Perception, Implementation and Mentoring: A Constructivist Approach to Pre-service Physical Education Teachers

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ABSTRACT

This work has three objectives: to examine the perceptions of pre-service Physical Education (PE) teachers on Teaching Games for Understanding (TGfU), including the factors influencing their perceptions; to investigate the teaching behaviors of pre-service teachers towards TGfU, including the determinants predicting such behaviors; and to explore the mutual interactions among pre-service teachers, cooperating teachers, and university supervisors during mentoring in TGfU teaching.

The first study (Chapter 3) examined pre-service teachers' perception of TGfU and factors influencing their perception of TGfU. Piaget's (1970) cognitive constructivism and Vygotsky's (1978) social constructivism provided a theoretical framework to steer the research purposes and design. By adopting a qualitative approach, 20 pre-service PE teachers (F=8, M=12) were recruited for individual semi-structured interviews. Data were analyzed using content analysis (Patton, 2002). Findings indicated TGfU is beneficial for students due to its propensity to make students feel fun, stimulate their thinking, and to be wholly inclusive. However, difficulties in understanding the nature of TGfU and implementing TGfU were encountered. Most of the pre-service teachers reported they would use TGfU in the future while some of them preferred to implement the skill-based approach during the teaching practicum due to the limited perceived support from cooperative teachers towards TGfU and short time of teaching practicum. Finally, individual factors including game knowledge, teacher beliefs, prior teaching and learning experience

and social factors such as government policy, school context, and support from peers, teacher educators, and cooperative teachers were identified to influence pre-service teacher perception of TGfU.

The second study (Chapter 4) investigated pre-service PE teachers' teaching behavior towards TGfU and the factors determining their teaching behavior towards TGfU. Theory of Planned Behavior by Ajzen (1991) was applied to guide the formulation of research purpose and design. The case study design (Merriam, 1998) was conducted with six pre-service teachers. Data collection consisted of documentation, systematic observation and semi-structured interviews. Data were analyzed using descriptive statistics and content analysis. Findings from the case studies indicate that pre-service teachers cannot implement the TGfU model effectively. Three groups of factors including attitude (pre-service teachers' attitude towards TGfU), subjective norm (the support from cooperating teachers, university supervisors, other school PE teachers, and students), and perceived behavior control (space, class time, equipments, game knowledge, TGfU conceptual understanding, students skill level, and classroom discipline) were identified to determine intention of pre-service teachers to adopt TGfU and subsequent TGfU teaching behavior. Among these factors, perceived behavior control was important because most of the pre-service teachers could not implement TGfU effectively mainly due to the constraints of resources and TGfU conceptual understanding.

The third study (Chapter 5) focuses on three groups of teachers including pre-service teachers, cooperating teachers and university supervisors. The purpose of

this study is to examine the awareness, attitude, and understanding of the three groups of teachers regarding TGfU, as well as to investigate the mutual interactions among them during mentoring in TGfU teaching. The theoretical framework of this study was based on situated learning theory (Wenger, 1998). Ten pre-service teachers, nine cooperating teachers, and three university supervisors were invited as participants. The written artifacts and semi-structured interviews (Patton, 2002) were conducted for data collection. Qualitative data were analyzed using data analysis (Patton, 2002). Findings indicate that there is a mutual interaction between pre-service teachers and their mentors. Mentoring provided by university supervisors has positive impact on the understanding and implementation of TGfU by pre-service teachers. Meanwhile, cooperating teachers and university supervisors also obtained benefits from mentoring in the TGfU teaching. However, the impact of mentoring provided by cooperating teachers on the implementation of pre-service teachers of TGfU is limited. The mutual interaction may be attributed to the following differences of the three groups in terms of awareness, attitude, and understanding towards TGfU including: first, pre-service teachers and university supervisors are more aware of TGfU compared with cooperating teachers due to relevant pedagogical courses and practical teaching experience; second, although the three groups of teachers all have positive attitudes towards TGfU, the reasons associated with such attitudes differ; and third, the three groups of teachers all hold constructivist views on TGfU but cooperating teachers seemed to be confused with the concept of TGfU.

Given the findings, The implication of this study include: first, government

should provide professional development on the PE curriculum innovation to pre-service teachers and TGfU training program to shool PE teachers; second, the major content and instructional strategies of the TGfU professional development program should be adjusted in universities, and third, the school environment context should be developed.

摘要

本論文之目的在於（一）研究職前教師對於領會教學法的感知以及影響其感知的因素；（二）研究職前教師運用領會教學法的教學行爲以及影響其教學行爲的因素；(三) 探索職前教師、學校指導教師以及大學導師在領會教學法的教學指導中的相互影響。根據研究目的，本研究共分爲三部分。

研究一（第三章）探討了職前體育教師對於領會教學法的感知以及影響其感知的因素。認知建構主義（Piaget, 1970）與社會建構主義(Vygotsky, 1978)構成了本研究的理論基礎。本研究採用了質性研究方法，二十位香港職前教師(男=12，女=8）接受了半開放式訪談(Merriam, 1998)。經過歸納內容分析法(Patton, 2002)，得出以下結論：（一）在對於領會教學法感知的方面，職前教師認爲領會教學法對於學生體育課的學習有正面的影響，可激發學生學習的興趣，加強主動思考的能力，以及提高運動技術水準低的學生參與運動的積極性。但職前教師在領會教學法的理解以及運用方面均遇到了困難。在二十位職前教師當中，大部分教師表示在將來的體育教學中會運用領會教學法，當中有少數教師則表示由於指導教師的反對以及實習期過短在教學實習期間不考慮選擇使用領會教學。（二）在影響因素方面，與認知以及社會建構主義一致，個人及社會因素影響了職前體育教師對領會教學法的感知。個人因素包括體育比賽相關知識、教學觀、教師過去的體育課學習以及教學經驗。社會因素則包括政府政策、同伴的支持、學校職業文化。

研究二（第四章）依據 Ajen (1991)的計畫行動理論，探討了職前教師運用領會教學法的教學行爲以及影響其教學行爲的因素。六位職前體育教師參與了本個案研究，通過文獻材料、系統觀察法以及半結構式訪談收集相關質化與量化資料。經過描述性統計以及內容歸納法，得出以下結論：（一）雖然職前教師對於

領會教學法持正面態度，大部分的職前教師不能有效地運用領會教學法。（二）三類因素包括個人行爲態度（職前教師對於領會教學法的態度）、主觀規範（學校指導教師、大學導師、其他的學校體育教師以及學生的支持）、以及認知行爲控制（場地、課堂時間、體育設施、班級人數、領會教學法的理論知識、學生的技術水準以及課堂紀律）影響了職前教師運用領會教學法的行爲意圖以及教學行爲。其中，大部分的職前教師由於學校資源的限制以及自身對於領會教學法的理解上的差異而導致了其無法有效的實行領會教學法。因此，在這些因素中，認知行爲控制的影響最爲重要。

研究三（第五章）目的在於探討香港職前體育教師、學校指導教師以及大學導師對於領會教學法的瞭解、態度以及理解程度，並瞭解三群教師在領會教學法指導過程中的相互影響。情境學習理論（Wenger, 1998）構成了本研究的理論架構。十位職前教師、九位學校指導教師以及三位大學導師參與了本研究。通過運用內容歸納法對於教師書面記錄材料以及半結構式訪談結果分析，本研究得出以下結論：在領會教學法的教學指導過程中，與情境學習理論一致，研究結果顯示職前教師與其導師之間相互影響。大學導師提供的指導促進了職前教師理解以及運用領會教學法，與此同時，大學導師與學校指導教師也認爲指導過程促進了其自身的職業發展。但與情境學習理論不同的是，職前教師認爲學校指導教師提供了的有關領會教學法的指導有限。職前教師與其導師之間的相互影響與三群教師對於領會教學法的瞭解、態度以及理解程度差異有關。這些差異包括：（一）職前教師以及大學導師對於領會教學法的熟悉程度高於學校指導教師；（二）雖然三群教師對於領會教學法都持有正面的態度，但是他們持有正面態度的原因卻各有不同；（三）三群教師都從建構主義角度出發看待領會教學法，但是學校指

導教師對領會教學法的理解有所偏差。

最後，根據研究結果，本研究建議：（一）政府應提供更多的機會促進職前教師對於體育課程改革的瞭解，同時應向在職體育教師提供領會教學法的課程以加強其對於此方法的理解與運用。（二）大學應調整領會教學法相關課程的主要教學內容以及教學策略。（三）中小學學校環境、資源有待改進。

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PUBLICATIONS

The findings presented in this thesis have been reported in the following publications and presentations.

Wang, C.L. & Ha, A.S. Mentoring in TGfU teaching: mutual engagement of pre-service teachers, cooperating teachers, and university supervisors. ***European Physical Education Review*** (In review).

Wang, C.L. & Ha, A.S. Three groups of teachers' awareness, attitude, and understanding towards a constructivist teaching approach. ***Journal of Teaching in Physical Education*** (In review).

Wang, C.L. & Ha, A.S. The theory of planned behavior: predicting pre-service teachers' teaching behavior towards a constructivist approach. ***Sport, Education and Society*** (In review).

Wang, C.L. & Ha, A.S. Factors influencing pre-service teachers' perception of Teaching Games for Understanding: A constructivist perspective. ***Sport, Education and Society*** (Accepted).

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Wang, C.L. & Ha, A.S (2008). The Teacher Development in Physical Education: A Review of the Literature. ***Asia Social Science***, *4*(12), 1-18.

Wang, C.L. & Ha, A.S. Pre-service Teachers' Responses to Teaching Games for Understanding and Factors Influencing Their Response. Paper presented at

International Association for Physical Education in Higher Education (AIESEP) Specialist Symposium, Florida, USA, September 24-26, 2009.

Wang, C.L.& Ha, A.S. Pre-service Teachers' Perception of Teaching Games for Understanding (TGfU): A Constructivist Perspective. Paper presented at ***The 20th Pan-Asia Congress of Sports & Physical Education***, Taipei, October 15-16, 2009.

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CHAPTER ONE

INTRODUCTION

Background

The issue on pre-service Physical Education (PE) teachers' perception, implementation, and mentoring is multi-layered because it involves teachers' instruction and development, student learning, and educational reform. To understand the complexity in education, its various contexts must be probed. It is necessary to consider the background from an international to a local context to arrive at the full picture.

Based on the study by Silverman and Ennis (1996), PE can be thought as three subareas including PE curriculum, PE teaching and PE teacher development. Extending it to the whole educational area, education is composed of three sections including curriculum, teaching and teacher development. Although they are distinct, it is found that these three subareas are related with each other when applied in educational innovation. The educational reform begins with the change of curriculum. With the innovation of curriculum, the teaching approaches are suggested for the curriculum goal. Teacher education is implemented to find the best ways to train pre-service teachers or in-service teachers to be familiar with the new curriculum and use the fresh teaching approach. Student learning is the core of the educational system because the reform of the other three subareas aims to improve student learning. Given the relationship among these three subareas, the international and local background is stated from three dimensions including curriculum, teaching and

teacher education as well as the influence of these three subareas on student learning.

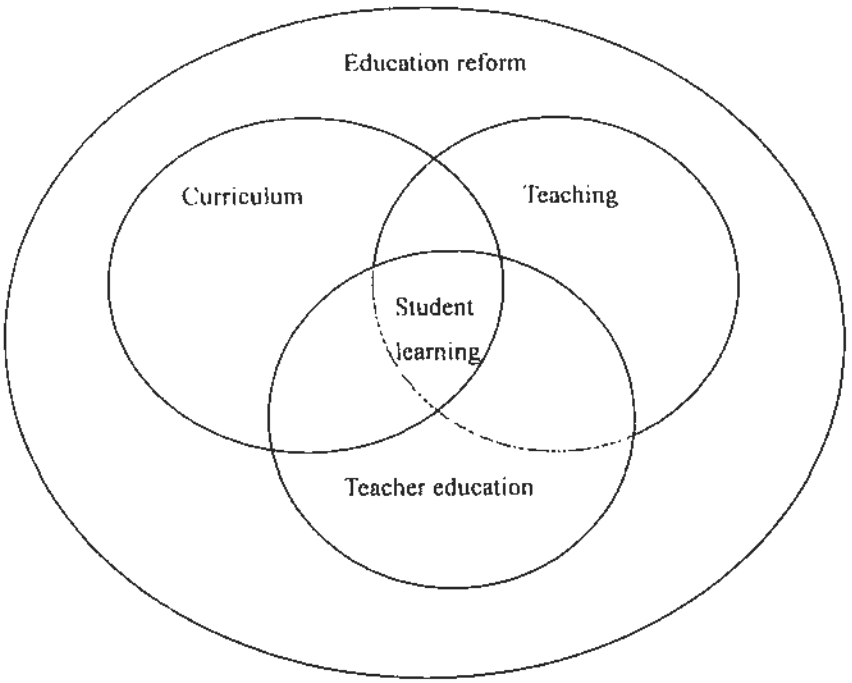


Figure 1. The relationship among subareas of education

International Context

Learning Theories and Educational Reform

Extensive literature has indicated that learning theories are connected with instructional activities because the former provides foundation for the design and development of instruction (Elkjaer, 2003; Freiberg, 1999; Jonassen & Land, 2000; Merriam, 2004; Taylor, 2007). Studies suggested that all the teaching methodologies can trace their roots from particular learning theories.

The past decade has witnessed the most substantive revolutionary changes in learning theory. First, learning is a process of meaning generation, not knowledge transmission. Second, contemporary learning theorists focus increasingly on the social nature of the meaning-making process. The third assumption on the meaning making shifts from the individual experience to the practice of the community. The change in

learning theories has influenced education significantly (Jonassen & Land, 2000).

In the early stage of the 20th century, behaviorism (Skinner, 1976) dominated educational theories, and research and learning were viewed as a process of stimulating learners to behave differently. Applied in education, behaviorist teaching methods tend to effectively reinforce response patterns through consistent repetition. However, behaviorism is limited because the concept of mental state is discarded, and the individual as the medium of learning is the theory's focus (Freiberg, 1999; Taylor, 2007). In response to this limitation, constructivism have emerged and replaced behaviorism as the most popular paradigm for understanding mental function in the late 20th century. In this new paradigm, the mental process is addressed instead of the behavioral response. Furthermore, the social nature of meaning making is emphasized in constructivism (Freiberg, 1999; Jonassen & Land, 2000).

Curriculum, Teaching, and Teacher Education

As a key component of the educational system, curriculum has undergone a massive reformation in past decades.

In western countries, the reform in curriculum is based on problem solving, student center, and creativity rather than skills mastery and application (Fullan, 1999; Garet, Porter, Desimone, Birman & Yoon, 2001; Hiebert et al., 1996; Huba & Freed, 2000; Jeffrey, 2003). Hiebert et al. (1996) proposed one principle for reform in curriculum and instruction, that is, students should be allowed to make the subject problematic. Curriculum and instruction should enable students to inquire, search for solutions, and resolve incongruities. Huba and Freed (2000) recommended that the

focus of educational innovation should be transformed from individual change to organizational reform. Furthermore, the learner-centered and constructivist teaching should be valued. Jeffrey (2003) stressed that creativity is part of the curriculum reform process. Educators should strive to teach creativity and to teach for creativity.

Similarly, the focus of curriculum in Asia countries has also transformed to students' generic skills and life-long learning (Mok, 2006). Taking China as an example, education since 1999 has evolved from a traditional rigid, close system to a more open one because of the changing economic and political system (Guan & Meng, 2007). According to the syllabus *Program of Basic Education Curriculum Reform (trial)*, the new curriculum aims to (1) develop students' social responsibility; (2) improve physical and mental health; (3) develop students' creativity, practical ability, and environmental awareness; and (4) master fundamental knowledge and promote life-long learning (Chinese Ministry of Education, 2002). Health, learning interest, student center, and individual differences are addressed in the new curriculum as well (Chinese Ministry of Education, 2002).

To meet the requirement of curriculum innovation, a host of student-centered teaching approaches emerged, premised on a constructivist philosophy to replace the teacher-centered teaching approach. For example, "teaching for understanding" is a typical constructivist model. This approach allowed student thinking to be the centerpiece of building meaning by eliciting ideas and providing ample guidance so that students could focus on content (McKeown & Beck, 2004; 郝明君，靳玉樂，張希希，2006). "Teaching for meaning", another constructivist approach, aimed to

promote understanding and build meaning in learning by allowing students to actively make sense of the academic learning experience (Knapp, 1995). A number of studies reported that the constructivist approach was beneficial for student learning because it enabled students to construct their own knowledge actively and achieve a positive learning effect (de Kock, Sleegers & Voeten, 2004; Fensham, Gunstone &White, 1994; Yuen & Hau, 2006; 熊生貴，2007；繽潤華，2007). For example, compared with the behaviorist approach, the constructivist instruction facilitated students' creation of their own knowledge as they were allowed to think over the problems together and generate original ideas. Students' performance in recalling, critiquing, and generating the knowledge gained in the constructivist teaching context was better than that in the behaviorist teaching context (de Kock, Sleegers, & Voeten, 2004; Yuen & Hau, 2006).

The radical reform created great challenges for teachers. To adapt to the new teaching approaches, teachers needed not only to offer useful information but likewise to be effective in understanding students, constructing and managing classroom activities, communicating well, applying technology, and reflecting on their practice and improving it continually (Darling-Hammond, 2006). Owing to the high requirement on teachers' knowledge and personal or professional skills, comprehensive literature revealed that although teachers generally supported the educational reform, many were not prepared to put teaching innovation into practice (Darling-Hammond, 2006; Elmore, Peterson & McCarthey, 1996; Garet et al, 2001; Grant, Peterson, & Shojgreen-Downer, 1996; Hargreaves, 2003; 鐘啓泉，崔允漷，張華，2001). Therefore, professional development of pre-service and in-service

teachers became a major focus of educational innovation (Darling- Hammond, 2006; Darling-Hammond & Bransford, 2005; Garet et al., 2001; Guskey, 2002). Pre-service teachers in particular needed more support because of the difficulties encountered during initial training (Calderhead & Shorrock, 1997; Villegas-Reimers, 2003).

PE Curriculum, Teaching, and Teacher Education

As a subject division of education, PE curriculum was reformed in most countries across the world.

In the US, for example, a new generation of curriculum models has been presented in recent years (Ennis, 2006). The goal of the new PE curriculum is to develop physically educated individuals who possess the knowledge, skills, and confidence to enjoy a lifetime of healthful physical activity instead of singularly educating the physical body. The national standards, sanctioned by the National Association for Sports and PE (NASPE, 2004), consists of six broad standards with defined objectives: (1) demonstrate competency in motor skills and movement patterns needed to perform a variety of physical activities; (2) demonstrate understanding of movement concepts, principles, strategies, and tactics as they apply to the learning and performance of physical activities; (3) participate regularly in physical activity; (4) achieve and maintain a health-enhancing level of physical fitness; (5) exhibit responsible personal and social behavior that respects the self and others in physical activity settings; and (6) value physical activity for health, enjoyment, challenge, self-expression, and/or social interaction (NASPE, 2004).

In England, the latest round of PE curriculum reform aims to deepen and

broaden students' knowledge, skills, and understanding. The PE curriculum helps students to (1) develop control of whole-body skills, select and use skills, tactics, and adapt to familiar and unfamiliar context; (2) understand how the components of competence combine, and apply them to produce effective outcomes; (3) improve creativity to solve problems and overcome challenges; and (4) develop healthy, active lifestyles (National Curriculum, 2007).

In Singapore, change was implemented in the past 10 years in the subject division (including PE), placing greater emphasis on the individual students and the various talents they possess. PE curriculum was required to create more opportunities for students to engage in critical thinking and problem solving (Wright, McNeill, Fry, Tan, Tan & Schempp, 2006). According to the PE Syllabus (Primary, Secondary, Pre-University) (2006), the program sought to develop each student's ability to accomplish the following: (1) perform and enjoy a variety of physical activities with understanding; (2) develop and maintain physical health and fitness through participation in physical activities; (3) demonstrate positive self-esteem through body awareness and control; (4) understand and apply thinking skills to PE; (5) demonstrate the spirit of fair play, team work, and sportsmanship; and (6) acquire safe practices during physical activities (Ministry of Education, 2006).

In China, the latest round of PE curriculum reform was conducted in 2002. According to the *Primary and Secondary PE Curriculum Standard*, the new curriculum was designed to help students achieve the following: (1) develop physical health and fitness; (2) improve mental health; (2) develop the ability of social

adaptability; and (3) obtain the knowledge and skills related to health (Chinese Ministry of Education, 2002). Meanwhile, the new curriculum addressed the students' lifelong PE awareness, learning interest, and individual differences (Chinese Ministry of Education, 2002).

Based on these government documents (e.g., Chinese Ministry of Education, 2002; NASPE, 2004; National Curriculum, 2007), there are common features in the PE curriculum of these different countries despite the differences in content and direction.

(1) Three domains — psychomotor, cognitive, and affective — are incorporated into the PE curricula of different countries. Instead of solely emphasizing motor skills, various purposes including the improvement of students' knowledge, good health, thinking, creativity, lifelong learning, and problem solving were embraced by the current PE curricula. This is in line with the recommendation by Penney and Jess (2004), which demonstrated that multiple dimensions like skills, knowledge, and understanding should be embraced by the PE curriculum.

(2) All PE curricula are related to social and interpersonal behaviors. Wright, MacDonald and Burrows (2004) illustrated that a socio-cultural perspective underpinned most syllabi in a number of ways, ranging from the knowledge of social determinants (e.g., participation in a physical activity) to advocacy for social justice. The current PE curriculum obviously addressed not only individual knowledge and skills development but, more importantly, the improvement of students' social behavior and social responsibility (Ennis, 2006; Hellison, Cutforth,

Kallusky, Martinek, Parker & Stiehl, 2000; Wright et al., 2004).

(3) Problem solving, lifelong learning, and health issues are major concerns of all the PE curricula. This is in line with the studies which presented lifelong learning and health as a basis for contemporary PE discourses (Cothran, 2001; Penney, 2008; Penney& Jess, 2004)

To meet the curricular objectives, a variety of teaching styles and strategies are required (Penney& Evans, 1999). For example, in the US, a number of constructivist teaching approaches are designed and tested in which teachers extended guidance and support to students as they developed their understanding of the content (Ennis, 2006). In Singapore, a conceptual (or tactical) approach to teaching games is provided by the PE curriculum development branch of the Ministry of Education to promote students' critical thinking (Wright et al., 2006).

As a constructivist approach, Teaching Games for Understanding (TGfU) was initially developed by Bunker and Thorpe (1982) as a shift from skills- or content-based to a student-centered approach linking tactics and skills within a game context. It maintained focus on students' learning in games education on the tactical understanding of game appreciation, tactical awareness, decision-making, and skill execution (Light & Fawns, 2003). A group of studies were conducted to compare the TGfU approach with the traditional skill-based approach, based mainly on skill development and cognitive ability (French, Werner, Rink, Taylor & Hussey, 1996a, 1996b; Turner & Marninek, 1999). The findings showed no significant difference in the areas measured between groups using either method. However, other research

conducted by Light (2003) and Light and Georgakis (2005) consistently found that the TGfU model engendered greater enjoyment and empowerment, increased engagement and increased physical activity levels in participants. Grehaigne, Richard and Griffin (2005) also compared game performance between two groups using the tactical and the technical approach over a 12 week period in basketball, which found that game performance was maintained or improved in the tactical group while that of the technical group declined slightly.

Hong Kong Context

Education Reform and PE Curriculum

Since the 1990s, education reform has been a popular topic for discussion in Hong Kong academic circles. The reform can be interpreted as an effort to improve the quality of education (Education Commission, 1994, 1997). One of the most influential policy documents, Quality School Education: Education Commission Report No. 7 (Education Commission, 1997), has accomplished much to direct the development of education in Hong Kong. Quality indicators, quality assurance, quality management, quality incentives, and quality teachers have been given emphasis because of the report. The notable efforts initiated by the Hong Kong Government's Education Department include the implementation of a target-oriented curriculum in primary schools, the modularization of curriculum and creation of special curricula for the gifted and the less able, the introduction of mastery learning as a teaching strategy in schools, and the adoption of a "whole school approach" to school guidance and counseling (Chan, 2000). After 2000, the education reform in

Hong Kong focused on the shift from teacher-centered to learner-focused curriculum. Students' generic skills, all-around development, and lifelong learning became the key component of curriculum reform during this period. According to the reform proposal for the Education System in Hong Kong (Education Commission, 2002), except for delivering subject knowledge, teachers were expected to help students develop their generic skills to enhance their ability in collaboration, communication, creativity, and critical thinking. In 2001, the Curriculum Development Council (CDC) developed a report in which the general direction and aim for education reform in the next decade were outlined. This report suggested that the emphasis of the reform should be on students' all-round development and lifelong learning. Furthermore, it outlined key learning areas (KLA) that would provide the curriculum's framework.

Meanwhile, PE plays a role that is in line with the new initiatives of educational reform. Over the past decade, the Hong Kong government has initiated a series of PE curriculum reforms. The earliest PE curriculum innovation began in the 1980s. To include the subject in the school curriculum, the Curriculum Development Council (CDC) officially initiated the syllabi for primary (CDC 1995) and secondary (CDC 1988) schools. The secondary syllabus (CDC, 1988) stated, "PE is a part of the school curriculum. Its overall aim is to help students develop an active lifestyle and acquire good health, physical fitness, and bodily coordination by means of teaching them various sports skills and knowledge. It further helps to promote the qualities of desirable moral behaviors, cooperation in communal life, the ability of making decisions, and the appreciation of aesthetic movements" (p.5). CDC (1995) suggested

that the overall objectives of PE in the school curriculum were to help students develop an active lifestyle and to acquire good health, physical fitness, and bodily coordination by means of teaching them various sports skills and knowledge. These documents provided guidance for teachers in Hong Kong to implement their teaching. From these documents, it is evident that health and active lifestyle is addressed during the reform in the 1980s and 1990s.

Despite these reforms, PE has remained marginalized for decades in the face of the growing emphasis on academic subjects (Fu, 1988, 1990; Johns, Ha & Macfarlane, 2001; Morris & Sweeting, 1991). In most schools, the PE curriculum is regarded as the means to produce successful wining teams, raise the schools' reputation, and help maintain school discipline (Ha, 1999; Ha, Wong, Sum & Chan., 2008; Johns & Dimmock, 1999; Johns, Ha & Macfarlane, 2001). Only 40 to 70 minutes are allocated to PE per week (CDC, 1988, 1995). PE curriculum is also devaluated by the parents' worry that it would interfere with their children's academic studies (Johns & Dimmock, 1999).

In recent years, the PE curriculum has gained social importance and awareness in the face of increasing obesity and inactivity among students. Following the outbreak of the Severe Acute Respiratory System (SARS) in 2003, public awareness on health through an active lifestyle became a major concern among Hong Kong residents (Sum & Dimmok, 2005). To promote students' concern for active lifestyle and motivate them to participate in physical activity, a curriculum reform was conducted in Hong Kong in 2002. In this round of reform, PE was introduced as one

of the curriculum's eight key learning areas (including Chinese Language Education, English Language Education, Mathematics Education, Technology Education, Science Education, Personal, Social and Humanities Education, Arts Education, and PE) in Hong Kong (CDC, 2002). According to the PE for Primary 1 to Secondary 3 syllabus (CDC, 2002), a PE class constitutes at least 5% to 8% of the total lesson time. It is important to note that apart from developing students' knowledge and motor skills through physical activity, encouraging them to have active and healthy lifestyles, and fostering desirable moral behavior, CDC (2002) stated that the emphasis of change should be on promoting generic skills such as collaboration, communication, critical thinking, problem solving, and creativity. In other words, the reform is an attempt to transform PE from a skills-oriented discipline to a student-centered and comprehensive health-related curriculum (Ha, et al., 2004).

The most recent round of PE curriculum reform began in 2005 with the launch of the new 3+3+4 educational reform system. This new senior secondary education system is expected to be implemented in 2009. According to the PE Curriculum and Assessment Guide (Secondary 4-6), the curriculum aims to help students (1) acquire the knowledge and skills, and develop the values and attitude necessary to pursue an active and healthy life; (2) become responsible citizens; (3) integrate physical skills with theoretical learning; (4) construct knowledge by linking the understanding they develop in PE, sports, and recreation with those in other disciplines; (5) apply theories to enhance performance or participation in PE, sports, and recreation; (6) develop positive sports-related values and attitude; and (7) develop the generic skills for

lifelong learning. This round of reform is different from the reforms in the 1980s and 1990s. First, unlike the curriculum reforms in the 1980s and 1990s, emphasis in this round of curriculum reform is on how PE could become an examination subject contributing to students' qualification for admission to post-secondary programs (CDC & HKEAA, 2007), implying that PE has gained more social importance and awareness. Second, the senior secondary academic structure is supported by a flexible, coherent, and diversified senior secondary curriculum, which aims to cater to students' various interests, needs, and abilities (CDC & HKEAA, 2007). Finally, the new senior secondary PE curriculum included general and elective subjects that led to the Hong Kong Diploma of Secondary Education (CDC & HKEAA, 2007). This indicates that the curriculum focuses more on students' individual differences and learning interest.

PE Teaching

The education curriculum challenges each subject division to introduce new strategies and/or approaches that would promote generic skills for students. First, government policy on educational reform presages a shift from a teacher-centered to a learner-focused approach. Second, in addition to knowledge subjects such as English, Chinese, and Mathematics, teachers are generally expected to develop other generic skill requirements to enhance students' abilities for collaboration, communication, creativity, and critical thinking. Furthermore, teachers are advised to employ different teaching strategies to meet the different abilities, interests, and needs of students and achieve the different purposes of learning specified under the educational reform

movement (CDC, 2002; CDC & HKEAA, 2007). PE is no exception.

The traditional skill-based approach is used in PE teaching in Hong Kong. The emphasis of this approach is on promoting ways to learn and perform skills and techniques such as passing and catching, serving, and shooting. However, it is criticized extensively because of its focus on physical capabilities rather than on understanding of the overall dynamics of game play (Cruz, 2000; Li & Cruz, 2006; Liu, 1997, 2004). It is obvious that this approach is not in line with the requirements of the new PE curriculum, which focuses on students' generic skills.

To address the gap, PE teaching is advised to shift from direct teaching, which addresses the mastery of techniques, to a facilitative style of teaching where the emphasis is on students' interest and needs (CDC, 2002; CDC & HKEAA, 2007). Meanwhile, the CDC (2002) suggested that learning and teaching PE should be modified to cater to student diversity. A number of guiding principles should be considered for effective teaching in classes such as teaching for understanding, building on prior knowledge and experience, teaching for independent learning, enhancing motivation, using resources effectively, maximizing engagement, catering to learner differences, and so on. Furthermore, three learning and teaching approaches – direct instruction (e.g., skills-oriented approach), enquiry approach (e.g., TGfU), and knowledge co-construction -- were recommended for use in the PE curriculum (CDC & HKEAA, 2007). Based on these guiding principles, various new pedagogical models are introduced in primary and secondary schools in Hong Kong, examples of which are the Sports Education model (Chan & Alberto, 2006; Siedentop,

1992) and spectrum of teaching styles (Mosston & Ashworth, 1990).

PE Teacher Education

With the continuous proposal of education and PE reform (CDC, 2002., CDC & HKEAA, 2007), teachers are required to develop relevant knowledge in preparation for the reform. As what Ha et al. (2004) suggested, PE teachers must have the knowledge and pedagogical skills to help students improve their generic skills and enhance their interpersonal skills and knowledge at the same time. However, research results revealed that PE teachers in Hong Kong remained faced with the challenge of curriculum reform, and they could experience difficulty in achieving the new teaching and learning objectives proposed by the government due to underdeveloped knowledge and pedagogical skills (Ha et al., 2004; Ha et al., 2008; Johns et al., 2001).

For pre-service teachers in Hong Kong, the professional development program is provided by the Hong Kong Institute of Education (HKIE) and the Chinese University of Hong Kong (CUHK). Only a small portion of programs come from other local or foreign universities providing additional post-graduate diploma majoring in PE (Sum & Dimmok, 2005). For in-service teachers in Hong Kong, the new mandatory policy is issued by the Education and Manpower Bureau to require each teacher to enroll in a minimum of 150 hours of Continued Professional Development (CPD) programs over a three-year cycle (EMB, 2006). The policy's aim is to ensure professional growth through lifelong learning and sharing of working experience in this dynamic subject (ACTEQ, 2003).

Ha et al. (2004) revealed that Continuous Professional Development (CPD)

programs were deemed helpful and important because teachers needed continuous support from professional agencies outside the school framework. Participants believed that in-service training could equip them with the skills to implement a PE program in line with the curriculum reform. The in-service training program was deemed practical and effective, creating excellent communication among schoolteachers, education experts, and government curriculum officers. However, Wong and Louise (2002) reported that the current academic sports-science experience appeared to be less useful than pedagogical orientation for PE teachers. Therefore, the researchers suggested that a professional development program and balance between theories and practice should be considered in the future.

Purposes of the Study

Three studies are included in this thesis and the specific purposes of each study are addressed as bellow.

Study I, Factors influencing pre-service teachers' learning of TGfU: a constructivist perspective

(1) To examine pre-service teachers' perception of TGfU

(2) To identify factors influencing pre-service teachers' perception of TGfU

Study II, The theory of planned behavior: predicting pre-service teachers' behaviors towards TGfU

(1) To examine teaching behaviors of pre-service teachers towards TGfU

(2) To identify the determinants of pre-service teachers' teaching behaviors towards TGfU using the theory of planned behavior

Study III, Mentoring in TGfU teaching: Mutual Engagement of Pre-service Teachers, Cooperating Teachers, and University Supervisors

(1) To examine the awareness, attitude, and understanding towards TGfU of pre-service teachers, cooperating teachers and university supervisors

(2) To investigate the interaction between pre-service teachers and mentors including cooperating teachers and university supervisors during the mentoring in TGfU teaching

Significance

This research is significant because it fills the existing research gaps in both theoretical and practical aspects.

This thesis enhances the research on TGfU and PE teacher development from the theoretical perspective. Reviews on PE teacher development in the past 20 years reported that few studies have focused on the professional development of pre-service PE teachers (Wang & Ha, 2008). This study addressed this deficiency by examining the professional development of pre-service teachers from their learning, and its implementation to the mentoring experience in TGfU teaching. Light and Butler (2005) suggested that although several studies have identified the issues contributing to the teachers' positive or negative responses on TGfU, these issues concentrated on the individual and personal perspectives. More attention should then be accorded to the social dimensions of learning or using TGfU. The first study addressed this deficiency by examining the factors influencing pre-service teachers' perception of TGfU from both individual and social perspectives. Wright et al. (2006) pointed out

that little is known about pre-service teachers' implementation of TGfU. It was recommended that future study may be conducted on pre-service teachers' ability and intention to use the TGfU approach (Wright et al., 2006). The second study is expected to bridge these research gaps by providing useful insights on pre-service teachers' implementation as well as by increasing the understanding on the way that some factors enhance or inhibit pre-service teachers' implementation of TGfU. Furthermore, Wright and Smith (2000) reviewed the literature detailing mentoring programs and pointed out that there is a dearth of studies on the mentoring within the realm of PE. Few studies described the pre-service teachers' own experience in mentoring because previous studies used questionnaires (Dodds, 2005) and little is known about the mentoring process from the perspective of both mentors and protégés (Ayers & Griffin, 2005). The findings from the third study of this thesis are expected to enhance the existing understanding of PE mentoring by using the qualitative method and exploring the mentoring experience in TGfU teaching from the perspective of pre-service teachers and mentors including cooperating teachers and university supervisors.

The findings from this research will be able to: (1) provide grounds and direction for establishing effective professional development program for pre-service teachers, which may, in turn, lead to more effective PE programs for students; (2) offer supportive evidence for the government to adjust the policy for improving PE teachers' acceptance and implementation of TGfU in Hong Kong; (3) help inform mentoring practice in teacher education; and (4) present the evidence that will support

the collaborative learning among pre-service teachers, cooperating teachers, and university supervisors, which will enhance the professional development of these three groups of teachers.

Operational Definition

TGfU

TGfU is a learner- and game – centred approach to sport-related games learning with strong ties to a constructivist approach to learning (Griffin & Butler, 2005).

Perception

Perception is the process by which information acquired from the environment is transformed into experience of objects and events (Roth & Frisby, 1986). In this study, it refers to teachers' response, views, and opinions of the learning of TGfU.

Mentoring

Mentoring is a nurturing process in which a more skilled or more experience person provide supervision, encouragement, and counsels for a less skilled or less experienced person for the purpose of promoting the latter's professional and or personal development (Kerry & Mayes, 1995).

Protégé

Protégé refers to a new or less experienced (than the mentor) member of an organization. Various terms have been used to describe the protégé such as mentee, trainee, intern, candidate or learner (Kram, 1985)

Mentor

A member of organization who is experienced, knowledgeable, and committed to

providing person and/or professional development support to the protégé (Kram, 1985; Mentors Peer Resources, 2001).

Beginning teacher

A beginning teacher is a teacher having less than one school year of public school, or accredited private school, classroom teaching experience (Villegas-Reimers, 2003).

Pre-service teacher

College or graduate student who is studying in a teacher education program in order to qualify for a degree in education (NCATE, 2002)

In-service teacher

For the purpose of this study, an in-service teacher refers to be a teacher who has graduated from the education program and begun the school teaching.

Cooperating teacher

In this study, a cooperating teacher is the school teacher responsible for supervising the work of a pre-service teacher

University supervisor

In this study, the term of "university supervisor" is used to identify those faculty members in the teacher preparation programs in the college of education who provide supervision on pre-service teachers' work.

Delimitations

(1) This is a two-year research on the professional development of pre-service teachers (from 2008 to 2010). A group of 20 pre-service teachers was followed from the learning process of TGfU (attending a TGfU program, from September

to December 2008), to the implementing process of TGfU (primary school teaching practicum, from May to June 2009), and finally to the mentoring process (primary and secondary school teaching practicum, from January to March 2010).

(2) A group of 20 pre-service teachers was focused in this thesis. They were invited as respondents in the first study. Six pre-service teachers were purposively selected from the group to participate in the second study. Ten pre-service teachers selected from the group and their mentors (nine cooperating teachers and three university supervisors) were involved in the third study.

(3) This research aims to represent a Hong Kong perspective. It would only examine pre-service teachers, cooperating teachers, and university supervisors in Hong Kong.

(4) All interviews in the three studies were conducted at the end of the TGfU program and the teaching practicum, while the systematic observation with six pre-service teachers in the second study was conducted during the pre-service teachers' three-week teaching practicum.

Limitations

(1) Given time and resources constraints, only 20 pre-service teachers, nine cooperating teachers, and three university supervisors were invited as respondents of this thesis. The research results are difficult to be applied in the general population because of the limited sample size.

(2) Self report measures were used for the collection of interview data. Hence, responses rely heavily on the participants' honesty in answering the questions.

(3) Coding and data may be misinterpreted even if qualitative research designs provide a richness of data unattainable with other methods. The researcher employed various procedures, including triangulation of data, member checking, and peer debrief.

(4) Participants were observed on the teaching of three lessons only, similarly a few quantifiable teaching behaviours were focused on.

(5) There are some disadvantages on using video equipments for research. For instance, video taping is subject to the possibility of equipment failure, which could result in the loss at least a part of a session. The other one is on the higher chance of subject reactivity compared with a live observation.

CHAPTER TWO

LITERATURE REVIEW

Introduction

A large body of literature on PE teaching and teacher development contributes an extensive platform for the presentation of the thesis. This chapter thoroughly discussed both theoretical and empirical studies. It aims to provide an overall picture as to how research in this filed proceeds.

A general-to-specific approach was adopted to review the theoretical literature. It was started by discussing the theories supporting PE teaching and teacher development. Based on the extensive literature review, the theoretical framework was identified and specified to back up the three studies of this thesis.

The empirical literature was reviewed based on the research questions of the thesis. The first section "*A Historical Overview of TGfU*" can help one better understand TGfU, which aims to establish a basis and context for the discussion of the empirical literatures on TGfU. The following three sections are linked with such research themes of three studies as perception, implementation, and mentoring. Therefore, the second section of empirical literature review "*Perception*" focuses on the studies on "*PE Teachers' Perception of TGfU*" and "*Factors Influencing Teachers' Perception of New Approaches*". The third section "*Implementation*" includes the research on "*PE Teachers' Implementation of TGfU*" and "*Factors Influencing Teachers' Implementation of New Approaches*". These two sections provided the supportive evidence and context for Study one and two. In these two

sections, the researcher reviewed the relevant literature from the perspective of pre-service and in-service teachers in attempt to identify the difference of these two groups of teachers' perception and implementation of TGfU and try to find out the existing research gaps. Finally, based on the major theme of Study three, the fourth section "*mentoring*" was discussed. Furthermore, this literature was categorized as the mentoring in teacher education and mentoring in PE teacher education, which identifies the research recommendation and offer the guidelines for Study three.

Theoretical Literature

Due to the focus of this thesis on the research area of PE teaching and teacher development, the theoretical basis supporting studies on PE teaching and teacher development was reviewed in this section. Then the theoretical framework used in this research was identified.

A couple of researchers have connected theories with their studies on PE teaching and teacher development. This review of related literature suggests that most current explanation describing PE teaching and PE teacher development is grounded in one of seven theories: constructivism, situated learning theory, teacher change theory, developmental stage theory, cognitive flexibility theory, social cognitive theory, and the theory of planned behavior. In these seven theories, two teaching theories focused on instruction, including teacher change theory and development stage theory, while the other five theories - constructivism, situated learning theory, cognitive flexibility theory, social cognitive theory, and the theory of planned behavior - are classified as learning theory.

Teaching Theory

Teacher change theory and development stage theory focus on instruction. Both of these two theories reflect teacher change and growth. Guskey (2002) proposed a model of teacher change which indicated that the relationship among change in teachers' classroom practices, change in student learning outcomes, and change in teachers' beliefs and attitude are highly complex and reciprocal. Teachers change their attitude and beliefs primarily because they gain evidence on improvements in student learning rather than because they have persuaded them to change their practices. The teacher change theory is applied in the study by Armour and Yelling (2007) to link teacher development with student learning. The developmental stage theory is composed of four developmental theories: Hunt's (1966) theory of conceptual levels, Kohlberg's (1984) moral judgment theory, Loevinger's (1976) personality development theory, and Fuller's (1969) teacher concerns theory. It describes the evolution of teaching in sequential stages towards mastery. This theoretical framework assumes that an individual's actions are governed by mediating cognitive processes that vary based on the age and the stage of individual development. This theory is linked with the influence of teaching experience on PE teacher development in two studies by Rikard and Knight (1997) and Senne and Rikard (2004).

Learning Theory

Five learning theories including constructivism, situated learning theory, cognitive flexibility theory, social cognitive theory, and the theory of planned behavior are identified to support the research on PE teacher development and

teaching. This is in line with the literatures reporting that learning theories are connected with teachers' professional development and instructional activities because learning theory presents the foundation for the design and development of instruction (Elkjaer, 2003; Freiberg, 1999; Jonassen & Land, 2000; Merriam, 2004).

These six learning theories are related to each other. As Figure 2 shows, there are three main categories or philosophical frameworks where learning theories fall: behaviorism, cognitivism, and constructivism. In the early part of the 20th century, behaviorism dominated learning theories and research. Skinner's (1976) behaviorism is based on behavior changes and it focuses on a new behavioral pattern being repeated until it becomes automatic. Behaviorists view learning as a process of stimulating learners to behave differently. However, behaviorism did nothing to address what happened inside learners' mind. In response to this limitation, cognitive psychology emerged in the 1950s and replaced behaviorism as the most popular paradigm for understanding mental function in the late 20th century. Cognitivism is based on the thought process behind the behavior. According to cognitivism, the change in behavior which could be observed is an indicator to what is going on in the learner's head. Constructivism (Piaget, 1970) takes the cognitivist focus on the mind one step further. It is based on the premise that we all construct our own perspective of the world, based on individual experiences and schema. Under the category of constructivism and behaviorism, these six theories are related to each other, as showed in the next section.

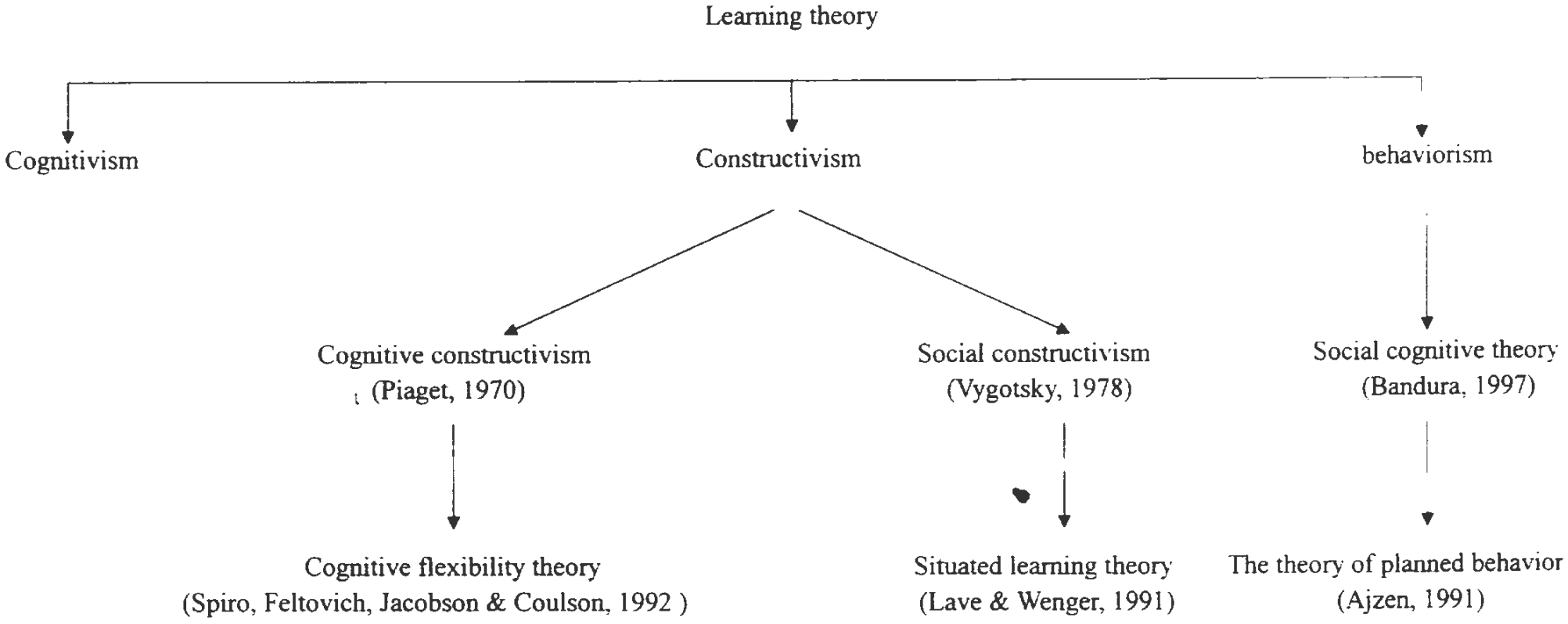
Piaget's (1970) cognitive constructivism and Vygotsky's (1978) social

constructivism are two major lines under the category of constructivism. Cognitive constructivism emphasizes learning as a process of self-organization (Piaget, 1970), while social constructivism posits that social experience shapes the ways of thinking about and interpreting the world (Vygotsky, 1978). Meanwhile, constructivism represents one of the big ideas in education which has many variations. Cognitive flexibility theory and situated learning theory are components of a broader constructivist theory and are developed from cognitive and social constructivism respectively (Brown, Collins & Duguid, 1989; Spiro, Feltovich, Jacobson & Coulson, 1992). Building upon Piaget's (1970) cognitive constructivism, cognitive flexibility theory (Spiro et al., 1992) focuses on the nature of learning in complex and ill-structured domains. The theory is largely concerned with the transfer of knowledge and skills to different situations. For this reason, emphasis is placed on the presentation of information from multiple perspectives and the use of many case studies that present diverse examples (Spiro et al., 1992). Developing from social constructivism, situated learning theory also emphasizes the importance of the social context. This theory demonstrates that inquiries into learning and cognition must take a serious account of social interaction and that knowledge is inseparable from the contexts and activities in which it develops (Brown et al., 1989; Lave & Wenger, 1991; Wenger, 1998). This group of learning theories has been extensively applied in the research on PE teaching and teacher development. Cognitive and social constructivism is applied to examine PE teachers' knowledge development and learning process (Rovegno & Bandauer, 1997b), as well as the effectiveness of the

professional learning communities (Armour & Yelling, 2007). A situated learning perspective offers a compelling framework for some instruction models, for example, sport education and TGfU (Dyson, Griffin & Hastie, 2004; Kirk & Macdonald, 1998), beginning teachers' mentoring process (Patton, et al., 2005), and collaborative learning (Duncombe & Armour, 2004). Cognitive flexibility theory, in the study by Bolt (1998), formulated to support the use of the case discussion to promote pre-service teachers' cognitive growth.

Under the category of behaviorism, social cognitive theory and the theory of planned behavior are related to each other. In behaviorism, individual learning is passively influenced by the environment (Skinner, 1976). Extending behaviorism, the social cognitive theory (Bandura, 1997) rejects the notion that behavior is purely a function of environmental influences or of personality traits (Bandura, 1997). According to Bandura (1997), human agency is the result of both social and self influences. People are proactive agents in their own lives instead of passive recipients of social influence or driven by unalterable personality traits. As an overarching meta-theory, social cognitive theory provides a broad framework for the theory of planned behavior (Ajzen, 1991). The theory of planned behavior posits that both behavior intention and perceived behavior control are determinants of behavior. Behavior intentions, however, are impacted by social influence (e.g., subjective norm) and individuals' attitude. Social cognitive theory and the theory of planned behavior are applied to support some studies on PE teaching and teacher development. The study by Kulinna, McCaughtry, Martin, Cothran and Faust (2008) was grounded in

Figure 2. The relationship among learning theories supporting PE teaching and teacher development



the social cognitive theory in order to examine the impact of yearlong professional development program on teachers' perceptions and behaviors when implementing a health-related elementary PE curriculum. The theory of planned behavior was mainly adopted to predict and understand PE teachers' intention to teach PE (Faulkner, Reeves & Chedzoy, 2004; Martin & Kulinna, 2004; Martin, Kulinna, Eklund & Reed, 2001), teaching behavior (Martin & Kulinna, 2005), and psychological perception and behavior (Kulinna et al., 2008).

Theories are, simply, explanations of why things occur. It is common that theories are used to support and explain the research results of qualitative studies. According to Gratton and Jones (2010), only when the data is related to existing theory can we explain the findings, and take our understanding beyond the basic descriptive level. It is therefore important that the research has a theoretical grounding if we want the research to be more than simply descriptive. In this thesis, the research results illustrate pre-service teachers' perception, implementation and mentoring of TGfU. There is a need to place the findings of the thesis within an appropriate theoretical framework. After reviewing the theories supporting the research on PE teaching and teacher development, the theoretical framework including constructivism, and the theory of planned behavior, and situated learning theory was identified to support the three studies included in this research because it demonstrates an explicit framework for explaining and predicting the intended research questions.

Empirical Research

A Historical Overview of TGfU

During the last 1960s and early 1970s, the traditional skill-oriented approach dominated PE classes. At that time, there was a move to quantify, evaluate, and measure skill acquisition. The popularity of the skill-oriented approach to teaching games can be attributed to PE teachers who sought to make the subject more credible when it was evaluated to degree status (Thorpe, Bunker & Almond, 1986). As Thorpe et al (1986) pointed out, "isolated techniques are so much easier to quantify than other aspects of games (p.27)."

At the beginning of the 1980s, dissatisfied with traditional teaching approach in which the games teaching was dominated by development of techniques, the researchers at Loughborough University began to develop a more cognitively based approach that placed greater emphasis on developing students' tactical awareness within game play (Thorpe et al., 1986). Bunker and Thorpe (1982) stated that traditional method is unproductive because it concentrated on specific motor response which failed to take contextual nature of game in consideration and addressed "what to do" and rarely made connections between the technique practices and how and when these techniques should be applied in game play. As a result, Bunker and Thorpe firstly proposed the TGfU model in 1982 as an alternative to traditional, technique-led approaches to games teaching and learning.

Compared with the traditional technique-oriented approach, all TGfU teaching takes place within the framework of game play and the modified game form. As

Figure 3 showed, the TGfU model includes six stages which enable students or players to become skillful game players. Stage one suggests that teaching should commence with a variety of game forms in line with students' age and experience to meet the development level of the learner. Stage two encourages students to learn and understand game rules which have implication for the tactics to be employed. Stage three presents students with tactical problems to help them increase their tactical awareness. At the fourth stage students make a quick decision on "what to do" and seek for the best way to do it. Stage five involves the skill execution which describes the actual production of the required movement in the context of the game. Stage six measures performance leading towards the development of competent and proficient games players.

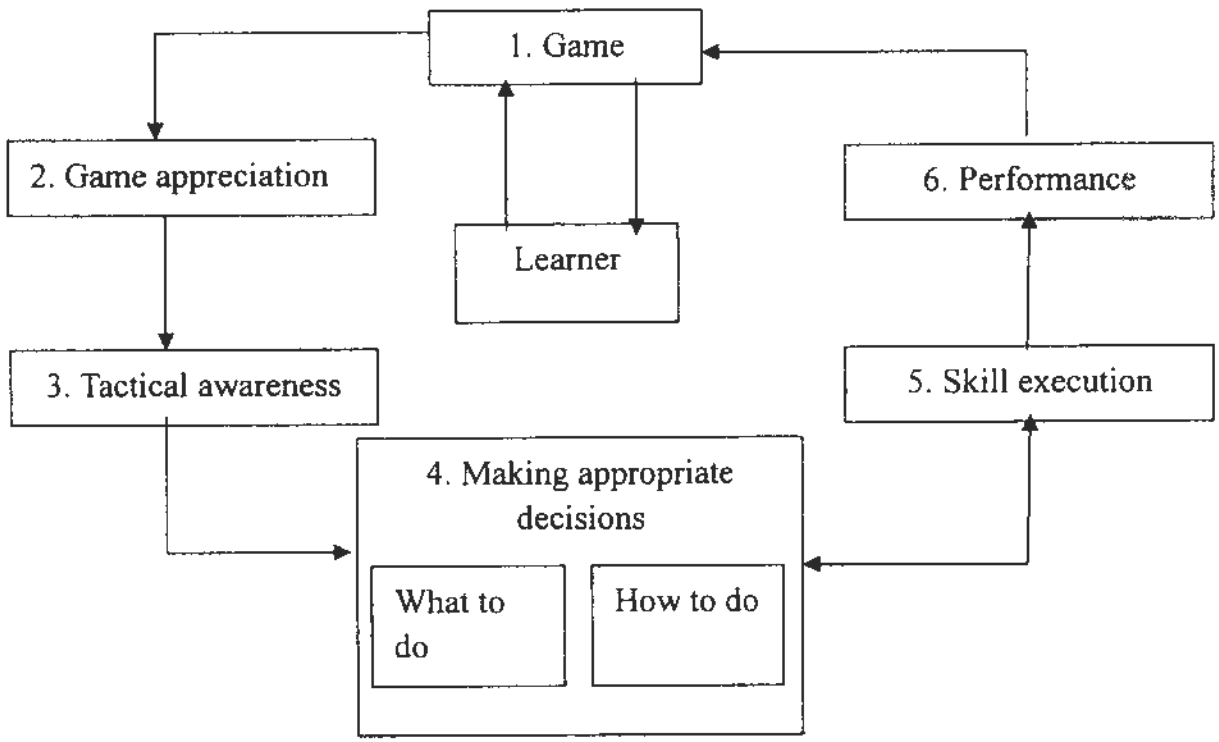


Figure 3. TGfU: The curriculum and model (Bunker & Thorpe, 1982)

Thorpe, Bunker, and Almond (1986) then introduced four fundamental pedagogical principles to be used in conjunction with the curriculum model for developing PE programs.

These four pedagogical principles are:

(1) Game sampling can provide students with an opportunity to explore the similarities and differences among games.

(2) Representation involves developing condensed games that contain the same tactical structure of the advanced form of the game.

(3) Exaggeration involves changing the secondary rules of the game to overstate a specific tactical problem.

(4) Tactical complexity involves matching the game to the developmental level of the student. Some tactical problems are too complex for novice players to understand, but as students develop an understanding of tactical problems and appropriate solutions, the complexity of the game can be increased.

(Thorpe et al, 1986)

In the following ten years the TGfU model and associated pedagogical principles have remained unchanged and only recently received some close examination, critique. Since 1997, scholars have proposed variations, extensions, or reconsiderations to the original model (Griffin, Mitchell & Oslin., 1997; Holt, Strean & Bengoechea, 2002; Kirk & MacPhail, 2002). To illustrate the processes of the TGfU approach, Griffin et al (1997) consolidated the model into three stages including modified game play, development of tactical awareness, and skill

development. The model outline in Figure 4 suggests that game teaching should begin with a game. Questions are asked by teachers to help students learn and understand the rules of games. At last, appropriate techniques were executed in the correct time frame, which elevates students' game performance. There are four essential points of a tactical approach to games teaching: "(1) consider the tactical problems to address during your unit and decide on the complexity of solutions to these problems; (2) within each lesson students practice skill after they have experienced a game form that present a tactical problem requiring the use of that skill; (3) make the link between the initial modified game and skill practice through your questions; (4) student have the opportunity to apply their improved skills and tactical understanding in a game" (Griffin et al, 1997). Furthermore, The Game Performance Assessment Instrument (GPAI) was developed to be a comprehensive assessment tool for teachers to use and adapt in assessing a variety of games (Griffin et al., 1997; Mitchell, Oslin & Griffin, 2003).

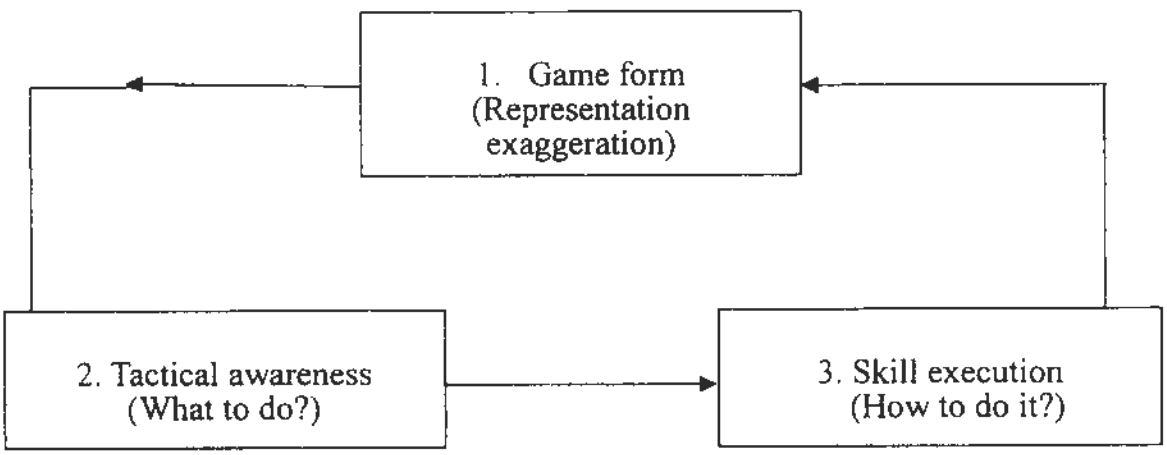


Figure 4. A tactical approach to games teaching (Griffin et al., 1997)

Kirk and MacPhail (2002) present a new version of the TGfU model (Figure 5) that draws on a situated learning perspective. A situated learning theory investigates

the relationships among the various physical, social, and cultural dimensions of the context of learning (Lave & Wenger, 1991). In the situated learning TGfU model, explicit attention is paid to the learner's emerging understanding, game concept, thinking strategically, cue recognition, technique selection, and situated performance as legitimate peripheral participation in games, which elaborate upon the already existing learning principles of the Bunker - Thorpe model. Furthermore, the notion of situated performance in TGfU provides one way of understanding the relationship between the game form and the player's prior and alternative conceptions of a game (Kirk & MacPhail, 2002). The situated performance provides the learner with opportunities to gain game playing experience.

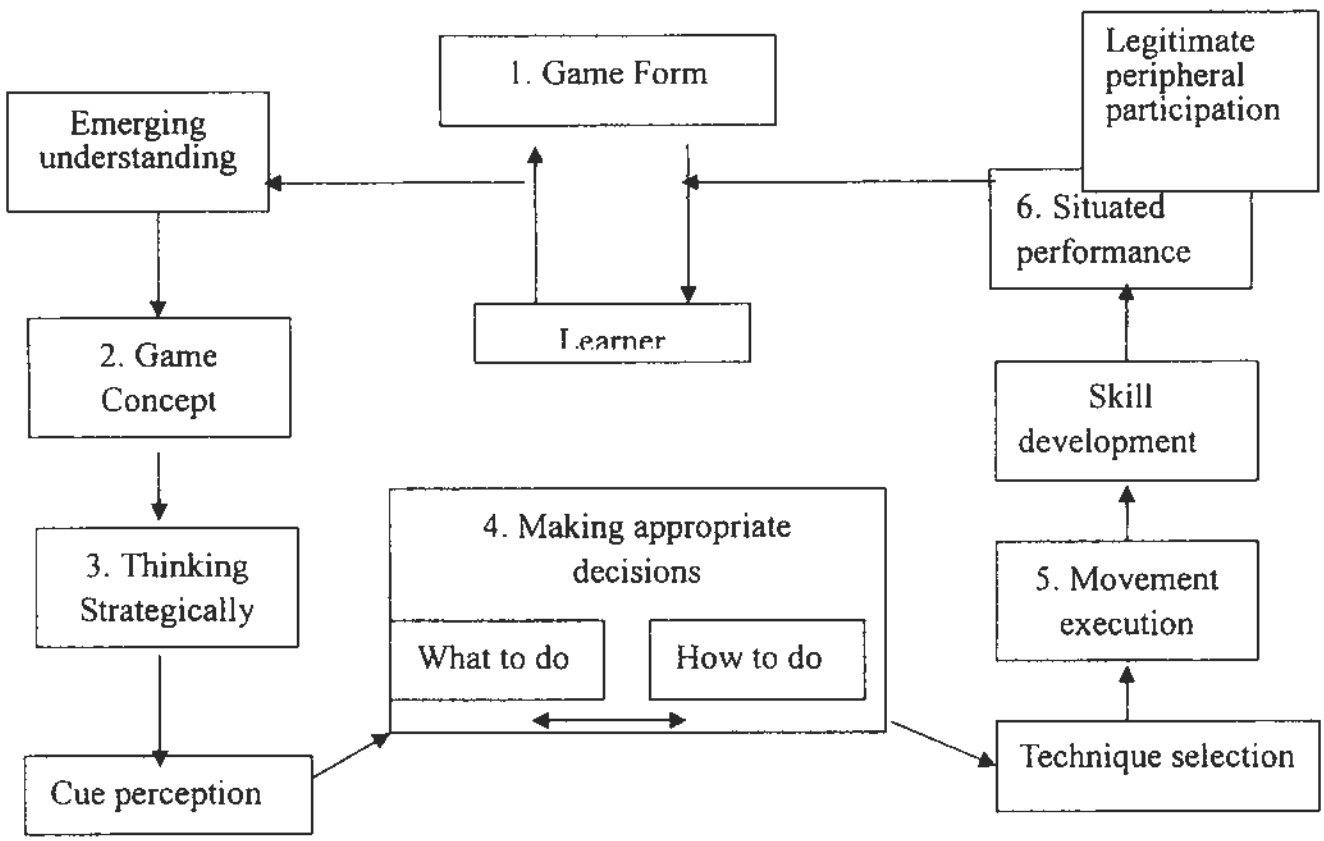


Figure 5. The revised TGfU model (Kirk & MacPhaill, 2002)

Although the TGfU model has been revised and extended by many researchers,

there are two vital components which have been overlooked by researchers and teachers (Holt et al., 2002). First, Thorpe et al. (1986) presented the four fundamental pedagogical principles of sampling, modification-representation, modification-exaggeration, and tactical complexity, they have not been widely considered from a research perspective. Additionally, the learner is at the centre of the TGfU model, but the experience of the learner has not been central to the academic debate. Due to these limitations, Holt et al. (2002) reexamined the four pedagogical principles and integrated the curriculum model (six-stage model), four pedagogical principles (Sampling, representation, exaggeration, and tactical complexity) (Figure 6). This expanded model represents a more holistic view of the learner. They call for a need to explore the learner-centered feature, specifically to focus on the affective domain (e.g., affect and enjoyment in sport) by suggesting future research that would consider the implication of games pedagogy for the cognitive, affective, and behavioral domains (Griffin & Butler, 2005).

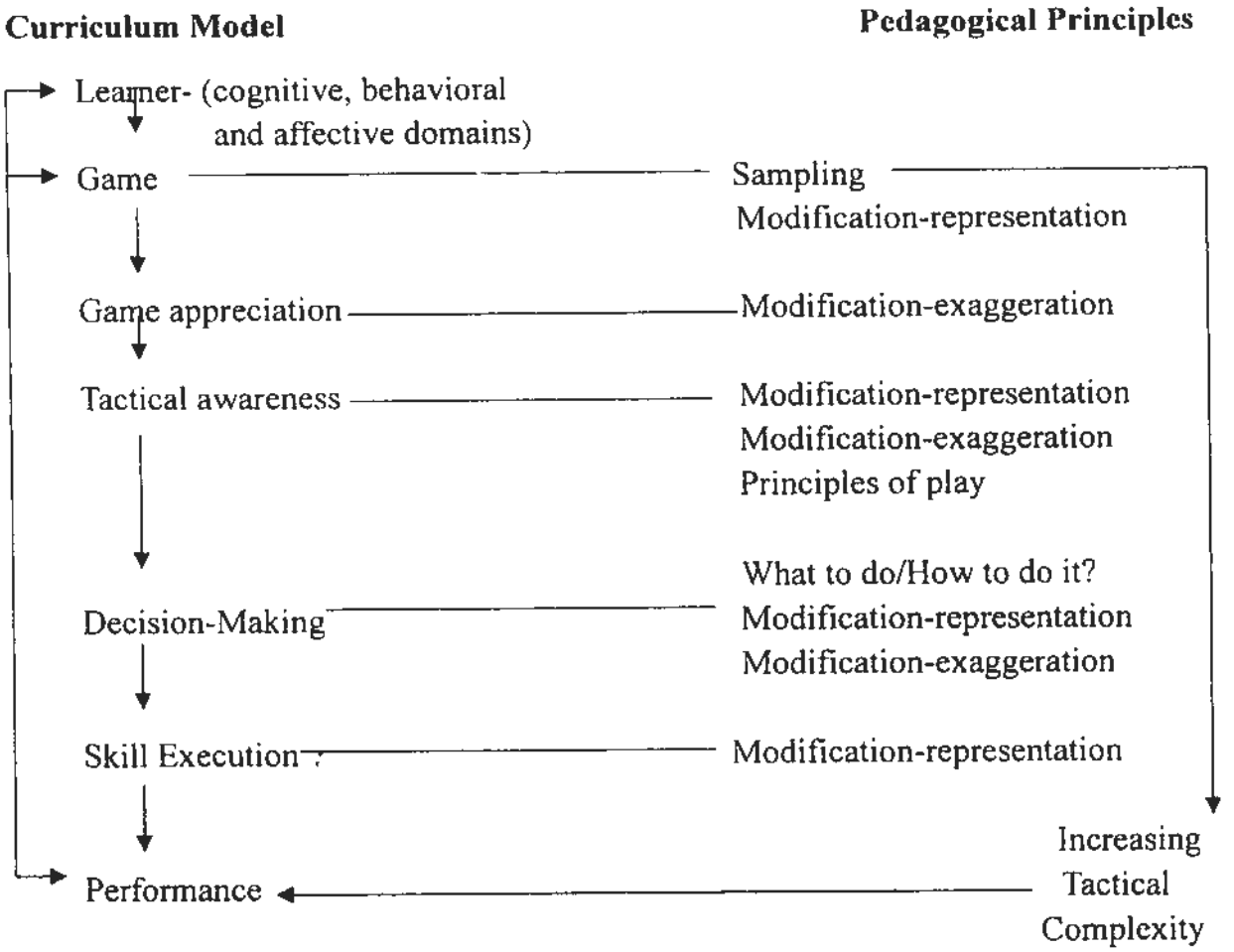


Figure 6. The expanded model (Holt et al., 2002)

Perception of TGfU

PE Teachers' Perception of TGfU

Currently, increasing attention is being given to research on pre-service and in-service teachers' responses or perception of TGfU (e.g., Bulter, 2005; Howarth, 2005; Light, 2002; Rossi, Fry, McNeill & Tan, 2007). These studies have focused mainly on the strength of TGfU and limitation of TGfU。

Pre-service Teachers' Perception of TGfU. For pre-service teachers, research findings show that most pre-service teachers have positive attitude towards TGfU because it increases students' engagement and stimulates students' creative minds (Howarth, 2005; Light, 2002, 2003; Light & Tan, 2006). Light (2003) studied

pre-service teachers' response to the TGfU model through a series of extended, in-depth interviews over an eight-month period. The research concluded that pre-service teachers were attracted to TGfU primarily because of the ways which emphasize propensity to engage learners of all levels. Howarth (2005) related the strength of TGfU to students' cognitive engagement and intellectual development. It is noted that pre-service teachers are enthusiastic about the TGfU model because it allowed students to participant in game play and stimulated their creative minds. Light and Tan (2006) compared the responses of Singaporean and Australian pre-service and beginning teachers and found that there were differences in teachers' attitude towards TGfU in these two countries. Results show that Australian teachers favor TGfU primarily because of the ways in which the method could address their concerns on the ideals of equity and positive social learning, and their importance on children's enjoyment of games. Different from Australian teachers, Singaporean teachers place more importance on identifiable learning outcomes that met the requirements of the Singapore PE syllabus and the strength of fostering thinking skills.

In-service Teachers' Perception of TGfU. Similar to pre-service teachers, the interview data in Light and Butler's (2005) study showed that in-service teachers strongly advocate TGfU because it can provide a more equitable experience of sports and fun for all students compared with other traditional approaches. However, in-service teachers noted the limitations of TGfU, citing, for example, that the amount of preparation and adaptability required for in-service teachers and very young

children (primary One to Four students) do not suit the TGfU model (Light and Butler, 2005; Rossi et al., 2007). In Light and Butler's (2005) study, for example, teachers replied that implementing TGfU was hard because it required much preparation and adaptability. The same study also revealed that teachers should be knowledgeable about offensive and defensive strategies as well as about connecting drills. In addition, Rossi et al. (2007), as another example, argued that very young children are incompatible with TGfU because the high skill requirements and the conceptual demands of the approach are too great for some children with "limited skills". The researchers advocated that TGfU fit the senior primary schools students and secondary school students.

Factors Influencing PE Teachers' Perception of New Approaches

The aforementioned studies point out that the change to new approaches such as TGfU is a long-term process. This process is facilitated and constrained by a range of factors. The following studies address two different strands of factors: factors influencing pre-service teachers' perception of new approaches and factors influencing in-service teachers' perception of new approaches.

Factors Influencing Pre-service teachers' Perception of New Approaches. A few studies have been conducted to examine the factors influencing pre-service PE teachers' receptivity of new approaches. For one, Rovegno (1992, 1993) described how pre-service teachers' prior knowledge and the mechanisms of learning that they used to reduce the cognitive complexity of the movement approach resulted in their maintaining partial and inaccurate information about the approach. In the same

manner, the other two studies revealed that the university supervisor played an important role in pre-service teachers' acceptance of new approaches (Graber, 1995; Rikard & Knight, 1997). Specifically focused on TGfU, Light (2002) focused on TGfU and found that existing attitude and dispositions of pre-service teachers influence their interpretation of the TGfU approach and perception of the games' education value. Through observation and interview, Light (2002) discovered that pre-service teachers who had negative attitude towards physical activity were reluctant to engage their students in the games for most of the unit, saw no educational value in games, and avoided using games in class. In contrast, the study revealed that pre-service teachers who had positive attitude towards sport and PE valued games as important in PE class.

Factors Influencing In-service teachers' Perception of New Approaches. Research has suggested that a group of factors facilitate and constrain in-service teachers' perception and acceptance of new teaching approaches. These include teachers' prior knowledge and experience, beliefs and attitude, district policy, school culture, support of school principals, other teachers and students, and workplace condition.

Generally, teachers bring their own knowledge and experience in learning and teaching with them into their preparatory courses or continued professional education. These prior experiences affect the way new information is accepted, interpreted, and integrated into the professional practice. Kirk (2001) illustrated that teachers' resistance to TGfU was largely due to the limited understanding of the game and

competence as game players.

Apart from prior knowledge and experience, teachers' belief and attitude can facilitate or inhibit their acceptance of a new approach (Bechtel & O'Sullivan, 2007; Cothran, 2001; Ennis, 1994; Light & Tan, 2006; Rovegno, 1998; Ward & Doutis, 1999). For instance, Bechtel and O'Sullivan (2007) identified the enhancers and inhibitors affecting four secondary PE teachers to make changes in their instruction. They noted that PE teachers' beliefs served as a key enhancer to enact changes in their programs and teaching practice. In addition, their findings show that teachers who strongly believed in the efficacy of the innovation made substantial changes in their programs and were willing to take the risk to change. Therefore, helping teachers to examine their beliefs should be included as a component in effective professional development programs. In so doing, teachers can understand their own beliefs and, in some cases, try to alter their beliefs through such programs. In another study, Ennis (1994) explored the interrelationship among beliefs, knowledge of physical educators, and teachers' curricular expertise. She found that the strength of a belief affected the ease or difficulty in teacher change, that is, weak beliefs are easier to change while strong beliefs were more difficult to change. Therefore, it was often proven incorrect to hold on to beliefs. Furthermore, when learning new knowledge, new beliefs "fought" with existing beliefs in order to establish a place in the individual's belief network. Generally, beliefs that are challenged prior to becoming firmly established are more easily squeezed out. Knowledge and beliefs also affected the curriculum expertise of teachers.

District policy and school culture are major factors that influence teachers' learning of new pedagogical approaches (Bechtel & O'Sullivan, 2007; Pope & O'Sullivan, 1998).Bechtel and O'Sullivan (2007) found that district policy inhibited teacher change in the district. The PE teachers involved felt that the district did not meet their professional development requirements because of the lack of a professional development program. This was perceived as a key barrier to teacher change. In addition, Pope and O'Sullivan (1998) explored a teacher's professional culture and its impact on teacher acceptance of a new constructivist curriculum model, that is, Sports Education, in PE classes. Four themes emerged to describe this PE teachers' change process: distraction, distance, dismay, and determination. Pope and O'Sullivan (1998) suggested that the cultural context in which the change takes place should be considered to understand the change process in PE. The study also found that the individual was connected with the context when change occurs, that is, the establishment of new culture would promote teachers' willingness to change the content and delivery of the program. Therefore, teachers' professional culture must be considered when attempting to prompt change in teachers.

The support from principals, colleagues, cooperative teachers, students, and university courses contributes to the teachers' acceptance of new programs (Bechtel & O'Sullivan, 2007; Corthan, 2001; Ha et al., 2004; Henninger, 2007; Pissanos & Allison, 1996; Stroot, Collier, O'Sulliva & England, 1994). In the study conducted by Bechtel and O'Sullivan (2007), principal and colleague support is found to impact teachers' perception of innovative curriculum approach. Specifically, the study found

that principal support played a key role in inducing teachers to change. The principal was viewed as supportive of the PE program and teachers' efforts to improve it. The study also found that teachers in favor of change often sought other teachers within their departments or in schools who could help them gain new ideas or reassure them as they attempt to change. Thus collegial support provided encouragement and ideas for teachers' efforts to improve. Finally, the study showed that students' positive comments support teachers' innovation of PE. Similarly, Stroot et al. (1994) revealed that collegial support aligns with workplace interactions, which come in three categories, influenced teacher change. The first category is departmental cohesion, in which all teachers share similar philosophies and goals for their programs. Included in this category is support from colleagues. The second category finds more social cohesion in philosophical differences; therefore, support appears to be less prevalent here. In the third category, coworkers separate themselves professionally from each other by teaching in their respective areas, thus allowing minimal interactions. In this category, little support is provided to colleagues. Generally, when teachers do not have collegial interactions, support is not available, and change is unlikely to occur. Therefore, collegial support should be a key component of more effective professional development programs. In Pissanos and Allison's (1996) study, a series of five interviews with an elementary PE teacher for over a three-year period showed clearly that teacher change was influenced by students, status, administrative support, community perception of sports, and personal interaction. Students were perceived as significant influencing factors because they motivated the PE teacher to participate in

professional development activities or inspired her to improve her teaching. In the same manner, the gain in status associated with the grant made the teacher more involved in the subject. The same thing could be said for the school administrators' appreciation and support, which encouraged the teacher to seek new ways to grow. Moreover, the early experience on community perceptions motivated her to attend university-sponsored workshops and to study curriculum resource materials so she could deal with sports content in the context of the school community better. The teacher's personal interaction about the personal and professional aspects made her more confident with her teaching abilities.

Based on the literature review on influencing factors, it is notable that most studies concentrated on in-service teachers, which indicated that more studies were needed to address the factors influencing pre-service teachers' willingness to accept the change of teaching approaches and strategies.

Hong Kong Perspective

As a student-centered and enquiry-based pedagogical model that aimed to develop students' problem-solving abilities, TGfU was introduced in Hong Kong in the 1990s. At present, TGfU is provided as part of a pedagogy course and pedagogy model for pre-service teachers (Ha, Butler, Pratt, & Collins, 2008). Many PE teachers have expressed the positive views on this new approach because TGfU offered many participating opportunities, improved students' motivation to learn, and help to resolve some problems encountered in game lessons (Liu, 1997, 2002, 2004). For example, Liu (1997) conducted a survey with 170 secondary schools in Hong Kong to

investigate what teaching approach or approaches PE teachers used during games lessons at schools and whether they were willing to accept change. The survey data showed that more than 90% of PE teachers still adopted the skill-based approach to teach their students during game lessons. However, more than 75% of the PE teachers showed interest in knowing more about the TGfU approach because they hoped to find a solution to overcome the difficulties faced during game lessons. Despite the studies on teachers' perception of TGfU, there are limited studies exploring the reasons behind Hong Kong teachers' acceptance and implementation of TGfU.

Implementation of TGfU

PE Teachers' Implementation of TGfU

Pre-service Teachers' Implementation of TGfU. The research on pre-service teachers' implementation of TGfU is limited (Wright et al., 2006). There are only two studies placing their emphasis on the pre-service teachers' implementation of TGfU (McNeill, Fry, Wright, Tan & Rossi., 2008; Wright, McNeill & Fry, 2009).

McNeill et al. (2004) conducted a pilot study and interviewed 11 Singaporean pre-service teachers who used TGfU in teaching in primary schools. The results indicated that pre-service teachers had common difficulties in the work design, TGfU clarification, content selection, time management, questioning, and the sustenance of students' interest. Based on the research results from McNeill et al. (2004) which indicated that pre-service teachers have problems in time management and questioning, McNeill et al (2008) proposed that TGfU teaching should be examined from three perspectives: structure – lesson form in terms of teacher-time and

student-time; product – how pre-service teachers used those time fractions; and process - the nature of their questioning. The two category observation system including time-management and questioning was utilized to assess the extent Singaporean pre-service teachers are able to implement the TGfU model effectively (McNeill et al., 2008; Wright et al., 2009). The findings from these two studies indicated that although pre-service teachers are delivering more student time (practice and game) than teacher-time, pre-service teachers spent more time organizing, explaining, demonstrating and reviewing than their students spent playing games, which is not consistent with the game-centered approach. Meanwhile, most questions were asked during play or practice but were substantially low-order involving knowledge or recall and only a small part of questions were open-ended and capable of developing tactical awareness. Furthermore, the research revealed that the pre-service teachers at the primary level provided more technical practice and those in secondary schools more small-sided game play. Thus the research concluded that pre-service teachers in Singapore cannot implement TGfU effectively (McNeill et al., 2008; Wright et al., 2009).

In-service Teachers Implementation of TGfU. In terms of in-service teachers' implementation of TGfU, a group of studies showed that many in-service teachers are not willing to implement TGfU in class (Butler, 2005; Evans & Clarke, 1988; Kirk & Claxton, 1999; Randall, 2008; Rossi, Fry, McNeill & Tan, 2007). For example, Evans and Clarke (1988) noted that the use of TGfU could not be described as widespread. Seventeen years later, Butler (2005) reported that many experienced teachers

preferred traditional approaches of instruction to the constructivist approach because TGfU might be in conflict with their values, beliefs, and attitude towards teaching and learning. Several studies associated in-service teachers' unwillingness to implement TGfU with the challenges they encountered in understanding and implementing TGfU (Brooker, Kirk, Braiuka & Bransgrove, 2000; Randall, 2008; Rossi et al., 2007). Teachers in the study by Rossi et al (2007) reported that it was difficult to tell the difference between a constructivist approach including TGfU and a behaviorist approach. Furthermore, they were confused about the relationship between skills, techniques, and tactics. In a more recent study, Randall (2008) found that the many PE teachers did not adopt the TGfU approach because of the difficulty in undertaking the shift, their lack of content knowledge, and fear of failure.

Factors Influencing PE Teachers' Implementation of New Approaches

In this section, the factors which facilitate and constrain teachers' implementation of TGfU will be identified by reviewing the relevant literature. The influencing factors will be categorized into two groups: factors influencing pre-service teachers' implementation of new approaches and factors influencing in-service teachers' implementation of new approaches.

Factors Influencing Pre-service Teachers' Implementation of New Approaches. The studies exploring the factors influencing pre-service teachers' implementation of new approaches are limited. There are only two studies which concentrate on the implementation of the TGfU model. These studies discuss the facilitators and inhibitors of pre-service teachers' implementation of TGfU from the perspectives of

teachers, students, and school context (Howarth, 2005; Wright et al., 2006). The study conducted by Wright et al. (2006) reported that pre-service teachers in Singapore can't implement the TGfU model appropriately because of the students' unfamiliarity with the TGfU model, the students' lack of skills to play the games properly and conceptual knowledge, the limitation of time, and the lack of space and equipment. Additionally, another study by Howarth (2005) reported that the difficulties that U.S pre-service teachers faced were related to the high requirements on pre-service teachers' content knowledge about the game, complexity of analyzing students' learning abilities and preference, and lack of time and experience.

Factors Influencing In-service Teachers' Implementation of New Approaches. Research has suggested that a group of factors facilitate and constrain in-service teachers' implementation of new teaching approaches. These include personal and psychological dispositions, professional culture, and workplace condition,

The impact of a teacher's personal and psychological dispositions is explored by Corthan (2001) and Rovegno and Bandhauer (1997a). Cothran (2001) described the characteristics of PE teachers who had successfully made curriculum changes in their PE programs. In this study, six teachers attempted to implement the new curriculum models such as the social responsibility model, fitness model, sports education, wilderness sports, and adventure education. Findings indicated that three personal characteristics initiated and sustained teachers' acceptance of new approaches: use of teacher reflection, the power of the students, and solicitation for help from those outside their classroom (Cothran, 2001). Rovegno and Bandhauer

(1997a) aimed to examine the factors influencing how a teacher came to understand, adopt, and then modify and expand a movement approach. Five psychological dispositions emerged as follows: (a) possessing appropriate content knowledge to implement a change adequately; (b) accepting that change is difficult and often required asking for clarification; (c) implementing change practices aligned with sound philosophy and theory; (d) creating a willingness to explore change and new ideas; and (e) suspending judgment on new ideas.

Apart from personal and psychological disposition, school culture can facilitate or inhibit in-service teachers' implementation of new approaches and models (Rovegno & Bandhauer, 1997b). Rovegno and Bandhauer (1997b) studied the norms of culture. Undertaken for over three years when in-service teachers adopted a constructivist approach to PE, the study identified five norms that had a positive impact on teachers' implementation of new curriculum model. These norms included the following: (a) the school philosophy, (b) teacher learning, (c) teacher participatory power and responsibility, (d) continual school improvement, (e) the tendency "to feel that we can do anything" (P.407). The norms of school philosophy influence the teacher change process because the principal, staff, and classroom teachers share similar goals and values concerning profession and PE, hence enhancing teachers' connection with one another. The norms of teacher learning have a positive impact on teachers' learning of new approaches in their field. These norms induce the PE teachers to accept the movement education approach. The other three norms were regarded as key components of the school climate including "optimism, possibility,

and empowerment" (p.421). In this climate, individual teacher change could be highly encouraged and promoted within the school.

The impact of workplace condition on the teachers' implementation of a innovative curriculum model was also examined in PE (Doutis & Ward, 1999; Stroot et al., 1994). For example, the Saber-Tooth Project (Doutis & Ward, 1999) focused on teacher change and workplace condition. The teachers involved in this project reported that equipment storage, equipment theft, overcrowded classes, noise levels, and isolation were constant problems for teachers in engaging in the project. Therefore, workplace conditions needed to be addressed in the change place. The three key themes related to improving workplace conditions in PE were identified as "collegiality, the role of planning and assessment, and professionalism" (Doutis & Ward, 1999; p.426).

Based on the literature review on teachers' implementation of TGfU, Wright et al (2006) pointed out that the research on teachers' teaching behavior towards TGfU is limited and there is a need to know much more about teachers' effective instruction of TGfU.

Hong Kong Perspective

Like their counterparts in other countries, pre-service teachers and in-service teachers in Hong Kong faced the same challenges during TGfU's implementation (Cruz, 2004; Ha et al., 2008; Li & Cruz, 2006; Liu, 1997). In 1997, 155 secondary school teachers were surveyed by Liu (1997) to study PE teachers' approach to game lessons. The research results showed that 90% adopted the skills-based approach and

exhibited no tendency to modify this approach. Similarly, survey data from 209 secondary school teachers revealed that PE lessons in Hong Kong secondary schools were generally skills-oriented and that PE teachers were technocratic in nature (Wong & Louie, 2002). Li and Cruz (2006) reported that because of anticipated practical problems such as difficulties in managing the class, transforming tactical knowledge into pedagogical content knowledge, and inadequate space for games, pre-service teachers in Hong Kong displayed hesitation in adopting the model in the future. Based on previous studies, limited studies examined teachers' teaching behaviors of TGfU and try to find out the factors influencing their implementation of TGfU.

Mentoring

Mentoring in Teacher Education

The mentoring in teacher education has been widely discussed in the literature from five perspectives including definitions, functions, the relationships between the mentor and protégé, influential structural and organizational aspects, and alternative forms of mentoring (Beyene, Anglin, Sanchez & Ballou, 2002). Because the present study addresses the effect of PE mentoring and the interaction between protégé teachers and mentors, this review will focus on the issues of function and relationship. Three major themes including effect of mentoring on protégés, the effect of mentoring on mentors and the relationship between protégés and mentors were addressed.

Effect of Mentoring on Protégés. Little (1990), reviewing the mentoring phenomenon, reported that mentoring could assist protégé teachers with the transition into education. The majority of mentoring literature targets the protégé teachers and

examines the benefits of mentoring on their professional development (e.g., Beyene et al., 2002; Evertson & Smithey, 2006; Huling & Resta, 2001; Schmidt, 2008; Smith & Ingersoll, 2004; Stanulis, 1994).

Some studies have reported that mentoring process helps protégé teachers adapt to new environment (Ganser, 1992; Odell & Ferraro, 1992). For example, research findings have shown that the protégé teachers appreciated the interactions with their mentors and felt that they helped them to more quickly adapt to their new environment (Ganser, 1992).

One study conducted by Odell (1990) found that mentoring process can help protégé teachers to shape their beliefs, in which, protégé teaches acquired more positive attitude towards teaching. Beyene et al's (2002) mainly reported that mentoring process nelped protégé teachers to model their roles as a full-time teacher, In this study, a sample of 133 participants were invited to participant in a mentoring program to identify the characteristics of mentoring from the perspective of diverse college students. The narrative data indicated that the benefit protégés received from their mentors was nurturance, knowledge, motivation, networking, trustworthinesss, and role modeling.

A large group of studies indicated that protégé teachers' pedagogical skills had been improved (Evertson & Smithey, 2001; Huling & Resta, 2001; Schmidt , 2008; Stanulis, 1994; Storms, Wing, Jink, Banks & Cavazos., 2000). For example, Evertson and Smithey (2001) compared the classroom practice of protégés assisted by mentors who participated in a formal mentoring program with protégés mentored by

experienced teachers with no formalized mentoring preparation. Forty-six protégé-mentor pair (23 treatment; 23 comparison) participated in this study. Ratings and narrative records indicate that protégés of mentor who participate in the mentoring program could more effectively organize and manage instruction at the beginning of the year and establish more workable classroom routines. Their students also were shown to have better behavior and engagement. Two studies by Storms et al. (2000) and Huling and Resta (2001) found that mentoring played a significant role in the professional growth of the new teachers. Specifically, mentoring helped beginning teachers hone their practice like planning lessons, teaching techniques, and reflect on the effectiveness of their instruction. Two other case studies have showed that mentoring can improve protégé teachers' knowledge and reflective ability. Using social constructivism, Stanulis (1994) examine the mentoring process between a pair of mentor and protégé through their interaction. The emergent themes indicated that the mentoring helped protégé teacher develop a habit of reflection and learn how to internalize knowledge. Schmidt (2008) explored a novice teacher's experiences in his third year of teaching as he worked with formal and informal mentors to improve his own teaching and simultaneously served as a mentor for two pre-service teachers. After one-year observation of this novice teachers' growth, the research results revealed that being mentored reinforced his new-found knowledge and skills. In the meantime, he learned to better describe and assess his own teaching (Schmidt, 2008).

It has also been reported that mentoring programs have a positive effect on the retention of beginning teachers (Gold, 1999; Ingersoll & Smith, 2003; Smith &

Ingersoll, 2004). For instance, the study conducted by Gold (1999) reported that the first-year attrition rate of teachers trained in traditional college programs without mentoring was 18%, whereas the attrition rate of first-year teachers whose induction program included mentoring was only 5%.More recently, Smith and Ingersoll's (2004) study, aims to examine whether beginning teachers who participated in the mentoring program were more or less likely to stay with their teaching jobs the following year. The research results indicate that beginning teachers who were provided with mentors from the same subject field and who participated in collective induction activities, such as planning and collaboration with other teachers, were less likely to move to other schools and less likely to leave the teaching occupation after their first year of teaching.

However, not all protégé teachers feel that mentoring bring benefit to them. In Cwikla's (2004) study, the different views are expressed by less experience teachers. This study noted that less experienced teachers are not willing to collaborate with their mentors for the lack the mathematics content knowledge of these experienced teachers. They would prefer to work with colleagues closer to their own age and /or experience level (Cwikla, 2004).

Effect of Mentoring on Mentors Several studies have shown that mentors, as well as protégés, benefit from the mentoring process (Beck & Kosnik, 2000; Daresh, 2001; Hanson & Moir, 2008; Hodkinson & Hodkinson, 2002; Johnson, 2003; Scott, 1999; Wright & Bottery, 1997; Zachary, 2000).

Studies showed that mentors received new ideas from protégés, which helps to

keep mentors update with the latest ideas and educational theories, and thereby increases their professionalism (Hodkinson & Hodkinson, 2002; Scott, 1999). Hodkinson & Hodkinson (2002) found the learning was not only going on from the beginning teachers to experienced teachers, sometimes, experienced teachers were also continuously learning new ideas and knowledge from beginning teachers for improving and developing their knowledge and classroom practice. In Scott's (1999) study, experienced teachers reported that mentoring allowed them to help others, improve themselves, receive respect, develop collegiality and profit from the novice teachers' fresh ideas and energy.

Mentoring improves mentors' understanding of teaching and broadens their views. Survey and personal interviews conducted by Hanson and Moir (2008) indicated that mentoring deepened mentors' understanding of teaching and learning, broadens teachers' views of themselves and the teaching profession, cultivates leadership development, and supports communities of practices.

Mentoring has also been reported to impact mentors' identity and their professional status (Johnson, 2003; Wright & Bottery, 1997). For instance, Johnson (2003) described a mentor's mentoring experience with one protégé. Three critical incidents – the preposition, the pair work, and the prayer time emerged, which has impact on the mentor's identity. The preposition incident forced the mentor wonder about his own expectations of the importance of language for protégé teacher. The pair work forced him to look at himself and ask how much teachers are expected to compromise their own beliefs while in the classroom. The issue of prayer time has

forced me to look closely at religion and the influence on the teaching.

Relationship between Mentors and Protégés. In recent years, the mutual beneficial relationship attracts increasing attention from researchers in which interaction, respect, and connection are addressed (Awaya, McEwan, Heyler, Linsky, Lum & Wakukawa, 2003; Beyene et al., 2002; Hodkinson & Hodkinson, 2002; Schmidt, 2008; Stanulis & Russell, 2000). The findings of these studies expand the concept of "mutual mentoring" beyond mentor-protégé pairs to include additional reciprocal mentoring roles. For example, Stanulis and Russell (2000) aimed to examine how two protégé/mentor pairs made sense of their roles during a year-long field placement. The pairs in this study all framed trust and communication as integral components of mentoring in learning to teach. Awaya et al. (2003) also tried to build an equal mentoring relationship characterized by trust, the sharing of expertise, moral support, and providing space to protégés. In response to the mentoring interaction between beginning teachers and mentors, some authors have suggested that the traditional mentoring model be updated by making it more collaborative (Chalies, Bertone, Flavier & Durand, 2008; Mullen, 2000).

Mentoring in PE Teacher Education

There are limited studies on mentoring within the specific realm of PE (Wright & Smith, 2000).

In 1990s, the studies on PE mentoring solely focused on protégé teachers. These studies aim to examine protégé teachers' experience of mentoring and the benefit of mentorship program (induction assistance). Mentoring is valuable to new

PE teachers on a variety of levels, such as, refining instructional and managerial techniques (Napper-Owen & Philips, 1995), adapting to the novel role of being a fulltime teacher (Solmon, Worthy & Carter 1993), and dealing with issues of reality shock, role conflict, isolation, and wash-out (Stroot, Faucetter & Schwager, 1993). For example, Stroot et al. (1993) reported on two individual case studies including a beginning teacher who received informal mentoring from a university faculty member and another novice teacher who received support from a formal mentoring program within her school district. In both cases two beginning teachers were provided with both emotional and professional support from the mentor, which helped them and led them to believe they were more effective teachers. The research results indicated that while informal mentoring is valuable, formalized mentoring is more effective as a means towards providing consistency and interaction. Additionally, the study by Napper-Owen and Phillips (1995) provided induction assistance to beginning teachers and investigated the impact of the assistance on the teachers. The findings showed that the two beginning teachers' experience is positive. One reported an increased sense of accountability to teach effectively and utilize knowledge from his teacher education program, while the other felt she was more reflective and analytical about her teaching as a result of the mentoring relationship. The authors recommend that the matching of mentor and protégé be done carefully, and when possible, the mentor-protégé relationship should be cultivated once a week, if not more frequently. They also make a strong call for induction assistance to be increased dramatically to help beginning teachers with problems such as isolation and frustration within their

working environment.

After the year of 2000, the notion of "mutuality" was emphasized in some studies on PE mentoring, which lead to the shift of the research focus from only beginning teachers to both beginning teachers and mentors. In 2005, a monograph on PE mentoring entitled *"Exploring mentoring in PE"* was published in *Journal of Teaching in PE.* Three studies are included in this monograph. Patton et al. (2005) applied a situated learning perspective to their examination of communities of practice and legitimate peripheral participation. McCaughtry, Cothran, Kulinna and Hodges (2005) examined in-service peer mentoring using reform-type professional development (Garet et al, 2001). Dodds (2005) grounded her theory in workplace socialization and employed Kram's (1985) theory of mentoring in which mentoring serves both career and psychosocial functions. Patton et al. (2005) applied a situated learning perspective to explore the initiation and development of mentoring relationships among participants. This study is a part of a larger examination that investigated the overall effectiveness of the Assessment Initiative in Middle School PE (AIMS-PE) teacher development project. The purpose of this project is to examine the context, activities, and interaction among participants that influenced mentoring relationships and facilitated the development of communities of practice. The findings showed that such factors as like-minded people, reflection and improvement, and uniqueness of the mentoring relationship coupled with support, give and take, and trust created a synergy that empowered the individuals and their community of practices facilitated mentoring relationship, which inform the conceptualization of an

empowerment model of mentoring. Based on the situated learning theory, it is suggested that mentoring must be of studied within the context in which it occurs, taking into account both the individual learner (e.g., teachers, mentors, and researchers) and the physical and social system in which the learner participates (Lave & Wenger, 1991). McCaughtry et al (2005) reported the results of a mentorship-based professional development intervention study. There are two purposes for this study. First, this study examined the influence of reform-based professional development program on experienced teachers' self-rated competence in mentoring newer teachers. Second, the study examined how experienced mentors could influence newer teachers' thinking about teaching and the mentoring experience. Two groups of teachers including 15 experienced teachers and 15 newer PE teachers participant in this study. Experienced teachers were provided with a range of professional development activities focused on developing mentoring skills. From pre- and post-workshop, the quantitative data analysis showed that mentors were successful in increasing their self-perceived mentoring abilities over time. However, mentors felt less competent and questioned their abilities when they lacked specific content knowledge (e.g., pedometers). On the other hand, the beginning teachers felt that their mentors did assist their teaching and career development. It is recommendable that mentor training should include a clear understanding of the needs and dynamics of the protégé. Mentors should be provided with opportunities to meet regularly with other mentors in order to (a) share experiences and solutions, (b) problem solve difficult situations, and (c) experience a sense of mutual empowerment from professional

interactions with other mentors. Dodds (2005) examined how female faculty recall and make meaning of the mentoring experiences that influence their career paths. Using Kram's (1985) mentoring theory, which posits mentoring as having two main components: to foster a beginning teacher's psychological development (competence, identity, and professional effectiveness) and to support professional development (career advancement), qualitative data indicated that many instances of mentoring from a variety of people in their lives, from childhood through adulthood and into their early professional training and careers. In general, these participants reported that their mentors helped clarify the beginning teacher's goals and career pathways rather than remaking beginning teachers in their own images.

Apart from the monograph, Martin, McCaughtry, Kulinna, Cothran and Faust (2008) examined the impact of the collaborative mentoring-based professional development on PE teachers' efficacy. Fifteen experienced mentors and 15 inexperienced protégés participated in the study. The mentorship program was grounded in a reform-style professional development addressing the collaborative and reciprocal benefits of a mentor-protégé partnership. The research results showed that both mentors and protégé teachers significantly increased their pedometer and computer efficacy. Furthermore, their computer anxiety was reduced accordingly.

These studies sheds some lights on the reciprocal dimension of mentoring relationship and the necessity of long-term, reciprocal mentoring (e.g., Martin et al., 2008; McCaughtry et al, 2005; Patton, et al., 2005). However, comparing the research on mentoring in teacher education and on mentoring in PE teacher education, it is

important to note that the studies on mentoring in PE teacher education described the mentor process solely from the perspective of beginning teachers and few studies explore mentors including cooperating teachers and university supervisors' reaction to mentorship. In the final part of the monograph, Ayers and Griffin (2005) suggested that "the follow-up study might explore the mentoring process from both mentor and beginning teachers' perspectives, taking into account both personal and cultural perspectives" (p. 376). On the other hand, it is found that most mentoring studies rely on questionnaire data and little is known about how beginning teachers themselves directly describe their own experiences of mentoring (Dodds, 2005).

Hong Kong Perspective

In Hong Kong, it is reported that pre-service teachers are less effective in PE instruction than in-service teachers (Cruz, 2000; Ha, 1996, 1999). As a result, mentoring program has been designed to facilitate education and personal growth of pre-service teachers (Lee &Bush, 2003). However, very few studies were conducted to examine the PE mentoring in Hong Kong.

Summary

In terms of theoretical literature, as evidenced by the literature review, seven learning theories have been applied in studies on PE teaching and teacher development. Linking with the research questions of three studies involved in this research, the theoretical framework including constructivism, the theory of planned behavior, and situated learning theory is identified and specified.

The empirical literature review mainly focuses on three major themes including

perception, implementation, and mentoring.

The empirical literature review on "perception" showed that despite the limitation of TGfU like the high requirement on teachers' preparation and adaptability, pre-service and in-service teachers strongly advocated TGfU because TGfU can increase students' engagement, stimulates students' creative minds, and provide equitable experience of sports and fun for all students. The literature review also show that the prior knowledge and university supervisor influenced pre-service teachers' perception and acceptance of a new teaching approach, while the factors influencing in-service teachers' acceptance of new teaching approaches include teachers' belief and attitude, district policy, school culture, and a group of people around like school teacher, principles, colleagues and students. It is notable that most studies focused on in-service teachers, which indicated that more studies were needed to address the factors influencing pre-service teachers' receptivity of the change of teaching approaches.

While PE teachers are showed to have a positive attitude towards TGfU, studies revealed that some pre-service and in-service teachers resist using TGfU or cannot implement TGfU effectively because they encountered the weight challenges in their implementation of TGfU including the lack of content knowledge, the confusion of TGfU concept, and the confliction with the existing beliefs towards teaching. The literature review also showed that the factors including the lack of resources, students' lack of skills and game knowledge, high requirement on teachers' content knowledge influence pre-service teachers' effective implementation of TGfU, and the factors

influencing in-service teachers' implementation of new approaches are identified as personal and psychological dispositions, professional culture, and workplace condition. Based on the literature review, the research on pre-service teachers' implementation of TGfU is limited and there is a need to understand better about teachers' effective instruction of TGfU (Wright et al., 2006).

The existing literatures on mentoring in teacher education indicate that mentoring has positive or negative effect on mentors and protégés. Furthermore, there is a mutual relationship between mentors and protégés in which trust, interaction, and respect are addressed. In terms of PE mentoring, although some studies are conducted to examine the effects of PE mentoring, relationship between protégés and mentors, most studies only focus on protégés. The future study is recommended by Ayers and Griffin (2005) to explore the mentoring process from the perspective of both mentor and protégé, taking into account both personal and cultural perspectives.

In Hong Kong, teachers' perception and implementation of TGfU are discussed in several studies, which showed that PE teachers in Hong Kong have positive attitude towards TGfU but are hesitate to use it. However, limited studies focus on the factors influencing teachers' perception and implementation of TGfU. Additionally, although mentoring is provided to pre-service teachers in Hong Kong to improve their teaching practice, there is no study concentrating on the PE mentoring in Hong Kong.

CHAPTER THREE

STUDY I. FACTORS INFLUENCING PRE-SERVICE TEACHERS' PERCEPTION OF TGFU: A CONSTRUCTIVIST PERSPECTIVE

Introduction

In recent years, education has undergone immense change, with the focus shifting from mastering skills to problem-solving capacities, as it has been in some countries, such as Australia, England, Hong Kong, Singapore, among others (Day, 2002; Education Commission, 2002; Ministry of Education, 2006; National Curriculum, 2007; Schoenfeld, 2006). This change can be traced back to the transformation of learning theory from behaviorism to constructivism (Freiberg, 1999; Taylor, 2007). As a key component of the educational system, the focus of the curriculum has also transformed from skills mastery and application to a student-centered, problem-solving, and creativity-focused curriculum, which require teachers to adopt new teaching approaches to achieve such goals (Fullan, 1999; Garet et al., 2001; Hiebert et al., 1996; Huba & Freed, 2000; Jeffrey, 2003). In the process of meeting the requirements of curriculum innovation and to enhance its implementation, studies on student-centered approach based on constructivism have begun to attract worldwide attention from both teachers and researchers (Corcoran, Shields & Zucker, 1998; Garet et al., 2001).

In many countries, the curriculum for PE has been reformed as well, focusing on multiple dimensions like skills, knowledge, and understanding (Penney & Jess, 2004). Furthermore, problem-solving, lifelong learning, and health issues have

become the major concerns of the PE curricula in some countries like the United States and England (Cothran, 2001; Penney, 2008; Penney & Jess, 2004). To meet the curriculum's objectives, a variety of constructivist teaching approaches is designed and tested (Ennis, 2006).

As a constructivist approach, TGfU was initially developed by Bunker and Thorpe (1982) as a shift from teacher-centered and skills-based to a student-centered approach, linking tactics and skills in the context of games played in class. Since the 1990s, scholars have proposed variations, extensions, or reconsiderations to the original model (Butler & McCahan, 2005; Griffin et al., 1997; Holt et al., 2002; Kirk & MacPhail, 2002). This model has attracted increasing interest from teachers across the world because of its potential for the following: (a) to facilitate the development of technical skills and tactical knowledge, (b) to empower children to learn for themselves and take responsibility, (c) to assess the tactical transfer across games, and (d) to increase the fun and enjoyment in playing games.

Research findings show that some teachers have a positive attitude towards TGfU because it provides fun and equitable experience to students, as well as promote the students' intellectual development (Light, 2003; Light & Butler, 2005; Light & Tan, 2006; Rossi et al., 2007). However, a majority of the teachers fail to implement TGfU in class due to the weighty challenge in teachers' understanding and implementation of TGfU (Butler, 2005; Light & Butler, 2005; McNeill et al., 2004; Randall, 2008; Rossi et al., 2007; Wright et al., 2006). For instance, McNeill et al. (2004) pointed out that teachers might find difficulty in designing units of work in

terms of clarifying TGfU objectives, selecting contents, questioning, and sustaining students' interest. Randall (2008) reported that teachers using TGfU not only need to know about the concept of discrete skills, but should also familiarize themselves with game forms, which then places high expectations on teachers' knowledge.

Despite the well-documented teachers' perception on the approach, only few studies were conducted to investigate the factors influencing teacher perception. Taking cue from the research gap, this study aimed to examine pre-service teachers' perception of TGfU and identify individual and social factors influencing their perception of TGfU. Qualitative data were drawn from 20 pre-service PE teachers in Hong Kong. Based on Piaget's (1970) cognitive constructivism and Vygotsky's (1978) social constructivism, this study is expected to provide useful insights into the pre-service teachers' receptivity of the PE innovation and to offer grounds and direction for establishing effective professional development programs.

Theoretical Framework

A constructivist perspective serves as the theoretical basis for this study. Constructivism is a theory on knowledge development and learning process (Fosnot, 2005). There are many different types of constructivism, among the most popular are cognitive, critical, radical, and social (Boghossian, 2006). In this study, Piaget's (1970) cognitive constructivism and Vygotsky's (1978) social constructivism are identified to link with the factors influencing pre-service teachers' perception of TGfU.

Piaget's (1970) research in cognitive science suggested that individuals construct new knowledge from their experiences through the processes of assimilation

and accommodation. Assimilation, he asserted, occurs when an individual's new experience aligns with his or her existing, internal representation of the world. The learner will assimilate the new experience into an existing framework. Accommodation, on the other hand, is a reflective process through which individuals transform their cognitive structures in the face of experiences that differ from their existing understanding. In other words, new experiences at times foster contradictions with the present understanding, making them insufficient and thus perturbing, disequilibrating the structure and causing people to accommodate (Fosnot, 1993). Essentially, this indicates that knowledge is created by individuals actively rather than merely being a thing that exists in the physical world (von Glaserfield, 1996). The same notion is shared by other researchers such as Bruner (1974), Jonassen (1994), and Simons (1993), who suggested that knowledge needs to be discovered through experience.

Although cognitive constructivism identifies how individuals learn from experience, it is limited because it fails to consider the influence of the society, culture, and people. In contrast to cognitive constructivism, Vygotsky's (1978) social constructivism emphasizes the role of culture and context in developing personal and shared interpretations of reality. Social constructivism interprets the learning processes using three concepts: (1) the Zone of Proximal Development (ZPD); (2) intersubjectivity; and (3) enculturation (Fosnot & Perry, 2005; Jonassen, 1999; Lave & Wenger, 1991; Vygotsky, 1978). One of the central notions of Vygotsky's theory is the ZPD concept, defined as "the distance between the actual development level as

determined by independent problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p.86). This definition recognizes peers' contributions to individual learning in the context of social engagement. It emphasizes the learning process by which knowledge is constructed through social interactions (Cobb, 2005). Intersubjectivity refers to the mutual understanding achieved between people through effective communication. Enculturation, on the other hand, is the process whereby the currently established culture enables an individual to learn the accepted norms and values of the culture or society in which he lives. In social constructivism, learning occurs through the process of intersubjectivity in the enculturalized ZPD. That is, learning occurs through communication with peers and experts or seniors in a context related to real-life tasks.

Cognitive and social constructivism appeared to be in direct conflict due to the focus on the individual learning process and culture or social process (Steffe, 1995). As a result, the issue of whether social and cultural processes have primacy over the individual process was intensely debated (Fosnot, 1993; Minick, 1989). At the same time, there was a dispute over whether learning was a self-organization or an enculturation process (Mincick, 1989).

Taking stock of the contrast between these two perspectives, Fosnot (2005) suggested that learning is both a self-organization and encultruation process; therefore, an integration of two ideas is highly recommended:

> We cannot understand an individual's cognitive structure without observing it interacting within a context, within a culture. But neither can we understand

culture as an isolated entity affecting the structure since all knowledge within the culture … is taken as shared" (Fosnot, 2005, p. 28).

Cobb (2005) also argued that the important perspective did not involve the question of whether individual construction or the influence of culture should be given priority in the learning analysis, rather the analysis of interplay between them. According to Cobb (2005), individual is cognitively challenged by the culturally based shared experience. Thus individual cognitive structure should be understood with observing its interacting within a context and culture. At the same time, however, the social culture cannot be considered as an isolated entity. It is broken by individuals as they construct new meaning, and then share their perspectives with those around them.

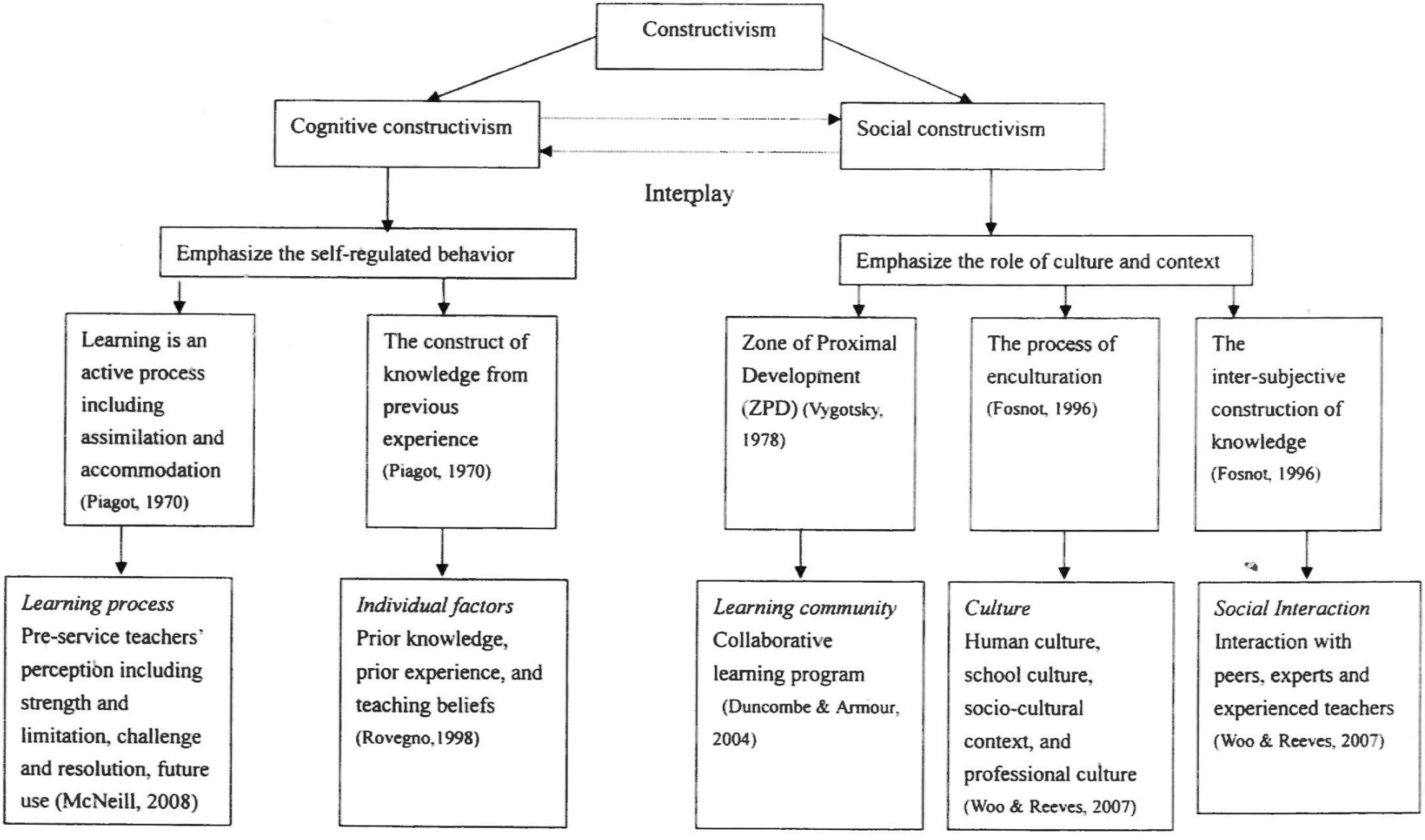
Constructivism has become the reigning paradigm in education research today. An increasing number of teacher education programs are portrayed as following a constructivist approach (Richardson, 1997). Cherubini, Zambelli and Boscolo (2002) suggested that constructivism prompts teachers to construct new ways of thinking and planning. They likewise posited that learning occurs in the social and cultural context, and teacher education should be situated within the real activity and practical context. In this study, constructivism provides the guiding principles for the design of a professional development program. In the study by Zozakiewicz and Rodriguez (2007), three guiding concepts from constructivism were proposed for professional development, namely, being responsive and theoretically explicit, providing ongoing and on-site support, and employing reflexive approaches to collaboration. Four perspectives of social transformative constructivism, including dialogic conversation,

authentic activity, meta-cognition, and reflexivity, were employed by Rodriguez and Berryman (2002) to explain the issues and difficulties that could be encountered by novice teachers committed to teaching for understanding. These provided evidence for the design of a professional development program. In various researches on PE, majority of the theoretical applications addressed the way teachers learn through social interaction as delineated by ZPD. Armour and Yelling (2007) drew on social constructivism to suggest that professional learning communities are an effective mechanism for teacher learning because from a constructivist perspective "learning is an active and creative process involving an individual's interaction with their physical environment and with other learners" (Kirk & Macdonald, 1998; p.377). Duncombe and Armour (2004) attempted to link Vygotsky's (1978) ZPD concept with collaborative professional learning. In ZPD, a person's potential development depends on what he/she could achieve with help from others, supporting the value of mentoring and collaboration. Evidently, constructivism is widely applied in studies on Education and PE. However, it is important to note that majority of the studies centered on social constructivism. Works focusing on the integration of the two tents of constructivism remain limited.

The coordinated perspective is connected with the research purposes and design of Study one. First, cognitive constructivism attempts to explain the learning process and cognition development as the process of assimilation and accommodation (Piaget, 1970). Under this concept, learning is essentially a process of making sense of the world through direct experience, making errors, looking for solutions, and presenting

information. Thus, in discussing the teacher learning process, the attitude, challenges encountered, recommended solutions, and future use are important components. Second, Based on cognitive constructivism, teacher learning is a self-regulated process. Prior knowledge and experience can facilitate or inhibit the professional development of teachers. Therefore, individual factors such as prior game knowledge and prior sports experience assume a powerful role in the process of teacher cognitive development. Additionally, the concepts of "ZPD", "intersubjectivity" and "enculturation" in social constructivism indicate that the learning process occurs in a social and cultural context. Thus, the social culture, school context, and social interaction with the people around should be considered during teacher learning. Therefore, this study categorizes the influencing factors as individual and social factors and discusses how these two groups of factors influence pre-service teachers' perception of TGfU. On the other hand, the two perspectives interplay with each other, which indicate there may be interaction between the individual and social factors influencing pre-service teachers' perception of TGfU. Figure 7 summarized the characteristics of constructivism and their link with the purposes of this study.

Figure 7. Characteristics and application of constructivism



Methodology

Justification of the Research Paradigm

The present study employs a qualitative design to gain an in-depth understanding of pre-service teachers' perception of TGfU and the factors influencing it. The justification for using a qualitative approach is discussed from three perspectives: theoretical underpinning, features of research methodology, and application in educational research.

Based on Guba and Lincoln's (1994) notion, there are four research paradigms: positivism, post-positivism, critical theory, and constructivism. Each paradigm possesses a different implication for the inquiry aim, nature of knowledge, knowledge accumulation, and the quality of an inquiry. There are two major theoretical perspectives that relate to educational research. One is positivism and the other is interpretivism. Positivism contends that there is a reality out there to be studied, captured, and understood (Guba, 1990). In positivist forms of research, education or schooling is considered as the object, phenomenon, or delivery system to be studied. Knowledge gained through positivist research is objective and quantifiable (Merriam, 1998). The products of positivism are facts, theories, law, and predictions. Therefore, positivism may be considered as a type of investigation that seeks a statistically proven relationship between defined variables using numeric results and quantitatively explicit findings (Denzin & Lincoln, 1994). In contrast, reality under interpretivism can never be fully apprehended, only approximated (Guba, 1990). Interpretivism emphasizes the discovery and verification of theories (Denzin & Lincoln, 1994). In interpretivist forms of research, education is considered as a process, and the school is a lived experience. Understanding the meaning of the process or experience constitutes the knowledge to be gained from an inductive,

hypothesis, or theory-generating (rather than deductive or testing) mode of inquiry (Merriam, 1998). Thus, interpretivism is a paradigm that employs qualitative methods such as formal interviews, observation, and documentary analysis as a means to obtain in-depth information (Denzin & Lincoln, 1994). This study aims to gain detailed, rich, and in-depth information on pre-service teachers' perception of TGfU and to identify the factors influencing it. As Strauss and Corbin (1998) stated, "Interpretivist paradigm could be used to obtain the intricate details about phenomenon such as feeling, thought process, and emotions" (p.11). Furthermore, this study attempts to understand pre-service teachers' learning process. Given the abovementioned theoretical perspectives in educational research, interpretivism is considered more closely suited to this study's research questions because of its capability to generate in-depth understanding and its emphasis on the process rather than facts.

In justifying the methodological approach, it is important to understand the features of a qualitative research. Merriam (1998) summarized them as follows:

(1) The key concern is to understand the phenomenon of interest from the participants' perspectives and not that of the researcher.

(2) The researcher is the primary instrument for data collection and analysis rather than an inanimate inventory, questionnaire, or computer.

(3) Qualitative research usually involves fieldwork. The researcher operates in a natural setting and to a certain extent maintains an openness regarding what should be observed in order to avoid missing important information.

(4) Qualitative research primarily employs an inductive research strategy. This type of research builds abstractions, concepts, hypotheses, or theories rather than tests existing theory. In contrast to deductive researchers who "hope to find data to

match a theory, inductive researchers hope to find a theory that explains their data" (Goetz & LeCompte, 1984, p.4).

(5) The product of a qualitative study is richly descriptive. Words and pictures rather than numbers are used to convey what the researcher has learned about a phenomenon.

Based on the features of qualitative and quantitative methodology, a qualitative approach was selected in this study because the perception and hidden factors being investigated in this study are considered difficult to explore using a quantitative methodology. To identify the influencing factors, the researcher employed a methodology that would allow more freedom to inquire into the phenomenon, which could not be provided by the more rigid research protocol prescribed by quantitative methodology. This entailed open-ended, flexible, and inductive and yet disciplined research methods that could only be found in the qualitative domain.

Traditionally, educational research has emphasized the quantitative approach, with many researchers intimating that qualitative studies have remained outside the mainstream of educational research. However, qualitative research in recent 30 years has become increasingly important because the quantitative approach relies too much on the researcher's view of education and less on the research participant's view (Creswell, 2007). Morrison (2002) argued that all educational research need to be grounded in people's experiences, and an interpretivist's core tasks were to view research participants as research subjects and explore the meaning of events and phenomena. In research concerning PE pedagogy, the qualitative or interpretive paradigm became the dominant research orientation in the 1990s (Rink, 1993). Templin, Graber and Belcher (1999) revealed that qualitative research became a legitimate and important form of inquiry in PE Pedagogy research because of its rich

description of the physical setting in what people say, do, think, and feel in the setting. The qualitative methodology's popularity in educational and sports pedagogy research further supported the qualitative research paradigm in this study as it focused on PE teaching and teacher development.

Development of Interview Guide

This study follows the semi-structured interview guide outlined by Patton (2002). An interview guide "lists the questions or issues that are to be explored in the course of interview" (Patton, 2002; p343). It offers topics or subject areas with which the interviewer is free to explore, probe, and ask questions that can elucidate and illuminate a particular subject (Patton, 2002). Thus, this semi-structured design allows the researcher to elaborate upon an interviewee's answer and probe on an issue that was not foreseen during interview.

Interview questions were designed based on the theoretic framework, literature review, research purposes, and expert opinions. Table 1 illustrates the congruence of research purposes, theoretical framework, concepts, and interview guide questions. First, according to the purposes of this study, two sets of questions were classified under the topics "interview questions about perception" and "interview questions about influencing factors." The first set answered the general question on pre-service teachers' perception of TGfU, while the second shed light on the factors influencing this perception.

Second, constructivism provided the guidance for the design of interview questions. The first set of questions was designed to answer research questions such as "What is the pre-service teachers' perception of TGfU?" This set of questions was

developed to explore information on pre-service teachers' general feeling, the strength and limitations of TGfU, challenges encountered in the learning process, and the perceived use of TGfU. Examples included "What do you think are the strengths and limitations of the TGfU model?" and "What challenges did you encounter when learning TGfU?" These interview questions were designed based on cognitive constructivism because of its emphasis on the knowledge development process (e.g., assimilation and accommodation); the learning process was composed of direct experience, making errors, finding solutions, and presenting information (Piaget, 1970). The second set of interview questions was designed to answer two general research questions: (1) "What are the individual factors that influence pre-service teachers' perception of TGfU?" and (2) "What are the social factors that influence pre-service teachers' perception of TGfU?" Two primary questions — "Can you describe the individual factors that influence your perception of TGfU? How do these factors influence your perception of TGfU?" and "Can you describe the social factors that influence your perception of TGfU? How do these factors influence your perception of TGfU?" — were consistent with Piaget's (1970) cognitive constructivism and Vigotsky's (1978) social constructivism, respectively. This was because cognitive constructivism addressed the individual learning process, while social constructivism concentrated on the social and culture influence. Several follow-up questions were developed to probe further on the influence of potential factors. According to Patton (2002), follow-up questions are used to "deepen the response to question, to increase the richness of the data being obtained, and to give

Table 1. Congruence of research purposes, theoretical framework, previous literature and interview questions

Research Purpose	Theoretical Framework	Relevant Literatures	Interview Questions (See Appendix B)
1. To examine pre-service teachers' perception of TGfU	Cognitive constructivism	Howarth, 2005; Light, 2003; Light, 2002; Rossi et al, 2007; Wright et al, 2006	Question 1, 2, 3, 4
2. To identify individual factors which influenced pre-service teachers' perception of TGfU	Cognitive constructivism	Bechtel & O'Sullivan, 2007; Corthran, 2002; Ennis, 1994; Light, 2002; Light & Butler, 2005;McNeill et al, 2004; Rovegno, 1998; Rovegno & Bandhauer, 1997a, 1997b	Question 5 and follow-up questions 5.1, 5.2, 5.3, 5.4, 5.5, 5.6
3. To identify social factors which influenced pre-service teachers' perception of TGfU	Social constructivism	Bechtel & O'Sullivan, 2007;Doutis & Ward, 1999;Graber, 1995; Pope & O'Sullivan, 1998; Rikard & Knight, 1997; Stroot et al., 1997	Question 6 and follow-up questions 6.1, 6.2, 6.3, 6.4

cues to the interview about the level of response that is desired" (Patton, 2002; p366). In these follow-up questions, a number of potential influencing factors such as prior experience, knowledge, school culture, peer interaction, and so on emerged from the key issues emphasized by cognitive and social constructivism. For example, the interviewees were asked whether their game experience influenced their perception of TGfU as prior experience was addressed in cognitive constructivism.

Third, during the process of the developing relevant interview questions, the researcher reviewed the literature on PE teacher development and TGfU. Identification of research themes from the literature and pre-established frameworks offered further support for the interview questions. For example, the major issues in the first part of the interview guide — strength, weakness, challenge, and future use — were featured in such studies on TGfU as those conducted by Howarth (2005) Light (2003), Light (2002), Rossi et al. (2007), and Wright et al. (2006). Other studies offered further support for the potential influencing factors included in the second set of interview questions (Bechtel & O'Sullivan, 2007; Corthran, 2002; Ennis, 1994; Light, 2002; Light & Butler, 2005; McNeill et al., 2004; Rovegno, 1998; Rovegno & Bandhauer, 1997a, 1997b).

Finally, an expert in teacher education and a researcher specializing in TGfU offered comments and suggestions for improving the interview guide.

The Pilot Study

Yin (1994) stated that a pilot study can be conducted to aid the researcher in refining data collection plans in relation to both the content and the procedures that were followed. The pilot study is used formatively, assisting an investigator to develop relevant lines of questions and possibly even provide conceptual clarification for the research design as well (Yin, 1994). Therefore, prior to actual administration of data, a pilot study was conducted in November 2008. Figure 8 depicts each major step of data collection and interpretation.

Following the pilot study procedure (Yin, 1994), the interview invitation and

informed consent (Appendix A) were sent out via electronic mail and phone to four pre-service teachers (F=2, M=2). All target respondents agreed to participate in the pilot study. These participants were undergraduates of the four-year, full-time Bachelor of Education Degree program of the Sports Science and PE Department of The Chinese University of Hong Kong. The respondents possessed the following characteristics: (1) they were in the fourth year of the education program; (2) they successfully completed the course of pedagogy of primary PE in which the TGfU program was included from September to December 2007 and the course of pedagogy of secondary PE from January to April 2007; (3) they acquired a three-week teaching experience in secondary schools in May 2007 and a three-week experience in primary school in May 2008; and (4) they were not involved in the main study.

The pilot study laid the groundwork for the present study:

The pilot study was applied to help test the face validity of the interview questions. Patton (2002) placed high value on "face validity" of interview questionnaires because it concerns "the extent to which an instrument looks like it measures what it is intended to measure" (Patton, 2002; p149). According to Patton (2002), there are two steps to test the face validity of interview questions. First, content analysis is used after data collection to analyze interview data to check the appropriateness of the questions in answering specific questions. Following data collection and analysis, the interview transcription, interpretation, and guide were submitted to a panel of experts composed of one expert in teacher education, three experienced physical educators, and two researchers on sports pedagogy. The panel

evaluated the merits of the interview questions in obtaining relevant information.

Additionally, the pilot study was used to help train the interviewer, assess the time required to conduct the interview and the suitability of terminology, as well as identify any redundant or confusing areas of the interview. Resolving these issues in advance reduced unwanted differences between interviews and was "likely to increase the ultimate reliability of the interviews" (Slavin, 1996).

After interviewing the four pre-service teachers in this pilot study, a number of interview questions were modified, added, and/or deleted based on the following comments from the researcher and the expert panel:

1) A few original interview questions were modified and deleted. For example, two respondents expressed willingness to use TGfU in the future rather than during the period of teaching practice for the fourth question, "Do you intend to use TGfU in the future?" This question was subsequently modified to be "Do you intend to use TGfU in the future? If you do, when will you use TGfU in the future (school teaching or teaching practice)?" The third question, "What change did the TGfU program bring for you?" was deleted because the experts deemed it irrelevant to the topic of perception.

2) To uncover richer information on pre-service teachers' perception and influencing factors, the researcher proposed two additional questions:

   i. Based on your experience, how can you overcome the challenges you encounter during learning TGfU? (Added information for part one; "pre-service teachers' perception")

ii. Do you think your previous PE class experience influences your perception of TGfU? If so, how? (Added information for part two; "influencing factors")

The interviewees were likewise asked to provide comments on the draft interview questions and schedule. Interviewees commented that the interview questions provided an accurate picture of their perception and influencing factors. There were a high number of interactions between the interviewer and the interviewees. The duration for each interview, which lasted 20 to 30 minutes, was appropriate as well.

Based on interviewees' suggestions, the researcher's experience, and working and study timetables, the interview schedule for the main study was established. It was recommended that three to four interviews should be conducted each week. This would provide ample time for the researcher to process and analyze data systematically, which would offer insights into exploring new information in the next interview. Additionally, since the duration of the four interviews was approximately half an hour (30 minutes, 28 minutes, 26 minutes, and 28 minutes), the researcher observed that the respondents possessed enough energy and willingness to discuss their current experiences thoroughly. Each interview was recommended to contain three phases. The first phase would encourage open, free-flowing conversation for developing rapport. The second phase, on the other hand, would introduce the purposes of the study and obtain information on the respondents' background, teaching practice, and pedagogical courses. The third phase would follow the pilot

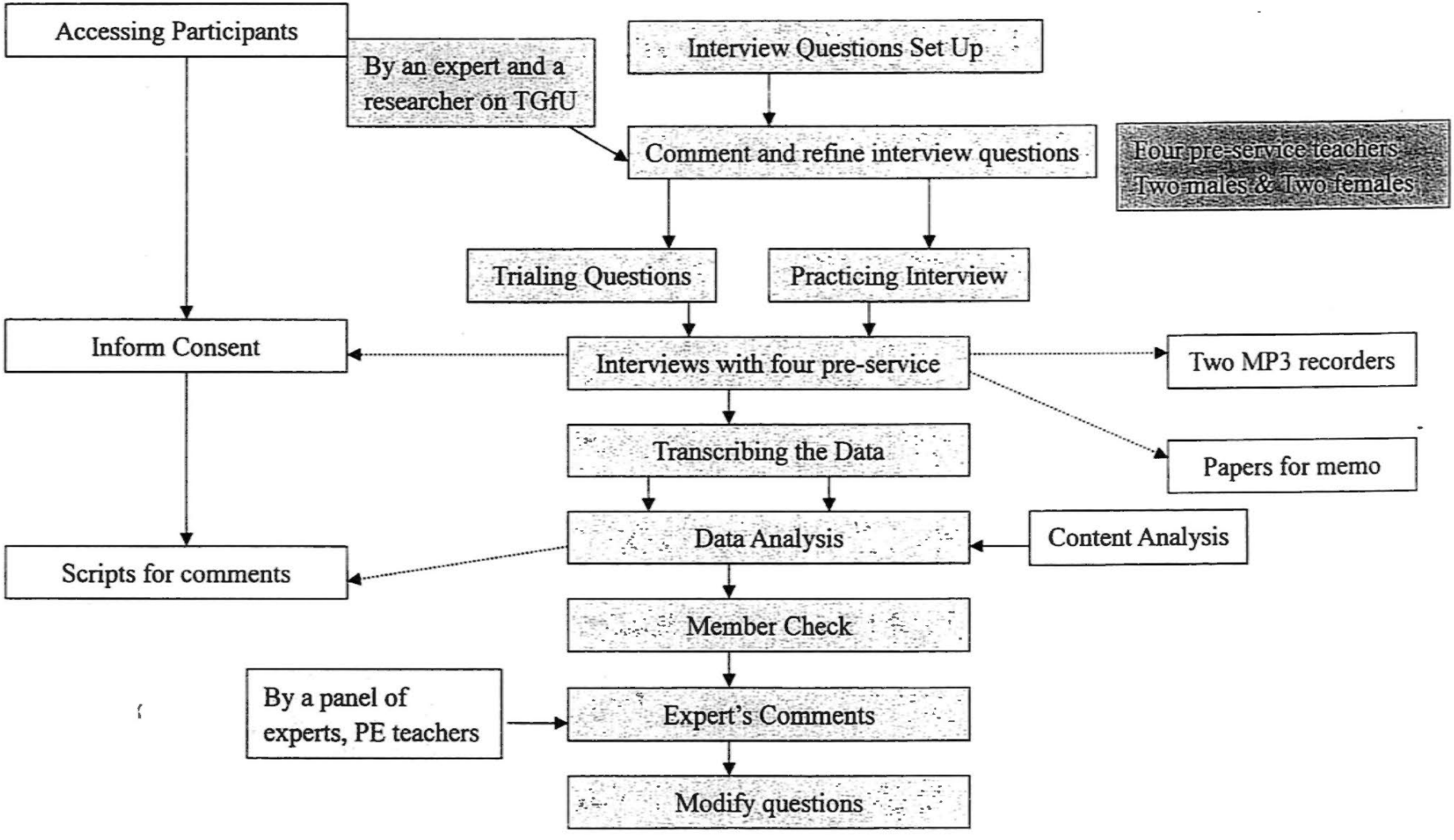
study's interview schedule to allow the interviewees to answer the questions. Finally, both the researcher and the panel agreed that the revised interview guide should be duplicated in the main study because it was effective in obtaining information on issues relevant to the research purposes. Moreover, the interview schedule was deemed reasonable. Based on the pilot study's results, the researcher decided to move forward and investigate the findings on a larger number of respondents.

Participants

A qualitative study does not require a statistically representative sample but rather one that is purposefully selected to represent important viewpoints of the research context (Patton, 2002). A group of 20 undergraduates was purposefully selected as participants because they recently completed the TGfU program of the Chinese University of Hong Kong. In November 2008, the researcher invited this group of 20 undergraduates to participate in person. At the same time, a cover letter along with the study consent form (see Appendix A) was sent out to the target participants. Non-respondents were contacted via electronic mail or telephone to confirm their participation in the study. Finally, a total of 20 undergraduates agreed to join in the study.

The 20 pre-service teachers were in their third year of teacher education. Table 2 summarizes the participants' gender, age, and major course. There were 12 male and 8 female participants whose ages ranged from 21 to 30 years. Thirteen pre-service teachers majored in ball games such as basketball, volleyball, soccer, handball, football, wood ball, badminton, and squash. The remaining seven participants

Figure 8. Data collection and interpretation procedures (pilot study)



excelled in sports such as track and field, swimming, and martial arts. All participants successfully completed the course "Pedagogy of Primary PE" from September to December 2008, as well as the course "Pedagogy of Secondary PE" from January to April 2008. Furthermore, the participants obtained a three-week teaching experience in secondary schools in May 2008 and will have a three-week teaching practice in primary schools in May 2009.

All participants attended the 14-week course on Pedagogy of Primary PE, including the TGfU program, from September to December 2008. The course was a professional development program available to pre-service PE teachers in the Chinese University of Hong Kong. The course aimed to provide a cohort of pre-service teachers with opportunities to gain a basic understanding of the optimal methods for teaching PE at the primary school level. Its other goals included the following: to understand the basic concepts of health-related fitness and how they can be integrated into movement experiences, and to use appropriate assessment methods to record students' growth and development. The course included a variety of content areas designed to align with the aforementioned goals. One class was devoted to the course introduction; four classes focused on fundamental movement (FM); three classes tackled TGfU; one class served as a school visit; and three weeks was allotted for pre-service teachers' microteaching including TGfU microteaching. The course was taught by an expert on PE pedagogy and supported by the researcher, who served as the teaching assistant. Aside from attending all classes, the researcher assisted teachers in preparing teaching facilities, co-taught one or two lessons, and provided

feedback when requested by the students.

Table 2. Summary of participants' background, interview date and duration

Code	Name (Pseudo nym)	Gender	Age	Major Sports	Interview Date	Interview Duration
R1	Candy	F	21	Track & Field	21/1/2009	31mins
R2	Justin	M	22	Soccer	21/12/2008	30 mins
R3	Andy	M	22	Basketball	10/1/2009	39 mins
R4	Elise	M	22	Soccer	16/12/2008	26 mins
R5	Daniel	M	22	Soccer, Squash	17/12/2008	37 mins
R6	Laura	F	22	Soccer, Volleyball	7/1/2008	26 mins
R7	John	M	30	Martial arts	9/1/2009	30 mins
R8	Tobby	M	21	Soccer , Volleyball	7/1/2008	28 mins
R9	Vivian	F	22	Track & Field	9/1/2009	36 mins
R10	Bobby	M	21	Swimming	12/1/2009	31 mins
R11	Rose	F	22	Basketball	13/1/2009	36 mins
R12	Winnie	F	22	Swimming, Badminton	17/12/2008	34 mins
R13	Holly	F	22	Track & Filed, Badminton	16/12/2008	37 mins
R14	Allen	M	22	Basketball, Badminton	15/12/1008	34 mins
R15	Penney	F	22	Soccer, Football	18/12/2009	33 mins
R16	Mickle	M	22	Track & Field	7/1/2009	37 mins
R17	Kenny	M	22	Handball	17/12/2008	36 mins
R18	Helen	F	22	Swimming	17/12/2008	28 mins
R19	Dave	M	22	Basketball, handball	9/1/2009	39 mins
R20	Jason	M	22	Soccer, Wood ball	18/12/2008	33 mins

Interview Data Collection

A semi-structured interview (Patton, 2002) was conducted with each participant from December 2008 to January 2009. Prior to the interview, the participants were contacted via telephone or electronic mail to arrange for and confirm the date, time, and location of the interview. Care was exercised to schedule the interviews so as not

to interfere with participants' academic schedule or important commitments. The researcher's office was selected as the venue for the interview. The date and duration are shown in Table 2.

Each interview began with a discussion on the study's purpose and an explanation of the informed consent (see Appendix A). The revised interview guide (see Appendix B) was employed as the instrument for the interview. The general question on teachers' perception of the TGfU model was asked, and the interviewer encouraged interviewees to speak freely on their views. More specific questions allowed the teachers to expound on the strengths, weaknesses, and challenges presented by TGfU. The participants were asked to present their perceived solutions to the difficulties in learning TGfU. Finally, they were asked regarding their willingness to use TGfU in the future. All the interviewees were required to explain their option.

The second part of the interview focused on factors influencing pre-service teacher perception. Teachers were asked to describe in detail the individual and social factors that shaped their perception. A series of follow-up questions ensued, obtaining additional information that the participants neglected to mention. For example, participants were asked to explain their previous game experience and its influence on their perception of TGfU.

All interviews were recorded on audio tape, the purposes of which were to ensure accuracy of data collection and to permit the researcher to be more attentive to the interviewee (Patton, 2002). During the interviews, key phrases, major points, and

interpretations were noted down and recorded to facilitate later analysis.

After each interview, the researcher immediately transcribed the interview data to maintain the rigor and validity of the research and guarantee the quality of data (Patton, 2002). Interview transcripts varied in length, ranging between three to five single-spaced pages. All interview transcripts were verified against the audiotapes for accuracy.

Data Analysis

Data analysis is the process of bringing order, structure, and meaning to a mass of data. Data obtained in this study was analyzed using content analysis (Patton, 2002). Content analysis is "the process of identifying, coding, and categorizing the primary patterns in the data" (Patton, 2002). The main goal of content data analysis is to seek concepts that represent commonalities in the qualitative data. With an deductive approach, the pattern, themes, and categories of analysis can emerge from the data rather than being imposed prior to data collection and analysis (Patton, 2002). The process involves coding and categorizing data, identifying primary patterns, and labeling themes in the data (Patton, 202).

Following Patton (2002), the management and analysis of this study included the following steps:

1) Twenty recorded interviews were transcribed verbatim by the researcher. The Nvivo 8.0 software was used to organize recorded data and transcriptions.
2) The transcriptions were read several times to obtain an overall understanding of the interviews and to validate data accuracy. Two researchers independently

identified raw data themes for each participant. Raw data themes were composed of the summary of the passage and a number of key words, phrases, or sentences in the interview data that conveyed a specific concept or idea. Two researchers discussed their respective raw data themes until a consensus was achieved.

3) Using content analysis, the researcher identified common themes or patterns shaped by cross-case raw data analysis. These common themes emerged as first-order themes, which were named using the terms already in the data or from other literature. For example, the term "bring fun" originated from the raw data, while the term "inclusive nature" was identified from the previous study (Light, 2002). A total of 22 first-order themes were identified. These first-order themes were included under 10 general dimensions, which corresponded to three major categories, namely, perception, individual factors, and social factors. Two researchers conferred to achieve consensus on the first-order themes and general dimensions, which characterized each participant's responses.

4) The summary of the raw data, first-order themes, general dimensions, and categories for participants was combined to form a hierarchical thematic structure. This structure is presented in Appendix E. Consensus for this stage of analysis was again achieved.

Trustworthiness

To ensure the trustworthiness, three methods were employed in this study: peer debriefing (Creswell, 2007), member checking (Merriam, 1998), and triangulation

(Patton, 2002).

1) Peer debriefing serves as an external assessment of the research process (Creswell, 2007). Lincon and Guba (1985) defined the peer debriefer as an individual who ensures the researcher's honesty. He/She asks the hard questions regarding methods, meanings, and interpretations. In this study, the peer debriefer was an experienced qualitative researcher. Throughout data collection and analysis, data, charts, matrices, memos, and the researcher's thoughts and analyses are shared with the peer debriefer, whose role is to comment on the logical nature of the researcher's interpretations, identification of all possible categories, and information regarding potential researcher bias.

2) Member checking (Merriam, 1998) was employed in this study to ensure the interview transcript's validity. This technique is considered by Lincoln and Guba (1985) to be "the most critical technique for establishing credibility" (p.314). According to Merriam (1998), this technique prompts the researcher to bring data and tentative interpretations back to the participants from whom the data are derived, asking participants to verify the plausibility of the results. Participants can confirm, deny, correct, or expand on any information presented in the transcription and interpretation. In this study, minor editorial changes were made at the teachers' request as a result of the member-checking process. As a general reaction, participants indicated that the manuscript correctly reflected their opinions.

3) A final analyst triangulation (Patton, 2002) was employed to test the reliability of

the data analysis. This is defined as "using several interviewers (to) help reduce the potential bias that comes from a single person doing all the data collection and provides means of more directly assessing the consistency of the data obtained" (Patton, 1990, p560). During the last coding phase, three researchers who were knowledgeable about TGfU but not involved in the project coded the data by category. An inter-coder reliability criterion was calculated by the following formula (Miles & Huberman, 1994): number of agreements divided by a total number of agreements and disagreements. The inter-coder reliability of this study ranged from .84 to .94. The average of the inter-coder reliability was .89, which was higher than the 80% inter-coder reliability criterion (Krippendorff, 1980; Weber, 1990). This indicated that the accuracy of the data analysis was achieved.

Results

Pre-service Teachers' Perception of TGfU

Strengths of TGfU

When the pre-service teachers involved in this study were asked about the strength of TGfU, most of them emphasized its propensity to engage students cognitively and emotionally, develop their intellectual development, and include different students with verifying skill levels.

Enhancing Engagement. The first strong theme that emerged as the strength of TGfU is its capability to engage students in games cognitively and emotionally. Through "observations of other teachers' instruction", "microteaching", "previous PE learning experience", and "prior game playing experience", pre-service teachers found

that the games allowed students to be more involved in and to be valued members of the team.

Several pre-service teachers reported that they believed students' cognitive engagement was enhanced with the TGfU approach because it allowed the students to understand tactics, strategies, and game rules by participating in various games. Emphasizing this strength, Elise explained,

> To play games, it is not enough to have relevant motor skills…Students have to acquire game knowledge including game rules, offensive and defensive tactics and strategies. As a result, students' motor skills are improved by games, but most importantly, the tactical knowledge is obtained. For example, students will not only know how to pass or catch a ball, but they will also learn some strategies to make sure they can pass or catch the ball successfully in games.

Meanwhile, majority of pre-service teachers related the students' emotional engagement with the enjoyment provided by TGfU. Across all the interviews, a large group of pre-service teachers revealed that they believed students would enjoy games in the TGfU approach because the games would be fun. Rose verified this view through a small-scale survey on some secondary school students, "…I conducted a small survey and sent questionnaires to a class of secondary school students to ask whether they preferred game play to skill practice in PE class. The results showed that over 90% students liked game play better." Tobby felt the same way. He discussed students' emotional engagement by talking about his past PE learning experience and by comparing TGfU with the skill-based teaching approach directly. He said,

> When I was a primary and secondary school student, my PE teachers conducted classes with a typical skill-oriented approach. In class, we performed the same sports drills repeatedly. It was quite boring. However, when games were occasionally provided in class, we became excited and energetic. Based on my prior PE class experience, I think students want to be involved in games and are less enthusiastic about skill acquisition because games are more enjoyable and interesting for students.

Fostering Intellectual Development. The pre-service teachers involved in this study considered TGfU as a teaching approach that fosters students' intellectual development, and this emerged as the second theme.

On the one hand, a small group of pre-service teachers reported that TGfU stimulated students' critical thinking. Critical thinking is a central component of a constructivist approach to learning. When applied in PE, critical thinking is defined as "reflective thinking that is used to make reasonable defensible decisions about movement tasks or challenges" (McBride,1991; p.115). Emphasizing this advantage, these pre-service teachers revealed that students observed, judged, and made decisions in games, hence improving students' critical thinking. Penney commented the following:

> In games, students observe other players, think about the tactics, make decisions on the use of sports skill, and independently resolve tactical problems that emerge during the game. The students must find the best way to cooperate with teammates to score. For example, in a basketball game, players

must think and make quick judgments on locating the best offensive or defensive position and passing, catching, or shooting accurately to achieve scores by cooperating with teammates. This requires students' quick response and critical thinking.

On the other hand, several pre-service teachers said that the TGfU model helped their students develop the habit of reflection. They revealed that teachers stimulated students to reflect by asking open-ended questions and facilitating students' discussion and debate. Laura explained,

> Raising questions is an important part of the TGfU class. By asking some questions or stimulating students to discuss an issue or a problem, students will actively think about what they learned in class instead of only accepting the knowledge. I think it is a good way to deepen students' understanding of tactical knowledge.

Inclusivity. The third important theme that emerged from the three pre-service teachers' interviews is inclusivity. These pre-service teachers reported that they liked TGfU because the games could be modified to include students with varying motor skill levels. As Kenny pointed out,

> In traditional PE classes, only the students with high skill levels have the chance to participate in the games. In contrast, games with low demand on skills and minimum rules can be structured to involve the less able players of the class.

Another pre-service teacher Allen reported that the TGfU model helped to deal with

students' individual differences effectively by including students with different skill levels. Allen said,

> I was attracted by the inclusive nature of the TGfU model because with it, teachers can consider students' individual differences effectively in PE class. Many students are not willing to attend traditional PE classes because they are not highly skilled. With TGfU, this problem is effectively resolved by providing students a variety of modified and interesting games, which require only fundamental skills.

Limitations of TGfU

Although TGfU is beneficial for students' learning, pre-service teachers had some reservations on the approach because of its limitations for teachers and students. For teachers, more lesson preparation is needed, while for students, fundamental requirements for psychomotor, cognitive, and affective domains are required.

Limitation for Teachers. Interview results from a group of pre-service teachers indicated that more lesson preparation was needed to conduct a TGfU class. Dave noted that teachers must put much more effort and time into the class preparation due to the lack of information related to teaching using the TGfU model. Dave said,

> At present, there is no adequate information concerning TGfU instruction, and very few teachers in Hong Kong use this approach. Most of the time, we create games by ourselves rather than refer to other teachers' classes, hence causing some difficulties in our lesson planning.

Other pre-service teachers commented that much more time and effort were necessary

for a lesson that uses the TGfU model compared with other models because the teachers consider many issues, such as students' sports skill level, game experience, classroom discipline, and equipment modification. All these issues directly influence the effectiveness of the TGfU class. Jason reported,

> A lesson that follows the TGfU approach increases teachers' work load...TGfU is a new approach for us. We do not have much experience in it, and we do not know if unexpected things would occur or not in the classes that follow the model. To keep the class under control, I try to consider each part of the class carefully prior to the class. For example, when I did my TGfU microteaching, I tried to take students' skill level, game experience, and classroom discipline into consideration in the lesson planning. Through this, I can have more confidence with my TGfU instruction.

Limitation for Students. In terms of the limitations of TGfU for students, based on their previous PE learning experience and TGfU microteaching experience a few pre-service teachers reported on the need for fundamental requirements for students' psychomotor, cognitive, and affective domains. In other words, the students taught using the TGfU approach must possess the fundamental skill, relevant game knowledge, moderate self-control, and high motivation to participate in TGfU. Due to these requirements, pre-service teachers argued that some junior primary school students, for example, Primary One to Four students, would not be able to adapt to the TGfU model because they were not physically, cognitively, and emotionally mature.

From the psychomotor perspective, although games could be modified to

counter the low-skill threshold, fundamental skills were perceived as essential for students to participate in the games. Tobby recounted, "...Modifying the games makes no difference when students do not even know how to pass or receive a ball." Justin added,

> I will not use the TGfU model in all classes...I would like to teach students fundamental skill and then introduce some primary tactical knowledge through the TGfU approach. When they are already skillful and have mastered some basic tactics that is the time I will teach them more complicated skill and tactics using the traditional and TGfU approaches, respectively. I think these two approaches can be supplemented. It is impossible to play games without any fundamental movement and manipulative skills.

Considering the cognitive domain, Vivian implied that the TGfU model is more complicated than traditional direct teaching because with TGfU, students must understand tactics and strategies, placing a high requirement for students' cognitive level. She said, "...I think that the TGfU model does not suit primary one to primary four students because their cognition is not yet developed to a level that allows them to understand complicated tactics and strategies."

Considering the affective domain, Candy and Penney showed that students in a class that use the TGfU model need to be able to control themselves and possess a high degree of attention. Penney found that managing a class of younger students (Primary One to Four students, age level from seven to ten) was challenging because they had low self-control. She stated,

> It is hard to manage a classroom when implementing the TGfU model because of the verbal and physical interaction among students. Students are free to talk with one another, hence taking their focus away from the teacher. They move and run around. Sometimes they are even knocked down by others that they could injure. Sometimes I feel that the classroom is in chaos, and I cannot control the students effectively. Therefore, I will use the TGfU approach only with some of the senior primary school or secondary school students because most of them already have self-control.

Similarly, Candy believed that the TGfU approach would not suit young students (Primary One to Four) because of their short attention span. She said,

> Young students are very active and they cannot concentrate. Their attention is easily distracted by the environment or other things. However, based on my understanding and microteaching experience, to ensure that the game could be processed smoothly PE teachers must spend a few minutes to clarify the rules and tactics first. I cannot imagine students sitting quietly for several minutes to listen to their teachers' talking.

Challenges

Pre-service teachers' responses to the challenges they face upon learning about the TGfU approach fall under two main categories: (1) challenges in understanding the concept of TGfU and (2) challenges in implementing TGfU. Based on their personal experiences, pre-service teachers provided some possible solutions to these problems.

Challenges in the Conceptual Understanding. Two pre-service teachers admitted that at first, they felt it was hard to comprehend the core idea of TGfU, that is, the constructivist nature of TGfU. Jason reflected "the theory of constructivism, the concepts of student center and problem solving are too abstract to be completely understood." Both teachers related their confusion about the TGfU concept to their too much exposure to the skill-based teaching approach.

Several pre-service teachers reported that understanding the relationship between game play and skills development was another challenge they encountered. They felt that fundamental skill was needed for students to play games. However, in the TGfU approach, students are typically introduced to play the games before they are taught the skill. Andy described the tension he felt in understanding such a relationship this way:

> I am confused with the concept of TGfU. I was taught that the TGfU approach is different from the skill-oriented approach because games are applied prior to the learning of skill. However, without the related skill, how could the students participate in the games?

Moreover, pre-service teachers' confusion in understanding the TGfU approach was connected with the time allocation for games and skills. The same teacher added,

> Honestly, I am not sure what the criteria for a standard TGfU class are. ...My understanding is that the emphasis of game play and skill practice is different between these the skill-oriented approach and the TGfU model. However, I wonder what the appropriate percentage of sports skill and games should be in

a TGfU class. This feeling of uncertainty makes me doubt if I had understood and implemented the TGfU correctly.

Challenges in the Implementation of TGfU. Interviews with the pre-service teachers involved in this study showed that the most difficult part of learning the TGfU approach was its implementation. Their responses indicated the difficulty in the creation of game forms and difficulty in the effective use of time.

Reflecting on their TGfU microteaching, a group of pre-service teachers feel it important to create new and interesting games. Hence, they gave the following responses: "The games should be new and provide enjoyment to stimulate students' learning interest"; "The games should relate with the objective of the class"; and "The game size, level of difficulty, and tactics emphasis must be considered". Given these requirements, pre-service teachers felt it difficult to create or modify a game to an appropriate level to bring out what they intend to achieve. Emphasizing the difficulty, Tobby said,

> When I conducted my TGfU microteaching, I felt the greatest challenge was designing the game. The game must bring enjoyment to the students. Otherwise, they will lose their motivation to participate. Additionally, the difficulty level of the game should be consistent with the students' sports skill level. These factors required me to do much preparation prior to the class. For example, I had to search some relevant information and tried to know much more about the students' characteristics including their age, skill level or class size, and discipline.

Another challenge for pre-service teachers in using the TGfU model is the effective use of time devoted to the lesson. A few pre-service teachers responded that they failed to implement the TGfU model because they had to spend extra time explaining the game rules and tactics in class, hence reducing the time intended for the activity. This can be attributed to any of the following reasons: "the complicated game rules and tactics", "the limitation of students' game knowledge and experience", and "the teachers' ability to clarify". Similarly, Kenny pointed out,

> During TGfU microteaching, I found that some pre-service teachers who used the traditional skill-based approach achieved better results than those who used the TGfU approach. Pre-service teachers who conduct TGfU class spent most of their time explaining the rules and demonstrating the games to the students. In addition, some students could not completely understand them. Some pre-service teachers had to stop the game while it took place just to make clarifications. Therefore, very limited time was left for the students' activity and game play. This influenced the students' learning negatively.

Possible Resolutions

Given the challenges they encountered, pre-service teachers offered some possible solutions based on their personal experience. With regard to the challenges in the conceptual understanding, the teachers suggested that they themselves should "read some relevant information and practice on my own", "attend a conference or workshop", "interact with peers", and "observe other teachers' instruction with the TGfU approach". For example, Holly revealed that the information from the internet

and communicating with other teachers through the internet greatly helped her understand TGfU better. She said,

> I like the TGfU approach, but I am confused with some of the concepts… In order to clarify these concepts, I surfed the internet for some information about TGfU and found adequate information. These pieces of information include some experts' explanation of TGfU concepts, some teachers' personal understanding of the TGfU model, and some videos of TGfU classes. Furthermore, I also communicated with the teachers from other places or other countries through the website or through MSN. I found that many other teachers have the same problems as I. We exchanged our own views and understanding of TGfU, and we recommended some books or materials to each other. These have been helpful for my conceptual understanding of the TGfU approach.

As regards the challenges in implementing the TGfU model, several pre-service teachers suggested "game modification", "keeping the topic simple", 'choosing the content that I am knowledgeable about', 'understanding students cognitive and skill level more', and 'teaching one concept over multiple lessons'. Emphasizing the problem of game creation, Bobby explained,

> My classmates said that they found it difficult to create interesting games. I suggest that one should begin with content that he/she is most comfortable with and has knowledge. For example, I am good at soccer, so it is easy for me to figure out some soccer games and understand the relevant game rules and

tactics.

Future Use of TGfU

The responses of pre-service teachers on the use of the TGfU model in the future are classified into two themes: (1) future use of TGfU in actual teaching and (2) future use of TGfU during teaching practicum. These classifications are based on the varying intentions of pre-service teachers to use the TGfU model between these two periods.

Future Use in Actual Teaching. During the interview, when asked if they would use the TGfU model in their actual teaching practice, 16 of 20 pre-service teachers said that they would try it out because of the benefits TGfU has on student learning. Elise said he would implement the TGfU model in practice:

> TGfU is beneficial for students' learning because it stimulates students' interest and promotes their cognitive development. With such strengths, I think it is definitely worth implementing. I am all for it...After the school visit and communication with school teachers, I found that many school teachers in Hong Kong have a negative attitude towards the implementation of TGfU because they think it is impractical. I think they will change their attitude if I apply the model successfully.

In contrast, Mickle and Jason expressed disinterest in using the TGfU model in the field. Jason related his unwillingness to implement TGfU to his 'conservative teaching beliefs" and "difficulty in making a change", while Mickle discussed the barriers of schoolteachers' heavy workload. He explained,

> In fact, a PE teacher in Hong Kong has much work to do. He or she not only has to teach PE classes but also has to teach two or three academic subjects like Chinese language, English language, and Mathematics. Not only that, he/she has to coach sports teams as an additional duty, which is not the case with other teachers. This is time consuming and energy demanding for teachers. I think that with such a heavy workload, I will not have the energy to try out some new approaches in my class.

Future Use in the Teaching Practicum. Despite pre-service teachers' intentions to implement the TGfU model, five of the 16 pre-service teachers who intended to use it in their future school teaching insisted that traditional skill-based approach should be embraced during their subsequent teaching practice. Interview results indicate that these five pre-service teachers' preference for traditional approach is linked with two issues: limited support from cooperating teachers (the schoolteachers providing supervision on the work of a pre-service teacher) and the short period of the practicum. Laura and Rose revealed that most of the schoolteachers including their cooperative teachers preferred traditional skill-based teaching approaches, hence greatly influencing their future implementation of the TGfU model during teaching practicum. Laura commented,

> It is risky to use TGfU during the practicum. In the school visit this year, I found that most of the schoolteachers do not know anything about TGfU, and they all think it cannot work in actual practice. Their opinions are very important to us because cooperating teachers grade our teaching performance

during the practicum. I would rather use the traditional approach because I don't want to receive low marks from my cooperating teachers.

The other three pre-service teachers attributed their unwillingness to use the TGfU model to the short period of the practicum. Kenny revealed,

> In fact, I will use TGfU only when I am familiar with the students. The problem is that the practicum lasts for only three weeks. It will take one or two weeks for me to know something about students' characteristics like their game experience and skill level, so there is little time left to apply TGfU. I think that the TGfU can be used if the practicum lasts for seven to eight weeks.

Individual Factors Influencing Pre-service Teachers' Perception of TGfU

This section discusses the three individual factors that emerged across all cases influencing pre-service teachers' perception of TGfU: game knowledge, teacher beliefs, and learning and teaching experience.

Game Knowledge

TGfU is a game-centered approach requiring teachers to use strategies to help students achieve learning outcomes. Consequently, in this study, the interview data from the majority of the pre-service teachers indicate that game knowledge is a major individual factor associated with pre-service teachers' successful or failed experience in learning and implementing the TGfU model.

Penney and Helen indicated that knowing the games is the fundamental requirement for teachers to learn TGfU. Addressing this issue, Helen stated, "...teachers who use the TGfU model must know about offensive and defensive

strategies, game rules, and connecting the games to specific skills. Otherwise, they will find it hard to understand and implement this approach completely."

Furthermore, the findings reveal that some of the pre-service teachers' adequate knowledge is linked with the successful learning and implementation of TGfU. For instance, Allen and Helen replied that rich game knowledge and experience helped them to understand the TGfU concepts and implement the TGfU approach during the peer teaching.

> I have experienced being a game player and found that games can improve not only my skills but also my decision-making and problem-solving abilities. This helped me understand more about the constructivist nature of games (Allen)
>
> ...Game knowledge was quite helpful for my lesson planning. The conceptual knowledge and understanding of tactics gave me ideas to design and modify games. I do not need to spend time on searching for information and learn the tactics. This made the lesson planning work more efficient and effective (Helen)

In contrast, the interviews reveal that the lack of confidence in teaching TGfU is linked with the restraints imposed by the shallow understanding of the conceptual aspect of the games and limited game experience. Some of them described their difficulties in the following ways:

> ...Without game knowledge, it would be hard for me to construct an array of novel game contexts to capture the participants' interest and motivate purposeful practice. I would not know what concepts and skills the game covers

and how concepts and skills should be addressed by the game (John).

...Compared with traditional skill-oriented approaches, I have to put much more effort and time in preparing work for a TGfU class because I have to search for game information and learn relevant knowledge (Penney).

...Without game experience, I would not be confident with my instruction because I would not be sure about the unexpected things that could happen in class... (Jason).

Teacher Beliefs

In the present study, teacher beliefs emerge as a major individual factor influencing pre-service teachers' perception of TGfU. This section discusses two main sub-themes: teacher beliefs on the profession and teacher beliefs on quality PE.

Teacher Beliefs on the Profession. Pre-service teachers' beliefs on their profession constitute a key sub-theme that serves to influence their perception of TGfU. In other words, what help pre-service teachers accept the TGfU approach is related to how they define themselves in their personal lives and their philosophy in teaching PE. Several pre-service teachers said that they were open-minded and wanted to be updated in their teaching, therefore making them interested in new instruction models. Holly pointed out,

I am open-minded, and I always look for something new. Change is not a risk but a new opportunity ... TGfU is a new approach, and I did not know anything about it before. However, I am interested in this new approach and curious about the outcomes it will yield.

However, there are two discriminant cases. Two pre-service teachers did not express a strong need to use the TGfU approach in teaching because of their comparatively conservative beliefs and visions. Daniel explained,

> I am traditional and conservative in my teaching. I do not enjoy challenge. I am inclined to use the traditional teaching approach because I do not want to risk implementing a new approach. For example, it is possible that bad remarks will be given by cooperative teachers if I use TGfU.

Teacher Beliefs on Quality PE. Teacher beliefs on quality PE emerge as another sub-theme. The responses of most pre-service teachers on the quality of PE teaching favor the following issues: "bringing enjoyment to students", "effective use of class time", 'being physically active", 'enhancing students' engagement" and "promoting students' knowledge development'. These views motivate pre-service teachers to try out new activities or procedures to provide better PE classes for their students. As Kenny stated,

> Quality PE class must improve not only the students' psychomotor domain but their cognitive and psychomotor domains as well. In TGfU classes, students not only improve skills, they also enjoy games and learn tactical knowledge in TGfU classes. I believe it is worth a try because of the consistency between this approach and the requirements of a quality PE class in my mind.

Learning and Teaching Experience

One other aspect that appears to be an important factor influencing pre-service teachers' perception of the TGfU model is their PE learning and teaching experiences.

Within the category of personal experience, two main sub-themes are identified: peer teaching experience and prior PE learning experience.

Prior PE Learning Experience. In this study, almost all the pre-service teachers described their previous PE teachers' instruction in the primary and secondary schools as a typical skills-oriented approach. Dave explained, 'At first, some warm-up and stretching exercises were done, and then the teacher taught us some motor skills such as passing and catching. After that, the teacher asked us to practice the sports skills'. Interviews with Jason and Helen indicate that they are bored with the repetitive skills practice in their PE classes; thus, they are more inclined to try out fresh and interesting approaches including the TGfU model in their own PE classes. For example, Helen commented,

> ...In every class, we just repeated the same motor skills, which were boring. I thought at that time that when I become a PE teacher, I would not want my students to have the same PE learning experience as I did back then. I thought would like to try out some new approaches to stimulate students' interest.

However, adopting the TGfU model requires pre-service teachers to devise ways of teaching different from what and how they were taught when they were students. Most of the pre-service teachers responded that too much first-hand experience with the skills-oriented model in their younger years became a barrier to their learning of TGfU. Holly said,

> I have been exposed to the skills-oriented PE teaching for over 10 years. I am deeply impressed by this approach. It is challenging to take away some of my

habitual behaviors and try a new approach. This is a barrier for me in learning TGfU.

Peer Teaching Experience. The pre-service teachers' responses indicate that the peer teaching experience is a significant factor in their inclination or disinclination to implement the TGfU approach.

Some pre-service teachers reported that the peer teaching experience provided them the opportunity to try out the TGfU model in a mock class, subsequently helping them to understand the concept of TGfU. For example, Allen said,

> Peer teaching allowed me to understand the features of the TGfU model more. For example, during peer teaching, I acted as a student and I realized that I must figure out a good way to score. Furthermore, teachers asked students questions in class. This allowed me to understand that TGfU could stimulate students' thinking.

Meanwhile, success or failure in peer teaching is directly related to pre-service teachers' inclination or disinclination to implement the TGfU model. Some pre-service teachers affirmed that their attempt to adopt the TGfU approach had been moderately successful. Students seemed "more active", "play cooperatively", and "engaged in games", which reinforced their interest to use TGfU in future lessons. In contrast, the negative experiences make pre-service teachers perceive its difficulty in implementing the TGfU approach and doubt its practicability. Andy revealed,

> Through TGfU peer teaching, I found that there were many barriers to implementing the approach successfully. For example, when Jackie gave a

TGfU lesson, he tried to explain the game rules, but it seemed that most of the students did not understand him. These problems made me hesitant to implement TGfU in the future.

Social Factors Influencing Pre-service Teachers' Perception of TGfU

Three themes emerge as social factors influencing pre-service teachers' perception of TGfU: government policy, teacher support, and professional culture.

Government Policy

Pre-service teachers link government policy with their perception of the TGfU model. The changes in the PE curriculum in 2002 and 2007 in Hong Kong aimed to improve students' generic skills. Teacher-center and skill-oriented discipline was changed to a student-centered and health-related curriculum (CDC, 2002, 2007). Accordingly, pre-service teachers reported that the PE curriculum reform motivated them to look for new teaching approaches. They considered TGfU as a "good option" for them because "TGfU fits in well with the commitment of improving students' generic skills and student-centered learning in school." In addition, Jason stated,

> The reformed PE curriculum aims to stimulate not only students' psychomotor development but also their cognitive and affective development. In a TGfU class, students learn tactics and strategies. It also improved students' problem-solving abilities. Most importantly, TGfU class brings much fun for the students. Given all these, I can say that TGfU is one of the teaching approaches that follow the guidelines of the new PE curriculum. This consistency between the PE curriculum reform and TGfU enhanced my

acceptance of TGfU.

Teacher Support

The support that pre-service teachers receive is the second social factor influencing their perception of the TGfU model. Two sub-themes emerged: support from teacher educators and support from peers.

Support from Teacher Educators. Interview data from several pre-service teachers show that teacher educators greatly influence the pre-service teachers' learning about the TGfU model because these educators introduced them to TGfU. For example, Helen stated,

> Dr. Garcia was the leader who showed us where to go. She not only taught me the theoretical knowledge about TGfU, but she also provided us some TGfU demonstrations and peer teaching experience to show us how to put the TGfU model into practice. These allowed me to believe that TGfU could work in classroom practice.

In addition, pre-service teachers reported that their teacher educators appreciated the change in teaching method and encouraged them to try out fresh teaching approaches. As Rose explained,

> ...Dr. Garcia encourages us to try out new teaching approaches. She always shares with us some new information and ideas on teaching. She helped us to be updated in our teaching. Her teaching belief influenced me and reinforced my inclination to implement TGfU in the future.

Support from Peers. The second sub-theme is peer support. Over half of the

pre-service teachers in this study reported that they shared instructional ideas with peers and talked about the learning and application of the TGfU model. The exchange of the teaching experience not only influences pre-service teachers' perception of TGfU but also helps them in implementing it effectively. The responses from Winnie and Candy imply the importance of peer opinions.

> Kelly told me that students liked the TGfU class because they enjoyed game play. Influenced by her experience, I decided to try it out during my teaching practicum the next year (Winnie)
>
> Vivian shared with me her peer teaching experience and advised me to simplify the games so students would understand the game rules immediately. I followed her suggestions and found that it worked in my microteaching. (Candy)

However, there are several discriminant cases for this sub-theme. The negative effects brought by the peers' failed experience of teaching games are apparent. For instance, Vivian said,

> … Kivi told me that TGfU is hard to implement in Hong Kong schools because the numerous students and the limited space made it impossible for students to play games normally. I have a positive attitude towards TGfU, but I am hesitant to use it at present because of some people's failures with that approach.

Professional Culture

Professional culture is identified as the third theme influencing pre-service teachers' perception of TGfU. Professional culture refers to the personal culture that can affect change on an individual basis (Pope & O'Sullivan, 1998). In this study,

most pre-service teachers reported that the traditional professional culture is dominant because few schoolteachers in Hong Kong apply the TGfU approach. As Elise stated,

> I found that the school teachers all use the traditional skills-oriented approach. Few of them know about the TGfU approach. I concluded that TGfU was not widely used in Hong Kong, and it would make me feel isolated if I use this approach.

Furthermore, Helen recounted how he was discouraged by a schoolteacher's comments on TGfU.

> I remember that during my secondary school teaching practicum last year, I used games in the whole class. However, one school teacher told me that my class was not a "standard" PE class. This experience frustrated me and made me doubt if the TGfU approach was worth implementing.

Meanwhile, a few pre-service teachers reported that the impact of professional culture was limited at present. However, it could have a great influence when they become school teachers. For example, Jason said,

> This traditional professional culture will not influence my perception greatly because I have few opportunities to communicate with them. However, when I go to school for my teaching practicum or when I become a schoolteacher, the teaching philosophy of these teachers possibly will possibly influence my views on TGfU.

Discussion

The Relationship between Constructivism, Perception, and Influencing Factors

The study seeks to examine pre-service teachers' perception of TGfU and identify the influencing factors based on cognitive and social constructivism. Results confirmed that the cognitive and social constructivism applies to pre-service teachers' learning of TGfU and is connected with the individual and social factors influencing pre-service Hong Kong teachers' perception of it.

The Relationship between Pre-service Teachers' Perception of TGfU and Cognitive Constructivism

The interview data concerning pre-service teachers' perception of the TGfU model in this study revealed that the learning process of TGfU include several steps: receiving new information (TGfU program), responding to new information (strengths and limitations), making errors (challenges encountered), looking for solutions (possible solutions), and information presentation (future use). This confirmed the perspective of cognitive constructivism, which suggests that learning is to construct new knowledge through the process of assimilation and accommodation (Piaget, 1970). Piaget (1970) asserted that when learners are presented with information conflicting with their existing schema, a state of disequilibrim is created. To resolve these conflicts, learners change their cognitive structures in the face of experiences, which come in conflict with their existing understanding (accommodation), or incorporate experience that match the learners' understanding into an existing cognitive structure (assimilation) (Piaget, 1970). Therefore, whether pre-service teachers could find out the solutions to the conflicts and problems or not will decide the change of their cognitive structures. It is suggested that the university professional

development program in Hong Kong should focus on pre-service teachers' difficulties in learning and implementing TGfU and should be improved to help pre-service teachers to resolve their problems.

The Relationship between Individual Factors and Cognitive Constructivism

The findings of this research could be explained by cognitive constructivism, which states that knowledge is self-regulated with personal experience (Piaget, 1970). Cognitive constructivists assert that learners are viewed as actively seeking, interpreting, and differentiating new information in terms of their prior knowledge, belief, and experience (Prawat, 1992). The research results in this study confirmed the constructivists' assumption by describing the influence of individual factors on pre-service teachers' perception of TGfU including game knowledge (prior knowledge), teacher belief (belief), and learning and teaching experience (prior experience) . This suggests that pre-service teacher beliefs on professionals and PE, game knowledge, and prior PE learning experience must be considered when designing an effective TGfU program.

The Relationship between Social Factors and Social Constructivism

In addition, the findings of this research were in line with social constructivism, which suggests that knowledge is socially constructed and mediated by social interaction and culture on learning (Fosnot & Perry, 2005; Jonassen, Davidson, Collins, Cmpbell & Haag, 1995). Peer support is influential in pre-service teachers' acceptance of the TGfU approach through sharing of teaching experience, while the support from teacher educator enhances pre-service teachers' perceived use

of TGfU because the teacher educator introduced TGfU to pre-service teachers and encouraged them to try it out. This finding agreed with the concept of "intersubjectivity" of social constructivism, which stresses the role of "adult" (teacher educator in this study) and "the learners' peers" (peer support in this study) when they converse and negotiate meaning (Fosnot, 2005). In addition, it was found that pre-service teachers' perception of TGfU was influenced by government policy and professional culture. The government policy on curriculum innovation (the innovative culture) promoted pre-service teachers to accept TGfU, while the accepted professional culture (the old professional culture) allowed pre-service teachers to suspect the applicability of TGfU. This agreed with the concept of "enculturation," which emphasizes that culture is established to enable individuals to learn the accepted norms and values of the culture or society in which they live (Fosnot & Perry, 2005). It indicates that apart from the effective professional development program, pre-service teachers need to be provided with continuous support by their peers, teachers, in-service teachers, and the government.

The Interaction between Individual and Social Factors

The constructivist perspective suggests that cognitive constructivism interplays with social constructivism (Cobb, 2005). Cobb (2005) contended that the individual is "disequilibrated," or cognitively challenged by the culturally based shared experience. At the same time, the culture is disequilibrated by individuals as they construct new meaning and then share their perspectives with those around them. The research results of this study showed that individual and social factors did not

independently influence pre-service teachers' perception of TGfU. Instead, these two groups of factors interplayed with each other.

Pre-service teachers' knowledge, beliefs, and experience are constructed in social settings and affected by the social background. For example, pre-service teachers reported that their prior PE learning experience was a barrier for their acceptance of TGfU because their prior primary and secondary schoolteachers used the skill-oriented approach in class. It is obvious that the individual factor "prior PE learning experience" is connected with the social factor "professional culture" in which most of the schoolteachers insist on the use of the skill-oriented approach and believe that the TGfU model cannot work in a school setting. Taking another example, as Candy said, "Peer opinions are important for me because they have the same educational background as I have. Their opinions affected my teaching philosophy"(P.92). It is obvious that the individual factor "teacher beliefs" (teaching philosophy) was impacted by "teacher support" (communication with peers). In addition, pre-service teachers used to be taught with the skill-oriented approach supported by the "traditional professional culture". The "professional culture" partially results in pre-service teachers' lack of "game knowledge" because the skill-oriented approach attached importance on the skill practice instead of game play.

At the same time, however, each pre-service teacher's knowledge, experience, and beliefs influence the broader social background by forming to the culturally accepted concepts. For example, the social factor "professional culture" in this study was mainly formed by some in-service teachers' instructional philosophy (teaching

beliefs) of preferring the traditional approach to new approaches. Furthermore, it was influenced by pre-service teacher belief as well. As Allen stated, "Many schoolteachers have negative attitude about implementing TGfU, but I think they might change such an attitude if I apply the approach successfully." (p.76).

As can be inferred at this point, this research provides evidence to support the interaction between cognitive and social constructivism. This interrelationship suggests that concentrating only on one issue is rather unreasonable. To improve pre-service teachers' perception and perceived use of TGfU, the government, universities, and schools should collaborate.

Similarities in and Differences from Previous Studies

Pre-service Teachers' Perception of TGfU

Strengths and Limitations. The research results thus far show that TGfU has some strengths, such as its propensity to enhance students' engagement, foster intellectual development, and include students with different skill levels. This supports earlier works suggesting that TGfU increases cognitive and emotional engagement (Light, 2002), improve students' creativity (Howarth, 2005), and provides equitable experience to students (Light, 2003; Light & Tan, 2006; Light & Butler, 2005). It is important to note that these strengths are consistent with the goals of the Hong Kong PE curriculum innovation of acquiring knowledge and developing generic skills. Thus, this study confirms that the TGfU approach is an effective way to help teachers achieve the requirement of the new PE curriculum. On the other hand, the results of the study show that the strengths of TGfU presented by pre-service

teachers are related to cognitive and affective domains, such as fun and knowledge development, instead of the psychomotor domain. This indicates that Hong Kong pre-service PE teachers focus more attention on students' knowledge and emotions rather than skills. This differs from the value orientation of in-service teachers in Hong Kong, which places a significantly high priority on developing performance proficiency in sports skill (Ha, 2001; Ha et al., 2007). The different value orientation between pre-service and in-service teachers may result in their varying attitude towards TGfU. To enhance both pre-service and in-service teachers' acceptance of TGfU, further study is needed to examine the interaction between pre-service and in-service teachers and the impact of this interrelationship on the implementation of TGfU.

TGfU has certain limitations. For one, pre-service teachers have to spend more time preparing for the class. This is in line with Light and Butler's (2005) study, which reported that implementing the TGfU model requires more preparation and adaptability for in-service teachers in the US because they must be knowledgeable about offensive and defensive strategies. However, it is notable that the emphasis on teachers' class preparation is different between these two studies. The current study reported that pre-service teachers spend time obtaining such information as students' sports skill, game experience, and classroom discipline to "keep the class under control". Additionally, in Rossi et al.'s (2007) study, in-service teachers suggest that TGfU does not fit young children (from Primary One to Four students) because the skill and conceptual demands of the TGfU approach are too great for these children. This is consistent with the present study, which shows that some junior primary school students are not compatible with the TGfU model. According to Piaget (1971),

children at 7-12 years always tie to concrete reality and lack the ability to generate abstract propositions. Therefore, it is hard for too young children to understand fully about the abstract tactics and game rules. However, it cannot be ignored that pre-service teachers seem not to understand TGfU fully, especially the four pedagogical principles in TGfU including game sampling, representation, exaggeration and tactical complexity (Thorpe et al., 1986). The four pedagogical principles indicated that games could be modified by comparing with other games, condensing games, changing game rules and tactical complexity. Holt et al. (2002) included the four pedagogical principles into the TGfU model as an important component. In this study, pre-service teachers also reported that they felt it challenging to modify game according to students' skill levels. This partially contributed to pre-service teachers' views on TGfU, that is, too young children do not suit the TGfU model. As for the difference between the current study and previous literature, it is obvious that Hong Kong pre-service teachers focus their attention more on classroom discipline and students' self-control in TGfU class. There are three possible reasons for this peculiarity in this study. First, compared with in-service teacher, pre-service teachers give more importance to classroom management by often citing it often as the most important problem they face (Everston & Weinstein, 2006). Second, teachers in Asian countries are more concerned about student discipline than those in Western countries due to cultural differences (Shin & Myung-Sook, 2007). Third, the perception of management is different. A quiet and obedient class may be valued more in Asia than in Western countries where free will and liberal values tend to frame discipline as more about safety and consideration for others than obedience.

Challenges and Resolutions. A number of studies explored the challenges teachers encounter in understanding and implementing TGfU (Butler, 1996; Howarth,

2005; McNeill et al., 2004; Randall, 2008; Rossi et al., 2007; Wright et al., 2006). Among them, McNeil et al. (2004) showed that Singaporean pre-service teachers have difficulties in understanding the constructivist nature of the TGfU model. Moreover, the same teachers encountered great challenges in designing units of work, clarifying, selecting content, questioning, and sustaining students' interest in the implementation of TGfU. In line with McNeil's et al. (2004) study, this study reveals the challenges Hong Kong pre-service teachers encounter in understanding the nature of the constructivist approach and implementing the TGfU model including the creation of games (selecting content) and effective use of time (clarification of game rules or tactics). The high consistency of the research findings between these two studies is possibly linked to the similar culture and educational background between Singapore and Hong Kong. Both Singapore and Hong Kong began as British colonies, with a British legal and administrative system, and both feature a mixture of influences through the joining of Eastern and Western values brought about by British colonization. Furthermore, in recent years, both Singapore and Hong Kong have initiated educational innovations that aim to create opportunities for students to engage in critical thinking and problem solving and be less involved in rote memorization of material (CDC, 2002; CDC & HKEAA, 2007; Wright et al., 2006;). Given this similar cultural and educational background, it is not surprising that pre-service teachers in these two different regions have the similar perceptions of TGfU.

Future Use. Many studies have shown that many in-service teachers do not

implement the TGfU approach in their classes (Butler, 2005; Evans & Clarke, 1988; Kirk & Claxton, 1999; Rossi et al., 2007). Similarly, the related local findings reveal that most in-service teachers in Hong Kong adopt the skill-based approach in teaching their students during game lessons (Cruz, 2004; Liu, 1997). In contrast to these research findings, most of the pre-service teachers involved in the present study responded that they intended to use TGfU when they begin teaching in a real school setting. The explanation maybe related to the pre-service teachers' willingness to innovate and try out new approaches (Butler, 2005). In-service teachers are more exposed to traditional approaches than pre-service teachers hence these approaches become a barrier for adopting TGfU.

Individual Factors Influencing Pre-service Teachers' Perception of TGfU

Consistent with existing literature (Bechtel & O'Sullivan, 2007; Ennis, 1994; Light, 2002; Rovegno, 1992) that emphasized the influence of teachers' prior beliefs and knowledge on the way new information is accepted and integrated into professional practice, pre-service teachers involved in this study reported that their game knowledge and teacher beliefs have affected their acceptance of TGfU. However, this study has a unique feature in that peer-teaching and prior PE learning experiences have been described as facilitators or inhibitors in the acceptance of the new approach. As literature review on factors influencing teachers' acceptance of new approaches suggests, most studies have focused on in-service teachers, not on pre-service teachers. This could explain why the factor of "peer teaching experience" was solely emphasized in the present study: Peer teaching is incorporated into teacher

preparation programs specifically as a method of preparing pre-service teachers professionally (Jenkins, Garn & Jenkins, 2005). Describing peer teaching experience as a facilitator would be unique to pre-service teachers. In terms of the factor on prior PE learning experience, Light (2002) noted that some of the pre-service teachers who completed their schooling in Asian countries showed considerably different attitude to sports and PE compared to those born in Australia. In Hong Kong, the ways of teaching and learning in schools have historically been underpinned by Confucian ideas. Confucianism places emphasis on hierarchical human relationships (e.g., obedience and respect for teachers in the classroom), which have long been considered as a virtue. The acceptance of authority and respect for teachers has led to a teacher-centered approach in which teachers are expected exercise strong leadership and control (Kwon, 2002). Influenced by this traditional teaching philosophy, pre-service teachers in Hong Kong might find it more difficult to accept TGfU compared to their counterparts in Western countries.

Social Factors Influencing Pre-service Teachers' Perception of TGfU

Consistent with the studies which point out that teacher educators and colleagues influence teacher acceptance of new approaches (Bechtel & O'Sullivan, 2007; Corthan, 2001; Pissanos & Allison, 1996), the present study reveals that teacher support has influenced pre-service teachers' perception of TGfU. Similarly, in line with the study of Pope and O'Sullivan (1998), this study confirms the importance of professional culture. However, different from research findings by Bechtel and O'Sullivan's (2007), which noted that district policy was perceived as a key barrier

for teachers to accept a new approach due to lack of professional development for teachers, the pre-service teachers in this study confirmed that government policy motivated them to test the TGfU because the TGfU program is provided and the objective of PE curriculum innovation is consistent with TGfU. Difference in results likewise confirms that educational change and professional development are highly interdependent (Fullan, 2003; Guskey, 2002).

In conclusion, although there are challenges in adopting TGfU such as the amount of preparation needed and that TGfU does not suit too young children, pre-service teachers believed that TGfU is beneficial for students because of its propensity to enhance students' engagement, stimulate their thinking, and include different students. Meanwhile, most pre-service teachers fully intend to use TGfU in their future school teaching. However, some of them will not use TGfU during their teaching practicum due to their traditional beliefs, the lack of support from cooperative teachers and the short period of teaching practicum. Research findings also indicated that individual factors including game knowledge, teacher beliefs, learning and teaching experience, as well social factors such as government policy, teacher support, and professional culture positively or negatively influence pre-service teachers' perception of TGfU during their learning process. Furthermore, individual and social factors interplay with each other. These research results prove that cognitive and social constructivism is useful in illustrating a blueprint of teachers' learning process of TGfU.

CHAPTER FOUR

STUDY II. THE THEORY OF PLANNED BEHAVIOR: PREDICTING PRE-SERVICE TEACHERS' BEHAVIORS TOWARDS TGFU

Introduction

Extensive educational studies have been conducted on teachers' views and implementation of the constructivist approach. Although some teachers have reported that the constructivist approach is beneficial for students and could be used to achieve a positive learning effect with instruction (de Kock et al., 2004; Fensham, Gunstone & White 1994), most of them resist implementing it (Cook, Smagorinsky, Fry, Konopak & Moore, 2002; Little, 1993; Purpel & Shapiro, 1995; Rosenfeld & Rosenfeld, 2006; Windschitl, 2002). Recent studies reveal that teachers are confronted with the challenges in implementing this approach, such as, the conceptual, pedagogical, cultural and political dilemma (Windschitl, 2002); the challenges with "change teacher role and curriculum focus, multiple student tasks, non-traditional assessment and staff relations" (Rosenfeld & Rosenfeld, 2006);.the official constructivist emphasis, conflicting notions of constructivism, and conflicts between theory and practice(Cook et al., 2002). Despite the well documents of teachers' views and implementation of a constructivist approach, there are limited studies investigating various issues that influence pre-service teachers' implementation of the constructivist approach (Rodriguez & Berryman, 2002).

In PE, Research findings suggest that some pre-service teachers have positive attitude towards TGfU because it increased students' engagement and stimulates

students' creative minds (Howarth, 2005; Light, 2002, 2003; Light & Tan, 2006). However, several researchers conducted a series of studies on TGfU implementation of Singaporean pre-service teachers in recent years and found that pre-service teachers cannot implement TGfU effectively. McNeill et al (2004) conducted a pilot study to examine the implementation of this approach among 11 pre-service teachers. The findings indicated that teachers have problems in time management and questioning. Based on the research results from McNeill et al. (2004), McNeill et al (2008) proposed that TGfU teaching be examined from three perspectives: structure – lesson form in terms of teacher-time and student-time; product – how pre-service teachers used those time fractions; and process – the nature of their questioning. The two-category observation system including time-management and questioning was utilized to assess the extent Singaporean pre-service teachers are able to implement the TGfU model effectively. The research concluded that pre-service teachers in Singapore cannot implement TGfU effectively (McNeill et al., 2008; Wright et al., 2009) Furthermore, Wright et al. (2006) and Howarth (2005) discussed the reasons behind the ineffectiveness in the teaching behavior of pre-service teachers. It was found that the facilitators of the teachers' implementation of TGfU are specific methods course, university course, and cooperating teacher, while the TGfU implementation was inhibited by students' unfamiliarity with the TGfU model, the students' lack of skills to play the games properly and conceptual knowledge, and the lack of space, equipment and time, and complexity of analyzing students' learning abilities. Since there are limited studies on pre-service teachers' implementation of

TGfU (Wright et al., 2006), there is a need to better understand their teaching behavior and determinants of their behavior towards TGfU.

In Hong Kong, many PE teachers have expressed the positive views on this new approach because TGfU offered more participating opportunities and improved students' motivation to learn (Liu, 2002, 2004). However, as same as other countries, teachers encountered great challenges in implementing TGfU like the difficulties in managing the class, transforming tactical knowledge into pedagogical content knowledge, and inadequate space for games (Li & Cruz, 2006).

Study one was completed to examine 20 pre-service teachers' perception of TGfU. In that study, most of the pre-service teachers responded that they have positive attitude and belief towards TGfU. However, according to the study conducted by Ha et al. (2008), this group of pre-service teachers had high belief scores but it could not be translated into intentions or actions. Reflecting on the TGfU learning and teaching, there is a need to examine whether this group of pre-service teachers with positive attitude towards TGfU could put it into school practice effectively or not. Taking cue from the research gap and findings of the initial study, the purposes of this study include the following: (1) to examine pre-service teachers' teaching behavior towards TGfU from the perspective of use of time, questioning and feedback and (2) to determine the factors influencing pre-service teachers' teaching behavior towards TGfU. Results generated from this study would help to provide grounds and direction for establishing effective professional development program for pre-service teachers. This, in turn, may lead to more effective PE program for students. Furthermore, it is

expected to provide supportive evidence for the government to adjust the policy and improve PE teachers' acceptance and implementation of TGfU in Hong Kong.

Theoretical Framework

Ajzen's (1991) theory of planned behavior served as the theoretical basis for this study. This theory suggested that both behavior intention and perceived behavior control are determinants of behavior. In other words, a person's intention to engage in a certain behavior and his/her sense that performance is under control can be deemed as motivators of behavior.

The theory of planned behavior is an extension of the theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) in which an individual's intentions to perform a given action are determined by a joint function of the attitude towards the behavior and the subjective norm. The attitude towards behavior refers to the individual's positive or negative evaluations of performing that action. This represents a personal component. The subjective norm includes the individual's perceptions about what others expect him/her to do in that situation. This component represents a social component and measures the extent to which the individual believes that other people, important to his/her life, think the behavior should be performed.

Since not all behavior is under volitional control, a third determinant, perceived behavior control (Ajzen, 1991) was added to the model to form the theory of planned behavior (Ajzen, 1991). Perceived behavior control refers to the resources and the obstacles that either facilitate or impede engagement in the behavior. In other words, perceived behavior control reflects the individuals' perceptions on how behavior is

complicated by internal (skill, ability, and knowledge) and external (resources, opportunity, and cooperation) factors (Ajzen, 1985, 1991). According to the theory of planned behavior, behavior intention is determined by attitude, subjective norm and perceived behavior control. In addition, perceived behavior control could also directly determine behavior when perceived behavior control can be considered to function as "a partial substitute for" (Ajzen & Madden, 1986, p.459) actual control over factors that could interfere with performance of the behavior.

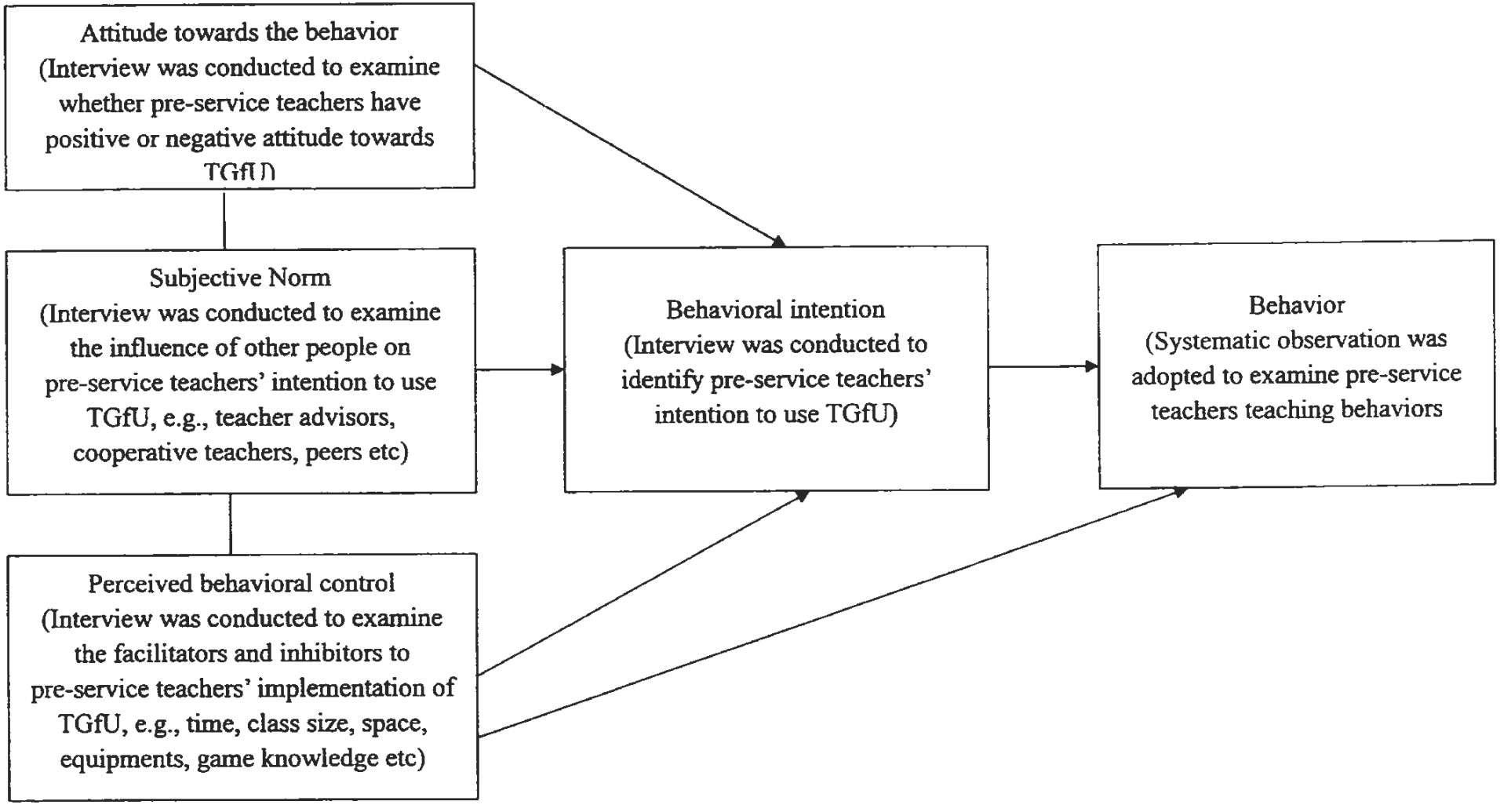
The theory of behavior control has been widely used in educational research to predict individuals' intent to engage in a certain behavior, such as, to predict teachers' intentions to engage in collaborative reflective practice (Shireen & Desouza, 2003), to predict the performance of teacher behavior associated with effective teaching in heterogeneous classroom (Stanovich & Jordan, 1998), to examine teachers' beliefs towards teaching behavior and their actual teaching behavior in teacher portfolio assessment (van der Schaaf, Stokking & Verloop, 2008), to investigate the factors that encourage or hinder resigned teachers from returning to teaching (Kersaint, Lewis, Potter & Meisels, 2007), and to examine teachers' implementation of the science education reform including constructivist approach in their classroom (Beck, Czerniak & Lumpe, 2000; Haney, Czerniak & Lumpe, 1996; Haney & McArthur, 2002; Haney, Lumpe, Czerniak & Egan., 2002).

Specific to PE research, the theory has been used mainly to predict and understand teachers' intention to teach PE (Faulkner et al., 2004; Martin & Kulinna, 2004; Martin et al., 2001), teaching behavior (Martin & Kulinna, 2005) and

psychological perception (Kulinna et al., 2008). First, research results showed that the theory of planned behavior was supported because PE teachers with positive attitude towards teaching highly active curriculum or perceived that their fellow teachers, administrators, parents, and particularly students wanted them to teach highly active classes were more likely to have strong behavioral intentions towards teaching highly active-related classes (Martin & Kulinna, 2004; Martin et al., 2001). Second, the theory was applied to examine actual teaching behavior. Connecting the Theory of Planned Behavior and the self-efficacy theory, Martin and Kulinna (2005) found that simply having a strong intention to teach physically active lessons was not enough. Teachers' teaching behavior was connected with the resources and skills to teach physically active lessons. Third, Kulinna et al. (2008) used the theory of planned behavior as the guiding theory to investigate the impact of a yearlong professional development intervention on PE teachers' psychological perception. The survey results indicated that teachers' psychological perception was increased with the predictor variables of the planned behavior model.

Comparing the application of the theory of planned behavior between educational and PE research, it is notable that the theory of planned behavior was not applied in the research of constructivist teaching in PE research area. Furthermore, it is found that few studies used the qualitative method to examine the determinants of intention or behavior. Smith and Biddlem (1999) recommended the qualitative method,

Figure 9. The characteristics and application of the theory of planned behavior



such as interviews should be conducted to generate a more valid set of variables. Therefore, the qualitative method was applied to examine whether the constructs of the theory of planned behavior were sufficient to explain pre-service teachers' TGfU teaching behavior in the present study.

Methodology

The case study design (Merriam, 1998) was drawn to investigate the determinants predicting pre-service teachers teaching behavior towards TGfU in this study. It involves the process of gathering information that allows the researcher to concentrate on particular subject or group of subjects to understand their behaviors caused by the interaction of various factors. This process eventually enables the researcher to produce a holistic description of his or her understanding of the behaviors being studied. Therefore, this approach is suitable for this study as its purpose is to understand the participants' teaching behaviors and determinants of this behavior intensively and extensively. This method was employed in previous studies on teachers' intention to use a new approach and teaching behaviors (e.g., Haney et al., 2002; Haney & McArthur, 2001).

Participants and Settings

One of the significant features in the case study is a purposeful sampling, which was used to select participants in this study. According to Babbie (1990), a purposeful sampling procedure "... might be appropriate for you to select your sample on the basis of your own knowledge of the population, its elements, and the nature of your research aims" (p.97). The minimum samples should be described based on

determined purpose and anticipated results of the research.

There are several different strategies for purposeful sampling including typical, unique, maximum variation, convenience, snowball chain and network sampling (Merriam, 1998). In this study, the maximum variation sampling was applied because this strategy could help to identify and seek out those who represent the widest possible range of the characteristics of interest for the study. With the maximum variation sampling, the important shared patterns and their significance emerged from heterogeneity could be yielded from a small sample of great diversity (Merriam, 1998; Patton, 2002). In this study, the criteria upon which the maximum variation is based are as follows. A group of 20 pre-service teachers in Study one is targeted. This group of pre-service teachers had a 3-week teaching practicum in 13 primary schools in Hong Kong in May 2009. In order to generate a broad enough profile of school context, consideration was given to the school context and participants' background information like gender, age, and game experience. Six pre-service teachers (four male and two female) who taught in different schools and had different background information were selected in this study.

All participants successfully attended the 14-week course on Pedagogy of Primary PE (age level from 6-11), including the TGfU program, from September to December 2008. They had a three-week teaching practicum in four primary schools in Hong Kong in May 2009, in which, this study was conducted. The detailed background information about six participants and school context are presented as follows. Pseudonyms were used throughout this article to protect the privacy of all

participants.

School 1 (Dave)

Dave taught in a government-granted primary school located in the district of New Territories during teaching practicum. The school was church-run, and had the oldest history of around fifty years. It was a small-sized school with 569 children spread between 19 classes. In a school visit, the researcher found that the campus was built with four basketball playgrounds, a soccer playground, and a medium-sized auditorium for PE class during rainy days. As Dave reported, "the space is big enough for my normal instruction." Additionally, there were five PE teachers comprised mostly middle-aged teachers in this school. According to Dave's report, most of them were "very hardworking, but all teach in a skill-oriented approach."

Dave is a 21-year-old male pre-service teacher. He is a player in his university basketball team and has rich basketball and handball game experience. Dave taught six classes from grades two to six with 36 to 42 students in each class. Class content covered volleyball, handball, basketball, and rope skipping.

School 2 (Tobby and Winnie)

Tobby and Winnie taught in a private, English primary school. It is church-affiliated, and has a history of around 20 years. This school was located in the district of Kowlong. It was a medium-sized school with 966 students in 24 classes. Most of the students enrolled are from families with high socioeconomic status. Based on the researcher's visit, the campus was built around a basketball playground and a small playground, part of which is covered to provide for PE class during the rainy

days. According to Tobby and Winnie's report, space was not sufficient for their instruction. The size of the PE teaching staff and support staff are larger than most schools in Hong Kong, with eight PE teachers, mainly young teachers. Tobby reported, "Most of them use the skill-oriented teaching approach. But some of them know much about the TGfU model."

Tobby, a male pre-service teacher, is 22 years old. He is highly skilled with soccer and volleyball. Tobby taught 12 classes with 35 to 42 students in each class during this study. These classes included students from grades one to six. The class content covered manipulative skills, rope skipping, volleyball, and soccer.

Winnie is a female pre-service teacher, 21 years of age. Her major sport is swimming, and she lacked game experience. Winnie taught 13 classes from grades one to six in this study. There were 40 to 45 students in each class. Rope skipping, football, volleyball, manipulative skills were included in the class content.

School 3 (Daniel and Penney)

The school Daniel and Penney taught was a direct subsidiary primary school. Located in Hong Kong Island, the school has a history of around thirty years. With a religious affiliation, it is one of the many schools administered by a large charitable body. This is a medium-sized school with around 798 students in 24 classes. On a visit to the school, the researcher observed that there were three fields - the school and found that there are three fields - a badminton playground, a basketball playground, and a small auditorium that could be used by a PE class of 30 students for rainy days. Daniel felt that the space was sufficient for his teaching except for rainy day. There

were six PE teachers in this school. Based on Penney and Daniel's report, most of the PE teachers in this school used a traditional skill-oriented approach in their classes.

Daniel is a 21-year-old male pre-service teacher who has plenty of game experience in soccer and squash. In this study, he taught 14 classes ranged from grades two to five. There were 30 to 35 students in each class. The class content included playing volleyball, soccer, and table tennis, as well as honing manipulative skills.

Penney is a female pre-service teacher, 22 years of age. She is good at soccer and wood ball and has a rich soccer game experience. In this study, Penney taught 12 classes from grades one to six. There were 35 to 39 students in each class. The class content covered manipulative skills, basketball, volleyball, and table tennis.

School 4 (Bobby)

Bobby taught in a religious, direct subsidiary primary school. The school is located in the district of New Territories. This school was founded in 1970 and has a history spanning 39 years. This was a large – sized school with 1153 students spread between 30 classes. The research found that it had two basketball playgrounds and one auditorium with cover. There were six PE teachers in this school, majority of whom in their 20s to 30s. Bobby reported that the PE teachers in this school were aware of TGfU and some of them apply TGfU in their PE teaching.

Bobby is a male pre-service teacher at the age of 22. His major sport is swimming, and he lacks relevant ball game experience. Bobby taught ten classes ranging from grades two to six. There are 35 to 40 students in each class. The class

content covered basketball, volleyball, and soccer.

Instrument

Targeted Behavior Categories

A three-category observation system including time management, questioning, and feedback was utilized to assess the extent that pre-service teachers are able to implement the TGfU model. These three categories have been extensively applied in studies on TGfU. French et al (1996a, 1996b) employed three categories such as the number and types of tasks for each lesson, the nature of teacher feedback, and the use of time to verify the TGfU treatment. In Turner and Matinek's (1999) study, a validation protocol was also used to assure the fidelity of the TGfU model. The treatment validation instrument required the coder to make judgments on each lesson based on the following criteria: (a) the students spent most of the lesson in games or game-related situations; (b) the students spent the lesson learning specific skills taught by the teacher before playing a game; (c) the teacher started the lesson with skill instruction; (d) the teacher intervened in game play or game-related practices to explain strategies to students; (e) the teacher based his or her teaching on observations of an initial game or game-related situation (e.g., 3 versus 1); (f) the major emphasis of the lesson was skill teaching; and (g) the major emphasis of the lesson was tactical instruction in games or game-like practice. More recently, a two or three-category observation system was employed to examine pre-service teachers' teaching behavior of TGfU including the use of time, questioning and feedback (Kuehl-Kitchen, 2005; McNeill et al., 2008, Wright et al., 2006, 2009). For example, McNeill et al. (2008) and Wright et al. (2009) applied the categories of use of time and questioning to assess the extent Singaporean pre-service teachers are able to implement the TGfU model effectively. The findings from these two studies indicated that although

pre-service teachers are delivering more student time (practice and game) than teacher-time, pre-service teachers spent more time organizing, explaining, demonstrating and reviewing than their students spent playing games, which is not consistent with the game-centered approach. Meanwhile, most questions were asked during play or practice but were substantially low-order involving knowledge or recall and only a small part of questions were open-ended and capable of developing tactical awareness. Thus the research concluded that pre-service teachers in Singapore cannot implement TGfU effectively (McNeill et al., 2008; Wright et al., 2009). In addition, Kuehl-Kitchen (2005) used a three – category system including use of time, questioning and feedback to measure pre-service teachers' teaching behavior of TGfU. This three-category observation system was also employed in the present study for three reasons: (1) The instrument is the most updated one and have been applied by several recent quality studies, (2) like the previous studies using this instrument, the present study also focus on pre-service teachers' teaching behavior of TGfU, and (3) feedback is also an important element for a TGfU class (Turner & Matinek, 1999).

Pre-service Teacher's Use of Time. The use of time of each pre-service teacher was placed into the following two categories: teacher time and student activity time. Teacher time applied when a pre-service teacher explained, demonstrated, organized, questioned, and reviewed. Explanation time was defined as teachers' explanation devoted to defining or clarifying tasks. Demonstration time is defined as that time when a teacher (by him/herself and/or pupils) presented a visual image for clarification purposes. Organization time occurred when student were not physically active; it comprised general organization and student management. Questioning time occurred when the teacher asked questions on the content or procedure with the intent. Reviewing time was a teacher-led segment at the lesson end used for reviewing

current and pre-empting future lesson content. Student activity time was further categorized as practice (technical drills) or game activity, which is situational, modified or regular play (McNeill et al., 2008; Wright et al., 2009).

The Nature of the Pre-service Teacher' Questions. Questioning was investigated based on the types of questions asked. Questions were determined to be one of two types: lower and higher order (Metzler, 2000). The lower order questions were further classified as three types including knowledge, technical, and affective. Knowledge questions produced factual information through memory or recall (e.g., what does a 3-second lane violation mean?). Technical questions revolve around how to be more efficient (e.g., When you were catching the ball, how did you stop to keep from traveling?). Affective questions interpreted students' mood and/or comfort level (i.e., were you happy with this game?). The tactical questions are considered as higher order because those questions "analyzed, synthesized, and evaluated relevant information" (Metzler, 2000; p. 107). Tactical questions probed for decision-making and problem-solving (i.e., Where is a good place to support?) (McNeill et al., 2008; Wright, et al, 2006).

The Nature of Pre-service Teacher's Skill Feedback. Skill feedback for each teacher and lesson was counted by episode and categorized into general, specific non-tactical, or specific tactical. General feedback referred to verbal reactions without either exact prescriptions for improving subsequent performance or precise targeting of the specific aspect of performance (e,g., "You have done a good job, Jane."). Specific feedback referred to verbal reactions including either precise targeting of the

aspect of performance that triggered the comment or exact prescriptions for improving subsequent performance (i.e., "I like the way that you used your arm strength to pull your body up during the flexed-arm hang."). Non-tactical and specific tactical feedbacks were determined based on the relation with skill performance or game tactics.

Based on previous studies where treatment validation was provided to assess the appropriateness of teachers' TGfU teaching behavior (French et al., 1996a, 1996b; Kuehl-Kitchen, 2005; Turner & Martinek, 1999), majority of (over 50%) student activity time, the feedback, and questions must be tactically oriented to be a valid representation of the TGfU model.

Development of Interview Guide

At the end of the teaching practicum, a semi-structured interview (Patton, 2002) was conducted with each participant. Prior to the interview, an interview guide was prepared to facilitate the dialogue between the researcher and the participants. The interview guide focuses on the factors facilitating or hindering pre-service teachers teaching behaviors of TGfU. The interview questions were designed based on research purpose, theoretical framework and expert opinions.

The research purpose and the theory of planned behavior provided guidance for the design of interview questions. According to the theory of planned behavior, individuals' behavior is related with behavioral intention directly. Furthermore, behavioral intention and behaviors are influenced by attitude, social norm, and perceived behavior control. Consistent with the theory of planned behavior, the first

question "Did you intend to use the TGfU approach in three lessons observed during the teaching practicum? What are the factors influencing your intention to use TGfU? " was designed to explore pre-service teachers' behavioral intention (intention to use TGfU). The second and third questions concentrate on pre-service teachers' attitude. For example, according to the theory of planned behavior, attitude influences the behavioral intention. Thus the third question "Do you think your attitude towards TGfU will influence your intention to use TGfU? If so, how?" was created to explore whether pre-service teachers' attitude towards TGfU influence their intention to use it. The fourth question "Can you describe the attitude of teachers or students (cooperating teachers, university supervisors, principals, other school teachers or students) towards TGfU? Did they support or oppose you to use TGfU? Did their attitude towards TGfU influence your intention to use TGfU?" is developed to discover the influence of teachers and students around on pre-service teachers' intention to use TGfU, which is in line with the social norm components measuring the extent to which the individual believes that other people, important to his/her life, think the behavior should be performed. The final four questions (from the sixth to ninth question) were created to reveal the influence of perceived behavior control on the behaviors (the teaching behaviors of TGfU) because these questions refer to the resources and the obstacles that either facilitate or impede engagement in the behavior. For example, the eighth question "What are the factors which facilitate your implementation of TGfU? Please give three examples" was created to find out the factors which have positive effect on pre-service teachers' implementation of

TGfU.

Finally, a panel of one expert in teacher education and three TGfU researchers evaluated content validity of the interview questions. Modifications was made prior to interviews.

Data Collection

Documentation

A variety of documents and archives were collected during the study to obtain the background information of schools and participants' instruction, verify data gathered through interviews and provide triangulation. These data include school documents, pre-service teachers' teaching timetable and lesson plans. A review of each school was first conducted via the internet. Extensive data on the school background including the site and location, instructional purpose and function, number of students, space for games, and sports facilities were obtained. Second, the teaching timetable and lesson plans were obtained from participants. The teaching timetable provided information related with pre-service teachers' instruction, such as class content, class size, and class duration. Lesson plans were used primarily to confirm data obtained in interview, for example, lesson plans could be applied to confirm pre-service teachers' intention to use TGfU.

Systematic Observation

Systematic observational method (Darst, Zakrajsek & Mancini, 1989) was applied to collect data with six pre-service teachers through 3-week teaching practicum in primary schools. According to Darst et al. (1989), "systematic

observation allows a trained person following stated guidelines and procedures to observe, record, and analyze interaction with the assurance that others viewing the same sequence of events would agree with his [or her] recorded data" (p.6). Systematic observation techniques are used in PE and sports setting to uncover what PE teachers were doing (Van der Mars, 1989). This method of data collection has been used by several researchers who have studied PE teachers' teaching behaviors (e.g., Morgan, Sproule, Weigand & Carpenter, 2005; Sproule, Kinchin, Yelling, McMorris & McNeill, 2002).

Prior to the observation, contact with participants was made by telephone or electronic mail to arrange for and confirm the date, time and location of the class. The informed consent (Appendix IV) was sent to each participant. Data collectors are composed of the researcher and two research assistants who are two students at the fourth year of PETE program. Two research assistants were trained in the recording technology. Every data collector is responsible for the lesson recording of one or two schools.

Six pre-service teachers agreed to use the TGfU approach to teach three lessons with one lesson in each week. However, they were allowed to adopt other teaching approaches if they changed their mind during the teaching practicum. The researcher did not provide them with any curriculum guidelines to follow in teaching the three lessons. The three lessons for each participant were videotaped, rending a total of 18 lessons from which data were collected. Each lesson ranged from 30 to 40 minutes. In order to film the lessons, the camcorder was mounted on a tripod and positioned so as

not to interfere with the lesson. Cameras were set at a wide angle to videotape the teachers' behavior and about more than half of the student learning responses. Video recording commenced when the pre-service teacher took students to the field until the students were dismissed by the pre-service teacher. The pre-service teacher wore a microphone throughout the lesson. Two back-up video cameras were used to ensure that lessons were documented. Data were saved in compact disc for analysis.

Semi-structured Interview

A semi-structured interview (Patton, 2002) was conducted with each participant at the end of the teaching practicum. The participants were contacted via telephone or electronic mail to arrange for and confirm the date, time, and location of the interview. Care was exercised to schedule the interviews so as not to interfere with participants' academic schedule or important commitments. Each interview lasted for approximately 30 to 40 minutes.

All interviews were conducted at the researcher's office, and with the participants' consent, tape-recorded. Each interview began with a discussion of the research purposes. The interview guide was employed as an instrument for the interview. Pre-service teachers were asked to describe in detail their intention to use TGfU and factors determining their teachers' intention and subsequent behavior towards TGfU. For example, the question "What do you think are factors facilitate or inhibit your teaching behavior towards TGfU? Why?" was asked. Participants were required to talk about it freely to obtain information on the factors determining teaching behavior of pre-service teachers towards TGfU. A series of follow-up

questions ensured that additional information that the participants neglected mentioning was obtained. For example, the question "What do you think of TGfU? Do you think your attitude towards TGfU influence your intention to use TGfU? Why?" was asked to investigate whether the attitude towards TGfU influenced their intention to adopt TGfU or not. During the interviews, key phrases, major points, and interpretations were noted and recorded to facilitate analysis. The interview data were transcribed to facilitate coding. Interview transcripts varied in length, ranging between three to five single-spaced pages. All interview transcripts were verified against the audiotapes for accuracy.

Data Analysis and Trustworthiness

Observation Data Analysis and Trustworthiness

Analysis of observation data was completed by the researcher and two research assistants. The research assistants with PE background were trained in the technology before the data analysis. Concerns related to use of time and ability to ask questions and provide feedback when using the TGfU. For training purpose, the researcher and research assistants met before the study and began to practice observing TGfU teaching behaviour. The researcher explained the way to measure the use of time, questioning and feedback. And then, researcher and researcher assistants reviewed coding manual. After that, they viewed a recorded TGfU class and analyzed the relevant data. Then, the researcher compared the results of her analysis with that of the two research assistants. When the results of their analysis showed a 90% or higher agreement, the training ended.

Teaching behavior of all teachers was coded by using the three-category observational instruments. The teaching behavior of TGfU was analyzed using event and interval coding procedures. Questioning and feedback were analyzed with event recording. Event recording provides the user with data on the frequency of occurrence of discrete events and tallies the number of times that this event took place (Van der mars, 1989). Questions and feedback were measured with frequency and feedback episodes. Descriptive statistics was unitized to calculate all variables (percentage). Once the questions and feedback provided by pre-service teachers were analyzed and categorized according to the operational definitions, percentages of specific questions and feedback were calculated by dividing the total number of questions and feedback in each category by the total number of questions and feedback during three TGfU classes multiplied by 100

$$\frac{\text{Observed categorical behaviors}}{\text{Total number of observed behaviors}} \times 100$$

The use of time was analyzed with interval recording. Interval recording allows the observer to measure the occurrence or non-occurrence of behavior within specific intervals. In this study, a 10-second interval is applied. The unit of measurement for interval recording was frequency of intervals, with percentage of intervals of observed behaviors used for data reporting. Descriptive statistics was unitized to calculate all variables (percentage). The percentage of intervals were determined by dividing the total number of intervals in which behavior occurred by the total number of intervals

observed, multiplied by 100 (Van der Mars, 1989).

$$\frac{\text{Intervals with specified observed behavior}}{\text{Total number of interval}} \times 100$$

Inter-observer agreement reliability is critical for accurate interpretation of the data collected. Van der Mars (1989) stated that inter-observer reliability is measured by the degree to which multiple observers using the same definitions and coding protocol, while observing the same activity, agree upon their coding. Measures of reliability were conducted through double coding sessions in which the researcher and research assistant viewed and coded the same lesson videotaped. They independently observed and coded all 18 lessons. They then met to compare results on a percentage of agreement bases. The percent of agreement and disagreement was calculated to determine inter-observer agreement (IOA = agreements/ [agreements + disagreement]). The reliability of all lessons was checked with agreement level of .87, which was higher than the 80% inter-observer reliability criterion (Van der Mars, 1989). Based on the above calculations, the observation data analysis should be considered reliable.

Interview Data Analysis and Trustworthiness

Patton's (2002) content analysis was adopted in this study. Following Patton (2002), the analysis of the interview data for each participant included the following steps: (1) The researcher and a research assistant independently identified raw data themes for each participant. Raw data themes were composed of the summary of the

passage and a number of key words, phrases, or sentences in the interview data that conveyed a specific concept or idea. The researcher and research assistant discussed their respective raw data themes until a consensus was achieved; (2) Using content analysis, the researcher identified common themes or patterns. These common themes emerged as first-order themes, which were named using the terms already in the data or from other literature. For example, the term "limited space for games" originated from the raw data, while the term "the lack of TGfU conceptual knowledge" was identified from the previous study by Wright et al (2006); (3) The first-order themes were categorized into the general dimensions of behavioral intention, attitude, subjective norm, and perceived behavior control. The first-order themes which were not covered by these dimensions were classified as the dimension "other factors"; (4) The summary of raw data, first-order themes, general dimensions, and categories for participants was combined to form a hierarchical thematic structure. During the data collection and analysis, the trustworthiness of interview data were established by using member checking (Merriam, 1998), peer debriefing (Creswell, 2007), and triangulation (Patton, 2002).

Resutls

Case 1: Dave's Case

<u>Behaivor Intention and Behavior</u>

Dave reported that his strong intention to use TGfU was not changed during three-week teaching practicum as he stated during the informal interview "...Yes, I planned to adopt the TGfU model in all three ball game classes observed." There were

a total of 105 minutes with 35 minutes in each lesson. The observation data analysis indicated that student activity time was less than the teacher time on the organization, demonstration, explanation, questioning and closure (49.6%:50.4%). However, Dave spent 77.7% activity time on game play and 22.3% on skill practice. Twenty-eight questions and 34 feedback statements were identified from three TGfU lessons. Questions (53.1%) and feedback (63.7%) were shown to be predominantly specific tactics-related. Due to the majority of (over 50%) tactical feedback, questions, and lesson time on tactics-related activity, results provided evidence that Dave utilized the TGfU model appropriately.

Attitude

Dave is a strong advocate of TGfU. He indicated that he planned to integrate TGfU into his teaching practicum as a way of contributing to students' development of three domains including psychomotor, cognitive and affective domains. As he stated, "TGfU provides students fun; improves students' skills; and allows students to learn tactical knowledge. This model effectively improves students' psychomotor, cognitive, and affective domains. With all these benefits, I think it is worth trying."

Subjective Norm

Two key individuals related to Dave's intention to adopt TGfU were identified including cooperating teachers and students.

Throughout his teaching practicum, Dave commented that he had received support from his cooperating teacher, which provided a great deal of freedom to create lesson plans, offered useful suggestions, and instilled in him the confidence. He

expressed the significance of the support in the following way:

> It surprised me that my cooperating teacher knows much about TGfU. She encouraged me to use this model and gave me some ideas on my lesson planning, game design and classroom management... For example, she provided me information about students' skill level and game experiences and suggestions on how to modify games based on students' skill levels.

Students' positive response was also identified to reinforce Dave's intention to use TGfU. Dave found that students enjoyed games and were engaged in TGfU class, which provided more confidence for him to continue with the use of TGfU. He explained,

> I felt that students enjoyed games and want to be involved in it. After each TGfU class, some students ask me if we are going to do the same sort of thing in next class. When I said yes, they were excited. Their enjoyment motivated me to use TGfU.

When asked about the groups or people who would disapprove of adopting TGfU. Dave commented, "No one". He added,

> ...I talked to a few people in schools including school teachers or peers that I'm going to include TGfU in my instruction. They all said "oh, great" or "fine, feel free to try it". I can't image anybody telling me that they think it's wrong to adopt it in class.

Perceived Behaivor Control

When asked about what facilitators and barriers made it easy or difficult for him

to include the TGfU model in his instruction, Dave quickly identified the factors including TGfU conceptual knowledge, space, equipments, and classroom discipline.

TGfU conceptual knowledge, space and equipments constitute the key themes that serve to enhance Dave's actual teaching of TGfU. Dave was confident in his TGfU teaching and believed his TGfU teaching was successful. He attributed the success mainly to his rich TGfU knowledge and deep understanding of the TGfU approach. Emphasizing his TGfU conceptual understanding, Dave stated,

> ... I read some samples of TGfU lesson plan and watched some teaching demonstration, from which, I learned that the Q&A session and feedback on tactics are essential elements in students learning process of games because they stimulate students to think. In following classes, I stopped the game for several times and asked questions on the strategies. Students began to think about their positions, movements and cooperation with peers and then applied them in games... I felt my teaching is successful and will continue to use it in my future teaching.

As far as Dave was concerned, space and equipment were not really a problem. For the most part, Dave was satisfied with space and equipment and thought of them as "important things that helped me in implementing TGfU". He revealed, " The field in school is spacious and equipment are sufficient, which offered much benefit and freedom for my planning and organization of the TGfU classes, thereby saving time of organization and management."

However, experiencing a few discipline problems in his teaching practicum,

Dave expressed his frustration at classroom management. Due to the difficulties in managing the classroom and concern with students' safety, Dave did not include the TGfU model in all game classes he taught during teaching practicum. Commenting on this, he said,

> Discipline is a problem in TGfU teaching. Students run around the playground, making it hard to manage the classroom. A more serious matter that I am worried about is safety. Students run back and forth which allowed them to easily bump into each other. Therefore, I only use the TGfU approach in classes with good classroom discipline.

Case 2: Tobby's Case

Behavior Intention and Behavior

Tobby reported that he still intended to use TGfU in the three lessons observed. The lesson plan he provided also showed that class content of three lessons focused on games. However, his lesson plan was different from Dave as his TGfU instruction was inappropriate. Of the three game classes, two were volleyball and one was soccer. One hundred and five minutes were included in three classes with 35 minutes in each class. Tobby spent more class time on student activity than teacher time with a ratio of 54.5:45.5%. A majority of the activity time was spent on game play (87.4%). In all three classes, 17 questions and 29 feedback statements were posed by Tobby of which, 52.9% of the questions and 48.5% feedback statements were tactically oriented. This indicated that Tobby's TGfU teaching was not effective because not all three variables met the minimal requirements for the effective TGfU instruction.

Attitude

Tobby expressed his positive attitude towards TGfU. He agreed that adopting the TGfU model would stimulate students' interest and include students with different skill levels in their respective classrooms. In contrast to the skill-oriented approach, he stated,

> ...No one likes to just perform the same sports drills repeatedly. That's boring. TGfU is beneficial for student learning because it provides students opportunities to understand games in the game context, instead of just teaching them skills...It helps to take care of students' individual difference because games were modified to include all students. Thus I am all for it.

Subjective Norm

In terms of individuals influencing his intention to use TGfU, Tobby mentioned that he encountered opposition from his cooperating teacher but was encouraged by students' positive response.

Tobby perceived the cooperating teacher to be a negative source of support due to his preference for the skill-based approach. Describing the cooperating teacher as being typically skill oriented, he reported, "Mr. Wong believed that the traditional approach was most suitable for student learning and was not willing to accept new teaching ideas". Tobby expressed his frustration with the guidance of his cooperating teachers,

> It is risky to use TGfU during the teaching practicum. When I told my cooperating teacher that I will use TGfU, at first he agreed but later he changed

his attitude by saying it is impractical in PE. Although I planned to adopt TGfU before the teaching practicum, I was hesitant due to my cooperating teacher's negative attitude.

Despite opposition from his cooperating teacher, Tobby finally decided to employ the TGfU approach in his game teaching because he obtained the positive response from students. He noted,

> I tried the TGfU model in the first week, and I saw the difference in students. Students actually knew there is a purpose when they learn skills. This is because they want to win a point or put the ball in a space or whatever. They practice skills with an objective in mind... As a result, they not only improved their skills but also carry with them to games. I think this is important for primary school students.

Perceived Behavior Control

When talking about the actual TGfU teaching behavior, Tobby perceived equipments and game experience as the facilitators of his TGfU teaching; however, the limited space, shallow understanding of TGfU, and classroom discipline were identified as barriers to his effective teaching of TGfU.

Tobby revealed that equipment was not problematic in his teaching. As he said, "...I don't need to consider the equipment provision because those I need are available in the equipment room." Game knowledge also helped Tobby in implementing the TGfU approach particularly in lesson planning. He noted, "...Game knowledge is helpful for my lesson planning, offering me ideas on the design and

modification of games. I do not need to spend time on searching for information and learn tactics. This made the planning work more efficient."

However, Tobby noted that the limited spaces and large class size brought problems in classroom management and organization. As he commented,

> One of the problems I encountered is space constraints…There is only one basketball playground in the school. When close to 40 students are moving in a small space, it becomes impossible to play games and maintain the normal organization. For example, the games performed by a group of students are always interrupted by balls and students from other groups due to the limited space.

Classroom discipline was also another barrier for Tobby to implement TGfU. Due to much active social interaction between students, Tobby felt that the TGfU classroom is more difficult to manage than other PE classes. Frustrated by the constant challenge to maintain discipline and safety in his classes, Tobby expressed his desire to acquire more appropriate and effective classroom management skills. He stated,

> …Good students' discipline and teachers' classroom management are important for a successful TGfU class. Students ran around the field, which placed high requirements on classroom management. Lacking teaching experience, I cannot manage classroom effectively in TGfU classes and had to spend much time on the organization and classroom management but little time on student activity and game play.

Tobby also linked his failure to implement TGfU with his shallow understanding of

TGfU. Tobby admitted that he was confused with some concepts of TGfU, which made him uncertain whether the approach he used was TGfU or not. He stated,

> My understanding of TGfU was that games instead of skills are used in classes. I did not realize that the nature of TGfU was to stimulate students' thinking… Usually, I just watch games and pick up questions and provide feedback based on what students doing. I did not think about whether these questions and feedback were tactics-related or skill-related.

Case 3 Bobby's Case

Behavior Intention and Behavior

Bobby responded that he still had strong intention of using TGfU and adopted the TGfU model in all the three ball game classes observed. However, his TGfU teaching behavior was shown to be not effective. There were a total of 105 minutes for all three TGfU lessons (one basketball class and two soccer classes) with 35 minutes in each lesson. The observation data analysis indicated that activity time was less than the time on the organization, demonstration, explanation, and closure (47.3:52.7%). However, Bobby spent more activity time on game play than skill practice (61.9:38.1%). Eleven questions and 18 feedback statements were identified from three TGfU lessons. The questions (79%) and feedbacks (75.9%) presented by Bobby were shown to be specific skill-related. These results illustrated that except for the use of time, Bobby did not meet the minimum requirement for three lessons by providing a majority of tactical feedback and questions. This indicated that Bobby did not implement the TGfU model completely.

Attitude

Bobby perceived attitude as a fundamental motive for him to implement the TGfU model. He asserted that TGfU can work in Hong Kong primary schools because his prior primary PE teacher used TGfU successfully. Emphasizing his previous PE learning experience, he said,

> ...Personally, I think the TGfU model is appropriate for senior primary school students, for example, primary 5 or 6 students, because they have the fundamental skills and self-control abilities... I don't suspect the application of TGfU in school because my previous secondary school PE teacher used a lot of games in his teaching. I felt his instruction is successful because students were engaged in the PE class. Therefore, I will use this model in grade five or six PE classes.

Subjective Norm

Bobby responded that the support from his cooperating teacher and other school PE teachers influenced his intention to adopt TGfU positively.

When asked if he perceived his cooperating teacher to be a supportive structure, Bobby thought for a while and described his cooperating teacher's attitude towards his adoption of TGfU as "from neutral to be supportive". He stated,

> I am not sure about my cooperating teacher's attitude towards TGfU in the beginning. When I asked him for his opinions on the use of the TGfU approach, he really didn't say much about the model. But after observing my TGfU teaching, he was interested in this model and supported me to continue

to use it. Moreover, he asked me some questions on this model and discussed it with me.

Additionally, Bobby stated, "PE teachers in this school know much about the TGfU model and some of them use it in their classes." To explain it, he added, "Possibly it is because most of the PE teachers in this school are very young and just graduated from university in recent years to be updated with new teaching ideas." Emphasizing the support from other PE teachers, Bobby stated,

> ...Some PE teachers in this school felt that TGfU would be beneficial to students and sometimes they use this model in their PE teaching. They provided me some advices and help on my instruction. For example, Carol always supports me by saying I was doing a good job and she enjoyed my lessons. This encouraged me to adopt this model.

Perceived Behaivor Control

Bobby's response to the question of what facilitates or inhibits his implementation of TGfU is class time, equipments, space, TGfU conceptual understanding, students' skill levels.

As opposed to other participants, Tobby reported that class time, equipment, space were not problematic for his teaching. Addressing these issues, he revealed,

> . ... Forty minutes are appropriate for a TGfU class. I only made a short explanation for game rules and tactics. A majority of the class time was spent on students' activity. With more lesson time, students will be tired.
>
> ... Two basketball playgrounds are spacious for 35 to 40 students to play games.

In raining day, there are a field with cover and some modified basketball stands offered for PE class. With the sufficient space and equipment, I could use the TGfU approach in my classes despite the rainy season during the period of our teaching practicum.

With sufficient resources and support from cooperating teachers and other school PE teachers, Tobby finally attribute his failure of TGfU teaching mainly to his limited knowledge and shallow understanding of TGfU. Tobby admitted that he did not realize the importance of the Q & A session and feedback in TGfU model and lacked skills to present questions, which resulted in his failure to implement TGfU. He responded in this way:

> I didn't plan to ask questions or provide feedback before the lesson. I am not used to asking students questions and am not sure what kind of questions and feedback should be presented. I just told them what to do and how to do.

Additionally, Bobby also pointed out that students' skill level and game experience influence his TGfU instruction. He reported that students seemed unable to understand the tactics and game rules completely. As a result, he adjusted the class content in the following TGfU classes. He stated in this way,

> In TGfU class, I found students' skills were not good enough for the games I created. Instead of giving games to start with, I started off with the skill practice, for example, the dribbling or shooting practice. Then I got them to play a game and introduce the conception of invasion, like creating space in a confined area.

Case 4: Penney's Case

Behavior Intention and Behavior

The interview with Penney and the lesson plan she provided indicated her intention to use TGfU was not changed during the teaching practicum. As she reported, "...Yes, I decided to adopt TGfU in my ball game classes during my teaching practicum. I wanted to confirm whether this model is practical in primary schools." All three classes observed were basketball classes. There were a total of 105 minutes of three TGfU lessons with 35 minutes in each lesson. It was found that the organization, explanation, demonstration, and closure time actually exceeded students' activity time at a ratio of 56.4 to 42.6%. 20.9% of the activity time was spent on game play, and 79.1% of the activity time on skill practice. Penney amassed 23 questions and 35 feedback statements; however, there are only 21.6% questions and 30.7% feedback statements related to tactics. This provided evidence that Penney did not implement the TGfU model appropriately.

Attitude

Penney stated that integrating games with students learning would be a fun, exciting and interesting manner of lesson delivery and this motivated her to use TGfU. She commented, "There is no doubt that the idea of TGfU is good. It makes learning fun and interesting...Most importantly, students do not need to have any particular ability in the sport, or knowledge. But they are sill included."

Subjective Norm

Penney perceived cooperating teachers, students, and university supervisors as the referents that might aid or hinder the integration of TGfU with her instruction.

Penney maintained that whether or not she would try out the TGfU approach would be dependent upon the cooperating teachers' attitude to TGfU. As Penney reported during interview, her cooperating teacher was happy for her to experiment this model and encouraged her to try out new instruction ideas. She stated,

> ...For me, my cooperating teacher had positive impact on my intention to use TGfU. He always asked me to try out new teaching approaches during teaching practicum. Meanwhile, he felt TGfU would be beneficial for students' learning although he doesn't know much about it. He is quite interested in this model and asked me something about TGfU. He said he will use this approach in his future teaching.

In the meantime, students' positive comments on TGfU classes propelled Penney to use TGfU in her classes.

> I can feel that students enjoyed games...Students told me that they liked games more than skill practice. Furthermore, I found students are active and they know how to move on the court to set themselves up appropriately to attack or defense in classes. I had a certain feeling of success.

A university supervisor was also identified by Penney as one of the strong supporters for his use of TGfU. According to Penney's report, the university supervisor appreciated the change in teaching method and encouraged her to try out fresh teaching approaches including the TGfU model. As Penney stated,

> My supervisor loves the idea of TGfU... She encouraged me to try out this approach and provided me some suggestions on the game creation and

classroom management. Her support reinforced my intention to use TGfU and improve my TGfU instruction.

Perceived Behavior Control

Penney's teaching behavior indicated that her instruction was typically skills-oriented. Penney attributed the low TGfU teaching behavior mainly to student low skill levels. Penney essentially believed that before integrating games, students first had to learn basketball skills through repetitive, decontextualized or contextualized drills. As a result, despite the strong intention to use the TGfU model, Penney decide to teach skills and rules of basketball in the first week and then incorporate the games into the subsequent two classes. She stated,

> In the first week, I found students have low basketball skills. They even can't pass and catch a ball smoothly. Although I planned to use the TGfU approach, I found games can't be processed due to students' low skill level. Thus I spent a lot of time practicing their skills in the first week.

Similar to most of the other pre-service teachers, Penney mentioned space problems she encountered while trying to use the TGfU model. However, Penney did not take it as a real issue preventing her from doing what she planned. She is confident that she could modify the equipment and adapt her teaching strategies to accommodate whatever space she would have. By giving an example, Penney stated,

> ...The space for rainy day is limited. Although it caused difficulties for the instruction, I felt that the problems could be resolved by teachers' effective use of space. For example, in rainy day, I organized students as two groups. When one

group plays games, the other group does skill practice. And then these two groups switch each other. As a result, every student have chance to play games.

Case 5: Winnie's Case

Behavior Intention and Behavior

Winnie reported that she decided to use the skill-based approach when she began with the teaching practicum. She stated, "I planed to adopt the skill-based approach finally due to the opposition from my cooperating teacher and the constraints of space". All of three classes observed by researcher were soccer classes. The lessons comprised of 120 minutes in total with 40 minutes for each class. Winnie spent 63.1% of lesson time on activity but 36.9% of lesson time on organization, demonstration and closure. However, only 13.3% activity time was spent on tactics. In the three classes, there were 26 questions and 39 feedback statements presented by Winnie; however, only 4.3% of questions and 6.5% feedbacks are specifically tactics-related. It was obvious that the lessons taught by Winnie were typical skill-oriented lessons.

Attitude

Winnie's first perception of the curriculum model was quite positive, in that it could stimulate students' thinking. Winnie noted,

> Well, I like the TGfU style of teaching. TGfU encourages students to think, to figure it out for themselves. It's real learning that involves making choices and decisions and solving problems encountered in games.

Subjective Norm

Despite her positive impression, Winnie's intention to use TGfU was changed quickly as she entered field-teaching because of the opposition from cooperating teacher. Winnie revealed that her cooperating teacher preferred traditional skill-based teaching approaches and repeatedly expressed frustration with the support and guidance received from her cooperating teacher. Winnie commented,

> My cooperating teacher said he is happy for me to experiment TGfU but he felt that TGfU would be suitable for secondary school students rather than primary school students…His opinions are very important for us because cooperating teachers grade our teaching performance during the practicum. I would rather use the traditional approach because I don't want to receive low marks from my cooperating teachers.

Perceived Behavior Control

Space constrain was another hindrance in her intention to adopt TGfU. The small space and large class size compelled Winnie to adopt the traditional skill-oriented approach. She revealed,

> There is only one basketball ground for PE class normally. Obviously it is too small for 30 to 40 students to play game. Furthermore, some times we have to share the limited field with other class. This reinforced my decision to use skill-based approach in my PE classes, which has lower requirement on the space than the TGfU model.

Case 6: Daniel's Case

Behavior Intention and Behavior

Similar to Winnie's case, Daniel changed his mind and adopted the skill-based approach during teaching practicum. He reported, "I tried the TGfU model in the first week. However, I decided to adopt the skill approach in the latter two weeks due to the space constraints and bad weather." One volleyball and two table tennis classes were included in this study. There were 105 minutes in three lessons with 35 minutes for each lesson. Daniel spent 38.6% of the lesson time on teachers' instruction, management, explanation, and closure and 62.4% of the lesson time on student activity time. However, most of the activity time (82.7%) was spent on skill practice. In three lessons, a total of 17 questions and 28 feedback statements were provided. Most of the questions (95.5%) and feedback statements (87.2%) were specific non-tactical related. Consistent with Daniel's report, the observation results showed that lessons were given by a typical skill-based approach.

Attitude

Although Daniel did not apply the TGfU model, he expressed a positive belief about TGfU because TGfU could stimulate the creativity of students and include students at different skill levels. He revealed,

> TGfU, I believe, stimulates the creative minds of children and makes activities more challenging for the mind…It also gives everyone the opportunity to be involved equally, which allows all students to participate in game play or activities.

Subjective Norm

Daniel reported that his cooperating teacher was supportive of his use of TGfU.

During the interview, he referred to his cooperating teacher quite often and discussed ideas that he adapted from his cooperating teacher. Daniel felt that the cooperating teacher was interested in the TGfU model. He stated,

> Yes, my cooperating teacher supported me to use TGfU… I felt that he is interested in this model although he doesn't know much about it. He said that the TGfU model fits in well with the commitment to student-centered learning in the school. Hence, he encouraged me to use TGfU model.

Meanwhile, Daniel stated although he only gave TGfU classes in the first week, students' engagement impressed him greatly. He noted, "Students like games… They are excited and they feel the happiness from games. After the TGfU class, some students said 'wow, this is cool! We're doing something different'. It seems that TGfU is worth trying."

Perceived Behavior Control

Despite the support from the cooperating teacher and students' positive response, Daniel stated that he decide to use the traditional skill-based approach in the latter two classes observed due to limited space and bad whether. He explained,

> The space influenced my use of the TGfU model negatively. Normally, I felt that the space was sufficient for my instruction. However, it happened to be in a rainy season during our teaching practicum. The auditorium provided for PE class in rainy day was too small for a class of students to play games. This prevented me from implementing the original plan of using TGfU in the latter two lessons observed. Instead, I employed the skill approach.

Discussion

Pre-service Teachers' Teaching Behavior of TGfU

A summary of pre-service teachers' teaching behavior structure can be found in Table 3. As Rovegno and Bandhauer (1997b) suggested, constructivist approaches are difficult to learn to teach because they often necessitate changes from the traditional practice of tell, demonstrate and drill. For the pre-service teachers that are studied in this research, the systematic observation showed that only one of six participants was able to actually use this model effectively. This is consistent with the research findings from McNeill et al (2008) and Wright et al (2009) reporting that pre-service teachers in Singapore could not implement TGfU effectively.

Furthermore, as Prawat (1992) suggested, teachers experience cognitive dissonance with a traditional teaching approach while learning a constructivist approach. In the present study, although half of the pre-service teachers spent a majority of activity time on modified games to maximize participation as well as learning opportunities (i.e., Dave, Penney, and Tobby), most of the questions and feedback they posed were skill-oriented (i.e., Penney, Tobby, Winnie, Daniel, and Bobby). There are two possible reasons. Although pre-service teachers realize the importance of game forms for the TGfU model, they were still influenced by the traditional skill-based approach and lack the understanding of constructivist nature of TGfU, that is, the emphasis on generating student learning, questioning, or inquiry strategies (Slavin, 1994). The other reason might be that pre-service teachers lack the skills to pose high-order questions and tactical related feedback. Similar findings have

Table 3. Summary of pre-service teachers' behavior structures

Cases	Behavior Intention	Behavior	Attitude	Subjective Norm	Perceived Behavior Control
Dave	Intend to use TGfU	Appropriate	Attitude towards TGfU (positive)	Cooperating teachers, students (positive)	TGfU conceptual knowledge, space and equipment (positive) Classroom discipline (negative)
Tobby	Intend to use TGfU	Inappropriate	Attitude towards TGfU (positive)	Cooperating teachers, students (positive)	Equipments and prior game experience (positive) Space, class size, classroom discipline, and TGfU conceptual understanding (negative)
Bobby	Intend to use TGfU	Inappropriate	Attitude towards TGfU (positive)	Other PE teachers and cooperating teachers (positive)	Equipments, time, space, and class size (positive) Shallow TGfU conceptual understanding and students' skill levels (negative)
Penney	Intend to use TGfU	Inappropriate	Attitude towards TGfU (positive)	Students and university supervisor (Positive) cooperating teachers (negative)	Space (positive) Students' skill level (negative)
Winnie	Intend not to use TGfU	Inappropriate	Attitude towards TGfU (positive)	Cooperating teachers (negative)	Space (negative)
Daniel	Intend not to use TGfU	Inappropriate	Attitude towards TGfU (positive)	Cooperating teachers, students (negative)	Space (negative)

also been obtained by previous studies that pre-service teachers failed to probe exploratory or problem-solving types of questions during constructivist teaching experience (McNeill et al., 2008; Wright, 2009). Despite studies conducted on TGfU teaching behavior, it has been observed that these were rather restricted in Asian countries and thus, further studies focusing on the Western countries are necessary. Moreover, except for pre-service teachers, in-service teachers' teaching behavior of TGfU should be explored as well.

Predictors of Pre-service Teachers' Teaching Behavior of TGfU

The current research confirmed the assertions of the planned behavior theory by suggesting that behavior intention and perceived behavior control were valid predictors of pre-service teachers' TGfU classroom action. For instance, Dave is the only one who used TGfU appropriately in this study. The interview and his lesson plan show that he had strong intention to use TGfU and most positive perceived behavior control factors (i.e., sufficient resources, space, and TGfU conceptual knowledge). Although the bad classroom discipline created trouble for his TGfU teaching, it appears that the effect is limited. Secondly, although pre-service teachers, such as Tobby, Bobby, and Penney desired to adopt TGfU during teaching practicum, they failed to implement the TGfU model effectively due to negative perceived behavior control components (i.e., limited space, conceptual understanding of TGfU, class time, and students' skill levels). Finally, Winnie and Daniel had low intention to use TGfU, which directly resulted in their adoption of skill-oriented approach. Additionally, a group of factors influencing pre-service teachers' intention and

subsequent action, such as pre-service teachers' attitude towards TGfU, cooperating teachers, university supervisors, other PE school teachers, students, space, class time, equipment, class size, TGfU conceptual understanding, pre-service teachers' game experience, students skill levels and classroom discipline were identified in this study. Data analysis indicated that all these factors are covered by the three constructs of the planned behavior model: attitude, subjective norm, and perceived behavior control. Although the qualitative method was conducted in this study with the aim of discovering more variables to explain behavior, research results indicate that all factors were included in the three constructs of planned behavior model. Based on the discussion above, the theory of planned behavior was sufficient to explain teaching behavior of pre-service teachers towards TGfU. This is consistent with the other studies that reported that the theory of planned behavior could be applied to support teachers' intentions and behavior towards the constructivist approach (Beck et al., 2000; Haney & McArthur, 2002).

The attitude of pre-service teachers towards TGfU is one of determinants of their intention to use TGfU and subsequent behavior towards TGfU. Overall, six pre-service teachers possess positive attitude towards TGfU. This was not surprising due to the purposeful sampling. Six participants were selected from 20 pre-service teachers involved in the initial study by Wang & Ha (accepted), which reported that most of the pre-service teachers have positive attitude towards TGfU. Furthermore, because this study aimed to examine the teaching behavior of pre-service teachers towards TGfU, the pre-service teachers who had high intention of using TGfU before

the teaching practicum were selected, which raised the possibilities of possessing positive attitude towards TGfU.

Subjective norm including cooperating teachers, university supervisors, other school PE teachers, and students were perceived as predictors of pre-service teachers' intention to incorporate TGfU in their classes. This agrees with the research by Chen (2001), Rovegno (1993), Rovegno and Bandhauer (1997), and Wright et al (2006), which argued that cooperating teachers, students, colleagues, and teacher educators facilitate or inhibit pre-service teachers' implementation of the constructivist approach. Cooperating teachers and students were two major subjective norm components in this study because most of the participants indicated the effect of cooperating teachers and students on their adoption of TGfU. Daniel and Penney reported that their cooperating teachers do not know much about the TGfU model. This might be due to the lack of TGfU professional development program provided to in-service teachers in Hong Kong (Ha et al, 2008). However, it is important to note that a majority of cooperating teachers supported the pre-service teachers' use of TGfU (i.e., Dave, Penney, Tobby, and Daniel). Furthermore, several cooperating teachers were also interested in this model and stated that they would like to try it in the future instruction after observing pre-service teachers' TGfU instruction (i.e., Bobby and Penney). This indicates that pre-service teachers' adoption of TGfU was influenced by cooperating teachers, which may in turn, influence cooperating teachers' learning of new ideas and teaching approach. Further research regarding the mutual beneficial relationship between pre-service teachers and cooperating teachers during the

implementation of the TGfU approach is necessary. With regard to students' response, the research findings in this study show that students displayed a positive response to the TGfU model, which in turn, promoted pre-service teachers' intention to use TGfU in PE class. This confirms the powerful influence of students on teachers' decision demonstrated in previous studies (Fishman, Marx, Best & Tal, 2003; Fullan, 1999; Guskey, 2002). Additionally, a number of reports have shown the importance of university supervisors and other school teachers in the improvement of the professional development of teachers (Burbank & Kauchak, 2003; Clarke, 2000; Erickson, Brandes, Mitchell & Mitchell, 2005). However, these two subjective norm factors were only mentioned by one or two pre-service teachers in this study. The limited contact that university supervisors and other school PE teachers had with pre-service teachers during the teaching practicum could be a plausible explanation for this. For example, as Bobby reported, "university supervisor only go to schools to observe my teaching once each week."

In terms of perceived behavior control constructs, Haney and McArthur (2002) applied the theory of planned behavior to examine constructivist beliefs and classroom practice in science education and noted that there is an apparent lack of concern regarding perceived behavior control for pre-service teachers to implement a constructivist approach because they were not fully aware of the perceived (or real) lack of support needed to implement innovative ideas. However, the present study indicated that perceived behavior control is important for pre-service teachers' adoption of the TGfU model. First, four of six pre-service teachers could not

implement TGfU effectively mainly due to the perceived behavior control factors (Tobby, Bobby, Penney, and Daniel). Second, based on the research results, all pre-service teachers have positive attitude (attitude) towards TGfU and the support from other pertinent people such as university supervisors, students, other school PE teachers and most of the cooperating teachers (subjective norm). Based on the theory of planned behavior and the research findings, five of six participant failed to implement the model effectively mainly due to limitation of perceived behavior control factors. One plausible explanation for the difference between these two studies is that PE class places higher requirement on space and equipment compared with other subject disciplines.

Previous studies reported that limited space and equipment, big class size, short class time, the lack of knowledge of constructivist teaching, the lack of teachers' game experience, and students' skills led to failure of PE teachers to implement the constructivist approach (Howarth, 2005; Rovegno, 1993; Rovegno & Bandhauer, 1997b; Wright et al., 2006). In line with these studies, perceived behavior control factors including space for games, class size, class time, equipment, TGfU conceptual understanding and student skill levels were identified as facilitators or inhibitors of pre-service teachers' teaching behavior towards TGfU in this study. The school context (space, class size, and class time) and the TGfU conceptual knowledge played a key role because most of the participants reported the effects of these factors. For most pre-service teachers, equipment was sufficient for TGfU classes while the limited space, large class size and the short class time inhibit pre-service teachers' effective use of TGfU. Hong Kong is a city with large population and limited space; as a result, most of the primary and secondary schools in Hong Kong cannot provide

sufficient space for PE class. Although the limitation of the space and class time is evident, the lack of school-based teaching experience of the pre-service teachers enhanced the inhibition of limited space and class time. Lack of classroom experience may have constrained the pre-service teachers from effectively using time and space (Chen, 2002). As Penney suggested in the interview, "...Although it (limited space) caused difficulties for the instruction, I felt that the problems could be resolved by teachers' effective use of space." However, pre-service teachers at university are provided micro (peer) teaching opportunities to teach in "ideal" settings that did not match the reality of the school situation. This might constrain the development of pre-service teachers' abilities to effectively use the space and class time, which influenced pre-service teachers' teaching behavior towards TGfU negatively. Apart from school context, pre-service teachers' conceptual understanding of TGfU was another major barrier for pre-service teachers' effective teaching behavior towards TGfU. Although a four-week TGfU program was provided by the university to pre-service teachers, it appears that the program was not sufficient to prepare them for the effective use of TGfU. Furthermore, it is worth noting that Bobby and Penney failed in teaching TGfU because of students' low skills, which indicated that students' skill level has become an important issue that teachers must consider. This is consistent with the developmental trend of the TGfU model that students' skill level has attracted increasing attention from researchers. Especially, in the latest TGfU model by Butler and McCahan (2005) which emphasized the need of individual skill mastery and the relationship between the game play and skill development. Different from previous TGfU model (Bunker & Horpe, 1982; Griffin et al., 1997; Kirk & Mac Phaill, 2002), Butler and McCahan (2005) recognized the need for individual technical mastery in the control of the object which happens before game performance.

Apart from these similarities, it is worth noting that classroom discipline is a unique perceived behavior control predictor of teacher' behavior towards the constructivist approach. Similar to the first study, three possible reasons including the focus on pre-service teachers, the characteristics of teachers and perception of classroom management in Asian countries.

In conclusion, pre-service teachers in this study cannot implement the TGfU model effectively. A group of factors influencing pre-service teachers' teaching behavior towards TGfU was identified, such as re-service teachers' attitude towards TGfU, cooperating teachers, university supervisors, other PE school teachers, students, space, class time, equipments, class size, TGfU conceptual understanding, and classroom discipline. These factors are covered by three constructs of the theory of planned behavior, which indicated that the theory of planned behavior was sufficient to explain pre-service teachers' behavior towards TGfU. Based on the research results, perceived behavior control is an important element to determine pre-service teachers' teaching behavior of TGfU.

CHAPTER FIVE

STUDY III. MENTORING IN TGFU TEACHING: MUTUAL ENGAGEMENT OF PRE-SERVICE TEACHERS, COOPERATING TEACHERS, AND UNIVERSITY SUPERVISORS

Introduction

Teaching is complex and demanding, especially, the requirement can be overwhelming for pre-service teachers without any teaching experience. Pre-service teachers were reported to encounter many challenges in teaching, such as, classroom management, isolation, physical exhaustion, difficult teaching assignments, or problems with administrators (Rodgers & Keil, 2007; Rust, 1994; Weiss & Weiss, 1999). As a result, researchers have called for induction programs with mentors to ease the transition of pre-service teachers into full-time teaching because they believe that working with experienced teachers will help shape a pre-service teacher's beliefs and practice (Johnson, 2007; Serpell & Bozeman, 1999).

For pre-service teachers, mentorship is structured with a triad framework – protégés (pre-service teachers), cooperating teachers (mentors) and university supervisors (mentors) (Rodgers & Keil, 2007). Over the years, in mentoring models, university supervisors and cooperating teachers have been referred to as mentors providing field supervision to pre-service teachers during teaching experience (Weiss & Weiss, 2001). As Figure 10 shows, the traditional supervisory model emphasized three major characteristics: (1) one-to-one protégé-mentor relationships; (2) the hierarchical and one-way relationship in which the mentor assumes the dominant role

while beginning teacher is subservient role and modeled by mentors (Guyton & Mcintyre, 1990; Yates, 1981).

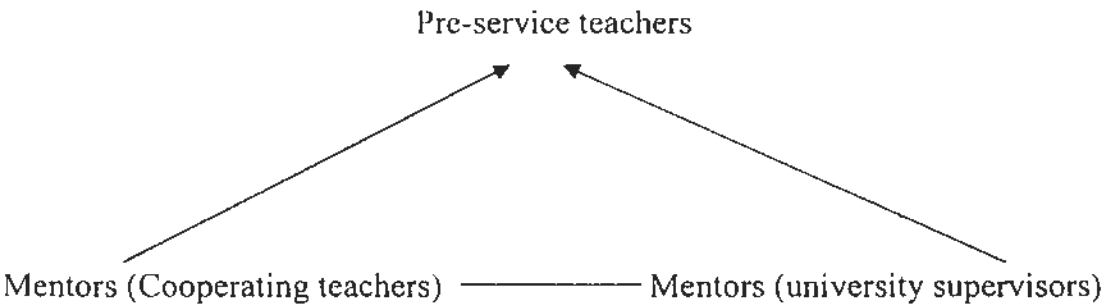


Figure 10. The traditional mentoring model of pre-service teachers (Guyton & Mcintyre, 1990; Yates, 1981)

A majority of mentoring literature reported the benefits of mentoring for pre-service or new teachers, including assisting them with the transition into education (Little, 1990), helping them implement new curricula (Bey & Holmes, 1990), shaping their beliefs and practices (Cochran-Smith, 1991; Stanulis, 1994), increasing the job satisfaction, efficacy, and retention of new teachers (e.g., Holloway, 2001; Smith & Ingersoll, 2004). However, except for pre-service teachers, limited studies indicated that mentors including cooperating teachers and university supervisors also learned from pre-service teachers and derived substantial benefits from the mentoring experience, such as, receiving new ideas from pre-service or new teachers (Hodkinson & Hodkinson, 2002; Scott, 1999); improving mentor teachers' understanding of teaching and broadens their views (Hanson & Moir, 2008); deriving marked satisfaction from their roles as mentor (Beck & Kosnik, 2000); and consolidating their self-image and professional status (Johnson, 2003; Wright & Bottery, 1997). In response to the mentoring interaction between pre-service teachers

and mentors, some researchers have suggested that the traditional mentoring model be updated by making it more collaborative as Figure11 shows (Chalies, Bertone, Flavier & Durand, 2008; Mullen, 2000).

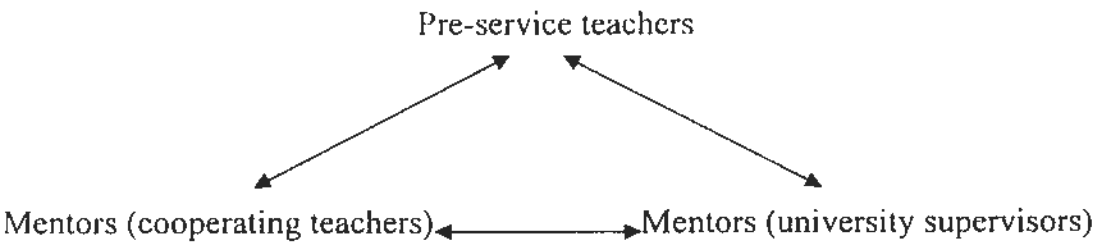


Figure 11. The collaborative mentoring model of pre-service teachers (Chalies et al., 2008; Mullen, 2000)

The literature on PE mentoring guided the development of the current study. There are many possible effect of PE mentoring on pre-service and beginning teachers, including refining instructional and managerial techniques (Napper-Owen & Phillips, 1995), adapting to the novel role of being a fulltime teacher (Solmon et al., 1993), dealing with issues of reality shock, role conflict, isolation, and wash-out (Stroot et al., 1993), and influencing new teachers' thinking about teaching and the mentoring experience (McCaughtry et al., 2005). However, these studies only concentrated on the effect of mentoring on pre-service teaches or beginning teachers. Based on the research gaps, Ayers and Griffin (2005) suggested that "the follow-up study might explore the mentoring process from both mentors and beginning teachers' perspectives, taking into account both personal and cultural perspectives" (p. 376).

From the perspective of TGfU teaching, the second study in this thesis reported that pre-service teachers' intention to adopt the TGfU model is influenced by their mentors including cooperating teachers and university supervisors during teaching practicum. It was recommended to examine what are the suggestions and comments

that cooperating teachers and university supervisors provided to pre-service teachers' TGfU teaching and whether the mentoring process in TGfU teaching also influence cooperating teachers and university supervisors' professional development during mentoring in TGfU teaching. Therefore, this study aims to explore the mutual interaction between pre-service teachers and their mentors by describing the TGfU mentoring experience of three groups of teachers. To better understand three groups of teachers' mentoring experience in TGfU teaching, the awareness, attitude, and understanding towards TGfU are investigated to provide detailed background of three groups of teachers. Therefore, the following two research purposes are addressed in this study: (1) to examine the awareness, attitude, and understanding towards TGfU of three groups of teachers and (2) to explore the mutual interaction between pre-service teachers and their mentors including cooperating teachers and university supervisors. This study is expected to provide the evidence to support the collaborative learning among pre-service teachers, cooperating teachers, and university supervisors, which enhances the professional development of these three groups of teachers.

Theoretical Framework

Situated learning theory has been developed over past decade. It was first expounded by Brown, Collins and Dugid (1989) which stated that inquiries into learning and cognition must take serious account of social interaction and physical activity. In contrast to classroom learning activities which involve knowledge that is abstract and out of context situated perspectives posited that knowledge is inseparable from the contexts and activities in which it develops (Brown et al., 1989).

Lave and Wenger (1991) developed the situated learning theory by presenting a key concept "*legitimate peripheral participation in communities of practice*", that is, learning is embedded within activity, context and culture. It is claimed that the prime unit of social practice is a "community of practice". Kirk and Macdonald (1998) provided a helpful definition by suggesting that a community of practice refers to "any collectivity or group who together contributed to shared or public practices in a particular sphere of life" (p.380). Thus the learning is not an individual process but influenced by history, society, and community. Lave and Wenger (1991) described the process of legitimate peripheral participation as the process that new comers move towards full participation to the community of practice beginning from a socially peripheral position. Learning in this respect is legitimate because individuals' participation matters to the community's successful performance of its work. At the same time, learning is also peripheral in the sense that apprentices are novice whose learning trajectory is expected to result in eventual full participation as members of a professional community of practice.

Lave & Wenger's (1991) situated learning perspective has been applied in PE teaching and teacher development as a theoretical base. In the research on PE teaching, the theory connects the instruction models of sport education, tactical games and cooperative learning (e.g., Dyson et al., 2004; Kirk & MacPhail, 2002). For example, situated learning theory is employed to explore the potential of the Sport Education model as a means of providing young people opportunities to engage in the community of practice sport as legitimate peripheral participants (Kirk & Kinchin,

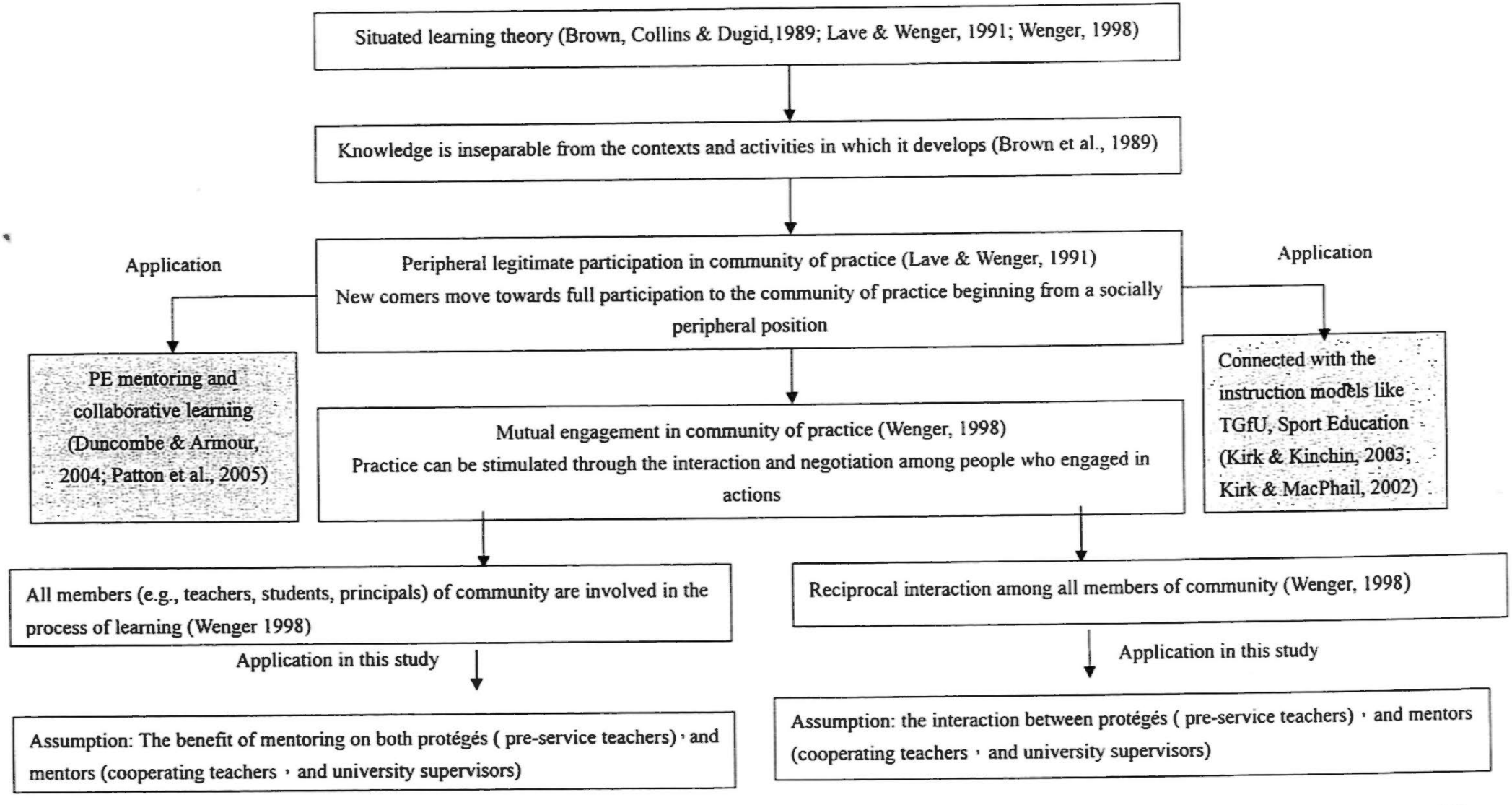
2003; Kirk & Macdonald, 1998). The notion of a "community of practice" also provides a useful dimension to the research on PE teacher development. For example, this concept is employed as a promising strategy, that is, Collaborative Professional Learning, to improve the quality of PE teacher education (Duncombe & Armour, 2004). Specifically on PE mentoring, this concept has clear relevance to an analysis of mentoring in schools because it provides a conceptual framework and potential value of mentoring in professional learning (Patton et al., 2005). School is a larger community of practice that includes principal, staff, and students. In this community, pre-service teachers take on partial, but meaningful, roles (legitimate peripheral situation) in schools on the way to become full participants (full participation in a community) (Duncombe & Armour 2004; Patton et al., 2005).

Azmitia (2000) pointed to the possibilities of two-way or multidirectional learning, where all members of the learning process can benefit from the process. Wenger (1998) encompassed this into communities of practice and suggested that community of practice is composed of three dimensions including mutual engagement, a joint enterprise, and a shared repertoire. In a community of teachers, mutual engagement suggests that practice can be stimulated through the interaction and negotiation among people who engaged in actions. Therefore, each member of community has opportunities to contribute and react to instructional, policy, curricular, and development decisions influencing their professional environment. Mutual engagement, however, is not independent from shared repertoire and joint enterprise, other two dimensions of the property of a community. Shared repertoire includes the

common actions, language, and experiences of participants. In teaching communities, shared repertoire encompasses the practices engaged by every member of the community, such as teaching, learning and curriculum. Joint enterprise, in turn, refers to the shared goals of a community. Individual members of the broader teaching community focus on attaining common community goals, such as a core curriculum and instructional methods. However, the concept of "mutual engagement" is applied in limited studies on PE teaching and teacher development.

Situated learning perspective (Lave & Wenger, 1991; Wenger, 1998) is connected with this study. According to the notion of "mutual engagement", it is assumed that there is a reciprocal interaction between pre-service teachers and their mentors, that is, there are not just newcomers (pre-service teachers) who are learning through social practice, cooperating teachers and university supervisors are also possibly continually learning from one another to improve and develop their existing practice. However, most of the previous studies explore the mentoring solely from the perspective of pre-service PE teachers and emphasize the pre-service teachers' learning from more experienced teachers. There is a need to include the views from other groups involved in the mentorship like cooperating teachers and university supervisor to explore if they learn from the process of mentoring. Figure 12 showed the characteristics of the application of the situated learning theory in Study three.

Figure 12. The characteristics and application of the situated learning theory



Methodology

Development of Interview Guide

Two different interview guides have been designed. One is created for pre-service teachers while the other one is for their mentors including cooperating teachers and university supervisors. Interview questions are designed based on the research purpose and expert opinions. The process of developing the interview guide is discussed in this section with the example of interview guide for pre-service teachers.

First, a group of interview questions were created to obtain participants' background information, such as, gender, age, school context, and the experience of TGfU teaching. For example, a question "Did you use TGfU in PE teaching before? And when?" was asked to obtain participants' information regarding TGfU teaching experience.

Second, according to the two research purposes of this study, two sets of question were created. The first set of questions was designed to examine pre-service teachers' perspective of TGfU. This set of questions is developed to examine pre-service teachers' awareness, attitude, and understanding towards TGfU. Several questions are included. For example, the question "What do you think of TGfU? And why" is created to obtain the information concerning pre-service teachers' attitude towards TGfU. The second set of questions focused on the second research purpose "the interaction between pre-service teachers and their mentors". A few questions on pre-service teachers' TGfU mentoring experience were included. For example, the

questions, for example, "Did your mentors provide any suggestions on your TGfU teaching? What are they?" and "Do you think the mentoring provided by mentors have impact on your understanding or effective implementation of TGfU?" were created to obtain detailed information on the TGfU mentoring.

Finally, an expert in teacher education and a researcher specializing in mentoring offered comments and suggestions for improving the interview guide.

The Pilot Study

Prior to actual administration of data, a pilot study was conducted with one pre-service teacher and one cooperating teacher. The pre-service teacher is at the third year of the four-year, full-time Bachelor of Education Degree of the SSPE of CUHK while the cooperating teacher has taught in a primary school for five years. They are not involved in the main study. Following the pilot study procedure (Yin, 1994), the interview invitation and informed consent were sent out via electronic mail and phone to the pre-service teacher and cooperating teacher. All interviews were recorded on audio tape. After each interview, the researcher will immediately transcribe the interview data.

The pilot study laid the groundwork for the present study:

1. The pilot study was applied to test the face validity of the interview questions. After the data collection, the interview transcription, interpretation, and guide were submitted to a panel of experts composed of one expert in teacher education, three experienced physical educators, and two researchers on sports science and sports pedagogy. The panel evaluated

the merits of the interview questions in obtaining relevant information.

2. The pilot study was used to help train the interviewer, assess the time required to conduct the interview and the suitability of terminology, as well as identify any redundant or confusing areas of the interview.

Based on the results of the pilot study and the suggestions from a panel of experts, the interview guide was adjusted. For example, the question 'what are the effects of mentoring on your TGfU teaching?' was modified to be 'what are the positive or negative effects of mentoring on your TGfU teaching?' because the participant reported that his cooperating teacher did not support his adoption of TGfU. Additionally, the question 'what is the difference of mentoring provided between cooperating teachers and university supervisors?" was added because the participant involved in the pilot study indicated the difference of mentoring provided by cooperating teachers and university supervisors.

Based on interviewees' suggestions, the researcher's experience, working and study timetables, and the interview schedule for the main study was established. All interviews were completed within one month with four to six interviews conducted each week. This would provide ample time for the researcher to process and analyze data systematically, which would offer insights into exploring new information in the next interview. Additionally, the duration for each interview was about half an hour. Based on the pilot study's results, the researcher decided to move forward and investigate the findings on a larger number of respondents.

Participants

Ten pre-service teachers, nine school teachers, and three teacher educators participated in this study. Pseudonyms were used for all participants. The selecting process and demographic information of each group of participants were indicated in this section.

A group of 20 pre-service teachers participating in Study one was targeted. They had eight-week teaching practicum from January to March 2010 at eight primary schools and 11 secondary schools in Hong Kong. Ten pre-service teachers (eight male and two females) had an age range of 21 to 22 years. All pre-service teachers agreed to adopt TGfU in game classes during the teaching practicum. Of the 10 pre-service teachers, eight drew on TGfU experience, ranging from three to ten times during their microteaching and teaching practicum; meanwhile, the other two had no TGfU experience.

Table 4. Summary of pre-service teachers' background

Name (Pseudonym)	Gender	Age	School of teaching practicum	Experience of using TGfU
Justin	M	22	Primary school	3 times
Andy	M	22	Secondary school	3-4 times
Tobby	M	21	Secondary school	5 times
Vivian	F	22	Primary school	No
Winnie	F	22	Primary school	7-8 times
Allen	M	22	Secondary school	3-5 times
Mickle	M	22	Secondary school	8 times
Kenny	M	22	Secondary school	No
Dave	M	22	Secondary school	3 times
Jason	M	22	Primary school	10 times

Ten cooperating teachers were invited to participate in this study because they were assigned to serve as the mentors to the ten pre-service teachers in this study. Nine teachers (five males, four females) with varying experiences in primary or

secondary school teaching consented to participant in this study; their ages ranged from 28 to 57 years. Two out of nine teachers were backed by over 30 years of school PE teaching experience, five drew on 10 to 20 years of teaching experience, and the other two had less than 10 years of teaching experience. In terms of TGfU learning and teaching experience, only one teacher reported learning TGfU through a pedagogical course and implementing this approach occasionally in his teaching. Furthermore, seven teachers possessed bachelor's degree in PE or Education, and two had master's degrees in PE.

Table 5. Summary of cooperating teachers' background

Name (Pseudonym)	Gender	Age	Highest degree	Teaching experience	Mentoring experience	School category
Henry	M	39	Master	17	7	Secondary school
Jacky	M	57	Bachelor	35	8	Secondary school
Dillon	M	43	Bachelor	20	10	Secondary school
Conney	F	37	Bachelor	15	3	Primary school
Susan	F	32	Bachelor	9	5	Secondary school
Mark	M	42	Master	19	8	Primary school
Lisa	F	28	Bachelor	6	2	Primary school
David	M	35	Bachelor	12	5	Primary school
Jackie	F	45	Bachelor	22	11	Secondary school

Four university supervisors were invited because they mentored the ten pre-service teachers in this study. Three agreed to join, their ages ranging from 44 to 48 years. All had Ph.D. degree, two are Sports Pedagogy majors, whereas the other is a Health and Fitness major. Of the three, one is a female supervisor backed by a six-year PE teaching experience in school, one a male supervisor with a five-year PE teaching experience, and the third a male supervisor had a two-year PE teaching experience. Moreover, the three university supervisors received TGfU training through a pedagogical course attended during their undergraduate or postgraduate years; they implemented this approach in their teaching.

Table 6. Summary of university supervisors' background

Name (Pseudonym)	Gender	Age	Speciality	Highest degree	School Teaching experience	Mentoring experience
Nancy	F	48	Sports pedagogy	PhD	1 year	10 years
Jeremy	M	48	Sports physiology	PhD	5 years	13 years
Frankie	M	44	Sports pedagogy	PhD	2 years	15 years

Data Collection

Two major data collection strategies were employed including written artifacts and individual semi-structured interviews.

Written Artifacts

The reflective journals provided by pre-service teachers and mentoring record completed by cooperating teachers and university supervisors served as data sources while enhancing the understanding of participants' experience of mentoring. Pre-service teachers were required to record their thoughts, feelings, actions, and reactions about the mentoring in TGfU teaching in their journal entries weekly while cooperating teachers and university supervisors were required to make reflection on the mentoring in TGfU teaching, assess pre-service teachers' teaching performance, and provide comments every week. At the end of the teaching practicum, all reflective journal and mentoring record were collected and read by the researcher, which allow the researcher to code statements, meanings and themes.

Semi-structured Interview

A semi-structured interviews was conducted with ten pre-service teachers, nine cooperating teachers, and three university educators at the end of teaching practicum respectively. The participants were contacted via telephone or electronic mail to

arrange for and confirm the date, time, and location of the interview. Care was exercised to schedule the interviews so as not to interfere with participants' academic schedule or important commitments.

Each interview began with a discussion on the study's purpose and an explanation of the informed consent letter (see Appendix G). The revised interview guide (see Appendix H and J) was employed as the instrument for the interview. The interview guide includes three sets of questions. The first set of questions was asked to explore teachers' background information. The second and third set of questions focused on three groups of teachers' awareness, attitude and understanding towards TGfU and mentoring experience in TGfU teaching respectively. Interviewees were encouraged to speak freely on their views of TGfU and their mentoring experience. Then several follow-up questions were asked to investigate additional information. For example, after freely talking about the understanding of TGfU, some follow-up questions like "Do you think what is purpose of the TGfU teaching?" was asked to explore more detailed information on pre-service teachers' perception of the purpose of TGfU teaching.

All interviews were recorded on audio tape, the purposes of which are to ensure the accuracy of data collection and to permit the researcher to be more attentive to the interviewee (Patton, 2002). During the interviews, key phrases, major points, and interpretations were noted down and recorded to facilitate later analysis. After each interview, the researcher immediately transcribed the interview data to maintain the rigor and validity of the research and guarantee the quality of data (Patton, 2002).

Interview transcripts varied in length, ranging between three to six single-spaced pages. All interview transcripts were verified against the audiotapes for accuracy.

Data Analysis and Trustworthiness

The artifacts and interview data were analysed using deductive content analysis (Patton, 2002) to identify meaningful pieces of information forming comprehensive text segment. First, 22 recorded interviews were transcribed verbatim by the researcher. Nvivo 8.0 software was used to organise artifacts, recorded data, and transcriptions. Second, a sizable amount of information was labeled with phrases as sub-categories (e.g., approach to mentoring, mentoring content, differences in mentoring from cooperating teachers and university supervisors, reason associated with the differences, and effect of mentoring). Third, the phrases were combined into categories, including mentoring approach and mentoring support. Finally, the summaries of the raw data, categories, and sub-categories were combined to form a hierarchical thematic structure for pre-service teachers and mentors.

The trustworthiness for this study was established using three strategies including peer debriefing (Creswell, 2007), member checking (Merriam, 1998), and triangulation (Patton, 2002). The researcher's thoughts and analyses are shared with the peer debriefer, whose role is to comment on the logical nature of the researcher's interpretations, identification of all possible categories, and information regarding potential researcher bias. Data and tentative interpretations were returned to all the participants to confirm, correct, or expand any information presented. At the final stage of data analysis, three researchers who were knowledgeable about TGfU coded

the data by category. The average of the inter-coder reliability was .89, which was higher than the 80% inter-coder reliability criterion (Krippendorff, 1980; Weber, 1990). This indicates that the accuracy of the data analysis was achieved.

Results

Three Groups of Teachers' Awareness, Attitude and Understanding towards TGfU

Teachers' Awareness of TGfU

According to the interviews with pre-service teachers, they are aware of many issues related to the TGfU model. This is because they have conceptual knowledge of TGfU, which they learned by attending relevant pedagogical courses; in addition, they have also implemented it several times during their peer teaching and teaching practice. Susan reflected, "I attended a course on TGfU in which I learned theoretical knowledge about TGfU. I also used TGfU in peer teaching." Dave also stated, "Except for the four-week TGfU program, I have implemented the TGfU model five times during the teaching practicum." However, most of the pre-service teachers revealed that the pedagogical course and teaching experience did not prepare them very well to understand TGfU completely and to implement this model effectively, that is, some of the pre-service teachers were still confused with the concept of TGfU and had no confidence in the effective use of the approach. For example, emphasizing his experience of learning TGfU, Andy stated,

> I am confused with some concepts. I am not sure what the criterion of a standard TGfU class is. For example, in game classes, I ask students to practice skills between two games, but I have no idea if it fits the TGfU format.

Another pre-service teacher, Kenney, addressed the barriers she encountered in implementing TGfU: "I felt it was harder to use TGfU than the skill-based approach because I have no idea on how to modify games according to students' cognitive and

skill levels." A few pre-service teachers attributed their limited conceptual understanding and ability in TGfU implementation to the lack of observation of TGfU teaching in an actual setting and the practical guidance from teacher educators. As Toby said,

> Yes, I have to admit that I am still confused with some concepts like the relationship between skills and games... Although we have learned TGfU in a course, I felt that the information provided is too general and theoretical. I think it would be helpful for me if the concept was clarified... to observe a demonstration of TGfU teaching in real setting and then teacher educator can guide us to compare the TGfU model and the skill-based approach.

Similarly, all university supervisors are familiar with the TGfU model because they have received TGfU training through a pedagogical course when they studied for a bachelor or master degree a few years ago. Apart from pedagogical courses, this group of educators continually learned TGfU by "attending workshops or seminars," "reading some literature on TGfU," "observing other teachers' teaching of TGfU," and "experimenting with the TGfU approach." For example, Jeremy commented,

> I registered a course on teaching methods, including one on TGfU, when I was an undergraduate. After graduation, I went to some workshops and also used the model in game classes when I worked as a secondary school PE teacher.

Nancy also reflected,

> Due to the requirements of my work as a teacher educator, I need to read some recent articles and attend some international workshops and conferences on TGfU to update myself on relevant knowledge. Furthermore, I implemented this model by providing demonstration to pre-service teachers, and also observed their teaching with TGfU teaching.

Through an integrated process of learning, experimenting and reflecting on the approach, university supervisors commented that they gained sufficient confidence on the understanding of TGfU and effective implementation of this model. Nancy noted, "Through different workshops and different things, I can say I could understand TGfU very well and implement this model effectively."

In comparison, three out of nine cooperating teachers reported that they are unaware of TGfU. For example, Dillon responded, "I don't know anything about TGfU and I never heard of it." The other five cooperating teachers responded that they read about or heard of it, but did not have any learning and teaching experience on TGfU. Among them, Jacky commented, "I heard of TGfU from the pre-service teachers who did their teaching practicum in my school, but I do not understand what TGfU exactly is." Of those interviewed in this group, just one cooperating teacher, Mark, reported that he learned of TGfU through a pedagogical course: "I learned it when I studied for my master's degree two years ago, and I occasionally use it in game classes." According to the interviews with all cooperating teachers, limited knowledge and experience regarding TGfU are connected with "lack of courses, workshops, or seminars on TGfU provided by government, universities, or schools" and "limited communication with other PE teachers and teacher educators." For example, Conney noted, "The Education Bureau provides seminars or workshops to us to improve our instruction each month. However, I did not find any program on TGfU." The other cooperating teacher, Susan, explained it this way: "We worked in closed environments and had few opportunities to communicate with other PE teachers or teacher educators to know about some new teaching ideas."

Teachers' Attitude towards TGfU and its Application

In discussing three groups of teachers' attitude towards TGfU, two themes

emerged across all cases including attitude towards TGfU and attitude towards the application of TGfU.

Attitude towards TGfU. With regards to the attitude towards TGfU, three groups of teachers all viewed TGfU based on its general benefits for students. They felt that they had discovered something meaningful professionally and were prepared to advocate it strongly. As a cooperating teacher, Mark said, "Although I am not sure if TGfU is applicable, the concept is appealing. It is quite different from traditional teaching because it addressed student understanding instead of skills alone." A pre-service teacher, Allen, also stated, "This is a fresh teaching approach. I felt it is worth trying because it will bring something new to students."

Despite the favorable responses to TGfU, the reasons associated with their positive attitude are different among three groups of teachers.

Most of the pre-service teachers and university supervisors shared similar views on this issue. First, they linked the strength of TGfU with such issues as providing fun to students, fostering student intellectual development, and including students with various skill levels. Some of them used the word "fun" to describe the TGfU approach and noted that TGfU provided an enjoyable learning experience. A pre-service teacher, Jason, reflected, "It was fun and it was different in terms of actually thinking about how you're doing things." Jeremy, a university supervisor, also commented by comparing the TGfU model and traditional skill-based approach:

> Based on my previous learning experience, skill learning is boring. Students just repeat similar skills over and over again, which make students lose interest in PE class. Compared with the skill-based approach, TGfU could provide more fun for students because students like game play.

Apart from the enjoyable experience that TGfU can provide, these two groups of teachers also evaluated TGfU as an effective vehicle with which to promote the intellectual development of students. They revealed that teachers stimulated students to think and reflect actively by asking open-ended questions and by facilitating student discussion and debate. Furthermore, through this approach, the status of PE as a subject could be raised in schools. Nancy commented,

> In games, students observe other players, think about the tactics, make decisions on the use of sports skill, and independently resolve tactical problems that emerge during games. After games, some questions are asked to stimulate students to reflect on what they learned.

The other appealing aspect of TGfU for pre-service teachers and university supervisors is inclusivity. These two groups of teachers felt that TGfU provided a way of teaching that is "more inclusive" than the directive skill-based approach because games could be modified equitably to satisfy the needs of students with different skill levels. As Dave stated,

> This model is great because games could be modified to satisfy different requirements of students. Many students are unwilling to attend traditional PE classes because they are not highly skilled. With TGfU, students only need fundamental skills to participant in the modified games, by which, the less able players of the class are involved in the class.

In terms of cooperating teachers, they also emphasized that TGfU could foster the intellectual development of students. For example, Jackie commented, "This approach can improve student understanding because they need to think about how to perform skills or games by themselves while teachers just provide guidance."

However, different from the pre-service teachers and teacher educators, most of the cooperating teachers focused their attention on the strength of TGfU, such as the high level of physical activity among students and better skill acquisition. For example, emphasizing the high physical activity level, Lisa stated, "In games, students run around and the physical activity level is quite high. Therefore, I strongly support it." Henry also addressed the acquisition of skill and noted, "When using TGfU, teachers just provide some hints and students are required to perform and understand skills by themselves, through which students become more impressed."

Attitude towards the Application of TGfU. In terms of the application of TGfU in Hong Kong, three groups of teachers shared similar views. They responded that TGfU should be applied in primary and secondary schools in Hong Kong because it is consistent with the objective of PE curriculum reform in Hong Kong. For example, a cooperating teacher, David, described TGfU as a "good option" because "TGfU fits well with the commitment of improving students' generic skills and student-centered learning in school." A university supervisor, Jeremy, also support the use of TGfU in primary and secondary schools in Hong Kong,

> The changes in the PE curriculum in Hong Kong aimed to improve students' generic skills including communication, collaboration, creativity, critical thinking and problem solving skills, among others. I feel TGfU is an appropriate approach to meet the requirements of the PE curriculum innovation. Therefore, TGfU should be applied in PE teaching in Hong Kong.

However, the three groups of teachers all expressed the opinion that the implementation and promotion of TGfU in Hong Kong would encounter great challenges. The major barriers include limited space for PE class and short class time in schools in Hong Kong. For instance, Vivien noted, "Most schools only have one

basketball playground and a volleyball, or badminton court. This is not sufficient for around 40 students to play games in." Addressing the short class time, Mark, a cooperating teacher, stated,

> 35 to 40 minutes are limiting for a TGfU class. Beyond grouping, explanation, demonstration, and classroom management, there is little time left for students to play games. Due to this, I did not use TGfU much in my teaching, although I am familiar with this model.

Additionally, the unwillingness of PE teachers to change is another barrier for the application and promotion of TGfU in Hong Kong schools. As Lisa commented, "I have insufficient confidence on the application of TGfU in Hong Kong. Cooperating teachers are used to the traditional skill-based approach. It will be hard for them to make such a great change in short time."

Teachers' Understanding towards TGfU

In this section, the teachers' understanding of TGfU is organized into three categories based on Butler's (1993) three components of the curriculum model: (1) why it is taught (perceptions of purpose), (2) what is taught (organization of instructional content), and (3) how it is taught (selection of pedagogical strategy). In each category, the similarities and differences among three groups of teachers' views are described.

Perceptions of Purpose. Two common themes on the purpose of TGfU emerged across the cases of pre-service teachers and university supervisors, including deepening the understanding of students and developing their decision-making and problem-solving capabilities. Pre-service teachers and university supervisors pointed out that TGfU helped students understand games in game contexts. Frankie noted, "The major purpose is to promote students' understanding of relevant game strategies

and rules through game play." The other purpose of TGfU that pre-service teachers and university supervisors emphasized is to develop students' decision-making and problem-resolving skills. For example, a pre-service teacher, Daniel said, "My whole idea is to develop students' abilities to make choices on their own through games." Similarly, Jeremy, a university supervisor, believed that the purpose of the TGfU approach is to "teach students how to be independent learners and let student facilitate their own learning to resolve problems."

Unlike pre-service teachers and university supervisors, majority of the cooperating teachers felt that TGfU aims to deepen the understanding of skills and promote skill development of students. In their opinion, games are used to bring out skills in TGfU. For example, in emphasizing students' understanding of skills, Lisa noted,

> Using the TGfU approach, teachers guide students to learn skills through games or asking questions, instead of teaching students about these skills. In the situational game context, students understand why skills are relevant in this situation, and why they are supposed to learn the skill. This motivates them to learn the skill.

Organization of Instructional Content. When the three groups of teachers were asked about their views on the class content and lesson format of TGfU, they responded differently.

Three university supervisors claimed that game play and skills practice should be included in TGfU classes. They viewed game play as the most important section of a TGfU class, and emphasized that using situational games and tactics first, rather than on skills, because TGfU is a game-centered approach. However, they also recognized the need for individual skill practice after the games for skill development

and elevation of game performance. For example, Nancy noted,

> After the warm up, I will provide modified games to students. During the game, I will observe their performance, and then stop them several times to ask questions on tactics in order to improve their understanding of strategies. At the end of the class, I will organize them to practice skills that will help improve their performance in games.

Pre-service teachers also viewed games as the major content of the TGfU classes. However, slightly different from university supervisors, pre-service teachers did not view skill practice as an inevitable part of a TGfU class due to the limited class time. Andy stated,

> In using TGfU, I would like to provide simple games to students, and then some complicated rules and tactics... I would like to include skills practice in class, but the class time is too short. As you know, there are only 35 minutes in a PE class. Excluding the time needed for the warm up, classroom management and explanation, there are only about 15–20 minutes left. When two games are included in a class, there is little time left for skill practice.

Most of the cooperating teachers who were interviewed addressed the importance of skill development in TGfU classes. In their interviews, skills practice is a major content of TGfU classes, and games are applied to situate students' skills learning in the game context and to improve student understanding of skills. The comment from Dillon is typical:

> For example, I will give a basketball class using TGfU. I will start by teaching skills of throwing, catching, or dribbling. Then students will practice by themselves. When I felt that they have reached the appropriate skill level, I will provide a game to them using these skills.

Selection of Teaching Strategies. In terms of the teaching strategies, three groups of teachers all suggested that an indirect way should be adopted in TGfU teaching. Specifically, the teachers' role is to provide students with suggestions and facilitate problem-solving. At the same time, open-ended questions and class discussion should be used to help students explore multiple dimensions of a problem and generate alternative ways to arrive at an answer instead of just pursuing the "right answer." As Daniel said, "I felt teachers [must] play the role of guide instead of instructor. They just provided some suggestions, questions, and feedback to students to guide them to learn by themselves." A cooperating teacher, Lisa, noted that "Students' individual difference should be paid with more attention. For example, the game could be modified and simplified according to students' skill levels." Similarly, another university supervisor, Frankie, stated that "Teachers just teach students the game rules and strategies. During games, teachers must observe student performance and then provide questions to students to allow them to find solutions, instead of merely telling them the right answer."

Mutual Interaction between Pre-service Teachers and Their Mentors during Mentoring in TGfU Teaching

In this section, the interaction between pre-service teachers and mentoring teachers (cooperating teachers and university supervisors) was investigated by describing their mentoring experience including mentoring approach and mentoring support.

Pre-service Teachers' Experience of Mentoring in TGfU Teaching

Mentoring Approach. According to the written artifacts and interviews of pre-service teachers, cooperating teachers and university supervisors provided

mentoring to pre-service teachers by "observing their classes", "commenting on their performance in post-lesson conferences", and "giving direct instruction to pre-service teachers on how to teach specific content". Most of the pre-service teachers indicated that mentors transferred their expected knowledge of teaching to pre-service teachers in a hierarchical way. Direction and advices were offered by mentors through a "master-apprentice approach" in which mentors provided suggestions on pre-service teachers' teaching and pre-service teachers was subordinate and followed the instruction or feedback from mentors. There is evidence of the record in Vivian's reflective journal who perceived her mentor as an expert who already owned rich pedagogical knowledge and an accomplished level of expertise, "She is an excellent teacher with rich teaching experience … the cooperating teacher always pointed out which part in the class need to be improved. I felt her advices are really helpful and just followed her instruction." Another pre-service teacher Tobby also explained this relationship in his interview, "my cooperating teacher usually provides evaluation and comments on my instruction and points out what are the problems in my teaching. I wrote it down and try to find solution to these problems to improve my following instruction."

Mentoring Support. In the process of mentoring, the pre-service teachers declared that they obtained support from their mentors despite differences between cooperating teachers and university supervisors in the emphasis of mentoring. Because of this difference, mentoring support is illustrated from two perspectives: support from cooperating teachers and that from university supervisors.

Each pre-service teacher interviewed in this study was assigned a cooperating teacher with varying teaching and mentoring experience in PE. According to the interviews and reflective journals of the pre-service teachers, most of the cooperating teachers encouraged them to apply a new teaching approach and supported them in adopting TGfU during the teaching practicum because of the benefits it offered to student learning. As stated by Dave, a pre-service teacher, "My cooperating teacher is a very supportive person. He is quite happy with my adoption of TGfU and also encouraged me to try new teaching ideas." Furthermore, the pre-service teachers disclosed that the cooperating teachers provided comments, suggestions, and evaluation on their TGfU classes. However, majority of the suggestions focused on "general issues", such as "classroom routines", "lesson planning", "the organisation of class content", and "classroom management" in stead of "the use of TGfU teaching approach". This group of pre-service teachers attributed this to the cooperating teachers' limited knowledge of TGfU. As reported by Justin, another pre-service teacher,

> ... No, I do not think we've ever had a discussion about how to teach with the TGfU approach. Normally, she just told me about the classroom routines and how to manage the classroom effectively ... I guess it is because she did not know much about this model.

Because of the few suggestions and comments that specifically emphasized TGfU implementation, most of the pre-service teachers believed that the impact of mentoring on their understanding and implementation of TGfU is limited. As Allen

stated, "Actually I do not think the mentoring provided by cooperating teachers is beneficial to my learning of TGfU because they rarely offered me advices on it."

Different from the revelations of most of the pre-service teachers, the reflective journals of the other two cooperating teachers, Andy and Kenny, revealed that they reverted to the technique-based approach due to the lack of support from the cooperating teachers. For example, Kenny wrote, "This week I did not adopt TGfU in my class. It seems that Mr. Jacky did not expect me to use it." They attributed this shortcoming to their cooperating teachers' age, unwillingness to change their teaching approach, and negative attitude towards the TGfU application. For example, Andy stated, "My cooperating teacher is quite old. She has used the traditional technique-based approach for 30 years. She is used to this traditional teaching and is not willing to make a change." Kenny shared a similar experience and emphasized his cooperating teacher's negative attitude towards the application of TGfU, "My cooperating teacher said that TGfU is a good idea but it is impractical. Thus, he advised me to focus more on what teaching strategies I will use."

In contrast with cooperating teachers, the pre-service teachers in this study stressed the importance of mentoring by university supervisors in TGfU teaching.

Based on the interviews with and reflective journals of the pre-service teachers, the university supervisors were described as "strong supporters" of TGfU adoption. They explained that university supervisors expressed appreciation over the change in teaching approach and encouraged them to apply fresh teaching methods, including the TGfU model. As stated by Jason, "My supervisor loves the idea of TGfU… She

encouraged me to try out this approach. Her support reinforced my intention to use TGfU."

Apart from support and encouragement, effective mentoring in TGfU teaching was also offered by the university supervisors. Although the mentoring extended by the university supervisors in TGfU teaching was similar to that offered by the cooperating teachers – specifically, observation and discussion – the pre-service teachers agreed that the suggestions and comments specifically concentrated on conceptual knowledge and implementation of TGfU. On the one hand, the university supervisors lent their assistance in terms of clarifying certain concepts such as 'the constructivist nature of TGfU' and 'the relationship between skill practice and game play' through linking with TGfU teaching. This reportedly deepened the pre-service teachers' understanding of TGfU. For example, Allen reflected,

> ... After class, the first question my supervisor always asked me is whether I think I really used the TGfU model in my class... And he helped me understand that the nature of TGfU is not just to adopt some games in class. The more important thing is to stimulate students to actively think about the tactics, strategies and the use of skills in various contexts.

On the other hand, a number of suggestions from the university supervisors focused on the effective implementation of TGfU, such as "game modification", "effective use of equipment and space", and "the skills to pose appropriate questions". These enabled pre-service teachers' TGfU teaching to be more effective. Justin described his mentoring experience in this way,

> The aspects of his (cooperating teacher's) mentoring that impressed me most is the suggestion on game modification and the effective use of equipment. In rainy days, there is no suitable place for a soccer game in the school. She suggested me attaching paper on the wall to serve as the gate of the soccer court. Actually, it really worked and students had fun with the modified equipment.

Despite the key role played by the university supervisors in mentoring, several pre-service teachers pointed out that a number of the suggestions were exceedingly idealistic and impractical because of the university supervisors' "unfamiliarity with school context", "lack of school teaching experience", and "limited understanding of characteristics of schools students like students' cognitive and skill levels". As a result, the pre-service teachers stated that they follow only the suggestions that they deemed feasible. Mickle comments,

> Some of the suggestions presented by the university supervisors are too ideal. I think this is because they have not work in schools for a long time and are not familiar with the school context … I just adopted some suggestions that can work on the students.

Meanwhile, Tobby shared a similar experience but emphasized the university supervisors' limited understanding of student characteristics:

> My university supervisors suggested explaining tactics to all students once they have stopped talking and have kept quiet. However, students are too naughty to keep quiet and concentrate on my teaching. Finally I decided not to take this suggestion and instead went to each small group to explain the related rules.

Mentors' Experience of Mentoring in TGfU Teaching

Mentoring Approach. In terms of the approach to mentoring, one university supervisor and one cooperating teacher responded that they "exchange their teaching ideas with pre-service teachers" (Conney) and "try to build the sharing relationship with pre-service teachers instead of telling them what to do and how to do" (Frankie). However, most of the cooperating teachers and university supervisors indicated that "observing pre-service teachers' teaching" and then "providing one-to-one hierarchical instruction" is a major way to provide mentoring to pre-service teachers, which is similar with the response of pre-service teachers. For example, Jackie explained the mentoring process in this way, "Usually, I observed his teaching. After that, I give some comments and suggestions on his instruction. Meanwhile, I would point out some problems in his teaching and provide the solution for his improvement."

Mentoring Support. Although it is generally true that pre-service teachers are the ones learning from their mentors, this study indicated that mentors learn from pre-service teachers as well. Mentoring support is illustrated from the perspective of support for cooperating teachers and university supervisors.

When discussing the mentoring experience, majority of cooperating teachers repeatedly addressed the benefits generated by the process. As stated by Lisa, a cooperating teacher, "... I hope that pre-service teachers can do their teaching practicum in my school because I always learn some new knowledge from them." Focusing on mentoring in TGfU teaching, the interviews and mentoring records of the

cooperating teachers confirmed that the mentoring process resulted in their own professional growth; it stimulated a desire for professional development, heightened their awareness of TGfU, and enabled them to obtain new teaching insights.

Because of the limited TGfU knowledge, several cooperating teachers experienced difficulty in extending feedback or suggestions on the use of the model. They encountered 'awkwardness' when they failed to answer related questions asked by the pre-service teachers, thus motivating them to update their professional knowledge. For example, Susan explained,

> ... I remember after one TGfU class, he (a pre-service teacher) asked me whether there were problems in his implementation of TGfU. I felt embarrassed because I had no idea what TGfU is and did not know how to answer. After that, I realized that it is really necessary to learn more and keep my professional knowledge updated.

A few cooperating teachers indicated that observing pre-service teachers' TGfU teaching exposed them to the new approach and therefore heightened their awareness. As stated by Mark in his mentoring record, "... through observing pre-service teachers' TGfU teaching, I learned that games should be used to induce students to learn skills with the TGfU model." Furthermore, during discussions on teaching, the pre-service teachers likewise shared their TGfU knowledge and teaching experience with the cooperating teachers, which deepened the latter's understanding of TGfU. For example, David responded,

> I learned some knowledge about TGfU from pre-service teachers ... After the

TGfU class, we often exchanged our views on TGfU. Furthermore, she gave me some TGfU materials and videos for my reference. By sharing her knowledge and experience, I felt I now know something about this new model.

Apart from the motivation to develop professionalism and improve their knowledge of TGfU, several cooperating teachers admitted gaining new insights on game design and teaching strategies, which they believed can be incorporated into their own practice. For example, Lisa stated, "I found that the games they designed and modified are interesting and all the students all like it. So I also used it in my own teaching."

Similar to the cooperating teachers, the university supervisors confirmed learning from the pre-service teachers. They acknowledged that mentoring process helped them update the knowledge of TGfU, compelling them to reflect on their instruction content and techniques.

One university supervisor, Frankie, stated that the discussion on TGfU updated his knowledge and understanding of the approach. He stated, "I learned TGfU about 15 years ago and I felt there is a need for me to update relevant knowledge." Frankie believed that the mentoring experience provided opportunities to learn new knowledge from the pre-service teachers through observation of teaching that used the TGfU model as well as discussions on the approach. He added,

... I found that their understanding and views of TGfU is a little bit different from mine. For example, when discussing his TGfU class, Dave mentioned that TGfU may also start with skill learning instead of game play, which depends on

student skill level. Although his view is different from the concept of TGfU, I felt it is reasonable in practice.

The other two university supervisors Nancy and Jeremy, indicated that the mentoring process is related to their reflection on their work as teacher- educators. Through observation and discussion, the university supervisors reported that they identified the challenges encountered by the pre-service teachers in implementing the TGfU model. This provided insights for making the necessary adjustments in teaching content and strategies on the relevant professional course in light of the needs, concerns, and circumstances of pre-service teachers. For example, Nancy stated,

> The mentoring allowed me to look closely at pre-service teachers' implementation of TGfU in the actual setting. I found that they encountered some difficulties in TGfU; for example, they are used to telling students what to do rather than stimulating independent thinking. I think I will emphasize this issue in the professional course of TGfU in the future.

Discussion

The Relationship between Mentoring and Situated Learning Theory

From a situated learning perspective, "legitimate peripheral participation in community of practice" is an important concept (Lave and Wenger, 1991). This provides a useful dimension to the analysis of mentoring. A TGfU community of practice in this study was formed when the pre-service teachers, cooperating teachers or university supervisors accumulated and shared their TGfU teaching experience. Lave and Wenger (1991) described the process of legitimate peripheral participation

as the central process for learning in a community, in which knowledge and skills are acquired when new members move from a peripheral position towards full participation in the community inhabited by experienced practitioners; it posits that newcomers can learn from experienced practitioners (Duncomber & Armour, 2004). In line with this concept, the pre-service teachers, as newcomers, experienced the "peripheral legitimate process" by reporting that mentoring from university supervisors (experienced practitioners) helped clarify certain TGfU concepts, rendering their TGfU instruction more effective in the present study.

Developing Lave and Wenger's (1991) view of situated learning, Wenger (1998) presented another important idea – "mutual engagement" - which suggests that practice can be stimulated through interaction and negotiation among individuals engaged in actions. The mutual interaction between the pre-service teachers and their mentors in this study is an example of mutual engagement in a community of practice (Wenger, 1998). In a community of pre-service teachers, cooperating teachers, and university supervisors, newcomers (pre-service teachers) are not the only ones who achieve an improvement in their understanding and implementation of TGfU through mentoring by experienced practitioners (university supervisors); experienced practitioners (cooperating teachers and university supervisors) likewise learn from newcomers (pre-service teachers), thereby improving and developing their existing practice. According to Wenger (1998), mutual engagement is not independent from shared repertoire and joint enterprise. In this study, the fact that three groups of teachers are organized around TGfU teaching lends a sense of joint enterprise and

identity. For a community to function, it must experience a shared repertoire of ideas, commitments, and ways of performing and approaching concepts and actions. During the mentoring process in the current study, three groups of teachers shared their learning and teaching experience in TGfU.

However, it is worth noting that the impact of mentoring on the pre-service teachers' understanding and implementation of TGfU is limited, whereas the cooperating teachers have learned more from the pre-service teachers on the subject in this study. This indicates that newcomers learning from experienced practitioners through movement from the periphery to the centre does not happen under all situations, especially when new knowledge, innovative teaching approach, or novel technology are involved. Occasionally, what appears to be more important is the experienced practitioners' movement outward to apply innovation and initiate change. Determining which direction is more dominant may depend on the relevant knowledge and experience of each member. This issue should be taken into consideration in the study of situated learning theory.

Similarities in and Differences from Previous Studies

Three Groups of Teachers' Awareness, Attitude and Understanding towards TGfU

Results indicate that pre-service teachers and university supervisors are aware of the TGfU model due to relevant pedagogical courses and teaching experience. However, only university supervisors claimed that they had confidence implementing TGfU. In contrast, pre-service teachers are still confused with some concepts and had no sufficient confidence on the effective implementation of TGfU. This is similar to

the observation in previous studies stating that pre-service teachers are familiar with TGfU but they have encountered challenges in understanding and implementing it (Howarth, 2005; McNeill et al., 2004; Wang & Ha, 2009; Wright et al., 2006). There are two possible reasons for the different familiarity levels of TGfU between pre-service teachers and university supervisors. On the one hand, university supervisors have a more proactive approach in learning TGfU than pre-service teachers. For example, university supervisors regularly attend workshops and read literature on TGfU, apart from participating in pedagogical courses. As Hernandez (1998) suggested, there is a great requirement for university supervisors or higher education teachers to be well-versed and educated in pedagogy, and that they should model and illustrate a variety of teaching methods, techniques, and processes. This might motivate university supervisors to improve and update their teaching and pedagogical knowledge. On the other hand, compared with university supervisors with several years of school teaching experience, the teaching experiences of pre-service teachers are limited. This might be associated with their lack of confidence in their ability to implement TGfU in an actual setting. In contrast to pre-service teachers and university supervisors, very few cooperating teachers are familiar with TGfU due to the lack of courses and programs provided to them; this is in line with a previous study reporting that the TGfU program for cooperating teachers is incomplete in Hong Kong (Liu, 2004). This might explain why the TGfU model cannot be used widely in schools even if it has already been introduced in Hong Kong in the 1990s. Clearly, more actions should be done to provide support for cooperating teachers in learning TGfU.

Data from interviews indicate that the three groups of teachers have positive attitudes toward the concept of TGfU. This agrees well with a set of studies that found

that pre-service and in-service teachers all have positive attitudes towards TGfU (Howarth, 2005; Light, 2002, 2003; Light & Butler, 2005; Light & Tan, 2006; Rossi et al., 2007). However, the three groups of teachers have different rationales for their positive attitudes. For example, pre-service teachers and university supervisors identified the ability to provide enjoyable experience, including providing students with various skill levels and fostering intellectual development, as the major strengths of TGfU. Meanwhile, cooperating teachers are attracted to TGfU primarily because of the ways in which it increases the physical activity level of students and enhances their skills acquisition. Previous research found that the value orientation of PE teachers influenced their interpretation and delivery of an innovative teaching approach (Chen et al., 1997; Jewett, 1994; Stran & Curtner-Smith, 2009). It is possible that the different interpretations of TGfU by these three groups of teachers influence their different value orientations. Some studies found that school PE teachers in Hong Kong favor disciplinary mastery (i.e., placing a significant high priority on development performance proficiency in sports skills), while pre-service teachers focus more on students' emotion (Ha, 2001; Ha et al., 2007; Wang & Ha, 2009). This is consistent with the findings in this study, wherein pre-service teachers and university supervisors focus more attention on the affective domain of students (e.g., enjoyable experience and inclusivity), while cooperating teachers put considerable thought on the psychomotor domain (e.g., better acquisition of skills and high level of physical activity) when viewing TGfU.

All teachers reported that TGfU must be applied in Hong Kong schools because it is consistent with the objectives of the new PE curriculum. This confirms that the TGfU approach is an effective way to help teachers achieve the requirements of the new PE curriculum (Wang & Ha, 2009). However, all teachers felt great challenges

will be encountered during the process, including limited space, short class time, and the unwillingness of teachers to change. This is in agreement with previous studies reporting that limited space and equipment, large class size, willingness of teachers to use the skill-based approach, and short class time constraints all hamper the implementation of TGfU (Howarth, 2005; Rovegno, 1993; Rovegno & Bandhauer, 1997; Wright et al., 2006). Hong Kong is a city with a large population and limited space; as a result, most of the elementary schools in Hong Kong cannot provide sufficient space and equipment for PE class. Furthermore, due to the low status of PE at primary and secondary schools, little class time is spent on PE class in Hong Kong. Students typically experience two PE periods per week or per cycle week, each amounting to less than an hour of actual instruction. Therefore, in order to facilitate the implementation of TGfU in Hong Kong, the school context should be more positive towards the TGfU teaching approach.

In terms of the three groups of teachers' understanding of TGfU, all have demonstrated some aspects of constructivist views regarding TGfU. For example, three groups of teachers all reported that they would use indirect teaching strategies, such as asking questions or class discussion, to stimulate students to think instead of teaching directly knowledge or skills; they tried to accommodate the individual difference of students; they connected skills learning to game situations. This is in agreement with Chen (2002) who found that expert teachers and per-service teachers all held constructivist views on another constructivist model—the movement approach. However, it seems that pre-service teachers and university supervisors understand better TGfU than cooperating teachers. According to the cooperating teacher interviews, they misinterpreted the TGfU model by emphasizing on students' skills development. For example, cooperating teachers reported that the purpose of

TGfU is to develop student skills, and the class content is mainly composed of skill practice. This is evidently in conflict with the characteristics of the game center of the TGfU model. Yet, this is in line with the findings stating that some cooperating teachers are unfamiliar with TGfU in this study. The lack of TGfU training programs, relevant teaching experiences, and limited communication with other PE teachers are likely to be the key factors to their lack of understanding when it comes to TGfU. Meanwhile, it cannot be ignored that cooperating teachers in Hong Kong have long been using the traditional skill-approach in their teaching. Too much exposure to the traditional approach might be another reason for their misinterpretation of TGfU.

Mutual Interaction between Pre-service Teachers and Their Mentors during Mentoring in TGfU teaching

Our research findings reveal that the traditional mentoring model is adopted to supervise the teaching of pre-service PE teachers in Hong Kong. Mentors observe pre-service teachers and provide instruction or suggestions on their teaching. Consequently, pre-service teachers follow the instruction to improve their craft. Furthermore, research results indicate that there is a reciprocal interaction between pre-service teachers and mentors during the mentoring process. On the one hand, mentoring provided by the university supervisors help pre-service teachers understand and effectively implement TGfU. Similar topics emerged in previous studies reporting that mentoring from experienced teachers helped pre-service teachers implement new curricula and shaped their beliefs and practices (Bey & Holmes, 1990; Cochran-Smith, 1991; Stanulis, 1994). On the other hand, cooperating teachers and university supervisors learn from pre-service teachers as well, and obtain benefits from

mentoring. These benefits include updated professional knowledge, heightened awareness of TGfU, and new insights in teaching. Similar results have been sufficiently documented in previous studies reporting that mentors learn new ideas and knowledge from pre-service teachers (Hodkinson & Hodkinson, 2002; Stanulis & Russel, 2000).

However, two issues that are different from the usual assumption emerged. First, it is generally accepted that cooperating teachers wield greater influence on pre-service teachers compared with university supervisor (Ganser, 1996; Guyton & McIntyre, 1990). By contrast, the findings in this study suggest that the university supervisors helped the pre-service teachers understand TGfU better and efficiently implement the approach, whereas the impact of mentoring provided by the cooperating teachers on the implementation of TGfU is limited. These research findings are linked with three groups of teachers' different awareness, attitude, and understanding towards TGfU. According to McCaughtry et al (2005), if the mentoring program is designed for the mentor to help the newer teachers learn to implement newer technologies, or learn and implement new curriculum, the content knowledge might be extremely important for the mentor to possess. In their review of teacher mentoring, Smith and Ingersoll (2004) also noted that this might be significant in that mentors should possess the knowledge, skills, and competence in the areas in which they will be providing mentoring to newer teachers for the mentoring process to have the greatest impact. In this study, university supervisors were showed to be familiar and knowledgeable with the TGfU model while cooperating teachers obviously

lacked the understanding of TGfU, which determined that university supervisors could provide the effective mentoring on TGfU teaching while fewer suggestions on the use of TGfU were presented by cooperating teachers. The second issue underscores the fact that the mentoring extended by the university supervisors is overly idealistic, mainly because of their unfamiliarity with school context and characteristics of students, according to the interview with pre-service teachers. Evidently, more efforts should be extended towards exposing university supervisors to actual scenarios in PE teaching and allowing them to familiarise themselves with schools and students.

Our research findings provided insights into the development of the mentoring model. Based on these, it is evident that the traditional mentoring model is inappropriate for mentoring in TGfU teaching in Hong Kong. These reveal that cooperating teachers are incapable of providing effective mentoring on the application of TGfU; rather, they learned relevant knowledge and experience from pre-service teachers. This is in contrast to the "top-down", hierarchy supervision paradigm, with the pre-service teachers at the bottom as passive recipients of training. Furthermore, the interaction between pre-service teachers and mentors suggests that the two-way mentorship program may be more appropriate and effective compared with the hierarchy one-way mentoring model. Because of these issues, there is a need to adopt a more collaborative mentoring model when an innovative approach is involved. In the alternative model, each participant negotiates the work to be accomplished based on his or her concerns, expectations, and possibilities; exchange between pre-service

teachers and their mentors is therefore more democratic and constructive (Awaya et al., 2003). This is supported by previous studies reporting that the traditional mentoring model may be updated by making it more collaborative (Chalies et al., 2008; Mullen, 2000; Patton et al., 2005).

In conclusion, the results on mentoring in TGfU teaching showed that there is a mutual interaction between pre-service teachers and their mentors, Mentoring provided by university supervisors has positive impact on pre-service teachers' understanding and effective implementation of TGfU while cooperating teachers and university supervisors also obtained benefits from the mentoring in TGfU teaching like gaining new teaching insights and deepening understanding of TGfU. However, it is reported that the impact of mentoring provided by cooperating teachers on pre-service teachers' understanding and use of TGfU is limited. It is found that the mutual interaction is connected with three groups of teachers' different awareness, attitude, and understanding towards TGfU.

CHAPTER SIX

GENERAL CONCLUSION, IMPLICATION, AND RECOMMENDATION FOR FUTURE STUDY

Conclusion

The purposes of this study were to examine Hong Kong pre-service PE teachers' perception of TGfU and factors influencing their perception, to explore their implementation of TGfU and factors determining their teaching behavior towards TGfU, and to investigate the mutual interaction among pre-service teachers, cooperating teachers, and university supervisor during the mentoring in TGfU teaching. There are three conclusions that can be drawn from this study.

The first conclusion is that in general, Hong Kong pre-service teachers had a positive attitude towards the TGfU model. They felt that TGfU is beneficial for students because of its propensity to enhance students' engagement, stimulate their thinking, and include different students. Pre-service teachers encountered challenges in understanding and implementing TGfU because it conflicted with their prior experience and knowledge. However, most pre-service teachers responded that they highly intended to use TGfU in their future field practice. Individual and social factors influence pre-service teachers' perception of TGfU. Individual factors include game knowledge, teacher beliefs, learning and teaching experience while social factors consist of government policy, teacher support, and professional culture enhance or inhibit pre-service teachers' receptivity of TGfU. Furthermore, individual and social factors interplay with each other. These research results prove that cognitive and social constructivism is useful in illustrating a blueprint of teachers' learning process of TGfU.

Second, although pre-service teachers in this study have positive attitude and

high intention to use TGfU, some of them changed their mind and adopted the skill-based approach. Furthermore, most of the pre-service teachers in this study cannot implement the TGfU model effectively. Based on the TPB, a group of factors such as attitude towards behavior (pre-service teachers' teaching behavior towards TGfU), subjective norms (support from cooperating teachers, university supervisors, other PE school teachers, and students), and perceive behavior control (space, class time, equipments, class size, TGfU conceptual understanding, and classroom discipline) were identified to determine pre-service teachers' intention of using TGfU and their teaching behavior towards TGfU. These factors are covered by three constructs of the theory of planned behavior, which indicated that the theory of planned behavior was sufficient to explain pre-service teachers' behavior towards TGfU. Among them, perceived behavior control factors are most significant predictors of pre-service teachers' teaching behavior towards TGfU.

The third conclusion is that there is a mutual interaction between pre-service teachers and their mentors including cooperating teachers and university supervisors. Three groups of teachers have different awareness levels, attitudes, and understanding of TGfU. Pre-service teachers and university supervisors are more aware of TGfU compared with cooperating teachers due to relevant pedagogical courses and teaching experience. Meanwhile, although three groups of teachers all have positive attitudes toward TGfU, pre-service teachers and university supervisors connected the strengths of TGfU with the emotional development of students, whereas cooperating teachers focused more on sports skills. Furthermore, the three groups of teachers all felt that TGfU could be applied in primary and secondary schools in Hong Kong, but it would be restricted by the limited space, short class time, and teachers' unwillingness to change. In terms of teachers' understanding of TGfU, the three groups of teachers

held the constructivist views on TGfU, but cooperating teachers seemed to be confused with the concept of TGfU. The different perspective towards TGfU of three groups of teachers resulted in the mutual interaction during the mentoring in TGfU teaching. Mentoring provided by university supervisors has positive impact on pre-service teachers' understanding and effective implementation of TGfU while cooperating teachers and university supervisors also obtained benefits from the mentoring in TGfU teaching like gaining new teaching insights and deepening understanding of TGfU. This is consistent with two important tents of situated learning perspective including "legitimate peripheral participation in communities of practice" (Lave & Wenger, 1991) and "mutual engagement" (Wenger, 1998). However, it is reported that the impact of mentoring provided by cooperating teachers on pre-service teachers' understanding and use of TGfU is limited, which indicated that the learning of pre-service teachers learned from experienced practitioners does not happened under all circumstance.

Implication

Given the findings, this study recommends several suggestions to improve PE teachers' understanding and implementation of TGfU. The implications are illustrated from three levels including the government, university and school level.

From the government level, exposure of pre-service teachers to the PE curriculum innovation should be increased to improve their acceptance and implementation of the TGfU approach. Based on the research results, although the curriculum reform in Hong Kong had a positive effect on pre-service teachers' perception of TGfU, some of them reported that the impact was limited because they were not familiar with the content and requirements of the new curriculum. This implies that exposing pre-service teachers to curriculum innovation process through

various forms is necessary. Information related to curriculum reform and implementation should be included in the professional development program for pre-service teachers. In the same manner, workshops or seminars on the PE curriculum innovation should be provided to pre-service teachers regularly. On the other hand, both "prior PE learning experience" and the issue of "traditional professional culture" hinder pre-service teachers from accepting TGfU because most in-service teachers insist on using the traditional skills-oriented approach. Findings also indicated that most of cooperating teachers are not aware of TGfU and have limited understanding of TGfU, which led them not to provide effective mentoring on pre-service teachers' implementation of TGfU. This implies that to enhance pre-service teachers' receptivity to the TGfU approach and their willingness to support it, improving their professional development alone is far from being adequate. Currently, in Hong Kong, the TGfU teacher education program for in-service teachers is not complete. Given that, more TGfU-related training programs should be provided to in-service teachers to help develop their knowledge of TGfU. Additionally, due to the interrelationship between pre-service teachers and in-service teachers (cooperating teachers, teacher educators, university supervisors, and school PE teachers) during the learning and implementation of TGfU, it is recommended that these two groups of teachers be connected. Previous studies reveal that the collaboration between pre-service teachers and in-service teachers is necessary because pre-service teachers' learning needs the support of in-service teachers, while in-service teachers should also be exposed to new teaching ideas and should develop their knowledge and classroom practice by learning from pre-service teachers. However, the collaboration work culture between pre-service teachers and in-service teachers is still in its infancy (Ha et al, 2004; Lee et al, 2005). A communication system through electronic means or

other means between pre-service teachers and in-service teachers should be established and adopted widely. Joint efforts should be initiated and maintained by the Education Bureau, by schools and universities, or other entities to support the interactive relationship. Furthermore, due to the mutual interaction among pre-service teachers, cooperating teachers and university supervisors during the mentoring in TGfU teaching, it is recommended that the collaborative mentoring model be presented as an effective approach for all pre-service and in-service teachers to improve their awareness and understanding of TGfU.

In the university level, results showed that pre-service teachers encountered challenges in understanding TGfU and they also cannot implement TGfU effectively, therefore, the major content and the "instructional strategies" of the TGfU professional development program must be adjusted to help pre-service teachers overcome these challenges. On the one hand, pre-service teachers' game knowledge and teacher beliefs were found to play significant roles in pre-service teachers' learning of TGfU, which must be considered by a professional development program designer. To help pre-service teachers understand TGfU and to provide a more comprehensive view of this model, more information should be included in the TGfU program. Apart from the theoretical knowledge of TGfU, a variety of fundamental tactical knowledge, the method of creating and modifying games, and more opportunities to demonstrate the TGfU approach are recommended to be covered in the program. Moreover, pre-service teachers' beliefs pertaining to teaching and/or PE must be examined and addressed as part of the program (Bechtel & O'Sullivan, 2007). On the other hand, based on the research results, microteaching experience provides opportunities for pre-service teachers to implement TGfU. Whether it will affect their perception of TGfU positively or negatively depends on their successful or failed

experience in microteaching. This implies that exposing pre-service teachers to theoretical knowledge and making them demonstrate the ideas in practice are not enough; these pre-service teachers should be trained specifically to apply theoretical knowledge in the practice of their skills (Armour and Yelling, 2004; Fullan & Hargreaves, 1996). Therefore, more opportunities should be provided for pre-service teachers to try out the TGfU model. To improve pre-service teachers' abilities to effectively use space and class time, the practice session included in the TGfU course or program should not be in an "ideal" setting but rather through imposed restraints, such as by limiting space and equipment. Moreover, the teacher educator should provide suggestions and guidance on the effective use of space and class time. Furthermore, due to the lack of abilities to prose appropriate questions or feedback, the relevant skills need to be addressed more clearly in the field experience. The teacher educator should also provide guidance for the successful implementation of the TGfU approach and help pre-service teachers by discussing the reasons behind the failed experience and finding solutions to these failures.

At the school level, the environmental context needs to be developed. Most of the pre-service teachers mentioned space and class time to be major constraints. The school context should be more positive towards the TGfU teaching approach to facilitate the process of implementing TGfU integration. Additionally, due to the effect of cooperating teachers and other school PE teachers on pre-service teachers' implementation of TGfU, there is a need to improve the professional development of all school PE teachers in order to provide more positive effect on pre-service teachers. Therefore, professional learning must be embedded in the culture of schools. Creating school cultures that value professional learning will encourage these teachers to learn new teaching ideas and pedagogical approach or improve their existing knowledge.

This in turn, will provide a more positive influence on the teaching behavior of pre-service teachers towards TGfU because they could provide with more effective supervision and suggestions from their supervisors and cooperating teachers.

Future Research

This study opened a range of research possibilities. In the course of conducting the study, the researcher discovered some areas that can be considered as productive grounds for future research.

One area of concern is the desire and ability of pre-service teachers to implement the TGfU approach in their school teaching. In the present study, pre-service teachers demonstrated positive attitudes towards TGfU and intend to use—but cannot implement—TGfU effectively in their teaching practice. Hence, a longitudinal study can be used to track the pre-service teachers' desire and ability to use the TGfU approach into the profession; this could prove to be useful and enlightening for beginning teachers.

Another area which calls for further investigation is the effect of a TGfU professional development program on the pre-service teachers' understanding and implementation of TGfU. This study found that pre-service teachers encounter difficulties in understanding and implementing the TGfU model. Therefore, a more effective TGfU professional development program based on the findings of the first and second studies is necessary. Further intervention study is recommended to examine whether or not the new TGfU program can improve the pre-service teachers' understanding and acceptance of TGfU.

The third area is to structure the collaborative mentoring model among pre-service teachers, cooperating teachers, and university supervisors. It should allow for the examination of the effect of the collaborative mentoring model on the respective professional developments of the three groups of teachers. According to the findings of the second study, mutual interaction exists between pre-service teachers and their mentors, including that among cooperating teachers and university supervisors. Therefore, facilitating such collaboration among pre-service teachers, in-service teachers, and teacher educators while learning TGfU, and establishing the communication system to promote the receptivity of these teachers, are worthy of further academic attention.

The fourth area relates to the further investigation of factors influencing the school PE teachers' perception and implementation of TGfU. These teachers are either unaware of TGfU or lack an understanding of this approach; Thus, focusing on the needs of school PE teachers can help investigate why they have low awareness and understanding of TGfU. Consequently, this can improve their learning and implementation of the program.

Finally, the research area can be extended from TGfU to other constructivist approaches in PE, or even in other school subjects (e.g., sports education model and the conceptual understanding approach). For these reasons, the perception, implementation, and mentoring of teachers on these constructivist teaching approaches are thus worth studying.

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Study I

Appendix A

Teacher Consent Letter

Dear Pre-service Teacher,

I will be conducting a research project entitled "Factors Influencing Pre-service Teacher's Perception of Teaching Games for Understanding: A Constructivism Perspective" in December, 2008. The purpose of this study is to examine pre-service teachers on their perception of TGfU and identify factors that influenced their perception of TGfU. I write to invite you to participant in this research project.

This study is supervised by Professor Amy Ha Sau Ching. Each student teacher will be interviewed. All data gathered during this research project will not require the names of you to be used and the data will be stored in confidence and anonymity.

During the periods of data collection, you are free to withdraw from the study at any time without prejudice. If you have any queries about the captioned study, please contact me at 26096098.

Thank you for your support in our research.

Yours sincerely,

_____

Department of Sports Science and Physical Education, CUHK
Professor Amy Ha Sau Ching

_____

Department of Sport Science and Physical Education, CUHK
Carrie Wang Li Juan

.....

Teacher Reply Form

I,_____, have read the accompany description of the research project entitled conducted by Carrie Wang Li Juan, and will/will not (please delete as whichever inapplicable) consent to participate and will participant in this study. I understand that I may withdraw at anytime without prejudice.

Signature: _____

Date: _____

Appendix B

訪談導引 (職前老師)

此次訪問是在你參加了領會教學法課程之後進行。訪問的目的是幫助我們解職前教師在學習領會教學法過程中的對此教學法的認知以及影響認知的因素。你已經收到並簽名了一封訪問同意書，這代表你同意接受此次訪談。這次訪談將會被錄音。

受訪者姓名：_____

受訪者性別：_____

就讀院校：_____

年級：_____

修讀過的教學法課程：_____

是否有教學實習的經驗：_____

如果有，

實習的學校：_____

教授的對象：_____

主要教授項目：_____

第一部分： 關於職前教師對於領會教學法感知的問題

1. 你怎樣看待領會教學法？
2. 你覺得什麼是領會教學法的優點和缺點？
3. 在學習領會教學法的過程中，你覺得最大的困難是什麼？爲什麼？基於你個人的經驗，你會怎樣克服這些困難？
4. 將來你會用領會教學法來教學嗎？

如果會，

4.1 什麼時候 (實習期間還是去學校工作教學期間)？

4.2 爲什麼？

如果不會，

4.3 爲什麼？

第二部分： 關於影響職前教師對於領會教學法感知的因素的問題

5. 你認爲有哪些個人因素會影響你對領會教學法的感知？這些因素怎樣影響你對領會教學法的感知？

5.1 你以前有參與球類比賽的經驗嗎？你覺得參與球類比賽的經驗會影響你對領會教學法的感知嗎？如果會，怎樣影響？

5.2 你曾經有過同伴互助教學的經驗嗎？在教學中你是充當教師還是學生的角色？你認爲你的同伴互助教學經驗影響你對領會教學法的感知嗎？如果會，怎樣影響？

5.3 你認爲你過去實習的經驗影響你對領會教學法的感知嗎？如果會，怎樣影響？

5.4 你認爲你的個性特點與你對領會教學法的感知有無關係？如果有，有怎樣的關係。

5.5 你心中好的體育教學的標準是什麼？你認爲你對體育教學的看法會影響你對領會教學法的感知嗎？如果會，怎樣影響？

5.6 你還記得你以前學校的體育教師上課的方法嗎？你能描述一下他們在體育課中怎樣做的嗎？你認爲他們的教學方法會影響你對領會教學法的感知

嗎？如果會，怎樣影響？

6. 你認爲有哪些社會因素會影響你對領會教學法的感知？這些因素怎樣影響你對領會教學法的感知？

6.1 你和其他的職前教師（例如你的同班同學，高年級同學）交流嗎？ 一般來說你們會談什麼內容？你認爲這種交流會影響你對領會教學法的感知嗎？如果會，怎樣影響？

6.2 你會和其他的在職教師（例如你的教學指導老師，你的實習教學顧問）交流嗎？這種交流會影響你對領會教學法的感知嗎？如果會，怎樣影響？

6.3 你觀察過其他教師的教學嗎？ 在什麼場合？你覺得這種觀察影響你對領會教學法的感知嗎？如果會，怎樣影響？

6.4 據我所知， 香港實行了體育課程改革，旨在培養學生的創造能力，批判思維能力，合作以及交流能力， 你認爲課程改革的大環境影響你對領會教學法的感知嗎？如果會，怎樣影響？

Appendix C

Interview Guide (pre-service teachers)

This interview is conducted after the TGfU program you attended. This interview aims to help us understand pre-service teachers' perception and factors that influence pre-service teachers' perception. You have received and signed the teacher inform consent, which means that you agreed to take this interview. This interview will be recorded on audio tape.

Part one: Pre-service teacher perception of TGfU

1. How do you think of TGfU approach?
2. What would you think are the strength and weakness of TGfU model?
3. What do you think are the challenges for you when learning TGfU? Why do you think so? Based on your experience, how could you overcome these challenges?
4. Would you use TGfU in the future?

If yes

4.1 When will you use TGfU approach for your teaching (e.g., internship or working as a school teacher)?

4.2 Why will you use TGfU approach for your teaching?

If not

4.3 Why will you not use TGfU approach?

Part two: Factors influencing pre-service teacher perception of TGfU

5. Can you describe the individual factors that influence your perception of TGfU? How do these factors influence your perception of TGfU?
   - 5.1 Do you have game experience previously? Do you think whether the previous game experience influences your perception or application of TGfU or not? If so, how?
   - 5.2 Do you have TGfU micro teaching experience? Acting as a teacher or a student? Do you think whether the micro teaching experience influences your acceptance of TGfU or not? If so, how?
   - 5.3 Do you think whether the previous teaching practice experience influences your perception of TGfU? If so, how?
   - 5.4 Do you think whether your personality is associated with your acceptance of TGfU or not? If so, how?
   - 5.5 What is quality physical education instruction in your mind? Do you think whether this view of teaching influences your perception on TGfU or nto? If so, how?
   - 5.6 Do you remember your previous physical education teachers' instruction in their class when you are a school student? Could you describe what they did in physical education class? Do you think whether their teaching approach influences your perception on TGfU or not? If so, how?
6. Can you describe the social factors that influence your perception of TGfU? How do these factors influence your perception of TGfU?
   - 6.1 Do you often talk with other pre-service teachers (e.g., your classmates), and

what you talk about? Do you think whether the interaction with them influences your perception of TGfU or not? If so, How?

6.2 Do you often communicate with experienced teachers (e.g. supervisor, teacher advisors, and other in-service teachers)? Do you think whether the communication with experienced teachers influences your perception on TGfU or not? If so, how?

6.3 Do you observe the other teachers' instruction? Where? Do you think whether the observation influences your perception on TGfU or not? If so, how?

6.4 In Hong Kong, physical education curriculum reform was conducted to foster student creativity, critical thinking, collaboration, and communication. Do you think whether physical education curriculum reform influences your perception on TGfU or not? If so, how?

Study II

Appendix D

Teacher Consent Letter

Dear Pre-service Teacher,

I will conduct a research project entitled "The Theory of Planned Behavior: Predicting Pre-service Teachers' Teaching Behavior towards a Constructivist Approach".
The purpose of this study is to examine pre-service teachers' implementation of TGfU and the factors that influence their implementation of TGfU based on the theory of planned behavior. I write to invite you to participant in this research project.

This study is supervised by Professor Amy Ha. Three of your classes will be videotaped and several interviews will be conducted with you as well. All data gathered during this research project will not require the names of you to be used and the data will be stored in confidence and anonymity.

During the periods of data collection, you are free to withdraw from the study at any time without prejudice. If you have any queries about the captioned study, please contact me at 26096098.

Thank you for your support in our research.

Yours sincerely,

_____

Department of Sports Science and Physical Education, CUHK
Professor Amy Ha Sau Ching

_____

Department of Sport Science and Physical Education, CUHK
Carrie Wang Li Juan

.....

Teacher Reply Form

I,_____, have read the accompany description of the research project entitled conducted by Carrie Wang Li Juan, and will/will not (please delete as whichever inapplicable) consent to participate and will participant in this study. I understand that I may withdraw at anytime without prejudice.

Signature: _____

Date: _____

Appendix E

訪問指引 (職前老師)

此次訪問是在爲期三你周的小學教學實習後進行。訪問的目的是幫助我們解職前教師在教學實習期間對領會教學法的實施以及影響其實施領會教學法達到的因素。你已經收到並簽名了一封訪問同意書，這代表你同意接受此次訪談。這次訪談將會被錄音。

受訪者姓名：_____
受訪者性別：_____
訪談日期：_____
訪談時間：_____
訪談地點：_____
就讀院校：_____
年級：_____

第一部分：受訪者所在實習學校的背景資料

1. 請描述學校器材與場地的情況？你認爲學校的體育教學資源是否豐富？
2. 實習學校的體育教師採用哪種教學法來教授體育課？
3. 請描述你所教授班級的特點（班級人數，學生特點，課堂紀律）？

第二部分：影響領會教學法教學意圖以及行爲的因素

4. 在此次實習過程中，你計畫在此次研究的三次課中運用領會教學法來教學嗎？什麼因素影響你運用領會教學法的意願? 請列舉三個因素.
5. 你對於領會教學法的使用是持支援還是反對的態度？爲什麼？
6. 你認爲對於領會教學法的態度會影響你使用領會教學法嗎？如果有，怎樣影響？
7. 你能描述你周圍的老師或者學生（教學指導老師，實習教學顧問老師，周圍的在職教師，校長）對於領會教學法的認知嗎？他們支援還是反對你使用領會教學法？他們的態度會不會影響你使用領會教學法的決定？請舉一例說明。
8. 回顧在實習期間的領會教學法單元，你認爲課程時間的分配合理嗎（教學，課堂管理，戰術，技術的時間分配）？爲什麼？如果合理，哪些因素幫助你合理安排時間？如果不合理，是什麼因素影響了課程時間的分配?
9. 能描述一下你在領會教學法中你的提問是涉及戰術，技術還是其他的知識？爲什麼會選擇這類問題？
10. 能描述一下你在領會教學法中給學生回饋的資訊？你的回饋資訊是關於技術還是戰術層面？爲什麼?
11. 在此次實習過程中，有什麼因素促進了你在課堂中實施領會教學法的教學？
12. 在此次實習過程中，有什麼因素阻礙了你在課堂中實施領會教學法的教學？

Appendix F

Interview Guide (pre-service teachers)

This interview is conducted after the teaching practicum you took. This interview aims to help us understand factors that influence pre-service teachers' implementation of TGfU. You have received and signed the teacher inform consent, which means that you agreed to take this interview. This interview will be recorded on audio tape.

Part One: Background information

1. Can you provide some information about the space and equipment in the school? Do you think whether these resources are sufficient for your teaching of TGfU?
2. What is the major teaching approach that the PE teachers in your schools conduct?
3. Can you describe the charasteritics of the school (school size, class size, and class time)?

Part Two: Factors determining pre-service teachers' teaching behavior of TGfU

4. Did you adopt the TGfU approach in three lessons observed during the teaching practicum? What are the factors influencing your intention to use TGfU?
5. Do you have a positive or negative attitude towards TGfU? Why?
6. Do you think your attitude towards TGfU will influence your intention to use TGfU? If so, how?
7. Can you describe the attitude of teachers or students (cooperating teachers, university supervisors, principals, other school teachers or students) towards TGfU? Did they support or oppose you to use TGfU? Did their attitude towards TGfU influence your intention to use TGfU?
8. Reflecting back the teaching practicum, do you think the time distribution is reasonable (teaching, management, tactics, skill time)? Why? What are the factors influencing the time distribution?
9. Do you think the questions you asked in class are related with tactics, skills or others? Why?
10. Can you describe the feedback that you provided to students? Are these feedbacks related with skills or tactics? Why?
11. What are the factors which facilitate your implementation of TGfU? Please give three examples?
12. What are the factors which inhibit your implementation of TGfU? Please give three examples?

Study III

Appendix G

Teacher Consent Letter

Dear teacher,

I will conduct a research project entitled "Mentoring in TGfU Teaching: Mutual Engagement of Pre-service Teachers, Cooperating Teachers, and University Supervisors". The purpose of the study is (1) to examine three groups of teachers' awareness, attitude, and understanding towards TGfU, and (2) to investigate the mutual interaction between pre-service teachers and their mentors including cooperating teachers and university supervisors during mentoring in TGfU teaching.

This study is supervised by Professor Amy Ha. One interview will be conducted with you during the 8-week teaching practice. All data gathered during this research project will not require the names of you to be used and the data will be stored in confidence and anonymity.

During the periods of data collection, you are free to withdraw from the study at any time without prejudice. If you have any queries about the captioned study, please contact me at 26096098.

Thank you for your support in our research.

Yours sincerely,

_____

Department of Sports Science and Physical Education, CUHK
Professor Amy Ha Sau Ching

_____

Department of Sport Science and Physical Education, CUHK
Carrie Wang Li Juan

.....

Teacher Reply Form

I,_____, have read the accompany description of the research project entitled conducted by Carrie Wang Li Juan, and will/will not (please delete as whichever inapplicable) consent to participate and will participant in this study. I understand that I may withdraw at anytime without prejudice.

Signature: _____

Date: _____

Appendix H

訪問指引 (職前老師)

此次訪問是在你參加爲期八周的教學實習期間進行。訪問的目的旨在目的在於探討香港職前體育教師、學校指導教師以及大學導師對於領會教學法的瞭解、態度以及理解程度，並瞭解三群教師在領會教學法指導過程中的相互影響。你已經收到並簽名了一封訪問同意書，這代表你同意接受此次訪談。這次訪談將會被錄音。

受訪者姓名：_____

受訪者性別：_____

受訪者年齡：_____

訪談日期：_____

訪談時間：_____

訪談地點：_____

就讀院校：_____

年級：_____

本次實習你是在中學還是小學？_____

有無領會教學法的教學經驗? 幾次？_____

第一部分: 對領會教學法的認識、態度與瞭解

1. 你知道領會教學法嗎？（看過，聽說過，學習過，用過？）
2. 請具體說明你是通過什麼途徑瞭解領會教學法以及通過這些途徑學到的有關領會教學法的內容？你認爲這些途徑是否能幫助你有效的學習領會教學法？如果不能，你認爲什麼方式能讓你更有效的掌握領會教學法？
3. 你怎樣看待領會教學法？爲什麼？
4. 你怎樣理解領會教學法？

   4.1 如果用領會教學法授課，你會如何安排你的課程內容？請以一堂課爲例說明

   4.2 你安排這些課程內容的目的是什麼？

   4.3 如果用領會教學法授課，你會運用怎樣的方式來教學？請以一堂課爲例說明
5. 你認爲領會教學法適合在香港的中小學體育課中推廣嗎？爲什麼？

第二部分：領會教學法實施中的教學指導關係

6. 在實習期間你有沒有在課堂中採用過領會教學法？
7. 在採用領會教學法時，你的學校指導老師和大學導師有沒有給你相關的指導？請分別說明指導的內容。(例如課堂管理，教學方法，與學生的溝通)
8. 在實施領會教學法的過程中， 你的學校指導老師和大學導師分別採用何種方式來對你進行指導？
9. 你覺得這些指導對你領會教學法的實施有什麼正面的或者負面的影響？如果有，請具體說明。(例如加深對領會教學法的理解，有效管理課堂)
10. 你覺得學校指導老師與大學導師在對你領會教學法的適用上所給的指導有什麼相同點和不同點嗎？

Appendix I

Interview guide (pre-service teachers)

This interview is conducted after the teaching practicum you took. This interview aims: (1) to examine three groups of teachers' awareness, attitude, and understanding towards TGfU, and (2) to investigate the mutual interaction between pre-service teachers and their mentors including cooperating teachers and university supervisors during mentoring in TGfU teaching. You have received and signed the teacher inform consent, which means that you agreed to take this interview. This interview will be recorded on audio tape.

Part one: teachers' awareness, attitude, and understanding towards TGfU

1. Are you aware of TGfU?
2. What is the major way through which you learn TGfU? Do you think these approaches could help you understand completely or implement TGfU effectively? If not, do you think what the effective way for you to understand and implement TGfU effectively is?
3. How do you think of TGfU? Why?
4. How do you understand TGfU?
   4.1 If you are reqired to use TGfU in classes, what class content will you choose? Please explain it with an example.
   4.2 What is the purpose of TGfU?
   4.3 How will you teach TGfU? Please explain it with an example.
5. Do you think the TGfU model should be promoted in primary and secondary PE classes in Hong Kong?

Part two: The mutal interaction among pre-service teachers, cooperating teachrs, and university supervisors

6. Did you use TGfU in game classes during teaching practicum?
7. Did your cooperating teachers and university supervisors provide any suggesions on your use OFTGfU? What are their suggestions? If not, why?
8. What is the way through which your cooperating teacher and university supervisor provided during teaching practicum during teaching practicum?
9. What is the positive or negative effect of the mentoring your cooperating teacher and university supervisor provided on your understanding and implementation of TGfU?
10. Do you think what are the similarities and differences between the mentoring provided by your cooperating teacher and university supervisor?

Appendix J

訪談提綱（大學導師和學校指導老師)

此次訪問是在你參加爲期八周的教學實習期間進行。訪問的目的旨在目的在於探討香港職前體育教師、學校指導教師以及大學導師對於領會教學法的瞭解、態度以及理解程度，並瞭解三群教師在領會教學法指導過程中的相互影響。你已經收到並簽名了一封訪問同意書，這代表你同意接受此次訪談。這次訪談將會被錄音。

名字：_____

性別：_____

年齡：_____

是否有中小學的教學經驗？多長時間？：_____

教學指導經驗：_____

學歷：_____

有無領會教學法的教學經驗? 幾次？_____

第一部分: 對領會教學法的看法與觀點

1. 你知道領會教學法嗎？（看過，聽說過，學習過，用過？）
2. 請具體說明你是通過什麼途徑瞭解領會教學法以及通過這些途徑學到的有關領會教學法的內容？你認爲這些途徑是否能幫助你有效的學習領會教學法？如果不能，你認爲什麼方式能讓你更有效的掌握領會教學法？
3. 你怎樣看待領會教學法？爲什麼？
4. 你怎樣理解領會教學法？
   4.1如果用領會教學法授課，你會如何安排你的課程內容？請以一堂課爲例說明。
   4.2 你安排這些課程內容的目的是什麼？
   4.3 如果用領會教學法授課，你會運用怎樣的方式來教學？請以一堂課爲例說明。
5. 你認爲領會教學法適合在香港的中小學體育課中推廣嗎？爲什麼？

不知道

1. 爲什麼？
2. 在體育教學中，你是採用什麼方法來教學？你認爲有無必要學習新的教學方法？爲什麼？
3. 在工作中，你是否有機會學習新的教學方法和觀念？如果有，是通過什麼方式？學習的內容是什麼？

第二部分： 領會教學法實施中的教學指導關係

1. 在實習期間你指導的職前教師有沒有在課堂中採用過領會教學法？
2. 你有沒有對於職前教師的領會教學法的教學給過具體的指導？請具體說明指導的內容以及方式 （例如觀察，討論，會議）
3. 指導職前教師領會教學法教學的過程對你的教學有沒有影響（正面或負面）？如果有，請具體說明？（例如加深對領會教學法的瞭解，對自己教學的反思，爲教學提供了新的素材）。

Appendix K

Interview guide (cooperating teachers and university supervisors)

This interview is conducted after the teaching practicum you took. This interview aims: (1) to examine three groups of teachers' awareness, attitude, and understanding towards TGfU, and (2) to investigate the mutual interaction between pre-service teachers and their mentors including cooperating teachers and university supervisors during mentoring in TGfU teaching. You have received and signed the teacher inform consent, which means that you agreed to take this interview. This interview will be recorded on audio tape.

Part one: teachers' awareness, attitude, and understanding towards TGfU

1. Are you aware of TGfU?
2. What is the major way through which you learn TGfU? Do you think these approaches could help you learn or implement TGfU effectively? If not, do you think what the effective way for you to understand and implement TGfU effectively is?
3. How do you think of TGfU? Why?
4. How do you understand TGfU?

4.1. If you are reqired to use TGfU in classes, what class content will you choose? Please explain it with an example.

4.2. What is the purpose of TGfU?

4.3. How will you teach TGfU? Please explain it with an example

5. Do you think the TGfU model should be promoted in primary and secondary PE classes in Hong Kong?

If not aware of TGfU,

1. Why?
2. What is the major approach you take in your PE teaching? Do you think there is a need to learn the new teaching approach? Why?
3. Do you have opportunities to learn new teaching idea or approach? If so, what do you learn and how do you learn?

Part two: The mutal interaction among pre-service teachers, cooperating teachrs, and university supervisors

1. Did the pre-service teacher you mentered use the TGfU model?
2. Did you provide relevant suggestions on pre-service teachers' implementation of TGfU? Please explain the specific mentoring content and approach.
3. Do you think the TGfU mentoring process has effect on your teaching? If so, what is it?