there is a need for more research to strength the theoretical framework of this study using constructivism theory and self determination theory. More study also need to be undertaken with primary Year 5 and Year 6 to debate on students' motivation to participate with TGfU approach. Level 2 comprises Year 4, Year 5 and Year 6 where the students' learn the game skill according to Primary Physical Education Syllabus in Malaysia.

Thirdly, this study was only focused on handball game as found in the Year 4 syllabus. Handball game was an invasion game. In future the research should be extended to other invasion games than handball. Finally one of the aims of the study was to explore students' voice of game learning experiences. This study only answered one research question which required qualitative technique to explore students' experience of learning outcome in game situations. The interview data showed important information about students' decision making and problem solving in games. In this study only one technique of qualitative research method was applied. Therefore, it limits further in-depth exploration into students' learnin g experience of game playing. Therefore, in future studies need to consider a full qualitative research approach to yield students' game learning experience with observation and during the game lesson.

Conclusion

The typical tradition approach of teaching games in school may have been the best option in the past but research has proven that teaching approaches often have been revised in order to effectively give our students the best education we can. This research result has pointed out that primary school physical education teachers may have more success by using the TGfU approach in teaching games in school. Curriculum developers may need to develop a module to integrate the TGfU approach to teach games in primary school physical education programs so that pupils can improve in cognitive, psychomotor and affective learning outcome in primary physical education.

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Appendix A

Game Performance Assessment Instrument

Date________________ Class ___________ Game_______________

Data sheet scoring key	5 = very effective performance
	4 = effective performance
	3 = moderately effective performance
	2 = week performance
	1 = very weak performance

Game Component Observed in the GPAI (Generic Definition)

Game Components	Description
Decision making	Makes appropriate decision about what to do with the ball during a game
Skill execution	Efficient Execution of selected skills
Adjust	Movement of the performer, either offensively as necessitated by the flow of the game
Cover	Provides appropriate defensive cover, help, backup for a player making a challenge for the ball
Support	Provides appropriate support for a teammate with the ball by being in a position to receive a pass
Guard/ Mark	Appropriate guarding /marking of an opponent who may or may not have the ball

Rating/Definition

5. Very effective performance

Always attempting to get open for passes; communicates and demands ball from teammates. Regularly uses sharp cuts to get into open spaces on the field being involved regularly in missed pass, switch pass, overlaps, and ball collection after teammate has been tagged.

4. Effective performance

Most of the time tries to get open for passes; communicates and demands ball from teammates. Uses sharp cuts to get into open spaces on the field being involved in some moves such as missed pass, switch pass, overlaps, and ball collection after teammate has been tagged.

3. Moderately effective

Player is beginning to communicate with and demand ball from teammates. Player attempts to get open for passes although cuts to get into open spaces are *slower* and player is only *sporadically* involved in moves and ball collection after a teammate has been tagged.

2. Weak Performance

Player rarely communicates with and demands ball from teammates. Player attempts to get open to receive passes although cuts to get into open spaces are slower, and if the player does not receive the ball *gives up.* Player is rarely involved in moves and in ball collection after a teammate has been tagged.

1. Very weak performance

Players never communicates with and demands from teammates. Player never tries to get open to receive passes from teammates and player has no concept of moves, such as missed pass, switch pass, overlaps, and never collects ball after a teammate has been tagged.

Name	Adjust	Decision making	Skill execution	Support	Cover	Guard or mark	Total score
	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	

Figure: Game Performance Assessment Instrument.

Reprinted, by permission, from Giffin, L.,S. Mitchell, and J. Oslin, 1997, *Teaching Sports Concepts and Skills*, Champaign, IL: Human Kinetics, 223.

Appendix B

Assessment Rubric (GPAI)

Game components	Very effective performance 5	Effective performance 4	Moderately effective performance 3	Weak performance 2	Very weak performance 1
Decision making	• Make appropriate decision about what to do with the ball during a game all the time effectively	• Make appropriate decision about what to do with the ball during a game most of the time effectively	• Make some appropriate decision about what to do with the ball during a game	• Make inappropriate decision about what to do with the ball during a game most of the time	• Make poor and inappropriate decision about what to do with the ball during a game all the time
Skill execution	• Very efficient execution of skill of the selected skills all the time	• Efficient execution of skill of the selected skills most of the time	• Make some execution of skill of the selected skills	• Inefficient execution of skill of the selected skills most the time	• Very inefficient andpoor execution of skill of the selected skills all the time
Adjust	• Very effective movement of the performer offensively as necessitated by the flow of the game all the time	• Effective movement of the performer offensively as necessitated by the flow of the game most of the time	• Make some effective movement of the performer offensively as necessitated by the flow of the game	• Ineffective and week movement of the performer offensively as necessitated by the flow of the game all	• Very weak movement of the performer offensively as necessitated by the flow of the game all the time
Cover	• Make appropriate defensive cover, help, backup for player making a challenge for the ball all the time	• Make appropriate defensive cover, help, backup for player making a challenge for the ball most of the time	• Make some appropriate defensive cover, help, backup for player making a challenge for the ball	• Make inappropriate defensive cover, help, backup for player making a challenge for the ball most of the time	• Make poor and inappropriate defensive cover, help, backup for player making a challenge for the ball all the time
Support	• Provide appropriate support for a teammate with the ball by being in a position to receive a pass all the time	• Provide appropriate support for a teammate with the ball by being in a position to receive a pass most of the time	• Provide some appropriate support for a teammate with the ball by being in a position to receive a pass	• Provide inappropriate support for a teammate with the ball by being in a position to receive a pass most of the time	• Provide poor and inappropriate support for a teammate with the ball by being in a position to receive a pass all the time
Guard	• Provide appropriate guiding/marking of an opponent who may and may not have the ball all the time	• Provide appropriate guiding/marking of an opponent who may and may not have the ball most of the time	• Provide some appropriate guiding/marking of an opponent who may and may not have the ball	• Provide inappropriate guiding/marking of an opponent who may and may not have the ball most of the time	• Provide poor an inappropriate guiding/marking of an opponent who may and may not have the ball all the time

Appendix C

Raw data from GPAI instrument dan skill test

Group	A1Ob1	A1Ob2	A2Ob1	A2Ob2	Dc1 Ob1	Dc1 Ob2	Dc2 Ob1	Dc2 Ob2	SE1 Ob1	SE1 Ob2	SE2 Ob1	SE2 Ob2	Sup1 Ob1	Sup1 Ob2	Sup2 Ob1	Sup2 Ob2	Cov1 Ob1	Cov1 Ob2	Cov2 Ob1	Cov2Ob2	Guard1 Ob1	Guard1 Ob2	Guard2 Ob1	Guard2 Ob2	Skilltest 1	Skilltest 2
1	1	1	2	2	2	1	4	3	2	2	3	3	1	2	3	4	1	1	3	4	1	2	3	4	3	3
1	1	1	2	3	2	1	4	3	2	2	3	4	2	2	3	3	1	2	3	4	2	2	4	4	1	2
1	1	1	2	2	2	2	5	4	2	1	3	4	2	2	3	4	1	2	2	4	1	2	2	4	4	5
1	2	1	3	3	1	1	3	4	1	2	4	3	2	2	4	4	2	2	4	3	2	2	3	3	1	2
1	1	1	2	2	1	2	2	4	2	2	3	3	1	2	2	3	1	1	3	3	1	2	2	4	2	2
1	1	1	1	2	1	1	2	3	3	2	3	4	1	1	3	3	2	2	4	3	1	1	3	4	2	2
1	1	1	2	2	2	1	4	4	2	2	4	4	1	2	3	4	1	2	2	3	1	1	2	3	3	4
1	1	1	3	3	2	1	3	4	2	1	3	3	2	2	4	4	1	2	3	4	2	2	4	4	5	5
1	1	2	2	3	2	1	4	4	1	1	3	4	2	2	4	4	1	1	3	4	1	1	2	3	3	4
1	1	1	3	2	1	1	3	3	2	2	3	4	2	2	4	5	2	1	4	4	1	2	3	4	3	3
1	1	2	2	3	1	1	1	2	2	1	4	4	1	2	2	3	1	1	2	4	2	1	5	4	1	1
1	1	1	3	3	1	1	1	2	2	1	3	3	1	1	3	4	2	1	4	3	1	1	2	4	5	5
1	1	2	2	3	2	2	2	3	2	2	3	3	1	2	3	4	1	1	2	3	1	1	3	4	1	2
1	1	2	3	2	2	2	3	4	1	1	3	4	2	2	4	4	1	1	3	3	2	2	4	4	1	1
1	2	2	4	3	2	2	4	4	2	2	4	4	2	1	4	5	1	1	2	4	1	1	3	3	4	5
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1	2	2	4	4	1	2	3	4	2	3	3	4	1	2	3	4	1	1	3	4	1	1	2	4	3	4
1	1	2	2	2	1	2	4	4	2	2	3	3	1	1	4	5	2	2	2	3	2	1	3	3	1	1
1	1	1	3	3	2	1	3	4	2	2	4	4	1	1	2	3	1	1	1	3	1	1	2	4	5	5
1	1	1	4	4	2	1	4	4	1	2	3	3	2	1	4	4	1	1	2	3	1	2	3	4	3	3
1	1	1	3	3	1	2	4	5	2	2	3	4	2	2	4	4	1	1	3	4	2	2	3	4	2	4
1	1	2	4	3	1	1	3	3	3	2	3	3	2	2	4	4	2	2	4	4	1	2	3	4	5	5
1	1	1	2	3	1	1	3	4	2	3	4	4	1	1	3	3	1	1	2	4	1	1	3	4	4	5
1	2	1	3	3	1	1	2	3	2	2	3	3	1	2	2	3	2	2	4	3	1	2	2	3	2	3
1	1	2	4	4	2	1	4	4	2	3	3	4	1	1	3	3	1	1	3	3	2	2	4	3	5	5
1	1	1	2	4	2	1	3	4	2	2	3	4	2	1	4	4	1	1	3	4	1	2	3	4	3	3
1	1	1	3	3	2	1	4	4	1	1	3	4	2	1	4	3	1	1	3	4	1	1	2	3	4	5
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1	2	1	2	3	2	2	3	4	2	3	3	3	2	2	3	3	1	2	3	4	2	2	2	3	2	3
1	1	1	1	2	2	1	4	3	1	2	3	3	1	1	3	3	1	2	2	3	1	2	3	4	4	4
1	2	2	3	3	1	1	3	3	2	2	3	4	2	2	4	4	2	1	4	3	1	2	3	3	3	4
1	1	1	2	2	1	1	3	3	3	2	4	4	1	1	3	3	1	2	3	3	2	1	4	4	1	1
1	1	2	3	2	2	1	5	4	1	2	3	3	2	2	4	3	1	2	1	3	1	2	3	3	1	1
2	2	1	2	2	2	1	3	3	2	2	3	3	1	1	2	3	1	2	2	3	1	2	2	3	1	1
2	1	1	2	2	1	1	2	3	2	2	3	3	2	2	2	3	2	2	2	3	1	1	2	3	1	1
2	2	1	2	3	1	1	2	3	2	1	2	3	1	1	2	3	1	1	2	3	1	1	2	3	4	1
2	2	2	3	2	1	1	1	2	2	1	3	3	1	1	2	3	2	1	3	3	2	1	3	3	2	2
2	1	1	1	3	1	1	1	2	1	1	2	3	1	1	1	3	2	1	3	3	1	1	2	3	2	2
2	1	2	1	2	1	1	2	2	2	2	3	3	1	1	2	3	1	2	2	2	2	1	2	3	4	4
2	1	1	2	2	1	1	1	2	3	3	3	3	2	2	2	2	1	2	1	2	1	1	2	3	1	1
2	1	1	2	2	2	1	2	2	2	2	3	3	1	2	2	2	2	2	2	2	1	1	2	3	1	2
2	1	1	2	2	2	1	2	2	2	2	3	3	1	2	2	2	1	1	2	2	1	2	1	2	1	1
2	1	1	1	2	1	1	1	2	2	2	2	2	1	2	1	2	2	1	3	3	2	2	3	3	5	5
2	2	2	2	2	1	1	2	3	1	2	2	3	2	1	3	3	1	1	1	3	1	1	2	2	2	2
2	1	1	2	2	1	1	2	2	2	1	3	3	2	1	2	2	1	2	2	2	1	1	1	2	4	4
2	1	1	1	2	1	1	1	2	3	2	3	2	1	1	2	3	2	2	3	2	1	1	2	2	3	4
2	1	2	2	2	1	2	1	2	2	2	2	3	1	2	2	3	1	1	2	2	1	1	1	2	2	2
2	1	1	2	2	1	1	1	2	2	2	3	3	1	2	3	3	1	1	1	2	2	1	3	2	1	1
2	1	1	2	3	2	1	2	3	2	1	3	3	1	1	2	3	2	2	2	2	2	2	3	2	1	2
2	1	2	3	3	1	1	1	2	1	2	2	2	1	1	3	3	2	2	3	2	1	1	2	2	2	3
2	1	1	1	2	1	2	1	2	2	2	2	2	1	1	2	2	1	1	1	2	1	1	1	2	3	3
2	1	1	2	2	1	1	1	2	3	3	3	3	2	1	3	3	1	1	2	3	1	1	2	2	2	2
2	1	2	3	3	2	1	2	3	2	2	2	2	1	2	2	3	2	2	2	2	1	2	2	2	3	3
2	1	1	1	2	2	1	3	3	2	2	3	3	1	2	2	2	1	2	1	2	1	2	2	2	5	5
2	1	1	2	3	1	2	1	2	2	2	3	3	1	1	2	3	2	1	2	3	1	1	1	2	4	5
2	2	2	2	2	1	2	1	2	1	2	2	3	2	2	2	3	1	1	2	3	2	1	2	2	5	5
2	1	1	1	2	1	1	2	2	2	2	2	3	2	1	2	3	1	1	2	3	1	1	1	2	3	3
2	1	1	1	2	1	1	2	3	3	2	3	3	1	1	1	2	2	1	2	2	1	1	1	2	5	5
2	1	1	1	2	1	1	2	2	2	1	2	3	1	1	1	3	1	2	1	2	2	2	2	2	4	4
2	1	1	2	2	1	1	1	3	2	2	3	3	1	2	2	3	1	2	1	2	1	1	1	2	3	3
2	1	1	1	2	2	1	2	2	2	1	2	2	1	1	2	3	2	2	2	3	1	1	1	2	3	3
2	1	1	1	2	1	1	2	2	1	1	1	2	1	1	2	2	2	2	2	3	1	1	1	2	3	3
2	1	1	1	3	1	2	2	2	2	2	2	3	1	1	2	3	1	1	1	2	1	2	2	2	4	3
2	1	2	2	2	1	1	2	3	3	2	3	3	2	2	3	3	1	1	1	2	2	1	3	2	1	1
2	1	1	1	2	2	1	2	2	2	2	2	3	1	1	2	2	2	1	2	3	2	1	3	2	2	3
2	1	1	2	2	1	1	3	3	2	2	2	3	1	1	2	3	1	1	2	3	1	2	2	2	2	2
2	1	1	2	2	1	1	2	2	2	2	3	3	1	1	2	3	1	2	2	3	2	2	3	3	3	3
2	1	1	2	2	2	1	3	3	1	2	2	3	2	2	3	2	2	1	2	3	1	1	1	2	2	2
2	2	2	2	2	1	1	3	3	2	3	3	3	1	2	1	2	1	1	1	2	1	2	2	2	1	2

Appendix D

SIMS (Situational Motivation Scale- English)

Directions: Read each items carefully. Using the scale below, please indicate the answer that best describes the reason why you currently engage in this activity. Answer each item according to the following scale. Why are you currently engaged in this activity?

1= Corresponds not at all

2= Corresponds a little

3= Corresponds moderately

4= Corresponds enough

5= Corresponds exactly

No.	Item	1. Corresponds not at all	2. Corresponds a little	3. Corresponds moderately	4. Corresponds enough	5. Corresponds exactly
1	Because I think that this activity is interesting	1	2	3	4	5
2	Because I am doing it for my own good	1	2	3	4	5
3	Because I am supposed to do it	1	2	3	4	5
4	There may be good reasons to do this activity but personally I don't see any	1	2	3	4	5
5	Because I think that this activity is pleasant	1	2	3	4	5
6	Because I think this activity is good for me	1	2	3	4	5
7	Because it is something that I have to do	1	2	3	4	5
8	I do this activity but I am not sure if it is worth it	1	2	3	4	5
9	Because this activity is fun	1	2	3	4	5

10	By personal decision	1	2	3	4	5
11	Because I don’t have any choice	1	2	3	4	5
12	I don’t know; I don’t see what the activity brings me	1	2	3	4	5
13	Because I feel good when doing this activity	1	2	3	4	5
14	Because I believe this activity is important for me	1	2	3	4	5
15	Because I feel that I have to do it	1	2	3	4	5
16	I do this activity, but I am not sure it is a good thing to pursue it	1	2	3	4	5

Appendix E

SIMS (Situational Motivation Scale- Bahasa Melayu)

Arahan: Baca semua item dengan teliti. Dengan skala yang diberi, tolong jawab sebab penglibatan anda dalam aktiviti permainan ini dengan jawapan sebaik mungkin. Jawab setiap soalan berdasarkan skala berikut:-

1= Sangat tidak setuju
2= Tidak setuju
3= Sederhana setuju
4= Setuju
5= Sangat setuju

Saya mengambil bahagian dalam aktiviti-aktiviti ini kerana:-

No.	Item	1. Sangat tidak Setuju	2. Tidak Setuju	3. Sederhana setuju	4. Setuju	5. Sangat Setuju
1	Saya rasa aktiviti ini memang menarik	1	2	3	5	5
2	Saya buat untuk kebaikan diri sendiri	1	2	3	5	5
3	Aktiviti ini adalah sesuatu yang sepatutnya saya lakukan	1	2	3	5	5
4	Mungkin ada kebaikan aktiviti ini tetapi saya tidak nampak kelebihan melakukanya	1	2	3	5	5
5	Saya berasakan aktiviti ini menyenangkan	1	2	3	5	5

6	Saya berasakan aktiviti ini baik untuk diri saya	1	2	3	5	5
7	Saya terpaksa buat aktiviti ini	1	2	3	5	5
8	Saya buat aktiviti ini tetapi tidak pasti sama ada ia berbaloi	1	2	3	5	5
9	Saya merasakan aktiviti ini menyeronokkan	1	2	3	5	5
10	Atas sebab peribadi	1	2	3	5	5
11	Saya buat kerana tidak mempunyai pilihan lain	1	2	3	5	5
12	Saya tidak tahu; saya tidak nampak akan kegunaan aktiviti ini pada diri saya	1	2	3	5	5
13	Saya rasa puas apabila melakukan aktiviti ini	1	2	3	5	5
14	Saya percaya aktiviti ini penting untuk saya	1	2	3	5	5
15	Saya rasa saya terpaksa buat	1	2	3	5	5
16	Saya buat aktiviti ini tetapi saya tidak pasti untuk meneruskannya	1	2	3	5	5

Appendix F

Validation Form

Please comments on the construct of items of GPAI and SIMS instruments base on the scale below:-

5= Very good 4= Good 3= Barely acceptable 2= Poor 1= Very poor

Construct	Scale	Comments
Cognitive • Tactical understanding a) Adjust b) Cover c) Support d) Guard e) Base • Decision making • Problem solving (from handball game to basketball)		
Psychomotor • Skill execution • Game performance		
Affective • Motivation		

Additional comments

Signature

Validated by

Cop

Appendix G

Confirmatory Factor Analysis Result

Analysis Summary

Date and Time

Date: Tuesday, 23 August, 2011
Time: 4:34:43 PM

Title

Cfa output 3 aug23: Tuesday, 23 August, 2011 04:34 PM

Variable Summary (Group number 1)

Your model contains the following variables (Group number 1)

Observed, endogenous variables

A1
A5
A9
A13
A2
A6
A10
A14
A3
A7
A11
A15
A4
A8
A12
A16

Unobserved, exogenous variables

Intrinsic Motivation
e1
e2
e3
e4
Identified Regulation
e5
e6
e7
e8
External Regulation
e9
e10
e11
e12
Amotivation
e13
e14
e15
e16

Variable counts (Group number 1)

Number of variables in your model:	36
Number of observed variables:	16
Number of unobserved variables:	20
Number of exogenous variables:	20
Number of endogenous variables:	16

Estimates (Group number 1 - Default model)

Scalar Estimates (Group number 1 - Default model)

Maximum Likelihood Estimates

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
A1	<---	Intrinsic Motivation	1.0				
A5	<---	Intrinsic Motivation	.5	.1	8.1	***	
A9	<---	Intrinsic Motivation	.7	.1	8.7	***	
A13	<---	Intrinsic Motivation	.2	.0	4.3	***	
A2	<---	Identified Regulation	1.0				
A6	<---	Identified Regulation	4.1	.8	5.0	***	
A10	<---	Identified Regulation	4.9	1.0	5.0	***	
A14	<---	Identified Regulation	.5	.2	2.7	.0	
A3	<---	External Regulation	1.0				
A7	<---	External Regulation	.6	.1	8.5	***	
A11	<---	External Regulation	2.1	.2	14.2	***	
A15	<---	External Regulation	1.0	.1	12.9	***	
A4	<---	Amotivation	1.0				
A8	<---	Amotivation	-1.0	.3	-3.0	.0	
A12	<---	Amotivation	-5.8	1.4	-4.0	***	
A16	<---	Amotivation	.4	.1	2.4	.0	

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
A1	<---	Intrinsic Motivation	.7
A5	<---	Intrinsic Motivation	.4
A9	<---	Intrinsic Motivation	.5
A13	<---	Intrinsic Motivation	.2
A2	<---	Identified Regulation	.3
A6	<---	Identified Regulation	.9
A10	<---	Identified Regulation	.9
A14	<---	Identified Regulation	.2
A3	<---	External Regulation	.7
A7	<---	External Regulation	.5
A11	<---	External Regulation	.9
A15	<---	External Regulation	.8
A4	<---	Amotivation	.2
A8	<---	Amotivation	-.2
A12	<---	Amotivation	-.8
A16	<---	Amotivation	.2

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
Intrinsic Motivation	<-->	Identified Regulation	.1	.0	4.6	***	
Intrinsic Motivation	<-->	External Regulation	-.2	.0	-9.0	***	
Intrinsic Motivation	<-->	Amotivation	.0	.0	3.8	***	
Identified Regulation	<-->	External Regulation	-.1	.0	-4.5	***	
Identified Regulation	<-->	Amotivation	.0	.0	3.1	.0	
External Regulation	<-->	Amotivation	.0	.0	-3.8	***	

Correlations: (Group number 1 - Default model)

CFA output 3 Aug23.amw

			Estimate
Intrinsic Motivation	<-->	Identified Regulation	1.0
Intrinsic Motivation	<-->	External Regulation	-1.1
Intrinsic Motivation	<-->	Amotivation	1.1
Identified Regulation	<-->	External Regulation	-1.0
Identified Regulation	<-->	Amotivation	1.0
External Regulation	<-->	Amotivation	-1.1

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
Intrinsic Motivation	.1	.0	7.0	***	
Identified Regulation	.0	.0	2.5	.0	
External Regulation	.2	.0	6.5	***	
Amotivation	.0	.0	2.0	.0	
e1	.1	.0	9.6	***	
e2	.2	.0	12.7	***	
e3	.2	.0	12.6	***	
e4	.1	.0	12.8	***	
e5	.2	.0	12.7	***	
e6	.1	.0	9.8	***	
e7	.1	.0	8.0	***	
e8	.1	.0	12.7	***	
e9	.2	.0	12.5	***	
e10	.2	.0	12.6	***	
e11	.1	.0	9.1	***	
e12	.1	.0	11.8	***	
e13	.2	.0	12.7	***	
e14	.2	.0	12.7	***	
e15	.1	.0	4.3	***	
e16	.1	.0	12.8	***	

Matrices (Group number 1 - Default model)

Residual Covariances (Group number 1 - Default model)

	A16	A12	A8	A4	A15	A11	A7	A3	A14	A10	A6	A2	A13	A9	A5	A1
A16	.0															
A12	.0	.0														
A8	.0	.0	.0													
A4	.0	.0	.0	.0												
A15	.0	.0	.0	.0	.0											
A11	.0	.0	.0	.0	.0	.0										
A7	.0	.0	.0	.0	.0	.0	.0									
A3	.0	.0	.0	.0	.0	.0	.0	.0								
A14	.0	.0	.0	.0	.0	.0	.0	.0	.0							
A10	.0	.0	.0	-.1	.0	.0	.0	.0	.0	.0						
A6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0					
A2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0				
A13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0			
A9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0		
A5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
A1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

Standardized Residual Covariances (Group number 1 - Default model)

	A16	A12	A8	A4	A15	A11	A7	A3	A14	A10	A6	A2	A13	A9	A5	A1

CFA output 3 Aug23.amw

A16	.0															
A12	-.9	.0														
A8	.7	-1.0	.0													
A4	1.9	-.3	-1.0	.0												
A15	-1.7	.0	-1.4	-.6	.0											
A11	.4	.0	.2	.2	.3	.0										
A7	-.8	-.7	2.8	-2.7	.0	-.8	.0									
A3	-1.8	.2	-.3	-.8	-1.2	.2	.2	.0								
A14	-.5	-.6	-1.3	3.1	-.7	-.6	-4.9	-.8	.0							
A10	-2.3	-.5	.4	-3.1	.1	.0	.2	.2	-1.5	.0						
A6	-2.1	.2	.7	.3	-.2	.1	-1.8	.9	.3	.2	.0					
A2	-.9	-1.6	-1.1	1.1	-1.4	-.2	-2.6	-.7	.5	-1.2	-.1	.0				
A13	-.7	1.3	-1.3	3.1	.3	.3	-1.7	.1	1.8	-.1	-.1	-3.0	.0			
A9	.8	-.9	-.8	-2.1	.8	-.3	-.7	-.6	3.1	-.1	-1.3	-.3	-2.9	.0		
A5	-1.3	.5	-.4	-1.4	-.3	-.1	1.4	-.1	-1.2	1.0	-1.0	-.4	2.2	-.9	.0	
A1	-.1	.0	.4	.6	.0	.0	.8	-.2	-1.2	.1	.2	1.1	-1.9	1.3	-.2	.0

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	38	454.92002	98	.00000	4.64204
Saturated model	136	.00000	0		
Independence model	16	2626.51563	120	.00000	21.88763

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.01490	.86000	.80572	.61971
Saturated model	.00000	1.00000		
Independence model	.14139	.34162	.25384	.30143

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.82680	.78791	.85884	.82564	.85760
Saturated model	1.00000		1.00000		1.00000
Independence model	.00000	.00000	.00000	.00000	.00000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.81667	.67522	.70038
Saturated model	.00000	.00000	.00000
Independence model	1.00000	.00000	.00000

NCP

Model	NCP	LO 90	HI 90
Default model	356.92002	294.36805	427.01000
Saturated model	.00000	.00000	.00000
Independence model	2506.51563	2343.46989	2676.90328

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	1.39975	1.09822	.90575	1.31388
Saturated model	.00000	.00000	.00000	.00000
Independence model	8.08159	7.71236	7.21068	8.23663

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.10586	.09614	.11579	.00001
Independence model	.25351	.24513	.26199	.00001

CFA output 3 Aug23.amw

AIC

Model	AIC	BCC	BIC	CAIC
Default model	530.92002	535.11482	674.82212	712.82212
Saturated model	272.00000	287.01299	787.01804	923.01804
Independence model	2658.51563	2660.28186	2719.10599	2735.10599

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	1.63360	1.44113	1.84926	1.64651
Saturated model	.83692	.83692	.83692	.88312
Independence model	8.18005	7.67837	8.70432	8.18548

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	88	96
Independence model	19	20

Appendix H

Letter of Consent

Date

Dear Parents,

I am Malathi Balakrishnan a lecturer from Technical Teacher Training College, currently doing my postgraduate PhD studies at University of Malaya. The title of my study is ‘The effects of Teaching Games for Understanding (TGfU) approach to improve students’ learning outcome in game performance. I will be focusing my project on a targeted group of year four students. I will meet them four lesson of physical education class, 40 minutes each time.

I will be collecting information on students playing game in handball, student surveys, and other data throughout the project. The students will remain anonymous in my written report and any work samples used will not include their names. Students will be referred to as a letter or a number in the report.

If you have any questions regarding my research project, feel free to contact me at my handphone 0126299420. Thank You

Sincerely,
(Malathi Balakrishnan)

Please complete the bottom portion of this letter and return it to me by (date).

Student’s name ____________________________________
Parent’s signature __________________________________
My child can participate in this research project.

YES ____ NO ____

Appendix I

Interview Protocol

Topic:

Objective:
Research Question:

Important note

1. Material need to bring along
    - MP3 (IC recorder)
    - Interview protocol
    - Researcher Diary
    - Small note pad

2. Instruction for researcher in interview session
    - Ask question base on RQ
    - The question must be probed until saturation

Place

Date/Day

Time/Duration

Guide to interview	Researcher's note	Researcher's comments
1. What do you do when you have the ball? 2. What you do after you throw the ball? 3. Where you should go after you throw the ball 4. What the defender do? 5. What the best way to beat the defender?		

Appendix J

Lesson Plan for Control Group

(Handball-C1)

Subject	: Physical Education
Strand	: Sport Skill
Title	: **Chest passes** in handball- C1
	; 5 Oct 2010
Time	: 7.30am – 8.00am
Class/Year	: 4 Melati
Total number of students	: 36 (boys)
Previous knowledge	: Pupils have learned how to manipulate different type of balls in basic ball movement
Objectives	: By the end of the lesson, pupil should be able to:-

Psychomotor: 1) Hold possession of ball using chest passes in a 3 versus 3 game situations

Cognitive : 1) State on what they will do before they pass the ball to friend

2) State on what is the best way to beat the defender in a 3 versus 3 game situations

3) Apply game plan to overcome the opponents in a 3versus 3 game situations

Affective: 1) Participate actively in a 3 versus 3 game situations

Stages/Time	Learning Experiences	Class organization/Evaluation	Sources/Remarks
1. Introduction (5 minutes)	- Warm up activity from head to toe - Warm up activity using the handball. Pupils in pair line up and chest pass the handball	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ T	-20 handball - 1 whistle - 24 skittle -12 Hula hoop
2. **Development Activity** (10 minutes) a. Class activity b. Group activity	**(Traditional skill Approach)** - Teacher demonstrates the chest pass skill in handball - In pair, pupils perform chest passes. - In pair pupils perform chest pass in different distances and directions - Pupils are divided into several groups where they practice the skill drills. Static and dynamic chest pass group activities are designed in stations. Pupils move from one station to another station to practice the skill drills.	X → X X → X X → X Group Activity Group Activity	**Group Activity** Strategy - Skill mastery Pupils practice skill drill
3. Climax (8-10 minutes)	- A modified 3 vs. 3 handball game in 10 x 5 meter grid distance is carried out. Pupils are divided into groups to play game using only chest passes skill.	Chest passes in 3 vs. 3 game situations	
4. **Closing** (5 minutes)	- Pupils do a reflection on what they must do to score in game situations. Pupils also express their experience while playing the game.	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ T	**Reflection** Cognitive questions

*The lesson plan is only a guide. Teacher may modify the lesson plan based on his/her own creativity

Lesson Plan for Control Group

(Handball-C2)

Subject	:	Physical Education
Strand	:	Sport Skill
Title	:	**Overhead passes** in handball- C2
	;	12 Oct 2010
Time	:	7.30am – 8.00am
Class/Year	:	4 Melati
Total number of students	:	36 (boys)
Previous knowledge	:	Pupils have learned how to manipulate different type of balls in basic movement and chest pass skill in handball

Objectives : By the end of the lesson, pupil should be able to:-

Psychomotor: 1) Hold possession of ball using overhead pasess in a 3 versus 3 game situations

Cognitive : 1) State on what they will do before they pass the ball to friend

2) State on what is the best way to beat the defender in a 3 versus 3 game situations

3) Apply game plan to overcome the opponents in a 3versus 3 game situations

Affective: 1) Participate competetively in a 3 versus 3 game situations

Stages/Time	**Learning Experiences**	**Class organization/Evaluation**	**Sources/Remarks**
1. Introduction (5minutes)	- Warm up activity from head to toe - Warm up activity using the handball. Pupils in pair line up and overhead pass the handball	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ T	20 handball - 1 whistle - 24 skittle -12 Hula hoop
2. Development Activity (10 minutes) a. Class activity	**(Traditional skill Approach**) - Teacher demonstrates the overhead pass skill in handball - In pair, pupils perform overhead passes. - In pair pupils perform overhead passes in different distances and directions	X X X X X X	
b. Group activity	- Pupils are divided into several groups where they practice the skill drills. Static and dynamic overhead pass and chest pass group activities are designed in stations. Pupils move from one station to another station to practice the skill drill.	Group Activity Group Activity	**Group Activity** Strategy - Skill mastery Pupils practice skill drill
3. Climax **(**8-10 minutes)	- A modified 3 vs. 3 handball game in 10 x 5 meter grid distance is carried out. Pupils are divided into groups to play the game using only chest passes and overhead passes skills.	Overhead passes in 3 vs. 3 game situations	
4. Closing (5 minutes)	- Pupils do a reflection on what they must do to score in game situations. Pupils also express their experience while playing the game.	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ T	**Reflection** Cognitive questions

*The lesson plan is only a guide. Teacher may modify the lesson plan based on his/her own creativity.

Lesson Plan for Control Group

(Handball-C3)

Subject	:	Physical Education
Strand	:	Sport Skill
Title	:	**Dribble** in handball- C3
	;	19 Oct 2010
Time	:	7.30am – 8.00am
Class/Year	:	4 Melati
Total number of students	:	36 (boys)
Previous knowledge	:	Pupils have learned how to perform chest passes and overhead passes in handball

Objectives : By the end of the lesson, pupil should be able to:-

Psychomotor: 1) Perform dribbling by avoiding the opponents in a 3 versus 3 game situations

Cognitive : 1) State on what they will do before they pass the ball to friend

2) State on what is the best way to beat the defender in a 3 versus 3 game situations

3) Apply game plan to overcome the opponents in a 3 versus 3 game situations

Affective: 1) Participate actively in a 3 versus 3 game situations

Stages/Time	Learning Experiences	Class organization/Evaluation	Sources/Remarks
1. Introduction (5 minutes)	- Warm up activity from head to toe - Warm up activity using the handball. Pupils in pair line up and dribble the handball	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ T	20 handball - 1 whistle - 24 skittle -12 Hula hoop
2. Development Activity (10 minutes) a. Class activity	**(Traditional skill Approach)** - Teacher demonstrates passive dribbling skill in handball with skittle - In pair, pupils perform passive dribbling.	X ⟶ X X ⟶ X	
b. Group activity	- Pupils are divided into several groups where they practice the skill drill of dribbling. Static and dynamic overhead pass and chest pass and dribbling group activities are designed in stations. Pupils move from one station to another station to practice the skill drill.	Group Activity Station A Station B Station C	**Group Activity** Strategy - Skill mastery Pupils practice skill drills
3. Climax (8-10 minutes)	- A modified 3 vs. 3 handball game in 10 x 5 meter grid distance is carried out. Pupils are divided into groups to play the game using chest passes, overhead passes and dribbling skills.	Handball game 3 vs 3	
4. Closing (5 minutes)	- Pupils do a reflection on what they must do to score in game situations. Pupils also express their experience while playing the game.	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ T	**Reflection** Cognitive questions

*The lesson plan is only a guide. Teacher may modify the lesson plan based on his/her own creativity.

Lesson Plan for Control Group

(Handball-C4)

Subject	:	Physical Education
Strand	:	Sport Skill
Title	:	**Dribble** in handball- C4
	;	26 Oct 2010
Time	:	7.30am – 8.00am
Class/Year	:	4 Melati
Total number of students	:	36 (boys)
Previous knowledge	:	Pupils have learned how to perform chest pass, overhead pass and dribbling in handball
Objective	:	By the end of the lesson, pupil should be able to:-

Psychomotor: 1) Hold possession of ball using chest pass, overhead pass and dribbling skills in a 3 versus 3 game situations

Cognitive : 1) State on what they will do before they pass the ball to friend

2) State on what is the best way to beat the defender in a 3 versus 3 game situations

3) Apply game plan to overcome the opponents in a 3versus 3 game situations

Affective: 1) Participate competitively in a 3 versus 3 game situations

Stages/Time	Learning Experiences	Class organization/Evaluation	Sources/Remarks
1. Introduction (5 minutes)	- Warm up activity from head to toe - Warm up activity using the handball. Pupils in group practice passive dribbling	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ T	20 handball - 1 whistle
2. Development Activity (10 minutes) a. Class activity	**(Traditional skill Approach)** - Teacher demonstrates active dribbling skill in handball with opponents - In pair pupils perform active dribbling left and right	X ⟶ X X ⟶ X	- 24 skittle -12 Hula hoop
b. Group activity	- Pupils are divided into several groups where they practice the skill drill of dribbling. Dynamic chest pass, overhead pass and active dribbling skill, group activities are designed in stations. Pupils move from one station to another station to practice the skill drill.	Group Activity Station A Station B Station C	**Group Activity** Strategy - Skill mastery Pupils practice skill drill
3. Climax **(**8-10 minutes)	- A modified 3 vs. 3 handball game in 10 x 5 meter grid distance is carried out. Pupils are divided into groups to play the game using chest pass, overhead pass and dribbling skills.	Handball game 3 vs. 3	
4. Closing (5 minutes)	- Pupils do a reflection on what they must do to score in game situations. Pupils also express their experience while playing the game.	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ T	**Reflection** Cognitive questions

*The lesson plan is only a guide. Teacher may modify the lesson plan based on his/her own creativity

Appendix K

Lesson Plan for Experimental Group

(Handball-E1)

Subject : Physical Education

Strand : Sport Skill

Title : **Chest passes** in handball- E1

; 7 Oct 2010

Time : 7.30am – 8.00am

Class/Year : 4 Mawar

Total number of students : 36 (boys)

Previous knowledge : Pupils have learned how to manipulate different type of balls in basic movement

Objectives : By the end of the lesson, pupil should be able to:-

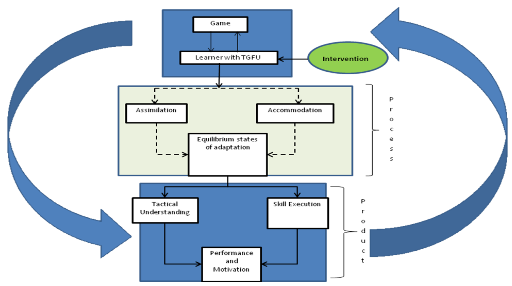
Psychomotor: 1) Hold possession of ball using chest passes in a 3 versus 3 game situations

Cognitive : 1) State on what they will do before they pass the ball to friend

2) State on what is the best way to beat the defender in a 3 versus 3 game situations

3) Apply game plan to overcome the opponents in a 3versus 3 game situations

Affective: 1) Participate actively in a 3 versus 3 game situations

Stages/Time	Learning Experiences	Class organization/Evaluation	Sources/Remarks
1. Introduction (5 minutes)	- Warm up activity from head to toe - Warm up activity using the handball. Pupils in pair line up and chest pass the handball	☺ ☺ ☺ ☺ ☺ ☺ ☺ T	20 handball - 1 whistle - 24 skittle -12 Hula hoop
2. Development Activity (10 minutes) a. Class activity	**(TGfU Approach)** - Pupils in a group's 2 vs.1 game hit the target. 2 attackers hit the skittle in hoop using chest passes in a 4 x 4 meter grid. Defender tries to block the attempt. Change of role once the ball is caught by the defender.	2 vs. 1 ☺ ☺ vs ☺ 2 vs. 1 ☺ ☺ vs ☺	
b. Group activity	- The game strategy changed to chest passes in 2 vs. 2 game situations in a 6 x 6 meter grid. Pupils' passes ball to their pairs and hit the skittle in hoop to score goal. 	2 vs. 2 ☺ ☺ vs ☺ ☺	**Group Activity** Tactical Understanding Decision making Pupils active participation
3. Climax (8-10 minutes)	- A modified 3 vs. 3game in a 10 by 5 meter grid distance is carried out. The pupils understanding of the 2 vs. 1, 2 vs. 2 in class activities and group activities facilitate their understanding in a modified 3 vs. 3 game situations. Pupils understand the game strategy with the number of player, the size of the field and the basic rules of the game.	3 vs. 3 ☺ ☺ ☺ vs ☺ ☺ ☺	
4. Closing (5 minutes)	- Pupils do a reflection on what they must do to score in game situations. Pupils also express their experience while playing the game.	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ T	**Reflection** Cognitive questions

*The lesson plan is only a guide. Teacher may modify the lesson plan based on his /her own their creativity

Lesson Plan for Experimental Group

(Handball-E2)

Subject	: Physical Education
Strand	: Sport Skill
Title	: **Overhead passes** in handball- E2
	; 14 Oct 2010
Time	: 7.30am – 8.00am
Class/Year	: 4 Mawar
Total number of students	: 36 (boys)
Previous knowledge	: Pupils have learned how to manipulate different type of balls in basic movement and chest passes skill in handball

Objectives : By the end of the lesson, pupil should be able to:-

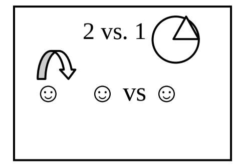
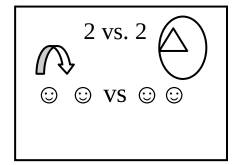
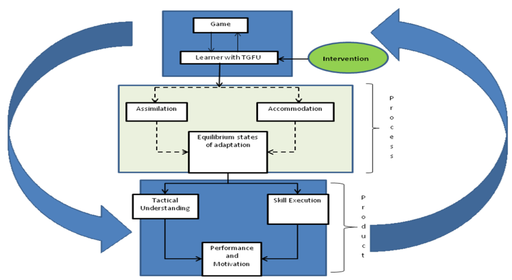
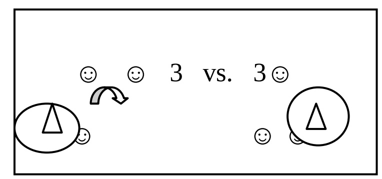
Psychomotor: 1) Hold possession of ball using overhead passes in a 3 versus 3 game situations

Cognitive : 1) State on what they will do before they pass the ball to friend

2) State on what is the best way to beat the defender in a 3 versus 3 game situations

3) Apply game plan to overcome the opponents in a 3versus 3 game situations

Affective: 1) Participate competitively in a 3 versus 3 game situations

<table>
<tr><th>Stages/Time</th><th>Learning Experiences</th><th>Class organization/Evaluation</th><th>Sources/Remarks</th></tr>
<tr><td>1. Introduction
(5 minutes)</td><td>- Warm up activity from head to toe
- Warm up activity using handball. Pupils in pair line up and overhead passes handball</td><td>☺ ☺ ☺ ☺
☺ ☺ ☺ ☺
T</td><td>20 handball
- 1 whistle</td></tr>
<tr><td>2. Development Activity
(10 minutes)
a. Class activity</td><td>(TGfU Approach)
- Pupils in a group’s 2 vs.1 game hit the target. 2 attackers hit the skittle in hoop using overhead pass in a 4 x 4 meter grid. Defender tries to block the attempt. Change of role once the ball is caught by the defender.
- The game strategy changed to chest passes in 2 vs. 2 game situations in a 6 x 6 meter grid. The pupils need to pass to their pairs and hit the skittle in hoop to score a goal.</td><td></td><td>- 24 skittle
-12 Hula hoop</td></tr>
<tr><td>b. Group activity</td><td></td><td></td><td>Group Activity
Tactical Understanding
Decision making
Pupils active participation</td></tr>
<tr><td>3. Climax
(8-10 minutes)</td><td>- A modified 3 vs. 3game in a 10 x 5 meter grid distance is carried out. The pupils understanding of the 2 vs. 1, 2 vs. 2 in class activities and group activities facilitate their understanding in a modified 3 vs. 3 game situations. Pupils understand the game strategy with the number of player, the size of the field and the basic rules of the game.</td><td></td><td></td></tr>
<tr><td>4. Closing
(5 minutes)</td><td>- Pupils do a reflection on what they must do to score in game situations. Pupils also express their experience while playing the game.</td><td>☺ ☺ ☺ ☺
☺ ☺ ☺
T</td><td>Reflection
Cognitive questions</td></tr>
</table>

*The lesson plan is only a guide. Teachers may modify the lesson plan based on their creativity

Lesson Plan for Experimental Group

(Handball-E3)

Subject	: Physical Education
Strand	: Sport Skill
Title	: **Dribbling** in handball- E3
	; 21 Oct 2010
Time	: 7.30am – 8.00am
Class/Year	: 4 Mawar
Total number of students	: 36 (boys)
Previous knowledge	: Pupils have learned how to chest pass and overhead pass in handball

Objectives : By the end of the lesson, pupil should be able to:-

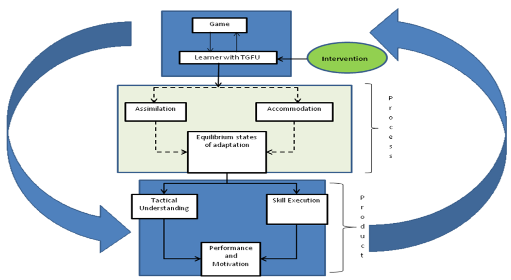
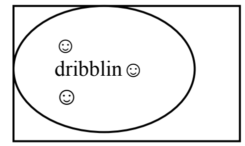
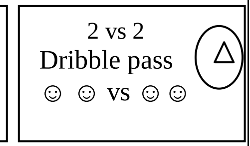
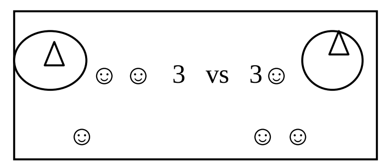
Psychomotor: 1) Perform dribbling by avoiding the opponents in a 3 versus 3 game situations

Cognitive : 1) State on what they will do before they pass the ball to friend

2) State on what is the best way to beat the defender in a 3 versus 3 game situations

3) Apply game plan to overcome the opponents in a 3versus 3 game situations

Affective: 1) Participate actively in a 3 versus 3 game situations

Stages/Time	Learning Experiences	Class organization/Evaluation	Sources/Remarks
1. Introduction (5 minutes)	- Warm up activity from head to toe - Warm up activity using the handball. Pupils individually dribble the ball. Then pupil dribble the ball in pair	☺ ☺ ☺ ☺ ☺ ☺ ☺ T	20 handball - 1 whistle
2. **Development Activity** (10 minutes) a. Class activity b. Group activity	**(TGfU Approach**) - Pupils in a group's 2 vs.1 game hit the target. 2 attackers hit the skittle in hoop using dribbling in a 4 x 4 meter grid. Defender tries to block the attempt. Change of role once the ball is caught by the defender. - The game strategy changed to chest passes in 2 vs. 2 game situations in a 6 x 6 meter grid. The pupils need to pass to their pairs and hit the skittle in hoop to score a goal. 		- 24 skittle -12 Hula hoop **Group Activity** **Group Activity** Tactical Understanding Decision making Pupils active participation
3. Climax (8-10 minutes)	- A modified 3 vs. 3game in a 10 x 5 meter grid distance is carried out. The pupils understanding of 2 vs. 1, 2 vs. 2 in class activities and group activities facilitate their understanding in a modified 3 vs. 3 game situations. Pupils understand the game strategy with the number of player, the size of the field and the basic rules of the game.		
4. **Closing** (5 minutes)	- Pupils do a reflection on what they must do to score in game situations. Pupils also express their experience while playing the game.	☺ ☺ ☺ ☺ ☺ ☺ ☺ T	**Reflection** Cognitive questions

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Lesson Plan for Experimental Group

(Handball-E4)

Subject	:	Physical Education
Strand	:	Sport skill
Title	:	**Dribbling** in handball- E4
	;	28 Oct 2010
Time	:	7.30am – 8.00am
Class/Year	:	4 Mawar
Total number of students	:	36 (boys)
Previous knowledge	:	Pupils have learned chest pass, overhead pass, and dribble the handball in previous lessons

Objectives : By the end of the lesson, pupil should be able to:-

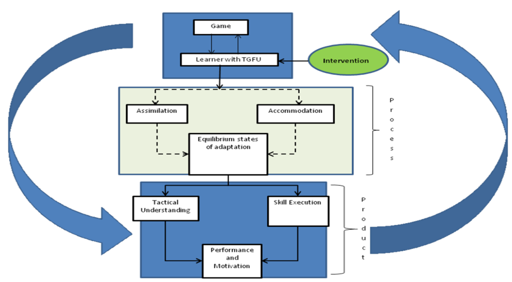
Psychomotor: 1) Hold possession of ball using chest passes, overhead passes and dribbling skills in a 3 versus 3 Game situations

Cognitive : 1) State on what they will do before they pass the ball to friend

2) State on what is the best way to beat the defender in a 3 versus 3 game situations

3) Apply game plan to overcome the opponents in a 3versus 3 game situations

Affective: 1) Participate competitively in a 3 versus 3 game situations

Stages/Time	**Learning Experiences**	**Class organization/Evaluation**	**Sources/Remarks**
1. Introduction (5 minutes)	- Warm up activity from head to toe - Warm up activity using the handball. Pupils in group paly passive dribbling	☺ ☺ ☺ ☺ ☺ ☺ ☺ T	-20 handball - 1 whistle - 24 skittle -12 Hula hoop
2. Development Activity (10 minutes) a. Class activity b. Group activity	**(TGfU Approach)** - Pupils in a group's 2 vs.1 game hit the target. 2 attackers hit the skittle in hoop using active dribbling in a 4 x 4 meter grid. Defender tries to block the attempt. Change role once ball is caught by the defender. - The game strategy changed to chest passes in 2 vs. 2 game situations in 6 by 6 meter grid. The pupils need to pass to their pairs and hit the skittle in hoop to score goal.	☺ dribblin ☺ ☺ 2 vs 2 Dribble pass ☺ ☺ vs ☺ ☺ △	**Group Activity** **Group Activity**
3. Climax (8-10 minutes)	 - A modified 3 vs. 3game in a 10 x 5 meter grid distance is carried out. The pupils understanding of 2 vs. 1, 2 vs. 2 in class activities and group activities facilitate their understanding in a modified 3 vs. 3game situations. Pupils understand the game strategy with the number of player, the size of the field and the basic rules of the game.	△ ☺ ☺ 3 vs 3 ☺ △ ☺ ☺ ☺	Tactical Understanding Decision making Pupils active participation
4. Closing (5 minutes)	- Pupils do a reflection on what they must do to score in game situations. Pupils also express their experience while playing the game.	☺ ☺ ☺ ☺ ☺ ☺ ☺ T	**Reflection** Cognitive questions

*The lesson plan is only a guide. Teachers may modify the lesson plan based on their creativity

Appendix L

Rancangan Pelajaran Pendidikan Jasmani- Kumpulan Kawalan

(Bola Baling-C1)

Subjek	: Pendidikan Jasmani
Tunjang	: Kesukanan
Tajuk	: **Hantaran aras dada** dalam Bola Baling- C1
	; 5 Oktober 2010
Masa	: 7.30 – 8.00 pagi
Tahun/Kelas	: 4 Melati
Jumlah murid	: 36 (lelaki)
Pengalaman lalu	: Murid-murid pernah memanupulasi alatan dalam pergerakan asas
Objektif:	: Pada akhir pelajaran murid-murid dapat :-

Psikomotor : 1. Melakukan hantaran aras dada kepada kawan dalam permainan 3 lawan 3

Kognitif : 1. Menjawab soalan tentang apa yang patut dilakukan untuk menghantar bola kepada kawan
2. Menjawab soalan kepada cara terbaik bertahan dalam permainan 3 lawan3
3. Mengaplikasi pengetahuan taktikal menyelesaikan masalah dalam permainan 3 lawan 3

Afektif : 1. Melibatkan diri secara aktif dalam permainan3 lawan 3

Langkah/Masa	**Pengalaman pembelajaran**	**Organisasi kelas/ Penilaian**	**Sumber/Alatan**
1.Permulaan (5 minit)	- Aktiviti regangan dari kepala ke pergelanggan kaki - Aktiviti memanaskan badan dengan menggunakan bola baling. Murid-murid beratur berpasangan dan membuat hantaran aras dada	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ G	-20 bola baling - 1 wisel - 24 kon -12 gelung rotan
2.Perkembangan (10min) a. Aktiviti Kelas	**(Pendekatan Traditional)** - Guru menunjukkan demonstarsi hantaran aras dada - Murid- murid membuat hantaran aras dada statik secara berpasangan setelah melihat demonstrasi guru. Kemudian membuat hantaran aras dada secara dinamik.	X → X X → X X → X	
b. Aktiviti Kumpulan	- Murid-murid dibahagikan kepada beberapa kumpulan. Beberapa stasen hantaran pelbagai arah disediakan. Setiap kumpulan membuat hantaran dalam stasen-stasen tertentu sebelum pergi ke stasen lain. Aktiviti kumpulan in berterusan sehingga semua ahli kumpulan mendapat peluang merima dan membuat hantaran aras dada dalam stasen berbeza.	Aktiviti kumpulan Aktiviti kumpulan	**Aktiviti Kumpulan** - Strategi- masteri - Latihan ansur maju
3.Kemu ncak **(**8-10 min)	- Permainan diubah suai ke 3 lawan 3 dalam kawansan 10 x 5 meter. Murid- murid dalam kumpulan berlawan dengan kumpulan lain dengan syarat hanya mengaplikasikan hantaran aras dada sahaja.	Permainan bola baling 3 lawan 3	
4.Penutup (5 min)	- Murid-murid membuat refleksi tentang kefahaman taktikal apa yang patut dilakukan untuk mengumpul mata dalam permainan. Murid-murid juga membuat refleksi tentang pengalaman permainan mereka.	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ G	**Refleksi** Menjawab soalan kognitif

* Rancangan pelajaran ini sebagai panduan sahaja, guru boleh ubahsuai mengikut kreativiti masing-masing.

Rancangan Pelajaran Pendidikan Jasmani

(Bola Baling-C2)

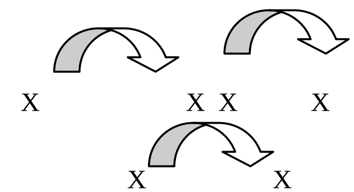
Subjek	: Pendidikan Jasmani
Tunjang	: Kesukanan
Tajuk	: **Hantaran atas kepala** dalam Bola Baling- C2
	; 12 Oktober 2010
Masa	: 7.30 – 8.00 pagi
Tahun/Kelas	: 4 Melati
Jumlah murid	: 36 (lelaki)
Pengalaman lalu	: Murid-murid pernah memanupulasi alatan dalam pergerakan asas dan hantaran aras dada dalam permainan 3 lawan 3

Objektif: : Pada akhir pelajaran murid-murid dapat :-

Psikomotor : 1. Melakukan hantaran atas kepala kepada kawan melepasi halangan dalam permainan 3 lawan 3

Kognitif : 1. Menjawab soalan tentang apa yang dibuat selepas menghantar bola
2. Menjawab soalan bagaimana cara terbaik untuk mendapatkan mata dalam permainan 3 lawan 3
3. Mengaplikasi pengetahuan taktikal menyelesaikan masalah dalam permainan 3 lawan 3

Afektif : 1. Melibatkan diri dengan semangat kesukanan dalam permainan3 lawan 3

Langkah/ Masa	Pengalaman pembelajaran	Organisasi kelas/ Penilaian	Sumber/Alatan
1.Permulaan (5 minit)	- Aktiviti regangan dari kepala ke pergelanggan kaki - Aktiviti memanaskan badan dengan menggunakan bola baling. Murid-murid beratur berpasangan dan membuat hantaran atas kepala	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ G	-20 bola baling - 1 wisel - 24 kon
2.Perkembangan (10min) a. Aktiviti Kelas	**(Pendekatan Traditional)** - Guru menunjukkan demonstarsi hantaran atas kepala. - Murid- murid membuat hantaran atas kepala statik berpasangan setelah melihat demonstrasi guru. Kemudian membuat hantaran atas kepala secara dinamik		-12 gelung rotan
b. Aktiviti Kumpulan	- Murid-murid dibahagikan kepada beberapa kumpulan. Beberapa stasen hantaran atas kepala pelbagai arah disediakan. Setiap kumpulan membuat hantaran atas kepala dan aras dada dalam stasen-stasen tertentu sebelum pergi ke stasen lain. Aktiviti kumpulan in berterusan sehingga semua ahli kumpulan mendapat peluang merima dan membuat hantaran atas kepala dalam stasen berbeza.	Aktiviti kumpulan Aktiviti kumpulan	**Aktiviti Kumpulan** - Strategi- masteri - Latihan ansur maju
3.Kemu ncak (8-10 min)	- Permainan diubah suai ke 3 lawan 3 dalam kawasan 10 x 5 meter. Murid- murid dalam kumpulan berlawan dengan kumpulan lain dengan syarat hanya mengaplikasikan hantaran aras dada dan atas kepala sahaja.	Permainan bola baling 3 lawan 3	
4.Penutup (5 min)	- Murid-murid membuat refleksi tentang kefahaman taktikal apa yang patut dilakukan untuk mengumpul mata dalam permainan. Murid-murid juga membuat refleksi tentang pengalaman permainan mereka.	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ G	**Refleksi** Menjawab soalan kognitif

* Rancangan pelajaran ini sebagai panduan sahaja, guru boleh ubahsuai mengikut kreativiti masing-masing.

Rancangan Pelajaran Pendidikan Jasmani

(Bola Baling-C3)

Subjek	:	Pendidikan Jasmani
Tunjang	:	Kesukanan
Tajuk	:	**Menggelecek bola** dalam Bola Baling- C3
	;	19 Oktober 2010
Masa	:	7.30 – 8.00 pagi
Tahun/Kelas	:	4 Melati
Jumlah murid	:	36 (lelaki)
Pengalaman lalu	:	Murid-murid pernah melakukan hantaran aras dada dan hantaran atas kepala dalam permainan 3 lawan 3

Objektif: : Pada akhir pelajaran murid-murid dapat :-

Psikomotor : 1. Menggelecek bola melepasi penghalang dalam permainan 3 lawan 3

Kognitif : 1. Menjawab soalan tentang apa yang patut dibuat untuk mengggelecek bola kepada kawan
2. Menjawab soalan kepada cara terbaik bertahan dalam permainan 3 lawan 3
3. Mengaplikasi pengetahuan taktikal menyelesaikan masalah dalam permainan 3 lawan 3

Afektif : 1. Melibatkan diri secara aktif dalam permainan 3 lawan 3

Langkah/ **Masa**	**Pengalaman pembelajaran**	**Organisasi kelas/ Penilaian**	**Sumber/Alatan**
1.Permulaan (5 minit)	- Aktiviti regangan dari kepala ke pergelanggan kaki - Aktiviti memanaskan badan dengan menggunakan bola baling. Murid-murid dalam kumpulan membuat hantaran aras dada dan hantaran atas kepala.	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ G	-20 bola baling - 1 wisel
2.Perkembangan (10min) a. Aktiviti Kelas	**(Pendekatan Traditional)** - Guru menunjukkan demonstarsi menggelecek bola secara pasif menggunakan kon. - Murid- murid menggelecek bola berpasangan setelah melihat demonstrasi guru.	X → X X → X	- 24 kon -12 gelung rotan
b. Aktiviti Kumpulan	- Kemudian murid-murid dibahagikan kepada beberapa kumpulan. Stasen hantaran aras dada, hantaran atas kepala dan mengelecek bola disediakan. Setiap kumpulan membuat hantaran dalam stasen-stasen tertentu sebelum pergi ke stasen lain. Aktiviti kumpulan in berterusan sehingga semua ahli kumpulan mendapat peluang merima dan membuat hantaran atas kepala dalam stasen berbeza.	Aktiviti kumpulan Aktiviti kumpulan Permainan bola baling 3 lawan 3	**Aktiviti Kumpulan** - Strategi- masteri - Latihan ansur maju
3.Kemu ncak **(**8-10 min)	- Permainan diubah suai ke 3 lawan3 dalam kawansan 10 x 5 meter. Murid-murid dalam setiap kumpulan berlawan dengan kumpulan lain dengan mengaplikasikan hantaran aras dada, hantaran atas kepala dan menggelecek bola dalam permainan.		
4.Penutup (5 min)	- Murid-murid membuat refleksi tentang kefahaman taktikal apa yang patut dilakukan untuk mengumpul mata dalam permainan. Murid-murid juga membuat refleksi tentang pengalaman permainan mereka.	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ G	**Refleksi** Menjawab soalan kognitif

* Rancangan pelajaran ini sebagai panduan sahaja, guru boleh ubahsuai mengikut kreativiti masing-masing.

Rancangan Pelajaran Pendidikan Jasmani

(Bola Baling-C4)

Subjek	: Pendidikan Jasmani
Tunjang	: Kesukanan
Tajuk	: **Menggelecek** dalam Bola Baling- C4
	; 26 Oktober 2010
Masa	: 7.30 – 8.00 pagi
Tahun/Kelas	: 4 Melati
Jumlah murid	: 36 (lelaki)
Pengalaman lalu	: Murid-murid pernah melakukan hantaran aras dada, hantaran atas kepala dan menggelecek dalam permainan 3 lawan 3

Objektif: : Pada akhir pelajaran murid-murid dapat :-

Psikomotor : 1. Menggelecek bola melepasi halangan dalam permainan 3 lawan 3

Kognitif : 1. Menjawab soalan tentang apa yang patut dibuat untuk mengggelecek bola kepada kawan

2. Menjawab soalan bagaimana cara terbaik untuk mendapatkan mata dalam permainan 3 lawan 3

3. Mengaplikasi pengetahuan taktikal menyelesaikan masalah dalam permainan 3 lawan 3

Afektif : 1. Melibatkan diri dengan semangat kesukanan dalam permainan3 lawan 3

Langkah/ **Masa**	**Pengalaman pembelajaran**	**Organisasi kelas/ Penilaian**	**Sumber/Alatan**
1.Permulaan (5 minit) **2.Perkembangan** (10minit) a. Aktiviti Kelas b. Aktiviti Kumpulan **3.Kemu ncak** **(**8-10 min) **4.Penutup** (5 min)	- Aktiviti regangan dari kepala ke pergelanggan kaki - Aktiviti memanaskan badan dengan menggunakan bola baling. Murid-murid beratur berpasangan dan membuat hantaran aras dada dan hantaran atas kepala **(Pendekatan Traditional)** - Guru menunjukkan demonstarsi menggelecek bola secara aktif pelbagai halangan - Murid- murid menggelecek bola berpasangan setelah melihat demonstrasi guru. Kemudian menggelecek bola secara dinamik pelbagai halangan - Kemudian murid-murid dibahagikan kepada beberapa kumpulan. Beberapa stasen menggelecek pelbagai arah, hantaran aras dada dan hantaran atas kepala disediakan. Setiap kumpulan membuat hantaran dalam stasen-stasen tertentu sebelum pergi ke stasen lain. Aktiviti kumpulan in berterusan sehingga semua ahli kumpulan mendapat peluang merima dan membuat hantaran atas kepala dalam stasen berbeza. - Permainan diubah suai ke 3 lawan3 dalam kawansan 10 x 5 meter. Murid-murid dalam setiap kumpulan berlawan dengan kumpulan lain dengan mengaplikasikan semua kemahiran yang dipelajari iaitu hantaran aras dada, hantaran atas kepala dan menggelecek dalam permainan 3 lawan 3. - Murid-murid membuat refleksi tentang kefahaman taktikal apa yang patut dilakukan untuk mengumpul mata dalam permainan. Murid-murid juga membuat refleksi tentang pengalaman permainan mereka.	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ G X ⟶ X X ⟶ X Aktiviti kumpulan Aktiviti kumpulan Permainan bola baling 3 lawan 3 ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ G	-20 bola baling - 1 wisel - 24 kon -12 gelung rotan **Aktiviti Kumpulan** - Strategi- masteri - Latihan ansur maju **Refleksi** Menjawab soalan kognitif

* Rancangan pelajaran ini sebagai panduan sahaja, guru boleh ubahsuai mengikut kreativiti masing-masing.

Lesson Plan for Experimental Group

Rancangan Pelajaran Pendidikan Jasmani- Kumpulan Experimental

(Bola Baling-E1)

Subjek	: Pendidikan Jasmani
Tunjang	: Kesukanan
Tajuk	: **Hantaran aras dada** dalam Bola Baling- E1
	; 7 Oktober 2010
Masa	: 7.30 – 8.00 pagi
Tahun/Kelas	: 4 Mawar
Jumlah murid	: 36 (lelaki)
Pengalaman lalu	: Murid-murid pernah memanupulasi alatan dalam pergerakan asas

Objektif: : Pada akhir pelajaran murid-murid dapat :-

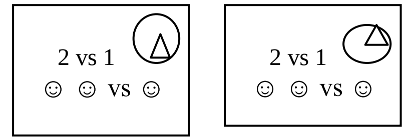
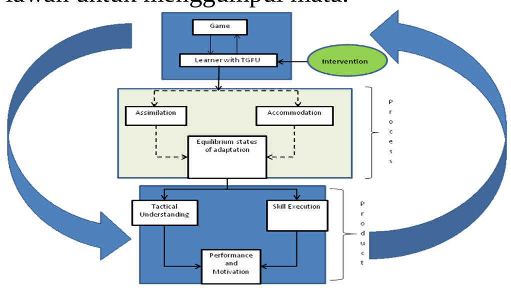
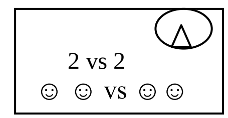
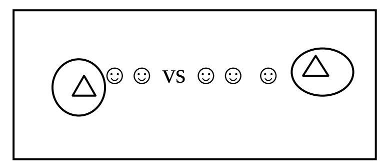
Psikomotor : 1. Melakukan hantaran aras dada kepada kawan dalam permainan 3 lawan 3

Kognitif : 1. Menjawab soalan tentang apa yang patut dilakukan untuk menghantar bola kepada kawan

2. Menjawab soalan kepada cara terbaik bertahan dalam permainan 3 lawan3

3. Mengaplikasi pengetahuan taktikal menyelesaikan masalah dalam permainan 3 lawan 3

Afektif : 1. Melibatkan diri secara aktif dalam permainan3 lawan 3

Langkah/Masa	**Pengalaman pembelajaran**	**Organisasi kelas/ Penilaian**	**Sumber/Alatan**
1.Permulaan (5 minit)	- Aktiviti regangan dari kepala ke pergelanggan kaki - Aktiviti memanaskan badan dengan menggunakan bola baling. Murid-murid beratur berpasangan dan membuat hantaran aras dada	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ T	20 bola baling
2.Perkembangan (10min) a. Aktiviti Kelas	**(Pendekatan TGfU**) - Dalam permainan 2 lawan 1, dalam gelanggang 4 x 4 meter, murid-murid dikehendaki berlawan untuk menjatuhkan kon dalam gelung rotan dengan hantaran aras dada. Bila penghalang dapat bola maka peranan penyerang bertukar menjadi penghalang.		- 1 wisel - 24 kon -12 gelung rotan
b. Aktiviti Kumpulan	- Strategi permainan diubah kepada 2 lawan 2 dalam kawasan 6 x 6 meter. Dalam pasangan murid-murid perlu menyerang dan bertahan. Setiap kumpulan perlu menjatuhkan kon pasukan lawan untuk menggumpul mata. 		**Aktiviti Kumpulan** - Kefahaman taktikal - Membuat keputusan apa hendak buat - Murid-murid melibatkan diri secara aktif
3.Kemu ncak **(**8-10 min)	- Permainan diubah ke 3 lawan 3 dalam kawasan 10 x 5 meter. Pengalaman permaian yang diperolehi oleh murid-murid dari 2 lawan1 dan 2 lawan 2digunakan sebagai prinsip untuk mengambil bahagian dan melakukan hantaran aras dada dalam permainan 3 lawan 3. Murid-murid mendapat kefahaman taktikal berdasarkan pengalaman lepas tentang jumlah pemain, saiz padang dan peraturan permainan.		
4.Penutup (5 min)	- Murid-murid membuat refleksi tentang kefahaman taktikal apa yang patut dilakukan untuk mengumpul mata dalam permainan. Murid-murid juga membuat refleksi tentang pengalaman permainan mereka.		**Refleksi** Menjawab soalan kognitif

* Rancangan pelajaran ini sebagai panduan sahaja, guru boleh ubahsuai mengikut kreativiti masing-masing.

Rancangan Pelajaran Pendidikan Jasmani

(Bola Baling-E2)

Subjek	: Pendidikan Jasmani
Tunjang	: Kesukanan
Tajuk	: **Hantaran atas kepala** dalam Bola Baling- E2
	; 14 Oktober 2010
Masa	: 7.30 – 8.00 pagi
Tahun/Kelas	: 4 Mawar
Jumlah murid	: 36 (lelaki)
Pengalaman lalu	: Murid-murid pernah memanupulasi alatan dalam pergerakan asas dan hantaran aras dada dalam permainan 3 lawan 3

Objektif: : Pada akhir pelajaran murid-murid dapat :-

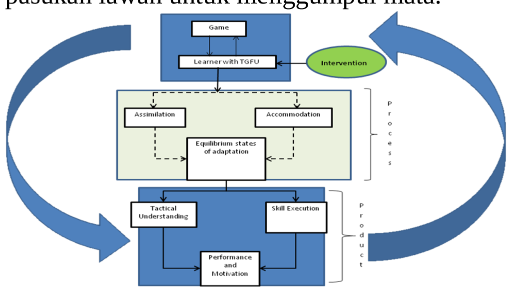
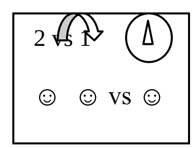
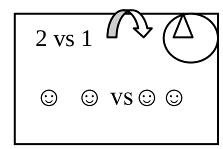
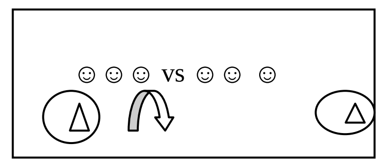
Psikomotor : 1. Melakukan hantaran atas kepala kepada kawan melepasi halangan dalam permainan 3 lawan 3

Kognitif : 1. Menjawab soalan tentang apa yang dibuat selepas menghantar bola

2. Menjawab soalan bagaimana cara terbaik untuk mendapatkan mata dalam permainan 3 lawan 3

3. Mengaplikasi pengetahuan taktikal menyelesaikan masalah dalam permainan 3 lawan 3

Afektif : 1. Melibatkan diri dengan semangat kesukanan dalam permainan3 lawan 3

Langkah/Masa	**Pengalaman pembelajaran**	**Organisasi kelas/ Penilaian**	**Sumber/Alatan**
1.Permulaan (5 minit) **2.Perkembangan** (10min) a. Aktiviti Kelas b. Aktiviti Kumpulan **3.Kemu ncak** **(**8-10 min) **4.Penutup** (5 min)	- Aktiviti regangan dari kepala ke pergelanggan kaki - Aktiviti memanaskan badan dengan menggunakan bola baling. Murid-murid beratur berpasangan dan membuat hantaran atas kepala **(Pendekatan TGfU**) - Dalam permainan 2 lawan 1, dalam gelanggang 4 x4 meter, murid-murid dikehendaki berlawan untuk menjatuhkan kon dalam gelung rotan dengan hantaran atas kepala. Bila penghalang dapat bola maka peranan penyerang bertukar menjadi penghalang. - Strategi permainan diubah kepada 2 lawan 2 dalam kawasan 6 x 6 meter. Dalam pasangan murid-murid perlu menyerang dan bertahan. Setiap kumpulan perlu menjatuhkan kon pasukan lawan untuk menggumpul mata.  - Permainan diubah kepada 3 lawan 3 dalam kawasan 10 x 5 meter. Pengalaman permainan yang diperolehi oleh murid-murid dari 2 lawan1 dan 2 lawan 2digunakan sebagai prinsip untuk mengambil bahagian dan melakukan hantaran aras dada dan atas kepala dalam permainan 3 lawan 3. Murid-murid mendapat kefahaman taktikal berdasarkan pengalaman lepas tentang jumlah pemain, saiz padang dan peraturan permainan. - Murid-murid membuat refleksi tentang kefahaman taktikal apa yang patut dilakukan untuk mengumpul mata dalam permainan. Murid-murid juga membuat refleksi tentang pengalaman permainan mereka.	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ T   	20 bola baling - 1 wisel - 24 kon -12 gelung rotan **Aktiviti Kumpulan** - Kefahaman taktikal - Membuat keputusan apa hendak buat - Murid-murid melibatkan diri secara aktif **Refleksi** -Menjawab soalan kognitif

* Rancangan pelajaran ini sebagai panduan sahaja, guru boleh ubahsuai mengikut kreativiti masing-masing.

Rancangan Pelajaran Pendidikan Jasmani

(Bola Baling-E3)

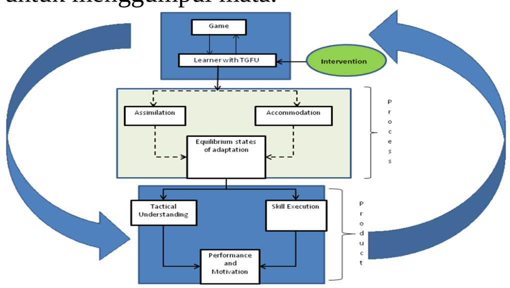
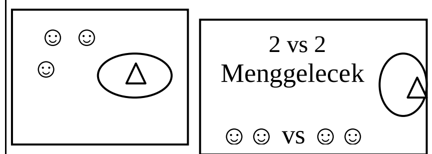
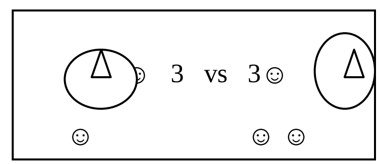
Subjek	: Pendidikan Jasmani
Tunjang	: Kesukanan
Tajuk	: **Menggelecek** dalam Bola Baling- E3
	; 21 Oktob er 2010
Masa	: 7.30 – 8.00 pagi
Tahun/Kelas	: 4 Mawar
Jumlah murid	: 36 (lelaki)
Pengalaman lalu	: Murid-murid pernah melakukan hantaran aras dada dan atas kepala dalam permainan 3 lawan 3

Objektif: : Pada akhir pelajaran murid-murid dapat :-

Psikomotor : 1. Menggelecek bola melepasi halangan dalam permainan 3 lawan 3

Kognitif : 1. Menjawab soalan tentang apa yang patut dibuat untuk mengggelecek bola kepada kawan
2. Menjawab soalan kepada cara terbaik bertahan dalam permainan 3 lawan 3
3. Mengaplikasi pengetahuan taktikal menyelesaikan masalah dalam permainan 3 lawan 3

Afektif : 1. Melibatkan diri secara aktif dalam permainan3 lawan 3

Langkah/Masa	**Pengalaman pembelajaran**	**Organisasi kelas/ Penilaian**	**Sumber/Alatan**
1.Permulaan (5 minit)	- Aktiviti regangan dari kepala ke pergelanggan kaki - Aktiviti memanaskan badan dengan menggunakan bola baling. Murid-murid dalam kumpulan membuat hantaran aras dada dan hantaran atas kepala. Murid-murid dalam kumpulan menggelecek bola	☺ ☺ ☺ ☺ ☺ ☺ ☺ G	20 bola baling - 1 wisel - 24 kon -12 gelung rotan
2.Perkembangan (10min) a. Aktiviti Kelas b. Aktiviti Kumpulan	**(Pendekatan TGfU**) - Dalam permainan 2 lawan 1, dalam gelanggang 4 x 4 meter, murid-murid dikehendaki berlawan untuk menjatuhkan kon dalam gelung rotan dengan menggelecek bola. Bila penghalang dapat bola maka peranan penyerang bertukar menjadi penghalang. - Strategi permainan diubah kepada 2 lawan 2 dalam kawasan 6 x 6 meter. Dalam pasangan murid-murid perlu menyerang dan bertahan. Setiap kumpulan perlu menjatuhkan kon pasukan lawan untuk menggumpul mata. 		**Aktiviti** **Kumpulan** - Kefahaman taktikal - Membuat keputusan apa hendak buat - Murid-murid melibatkan diri secara aktif
3.Kemu ncak **(**8-10 min)	- Permainan diubah kepada 3 lawan 3 dalam kawasan 10 x 5 meter. Pengalaman permaian yang diperolehi oleh murid-murid dari 2 lawan1 dan 2 lawan 2digunakan sebagai prinsip untuk mengambil bahagian dan melakukan hantaran aras dada, atas kepala dan menggelecek dalam permainan 3 lawan 3. Murid-murid mendapat kefahaman taktikal berdasarkan pengalaman lepas tentang jumlah pemain, saiz padang dan peraturan permainan.		
4.Penutup (5 min)	- Murid-murid membuat refleksi tentang kefahaman taktikal apa yang patut dilakukan untuk mengumpul mata dalam permainan. Murid-murid juga membuat refleksi tentang pengalaman permainan mereka.		**Refleksi** Menjawab soalan kognitif

* Rancangan pelajaran ini sebagai panduan sahaja, guru boleh ubahsuai mengikut kreativiti masing-masing.

Rancangan Pelajaran Pendidikan Jasmani

(Bola Baling-E4)

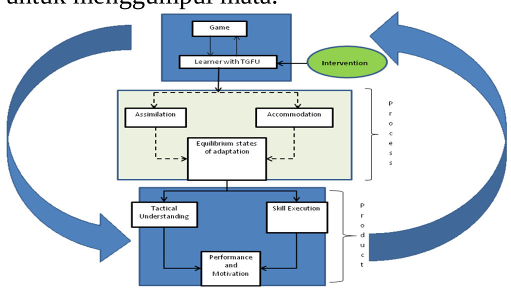
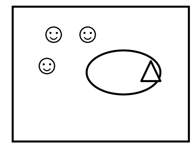
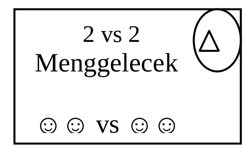
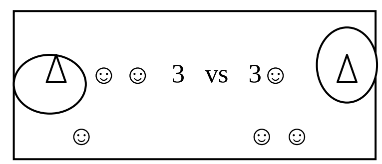
Subjek	: Pendidikan Jasmani
Tunjang	: Kesukanan
Tajuk	: **Menggelecek** dalam Bola Baling- E4
	; 28 Oktober 2010
Masa	: 7.30 – 8.00 pagi
Tahun/Kelas	: 4 Mawar
Jumlah murid	: 36 (lelaki)
Pengalaman lalu	: Murid-murid pernah melakukan hantaran aras dada, hantaran atas kepala dan menggelecek dalam permainan 3 lawan 3

Objektif: : Pada akhir pelajaran murid-murid dapat :-

Psikomotor : 1. Menggelecek bola melepasi halangan dalam permainan 3 lawan 3

Kognitif : 1. Menjawab soalan tentang apa yang patut dibuat untuk mengggelecek bola kepada kawan
2. Menjawab soalan bagaimana cara terbaik untuk mendapatkan mata dalam permainan 3 lawan 3
3. Mengaplikasi pengetahuan taktikal menyelesaikan masalah dalam permainan 3 lawan 3

Afektif : 1. Melibatkan diri dengan semangat kesukanan dalam permainan 3 lawan 3

Langkah/Masa	**Pengalaman pembelajaran**	**Organisasi kelas/ Penilaian**	**Sumber/Alatan**
1.Permulaan (5 minit) **2.Perkembangan** (10min) a. Aktiviti Kelas b. Aktiviti Kumpulan **3.Kemu ncak** **(**8-10 min) **4.Penutup** (5 min)	- Aktiviti regangan dari kepala ke pergelanggan kaki. - Aktiviti memanaskan badan dengan menggunakan bola. baling. Murid-murid menggelecek bola bola dalam kumpulan **(Pendekatan TGfU**) - Dalam permainan 2 lawan 1, dalam gelanggang 4 x4 meter, murid-murid dikehendaki berlawan untuk menjatuhkan kon dalam gelung rotan dengan menggelecek bola. Bila penghalang dapat bola maka peranan penyerang bertukar menjadi penghalang. - Strategi permainan diubah kepada 2 lawan 2 dalam kawasan 6 x 6 meter. Dalam pasangan murid-murid perlu menyerang dan bertahan. Setiap kumpulan perlu menjatuhkan pasukan lawan untuk menggumpul mata.  - Permainan diubah kepada 3 lawan 3 dalam kawasan 10 x 5 meter. Pengalaman permaian yang diperolehi dari 2 lawan1 dan 2 lawan 2digunakan sebagai prinsip untuk mengambil bahagian dan melakukan semua kemahiran hantaran aras dada, atas kepala dan menggelecek dalam permainan 3 lawan 3. Murid-murid mendapat kefahaman taktikal berdasarkan pengalaman lepas tentang jumlah pemain, saiz padang dan peraturan permainan. - Murid-murid membuat refleksi tentang kefahaman taktikal apa yang patut dilakukan untuk mengumpul mata dalam permainan. Murid-murid juga membuat refleksi tentang pengalaman permainan mereka.	☺ ☺ ☺ ☺ ☺ ☺ ☺ G   	20 bola baling - 1 wisel - 24 kon -12 gelung rotan **Aktiviti Kumpulan** - Kefahaman taktikal - Membuat keputusan apa hendak buat - Murid-murid melibatkan diri secara aktif **Refleksi** -Menjawab soalan kognitif

* Rancangan pelajaran ini sebagai panduan sahaja, guru boleh ubahsuai mengikut kreativiti masing-masing.

Appendix M

Handball Skill Test: 30m dribbling test

Justification: Student needs to control the ball while changing directions (e.g., during fast breaks).

Objective: To run the 30 meters while dribbling the ball in a regular team handball manner slaloming through the cones. The ball needs to be controlled by the student at all times from start to finish. Student is not allowed to throw the ball or catch it and run to the finish line.

Equipments: 7 skittle, 1 wisel, 2 handball, 1 Measuring tape and 1 stopwatch

Instructions/Required resources:

- There will be seven skittle placed on the length of a 30-m field; the firstcone is set at a 6-m distance from the starting line and the seventh cone is set at a 6-m distance from the finish line.
- There will be another five cones set between these two cones at 3 meter intervals. (Figure 2).

The 30-m dribbling test, continued.

Start Finish

Line Line

X X X X X X X

6 m 3 meters between each of the seven cones 6 m

- The field length is 30 meters.

- The result of run is recorded in seconds

Time	Rating scale
12.0s-13.9s and below	5
14.0s- 15.9s	4
16.0s- 17.9s	3
18.0s- 19.9s	2
20s and above	1

Appendix N

(Peer debriefing of qualitative analysis)

27 July 2011

To: Dr. Shabeshan Rengasamy
Supervisor,
Faculty of Education
University Malaya

From: Nicole Chen Lee Ping
PhD candidate
Qualitative Researcher
Faculty of Education
University Malaya

Re: Peer Review Statement – Malathi Balakrishnan thesis

I have reviewed the qualitative data of focus group interview transcription as well as the Chapter 4 qualitative data analysis. In addition I have participated in four meeting with Malathi Balakrishnan on these documents.

It appears that Malathi Balakrishnan followed the proper interview protocol in gathering the data. She have conducted each of the focus group interview herself, transcribed the interview and put the data in narrative form for review.

Malathi Balakrishnan in her analyses of the data seemed to capture all the poignant point from each eight interviews. Her knowledge as a physical education researcher helped her in all the research process, from conducting the interviews to interpreting the result.

Please let me know if I can provide any additional information.

Submitted by: ______________ Date: 27/7/11

Appendix O

Recorder for Interview

Appendix P

Sample of Transcription

Title: Interview with the Experimental group U4 after the first game session

11/11/2010 (4th Interview)

Name: Yaswer, Megad, Muzakhir, Darshan G, Dharshan M and Hafiz

Age: 10 years old

Gender: Boys

Interviewer: Malathi Balakrishnan

I: Good morning class. This is our forth interview session. I’m Malathi Balakrishnan. Can you all come closer because it is recess time now. My research title: The effects of Teaching Games for Understanding on students learning outcome. Ok please introduce yourself.

Yaswer: I’m Yaswer.

Muzakhir: My name is Muzakhir

Darshan M: I’m Dharsan M.

Darsan G: I’m Darsan

Megad: I’m Megad

Hafiz: I’m Hafiz

I: Thank you to all of you. Ok we move on to question based on your participation in games just now. What do you do when you have the ball just now?

Darsan: Pass to your friend.

Yaswer: Dribble the ball

Megad: Can dribble, can pass the ball.

I: What else you do when you have the ball?

Muzakhir: Look for space and pass to your friend.

Hafiz: You can score a goal

Yaswer: Run fast and try to score.

I: Can you run with the ball?

Darshan: Cannot, dribble with the ball

Muzakhir: Dribble and try to score a goal.

Yashwer: Dribble and throw at the goal.

I: Ok second question, what you do after you dribble or pass the ball.

Muzakhir: Find space to score a goal

Yashwer: Help your teammates

Megad: Support your teammates

Darshan: Pass to your teammates and help them score a goal.

I: Ok third question, where you should go after you throw or dribble the ball.

Darshan: Go to a empty space

Muzakhir: Go near the goal.

Hafiz: Defend

Darshan M: Go forward

Darsan G: Go to empty space so that your teammates can pass the ball to you.

Yashwer: Go near the goal

I: Ok forth question, you also played the role as defender just now. What the defender do?

Yashwer: Defend the ball

Megad: The defender try to snatch the ball

Muzakir: They try to take the ball and go in front.

Yashwer: The don’t let the opponent take the ball.

Muzakir: They don’t let the opponent score a goal.

I: By not letting opponent take the ball, Any more answer?.

I: Any more answer? No, ok the last question. What is the best way to beat the defender?

Muzakhir: By taking the ball from them.

53. Yashwer: Don't give them the ball.

54. Megad: Trick them nicely

55. I: Trick them nicely how?

56. Yashwer: Two people go in front and try to keep the ball.

57. I: Ok two people try to keep the ball. What you call that

58. Muzakhir: Team work

59. Darshan : Two people go in front and counter attack

60. Yashwer: Strategy

61. I: You plan a strategy. What else? What the best way to beat the defender?

62. Darshan: To move left and right.

63. I: Why you want move left and right by dribbling the ball.

64. Yashwer: To make the defender confused to defend.

65. Muzakhir: When they defender confused the teammates can pass the ball easily.

66. I: So do you think that is the best way to beat the defender?

67. All: Yes

68. I: Any other answer?

69. All: No.

70. I: So with that I thank all of you, I can see that you have a better understanding of how

to pass the ball, how to dribble the ball to score goal. With that I thank all of you for participating in this research. I wish you all the best.

Appendix Q

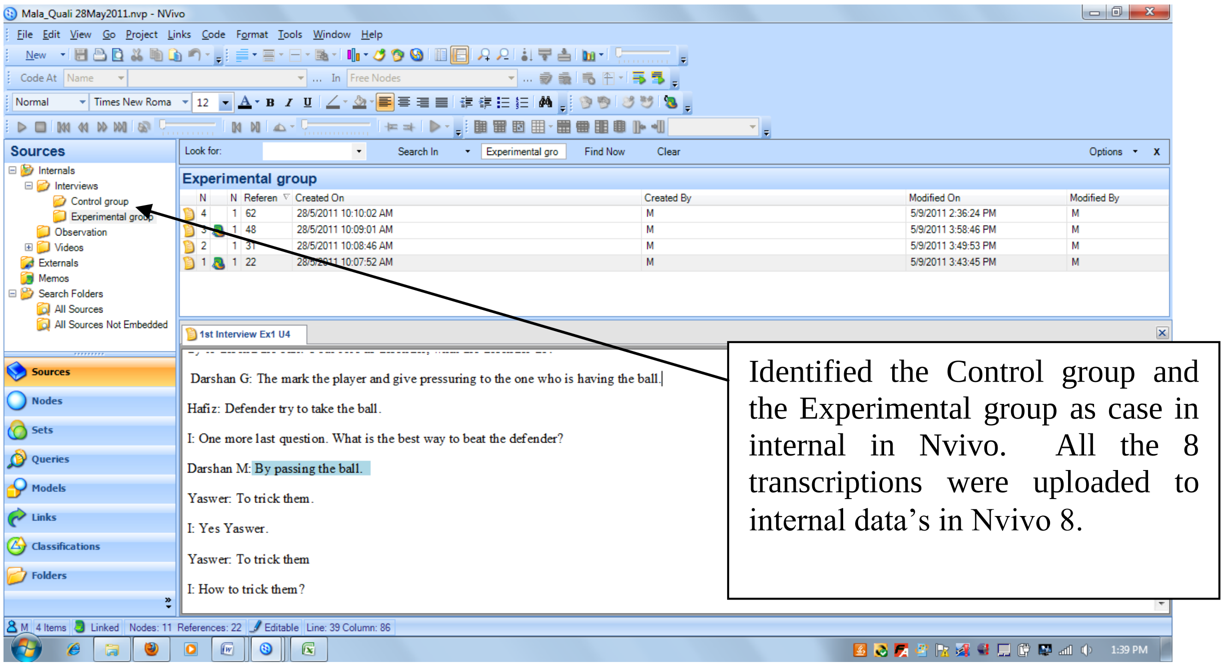
Example of Code index (Audit Trail)

No	Audit Trail	Descriotion
1.	FGI/CG /2/26/10/2010/19-23	Focus group interview/control group/second interview/ 26 October 2010/transcription line 19 to23
2.	FGI/EG /4/11/11/2010/18-22	Focus group interview/experimental group/fourth interview/ 11 November 2010/transcription line 18 to22

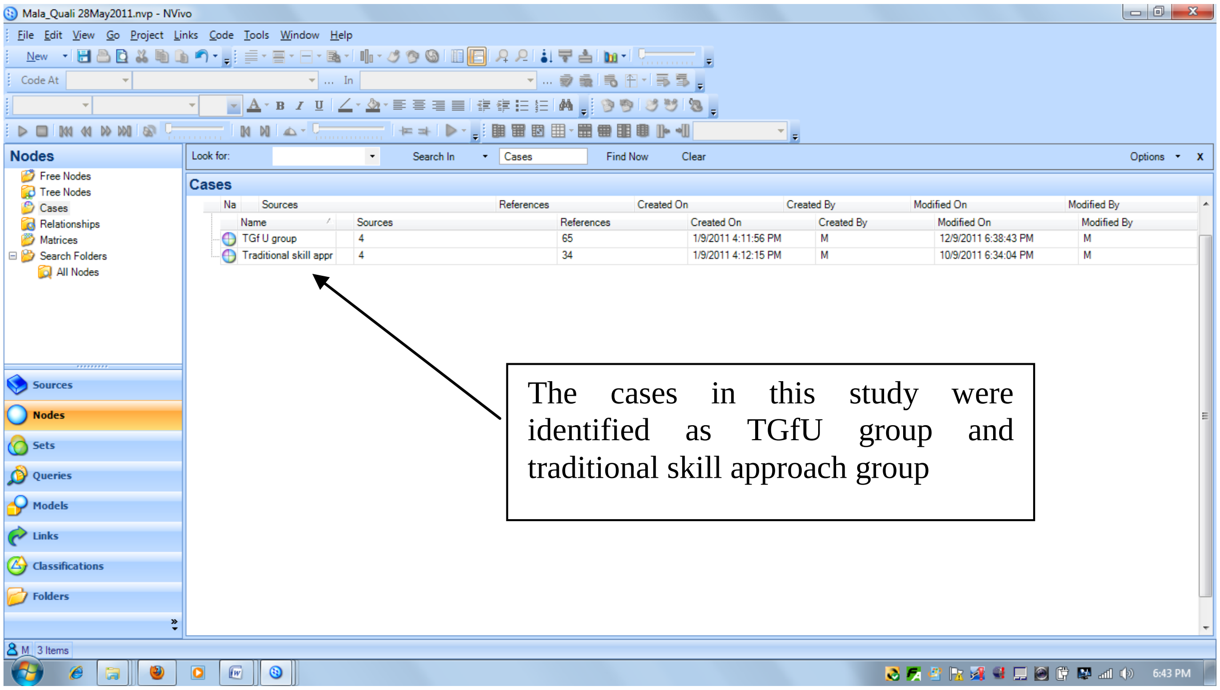
Appendix R

The coding process using Nvivo 8

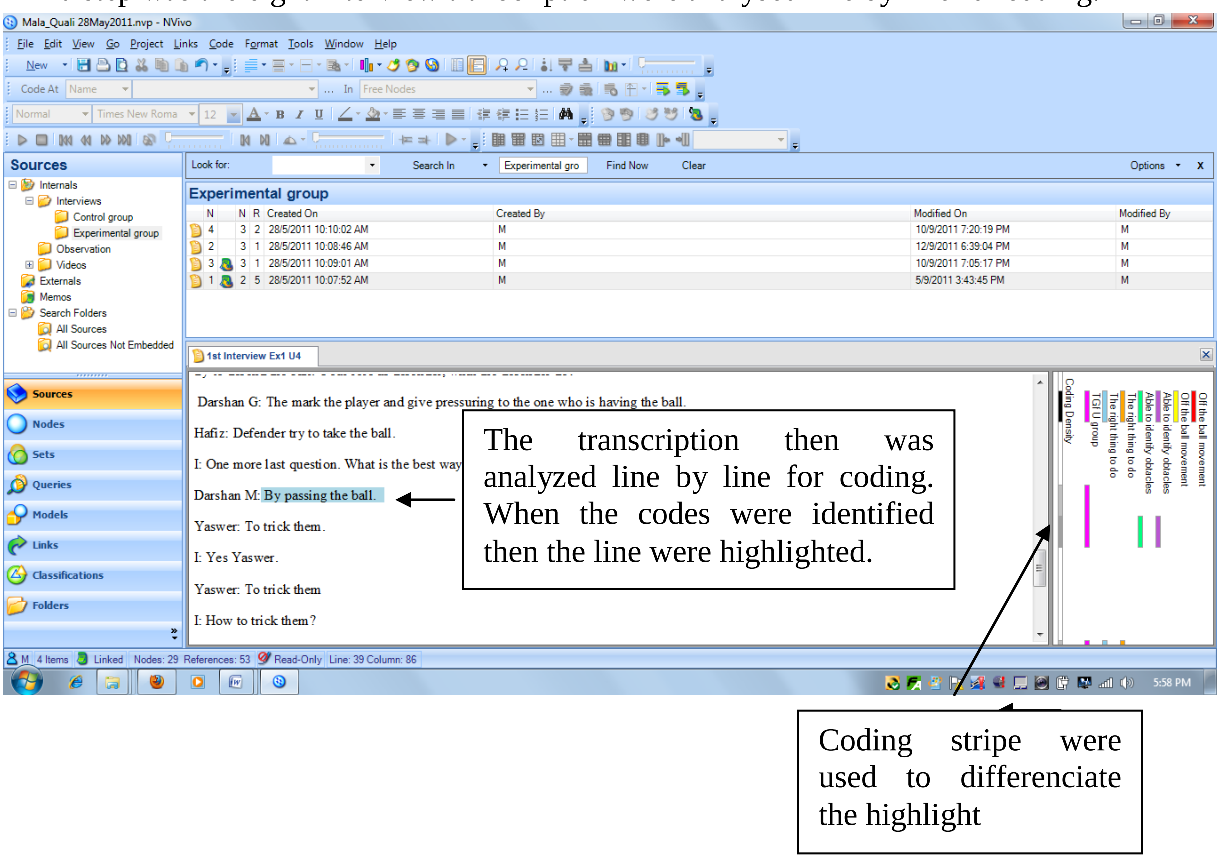
1. First step was to import the interview transcription from Microsoft word to internal data source in Nvivo 8.



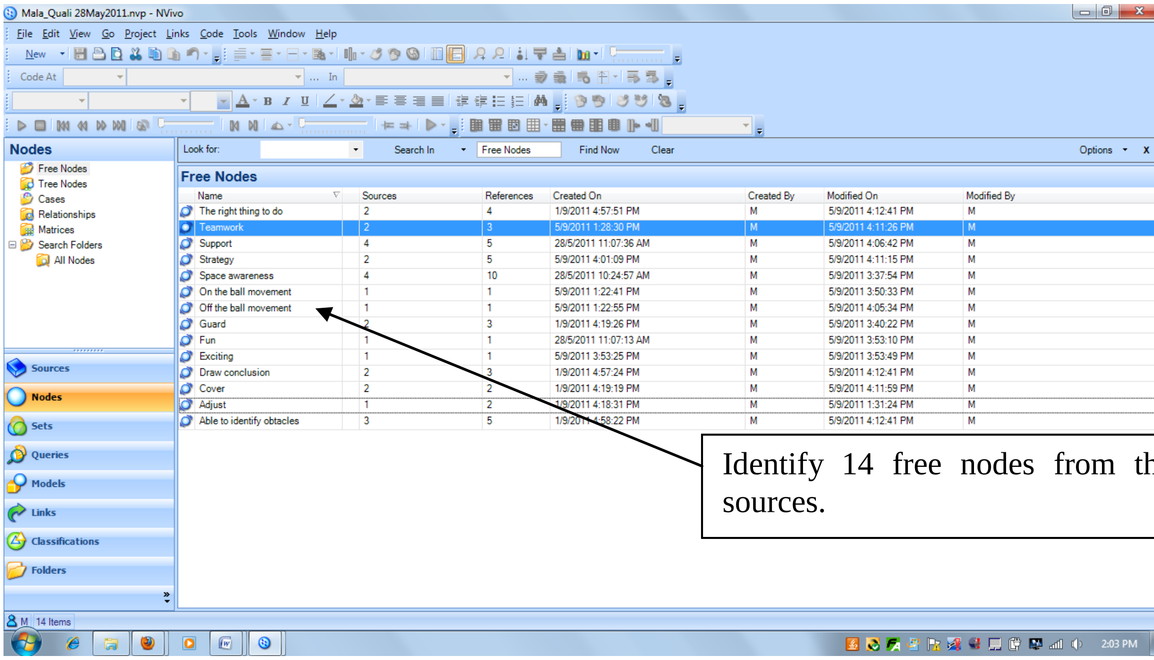
2. Second step identify the soueces as case nodes



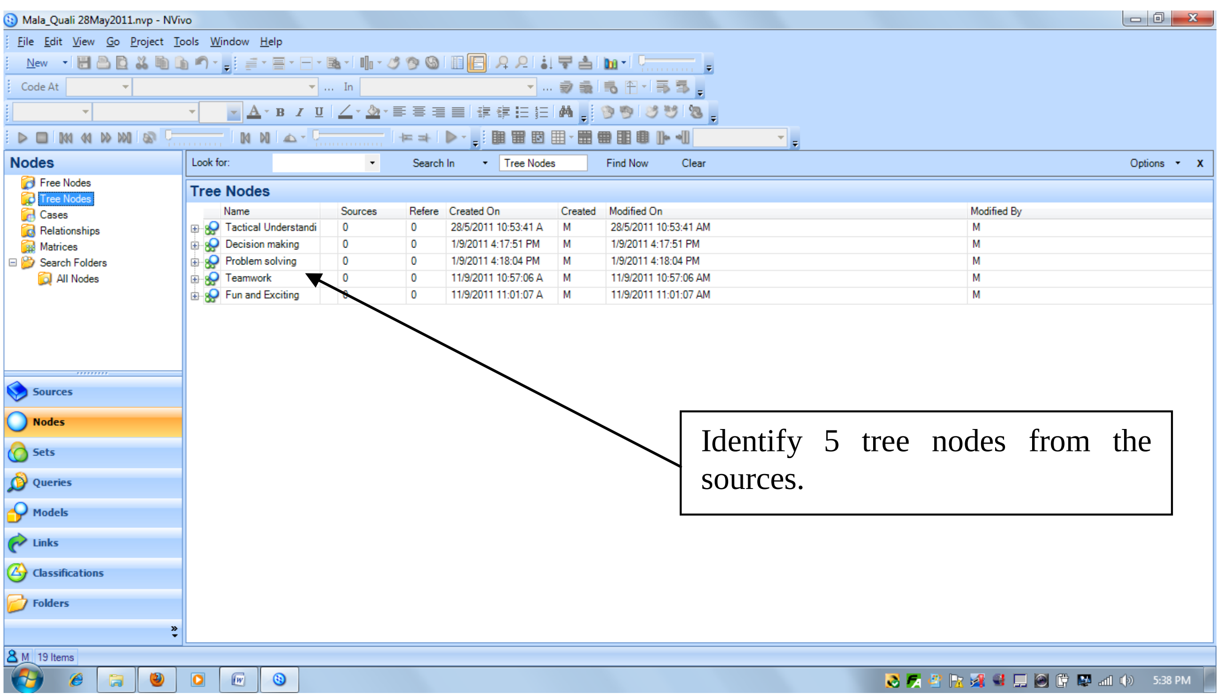
3. Third step was the eight interview transcription were analysed line by line for coding.



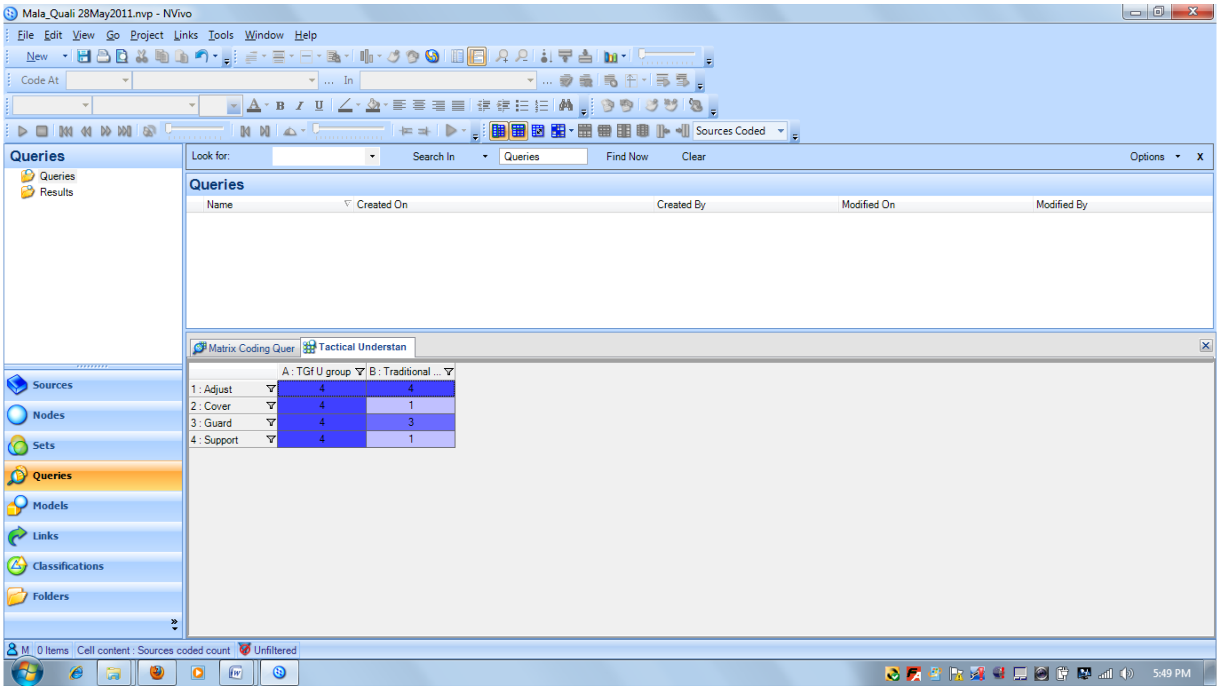
4. The fourth step was to identify the codes as free nodes as the first level of coding.



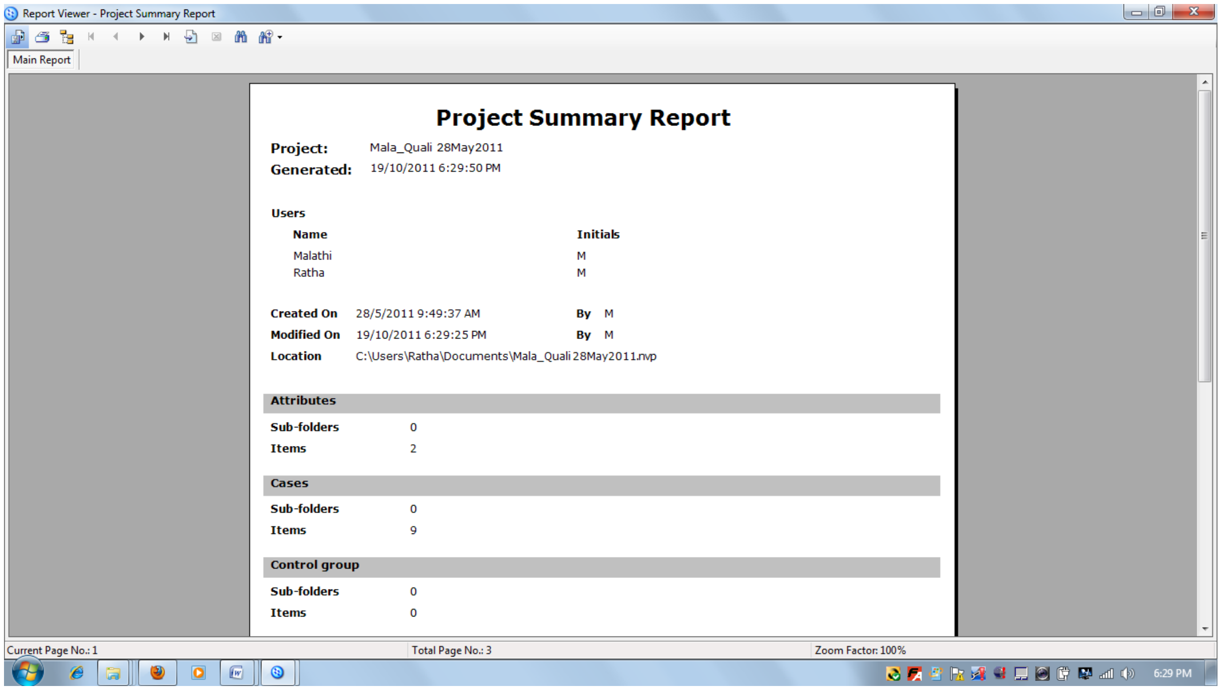
5. Then identified the tree nodes.



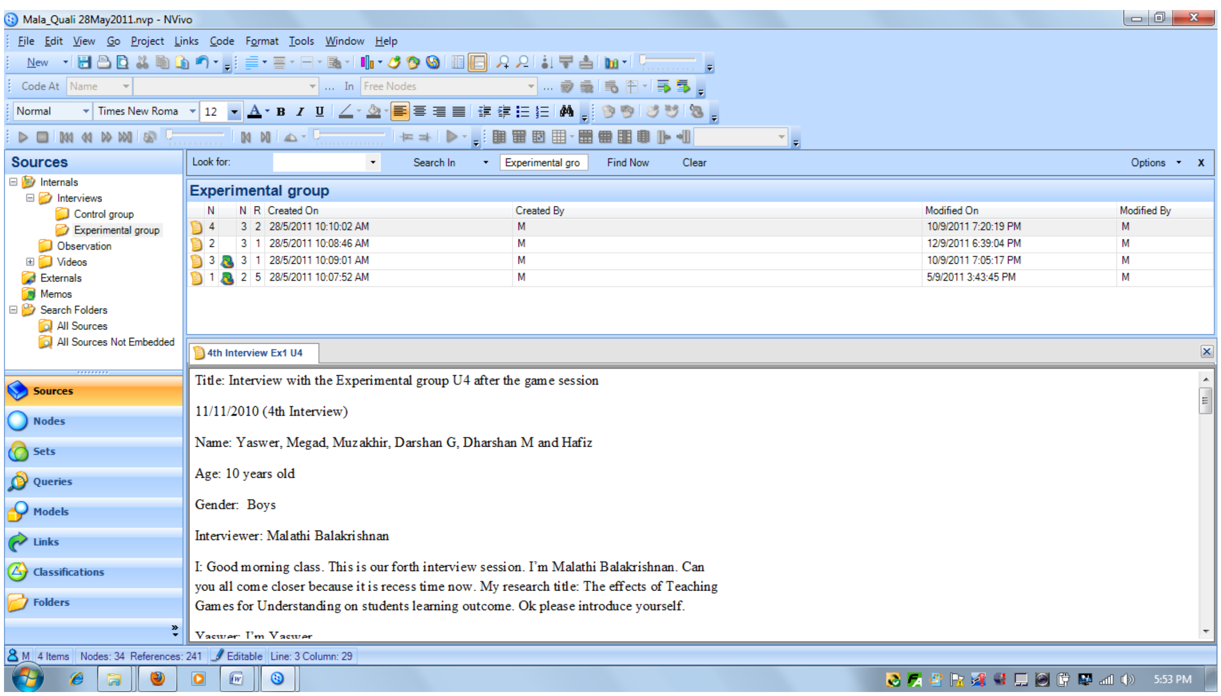
6. Do the Matrix Coding Query to see the themes



7. Based on the Matrix Coding Query the reports generated



8. Sample of Excerpt from the Focus group interview



AppendixS

Coding Summary Report

Project: Mala_Quali 28May2011
Generated: 3/12/2011 3:27:19 PM

Coding By

Name	Initials
Ratha	M
Malathi	M
Total Users	2

Internals\Interviews\Control group\1st interview C1 U4 **Document**

Node Coding	References	Coverage
Cases\Focus group\Traditional skill approach group	11	13.60%

Node Coding	References	Coverage
Free Nodes\Able to identify obtacles	2	3.87%

Node Coding	References	Coverage
Free Nodes\Adjust	2	1.61%

Node Coding	References	Coverage
Free Nodes\Cover	1	1.61%

Node Coding	References	Coverage
Free Nodes\Guard	2	2.32%

Node Coding	References	Coverage
Free Nodes\On the ball movement	1	0.64%

Node Coding	References	Coverage
Free Nodes\Space awareness	3	2.58%

Node Coding	References	Coverage
Free Nodes\Support	1	1.19%

Node Coding	References	Coverage
Tree Nodes\Decision making\On the ball movement	1	0.64%

Node Coding	References	Coverage
Tree Nodes\Problem solving\Able to identify obtacles	2	3.87%

Node Coding	References	Coverage
Tree Nodes\Problem solving\Space awareness	3	2.58%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Adjust	2	1.61%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Cover	1	1.61%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Guard	2	2.32%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Support	1	1.19%

Total References	35
Coverage	3%
Total Users	2

Internals\Interviews\Control group\2nd interview C1 U4 **Document**

Node Coding	References	Coverage
Cases\Focus group\Traditional skill approach group	7	6.11%

Node Coding	References	Coverage
Free Nodes\Adjust	1	0.62%

Node Coding	References	Coverage
Free Nodes\Guard	3	3.40%

Node Coding	References	Coverage
Free Nodes\Off the ball movement	1	0.65%

Node Coding	References	Coverage
Free Nodes\Space awareness	1	0.99%

Node Coding	References	Coverage
Tree Nodes\Decision making\Off the ball movement	1	0.65%

Node Coding	References	Coverage
Tree Nodes\Problem solving\Space awareness	1	0.99%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Adjust	1	0.62%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Guard	3	3.40%

Total References	**19**
Coverage	**2%**
Total Users	**2**

Internals\Interviews\Control group\3rd interview C1 U4 **Document**

Node Coding	References	Coverage
Cases\Focus group\Traditional skill approach group	6	6.56%

Node Coding	References	Coverage
Free Nodes\Adjust	1	0.78%

Node Coding	References	Coverage
Free Nodes\On the ball movement	1	0.66%

Node Coding	References	Coverage
Tree Nodes\Decision making\On the ball movement	1	0.66%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Adjust	1	0.78%

Total References	10
Coverage	2%
Total Users	1

Internals\Interviews\Control group\4th interview C1 U4 **Document**

Node Coding	References	Coverage
Cases\Focus group\Traditional skill approach group	10	9.98%

Node Coding	References	Coverage
Free Nodes\Adjust	1	0.67%

Node Coding	References	Coverage
Free Nodes\Guard	1	1.41%

Node Coding	References	Coverage
Free Nodes\On the ball movement	2	1.23%

Node Coding	References	Coverage
Tree Nodes\Decision making\On the ball movement	2	1.23%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Adjust	1	0.67%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Guard	1	1.41%

Total References	18
Coverage	2%
Total Users	1

Internals\Interviews\Experimental group\1st Interview Ex1 U4 **Document**

Node Coding	References	Coverage
Cases\Focus group\TGf U group	7	9.27%

Node Coding	References	Coverage
Free Nodes\Able to identify obtacles	3	6.07%

Node Coding	References	Coverage
Free Nodes\Adjust	1	0.70%

Node Coding	References	Coverage
Free Nodes\Cover	1	2.58%

Node Coding	References	Coverage
Free Nodes\Guard	1	3.04%

Node Coding	References	Coverage
Free Nodes\Off the ball movement	2	3.81%

Node Coding	References	Coverage
Free Nodes\On the ball movement	1	0.70%

Node Coding	References	Coverage
Free Nodes\Space awareness	2	2.50%

Node Coding	References	Coverage
Free Nodes\Support	3	1.56%

Node Coding	References	Coverage
Free Nodes\Teamwork	1	3.04%

Node Coding	References	Coverage
Free Nodes\The right thing to do	3	8.12%

Node Coding	References	Coverage
Tree Nodes\Decision making\Off the ball movement	2	3.81%

Node Coding	References	Coverage
Tree Nodes\Decision making\On the ball movement	1	0.70%

Node Coding	References	Coverage
Tree Nodes\Decision making\The right thing to do	3	8.12%

Node Coding	References	Coverage
Tree Nodes\Problem solving\Able to identify obtacles	3	6.07%

Node Coding	References	Coverage
Tree Nodes\Problem solving\Space awareness	2	2.50%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Adjust	1	0.70%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Cover	1	2.58%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Guard	1	3.04%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Support	3	1.56%

Node Coding	References	Coverage
Tree Nodes\Teamwork\Teamwork	1	3.04%

Total References	43
Coverage	4%
Total Users	2

Internals\Interviews\Experimental group\2nd Interview Ex1 U4 **Document**

Node Coding	References	Coverage
Cases\Focus group\TGf U group	17	12.42%

Node Coding	References	Coverage
Free Nodes\Able to identify obtacles	5	5.32%

Node Coding	References	Coverage
Free Nodes\Adjust	2	2.17%

Node Coding	References	Coverage
Free Nodes\Cover	5	3.95%

Node Coding	References	Coverage
Free Nodes\Draw conclusion	5	5.87%

Node Coding	References	Coverage
Free Nodes\Exciting	1	0.47%

Node Coding	References	Coverage
Free Nodes\Fun	2	0.35%

Node Coding	References	Coverage
Free Nodes\Guard	4	3.32%

Node Coding	References	Coverage
Free Nodes\Off the ball movement	3	1.65%

Node Coding	References	Coverage
Free Nodes\On the ball movement	3	2.35%

Node Coding	References	Coverage
Free Nodes\Space awareness	2	3.22%

Node Coding	References	Coverage
Free Nodes\Strategy	5	5.92%

Node Coding	References	Coverage
Free Nodes\Support	1	0.42%

Node Coding	References	Coverage
Free Nodes\Teamwork	7	6.02%

Node Coding	References	Coverage
Free Nodes\The right thing to do	9	8.60%

Node Coding	References	Coverage
Tree Nodes\Decision making\Off the ball movement	3	1.65%

Node Coding	References	Coverage
Tree Nodes\Decision making\On the ball movement	3	2.35%

Node Coding	References	Coverage
Tree Nodes\Decision making\Strategy	5	5.92%

Node Coding	References	Coverage
Tree Nodes\Decision making\The right thing to do	9	8.60%

Node Coding	References	Coverage
Tree Nodes\Fun and Exciting\Exciting	1	0.47%

Node Coding	References	Coverage
Tree Nodes\Fun and Exciting\Fun	1	0.25%

Node Coding	References	Coverage
Tree Nodes\Problem solving\Able to identify obtacles	5	5.32%

Node Coding	References	Coverage
Tree Nodes\Problem solving\Draw conclusion	5	5.87%

Node Coding	References	Coverage
Tree Nodes\Problem solving\Space awareness	2	3.22%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Adjust	2	2.17%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Cover	5	3.95%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Guard	4	3.32%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Support	1	0.42%

Node Coding	References	Coverage
Tree Nodes\Teamwork\Teamwork	7	6.02%

Total References	124
Coverage	4%
Total Users	1

Internals\Interviews\Experimental group\3rd Interview Ex1 U4 **Document**

Node Coding	References	Coverage
Cases\Focus group\TGf U group	19	18.93%

Node Coding	References	Coverage
Free Nodes\Able to identify obtacles	5	8.49%

Node Coding	References	Coverage
Free Nodes\Adjust	2	1.79%

Node Coding	References	Coverage
Free Nodes\Cover	2	4.72%

Node Coding	References	Coverage
Free Nodes\Draw conclusion	2	2.93%

Node Coding	References	Coverage
Free Nodes\Guard	1	1.49%

Node Coding	References	Coverage
Free Nodes\Off the ball movement	2	3.27%

Node Coding	References	Coverage
Free Nodes\On the ball movement	4	5.83%

Node Coding	References	Coverage
Free Nodes\Space awareness	6	5.29%

Node Coding	References	Coverage
Free Nodes\Strategy	6	9.44%

Node Coding	References	Coverage
Free Nodes\Support	3	2.21%

Node Coding	References	Coverage
Free Nodes\Teamwork	5	5.33%

Node Coding	References	Coverage
Free Nodes\The right thing to do	7	10.59%

Node Coding	References	Coverage
Tree Nodes\Decision making\Off the ball movement	2	3.27%

Node Coding	References	Coverage
Tree Nodes\Decision making\On the ball movement	4	5.83%

Node Coding	References	Coverage
Tree Nodes\Decision making\Strategy	6	9.44%

Node Coding	References	Coverage
Tree Nodes\Decision making\The right thing to do	7	10.59%

Node Coding	References	Coverage
Tree Nodes\Problem solving\Able to identify obtacles	5	8.49%

Node Coding	References	Coverage
Tree Nodes\Problem solving\Draw conclusion	2	2.93%

Node Coding	References	Coverage
Tree Nodes\Problem solving\Space awareness	6	5.29%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Adjust	2	1.79%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Cover	2	4.72%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Guard	1	1.49%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Support	3	2.21%

Node Coding	References	Coverage
Tree Nodes\Teamwork\Teamwork	5	5.33%

Total References	**109**
Coverage	**6%**
Total Users	**2**

Internals\Interviews\Experimental group\4th Interview Ex1 U4	**Document**

Node Coding	References	Coverage
Cases\Focus group\TGf U group	22	22.48%

Node Coding	References	Coverage
Free Nodes\Able to identify obtacles	13	16.48%

Node Coding	References	Coverage
Free Nodes\Adjust	7	7.30%

Node Coding	References	Coverage
Free Nodes\Cover	2	2.55%

Node Coding	References	Coverage
Free Nodes\Draw conclusion	8	10.91%

Node Coding	References	Coverage
Free Nodes\Guard	4	4.12%

Node Coding	References	Coverage
Free Nodes\Off the ball movement	9	8.36%

Node Coding	References	Coverage
Free Nodes\On the ball movement	7	6.86%

Node Coding	References	Coverage
Free Nodes\Space awareness	2	2.14%

Node Coding	References	Coverage
Free Nodes\Strategy	11	12.04%

Node Coding	References	Coverage
Free Nodes\Support	5	5.97%

Node Coding	References	Coverage
Free Nodes\Teamwork	9	11.13%

Node Coding	References	Coverage
Free Nodes\The right thing to do	14	16.54%

Node Coding	References	Coverage
Tree Nodes\Decision making\Off the ball movement	9	8.36%

Node Coding	References	Coverage
Tree Nodes\Decision making\On the ball movement	7	6.86%

Node Coding	References	Coverage
Tree Nodes\Decision making\Strategy	11	12.04%

Node Coding	References	Coverage
Tree Nodes\Decision making\The right thing to do	14	16.54%

Node Coding	References	Coverage
Tree Nodes\Problem solving\Able to identify obtacles	13	16.48%

Node Coding	References	Coverage
Tree Nodes\Problem solving\Draw conclusion	8	10.91%

Node Coding	References	Coverage
Tree Nodes\Problem solving\Space awareness	2	2.14%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Adjust	7	7.30%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Cover	2	2.55%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Guard	4	4.12%

Node Coding	References	Coverage
Tree Nodes\Tactical Understanding\Support	5	5.97%

Node Coding	References	Coverage
Tree Nodes\Teamwork\Teamwork	9	11.13%

Total References	**204**
Coverage	**9%**
Total Users	**1**

Appendix T

Free notes summary

Type	Name	Sources	References
Free Node	Able to identify obtacles	5	28
Free Node	Adjust	8	17
Free Node	Cover	5	11
Free Node	Draw conclusion	3	15
Free Node	Exciting	1	1
Free Node	Fun	1	2
Free Node	Guard	7	16
Free Node	Off the ball movement	5	17
Free Node	On the ball movement	7	19
Free Node	Space awareness	6	16
Free Node	Strategy	3	22
Free Node	Support	5	13
Free Node	Teamwork	4	22
Free Node	The right thing to do	4	33

Appendix U

Letter from EPRD

BAHAGIAN PERANCANGAN DAN PENYELIDIKAN DASAR PENDIDIKAN
KEMENTERIAN PELAJARAN MALAYSIA
ARAS 1 - 4 BLOK E - 8,
KOMPLEKS KERAJAAN PARCEL E
PUSAT PENTADBIRAN KERAJAAN PERSEKUTUAN
62604 PUTRAJAYA

Telefon : 03-88843591
Faks : 03-88846579

Rujuk. kami : KP(BPPDP)603/5/JLD10 (225)
Tarikh 30 **Oktober 2009**

Puan Malathi A/P Balakrishnan **IC: 690902085316**
No 12 Jalan USJ/9E
47600 Subang Jaya
Selangor

Tuan/Puan,

Kelulusan Untuk Menjalankan Kajian Di Sekolah, Institut Perguruan, Jabatan Pelajaran Negeri dan Bahagian-Bahagian di Bawah Kementerian Pelajaran Malaysia

Adalah saya dengan hormatnya diarah memaklumkan bahawa permohonan tuan/puan untuk menjalankan kajian bertajuk:

Effects Of Teaching Games For Understanding Approach On Students Learning Outcome In Physical Education

diluluskan.

2. Kelulusan ini adalah berdasarkan kepada cadangan penyelidikan dan instrumen kajian yang tuan/puan kemukakan ke Bahagian ini. Kebenaran bagi menggunakan sampel kajian perlu diperoleh dari Ketua Bahagian / Pengarah Pelajaran Negeri yang berkenaan.

3. Sila tuan/puan kemukakan ke Bahagian ini senaskah laporan akhir kajian setelah selesai kelak. Tuan/Puan juga diingatkan supaya mendapat kebenaran terlebih dahulu daripada Bahagian ini sekiranya sebahagian atau sepenuhnya dapatan kajian tersebut hendak dibentangkan di mana-mana forum atau seminar atau diumumkan kepada media

Sekian untuk makluman dan tindakan tuan/puan selanjutnya. Terima kasih.

"BERKHIDMAT UNTUK NEGARA"

Saya yang menurut perintah,

(DR. SOON SENG THAH)
Ketua Sektor,
Sektor Penyelidikan dan Penilaian
b.p. Pengarah
Bahagian Perancangan dan Penyelidikan
Dasar Pendidikan
Kementerian Pelajaran Malaysia

Letter from State Education Department

جابتن ڤلاجرن سلاڠور

JABATAN PELAJARAN NEGERI SELANGOR

Jalan Jambu Bol 4/3E, Seksyen 4, 40604 Shah Alam
TEL : 03-5518 6200 FAKS : 03 55129704 E-mail jpnsel@sel.moe.gov.my
Website:http://www.moe.gov.my/jpnsel

Rujukan Tuan :
Rujukan Kami : JPNS/SPS/PPN/A25090/06/25/JLD 58/ (46)
Tarikh : 18/02/2010

MALATHI A/P BALAKRISHNAN.
NO.12 JALAN USJ4/9E,
SUBANG JAYA,
47600 SUBANG JAYA.
SELANGOR DARUL EHSAN.

Tuan,

EFFECTS OF TEACHING GAMES FOR UNDERSTANDING APPROACH ON STUDENTS LEARNING OUTCOME IN PHYSICAL EDUCATION

Dengan segala hormatnya perkara di atas dirujuk.

2. Jabatan ini tiada halangan untuk pihak tuan/puan menjalankan kajian / penyelidikan tersebut di sekolah-sekolah dalam Negeri Selangor seperti yang dinyatakan dalam surat permohonan.

3. Pihak tuan/puan diingatkan agar mendapat persetujuan daripada Pengetua / Guru Besar supaya beliau dapat bekerjasama dan seterusnya memastikan bahawa penyelidikan dijalankan hanya bertujuan seperti yang dipohon. Kajian / Penyelidikan yang dijalankan juga tidak mengganggu perjalanan sekolah serta tiada sebarang unsur paksaan.

4. Tuan/Puan juga **diminta menghantar senaskah hasil kajian** ke Unit Perhubungan & Pendaftaran Jabatan Pelajaran Selangor sebaik selesai penyelidikan / kajian.

Sekian, terima kasih.

"BERKHIDMAT UNTUK NEGARA"

"KEJUJURAN DAN KETEKUNAN"

Saya yang menurut perintah.

(MOHD SALLEH BIN MOHD KASSIM)
Penolong Pendaftar,
b.p. Pendaftar Sekolah Dan Guru,
Jabatan Pelajaran Selangor.

s.k. 1. Fail

(Sila catatkan nombor rujukan apabila berurusan dengan kami)

JABATAN PELAJARAN SELANGOR TERBILANG

Appendix V

Letter of Permission to use GPAI

UNIVERSITY OF MALAYA

PHA070045 student <malathi@siswa.um.edu.my>

Permission to use GPAI Instrument for my PhD research

2 messages

PHA070045 student <malathi@siswa.um.edu.my> Tue, Mar 29, 2011 at 2:36 PM

To: lgriffin@educ.umass.edu

Dear Dr. Griffin,

I am a PhD students from University of Malaya, Malaysia. Currently doing research on the "Effects of Teaching Games for Understanding on Students Game Performance Learning Outcome". I would like to get the permission to use the GPAI instrument in my research. This is a PhD study and the outcome of the study will be a good contribution to sports and physical education in my country. Your help is very much appreciated. Thank You.

Regards
Malathi Balakrishnan
Faculty of Education
University of Malaya
Kuala Lumpur
Malaysia

Linda Griffin <lgriffin@educ.umass.edu> Tue, Mar 29, 2011 at 8:15 PM

To: PHA070045 student <malathi@siswa.um.edu.my>

Malathi --

You have my permission and I am delighted you are going to use the instrument. best, Linda

From: PHA070045 student [malathi@siswa.um.edu.my]
Sent: Tuesday, March 29, 2011 2:36 AM
To: Linda Griffin
Subject: Permission to use GPAI Instrument for my PhD research
[Quoted text hidden]

Appendix W

Letter of Permission to use SIMS

UNIVERSITY OF MALAYA

PHA070045 student <malathi@siswa.um.edu.my>

Permission to use SIMS instrument for my PhD research

2 messages

PHA070045 student <malathi@siswa.um.edu.my> — **Mon, Mar 21, 2011 at 2:16 PM**
To: frederic.guay@fse.ulaval.ca

Dear Dr Frederic Guay,

I am a PhD student from University of Malaya, Malaysia. Currently doing research on primary students motivation of participation in game situation. I would like to get your permission to use the Situation Motivation Scale Instrument (16 item inventory) in my reseach. This is a PhD study and the outcome of the study will be a good contribution to sports and physical education in my country. Thanking you in advance.

Regards,

Malathi Balakrishnan
Faculty of Education
University of Malaya
Malaysia.

Frédéric Guay <Frederic.Guay@fse.ulaval.ca> — **Mon, Mar 21, 2011 at 6:40 PM**
To: PHA070045 student <malathi@siswa.um.edu.my>

of course you can use it. Good luck with your project.

De : PHA070045 student [malathi@siswa.um.edu.my]
Date d'envoi : 21 mars 2011 02:16
À : Frédéric Guay
Objet : Permision to use SIMS instrument for my PhD research
[Quoted text hidden]