USING COMMUNITIES OF PRACTICE IN DEVELOPING HEALTH-RELATED FITNESS KNOWLEDGE OF PHYSICAL EDUCATION TEACHERS: IMPACT ON STUDENT LEARNING

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Approval of the Graduate School of Social Sciences

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ABSTRACT

USING COMMUNITIES OF PRACTICE IN DEVELOPING HEALTH-RELATED FITNESS KNOWLEDGE OF PHYSICAL EDUCATION TEACHERS: IMPACT ON STUDENT LEARNING

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The purpose of this study was to examine 1) the ways physical education teachers' interact in a community of practice (CoP) 2) the effects of participation in CoP on the physical educators' and their students' health-related fitness (HRF) content knowledge (CK) and 3) the effects of physical education teachers' CoP experience on their HRF pedagogical content knowledge (PCK) construction process. Twelve experienced physical education teachers (six in treatment, six in control group) and 278 of their students voluntarily participated in this study. Mixed method research with experimental pre–post design was used. Teachers in treatment group participated in a CoP for six weeks. For the first research question, results of the Interaction Process Analysis indicated that the types and patterns of the interactions changed over the six weeks. Teachers were more open to giving suggestions and opinions, expressing their feelings to each other and collectively offering solutions to each others problems as the weeks progressed. For the second research question, both quantitative and qualitative analysis indicated that teachers' participation in a CoP increased both their and their students' HRF CK. Two themes emerged to reveal these teachers' increased CK: (1) how teachers became aware of their needs about HRF CK through support of the CoP and (2) the types of resources that helped them improve their CK through the CoP. For the third research question, results of the

qualitative data demonstrated that for teachers, seeing their students respond positively and enjoying learning encouraged them to change their classroom practices. These changes typically resulted from increased HRF CK and made a change in teachers' classroom practice, implementing new instructional methods, developing instructional tools, giving responsibility for learning to their students.

Keywords: Community of practice, health-related fitness, content knowledge, pedagogical content knowledge

ÖZ

MESLEKİ ÖĞRENME GRUBUNUN BEDEN EĞİTİMİ ÖĞRETMENLERİNİN SAĞLIKLA İLGİLİ FİZİKSEL UYGUNLUK BİLGİLERİNİ GELİŞTİRMEDE KULLANIMI: ÖĞRENCİ ÖĞRENMESİNE ETKİLERİ

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Bu çalışmanın amacı, mesleki öğrenme grubuna (MÖG) katılan beden eğitimi öğretmenlerinin 1) birbirleriyle olan etkileşim yollarını, 2) kendilerinin ve öğrencilerinin sağlıkla ilgili fiziksel uygunluk (SiFU) alan bilgilerini ve 3) SiFU pedagojik alan bilgilerinin gelişimini incelemektir. 12 deneyimli beden eğitimi öğretmeni (6'sı deney, 6'sı kontrol grubunda olmak üzere) ve 278 öğrenci bu çalışmaya gönüllü olarak katılmışlardır. Çalışmada ön test-son test deney desenli karma yöntem kullanılmıştır. Deney grubundaki öğretmenler 6 hafta boyunca MÖG'e katılmışlardır. İlk araştırma sorusu için, 6 haftalık MÖGe katılan öğretmenlerin etkileşimlerini analiz etmek için Etkileşim Süreci Analizi (Interaction Process Analysis) sonuçları, 6 hafta içerisinde etkileşimin örüntülerinin ve türünün değiştiğini göstermiştir. Haftalar ilerledikçe öğretmenlerin öneri ve fikir sunmaya, hislerini birbirlerine ifade etmeye ve herkesin sorunlarına ortaklaşa çözüm yolu üretmeye daha açık oldukları görülmüştür. İkinci araştırma sorusu kapsamındaki hem nitel hem de nicel veri analizleri, öğretmenlerin MÖGe katılmalarının hem kendilerinin hem de öğrencilerinin SiFU alan bilgilerini arttırdığını göstermiştir. Öğretmenlerin alan bilgilerinin artmasına neden olan iki tema ortaya çıkmıştır: (1) öğretmenlerin kendi SiFU alan bilgi ihtiyaçlarının MÖG yardımıyla farkına varmaları ve (2) öğretmenlerin MÖG yardımıyla, alan bilgilerini geliştirmeye yardımcı olan kaynaklarının türleri. Üçüncü araştırma sorusu kapsamındaki nitel veri

analizlerine göre öğretmenlerin, ders ortamında yaptıkları yeniliklere öğrencilerinin olumlu tepki vermesi ve derslerden memnun olduklarını görmek, öğretmenleri sınıf içi uygulamalarını değiştirmeye teşvik etmiştir. Bu değişim genel anlamda SiFU alan bilgi düzeyinin artmasına bağlanabilir. Bununla birlikte öğretmenler sınıf içi uygulamalarında yeni öğretim modellerinin kullanmışlar, öğretim materyalleri geliştirmişler ve öğrencilerine sorumluluk vermişlerdir.

Anahtar kelimeler: Mesleki öğrenme grubu, sağlıkla ilgili fiziksel uygunluk, alan bilgisi, pedagojik alan bilgisi.

To my family

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CHAPTER I

INTRODUCTION

This chapter includes four sections. First, the background of the study is presented followed by a statement of the problem. Third, the significance of the study is explained and finally the definition of the terms as used in this study are provided.

1.1. Background of the Study

Recent studies indicated the sharp increase in childhood inactivity, overweightness and obesity (Sanchez et al., 2007, Turkish National Burden of Disease Report, 2004) and their negative effect on the wellbeing of children and youth (Tremblay et al., 2011). These results provided the main impetus for stressing health related fitness (HRF) in the new physical education curriculum being implemented in Turkey. Therefore, Turkish National Physical Education Curriculum was changed in 2007 and one of the main foci of the curriculum is HRF now.

Previous studies produced a body of knowledge about how to exercise to achieve maximum health gains from physical activity (Corbin and Lindsey, 2006). Concepts of optimum exercise frequency, intensity, time and exercise type were identified for each HRF component: body composition, cardiovascular endurance, muscular strength and endurance, and flexibility (Corbin & Lindsey, 2006). Increased emphasis on these concepts in physical education have increased the attention given to the HRF content knowledge (CK) level of teachers (Castelli & Williams, 2007; Ince & Hunuk, 2013; Santiago, Morales, & Disch, 2009). Unfortunately, findings from previous research indicate weaknesses in the HRF CK of physical education teachers, including poor knowledge levels (Castelli & Williams, 2007; Santiago et al., 2009) and misconceptions about HRF concepts and their application (Ince & Hunuk, 2013). Not surprisingly, other studies examining the HRF CK of students revealed similar knowledge deficiencies, such as low levels of knowledge (Hunuk, Gursel, & Ince, 2007; Keating et al., 2009) and related misconceptions (Placek et al., 2001).

This gap between physical education HRF curriculum goals and teachers' and students' HRF CK levels prioritizes improving the HRF CK and pedagogical content knowledge (PCK) of physical education teachers through professional development (PD) opportunities. Grosman, Wilson and Shulman (1989), defined CK as "the stuff of a discipline: factual information, organizational principles, or central concepts" (p. 27). Having the CK does not ensure the ability to teach this knowledge; it is not a sufficient condition for effective teaching because the teacher must also be educated in pedagogy (Castelli & Williams, 2007). The process of transforming CK into pedagogical form is referred to as PCK (Shulman, 1987). Although Shulman (1987) identified PCK as teacher's knowledge of content for teaching, "*that special amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding*", Ayvazo (2007) operationally defined PCK as, "the act of selecting content from one's knowledge base for the purpose of teaching in a specific context" (p. 77).

The number of studies emphasizing the importance and characteristics of quality PD in physical education has increased (Armour & Duncombe, 2004; Armour & Yelling, 2004; Betchel & O'Sullivan, 2006, Kulinna, et al., 2008). Results of these studies indicated that high quality PD must consider teachers' needs when providing them with challenging and intellectually stimulating work (Armour & Yelling, 2007; Betchel & Sullivan, 2006). Also suggested is that quality PD needs to include collaborative opportunities with teachers seeing themselves as members of a community (Betchel & Sullivan, 2006).

Collaborative professional learning involves all learners in the pedagogical process, including both teachers and pupils. Collaborative professional learning is a multi-dimensional concept that encompasses learning communities and teachers' networks. Most of these concepts share a theoretical base in the social constructivist theory that embraces Vygotsky's notion of a "community of practice"(CoP) and Lave and Wengers' concept of "situated learning" (Armour & Yelling, 2004). According to situated learning theory, learning occurs during the process of engagement in social-

cultural practice in a social setting and involves becoming a full participant in the CoP (Lave & Wenger, 1991). Although a variety of terms are given to this concept of community, CoP, teacher learning communities, knowledge communities; their aim is to inform, empower, support and improve the practices of teachers (Deglau, et al., 2006).

Research on teachers' PD indicates that learning is most successful when PD is aligned, coherent and sustained (Cochran-Smith & Lytle, 1999; DuFour, 2004; Lave & Wenger, 1991). Professional learning communities, or CoP have been accepted by many scholars and practitioners as an effective tool for teachers' PD (Lieberman & Mace, 2009; Parker et al., 2010; Wenger, 1998). Therefore, establishing and maintaining a CoP seems to be a promising method to improve HRF CK and PCK of physical education teachers.

Wenger (1998) described CoP as "*groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly"*. People belonging to a CoP are more than just a group of people, they are a group who share an overall view of the domain in which they practice and have a sense of belonging and mutual commitment to this practice (Wenger, McDermott, & Snyder, 2002). Members of a CoP develop their own understandings of what their practices and profession are about and while learning is a primary goal for them, they also find value in the process of learning.

Wenger (1998) suggested that a successful CoP should be based on *mutual engagement* (the way members engage in action with other people and develop expectations on how to work together and establish relationships based on this engagement); *joint enterprise* (how members of the community contribute to and take responsibility for the development of the CoP as individuals); and a *shared repertoire* (the ability to make the range of resources employed into something that is used and engaged in). This requires participation and the ability to make practices meaningful.

There is a growing body of literature highlighting the values and benefits of being a member of a physical education CoP (Armour & Yelling, 2007; Deglau & O'Sullivan, 2006; Parker et al., 2010; Tannehill & Murphy, 2010). Researchers have indicated that when teachers collaborate in such communities, discuss teaching with others and engage in critical dialogue about their works they are more willing to take risks, reflect on their failures and share successful practices (Deglau et al., 2006). Moreover, positive outcomes of CoPs include teachers informally and collaboratively learning from each other (Armour & Yelling, 2007), forming strong identities as teaching professionals (Deglau & O'Sullivan, 2006), developing a commitment to advocate for their subject at a wider policy level (O'Sullivan, 2008), and creating new images of themselves as teachers (Deglau & O'Sullivan, 2006). Finally, teachers were also highly motivated to reconsider their own practices for improving student learning and developing their programmes while participating in a CoP (O'Sullivan, 2008).

Despite evidence that PD and CoP are effective methods of fostering physical education teachers' improved practices, recognizing the importance of increasing physical educators' HRF CK and PCK, there is a dearth of research examining or seeking to improve teachers' CK in this area (Castelli & Williams, 2007; Ince & Hunuk, 2013; Santiago et al., 2009). Limited research reveals that teachers have a lack of HRF CK related to fitness components, setting of fitness goals and design of physical activity programmes for youth yet none has been identified that examines the impact of teachers' HRF CK and PCK on their learners' CK. Numerous PD scholars recommend (Armour & Yelling, 2004; O'Sullivan, 2008; Vescio, Ross, & Adams, 2008) studying the impact of teachers attending CoP on their students' learning, ultimately providing insight into the outcomes of effective teacher PD on students.

1.2. Statement of the problem

Within educational reform, the need for more learning opportunities for teachers is considered significant to improve teacher quality as well as the learning of students. As a result of educational reform, the Turkish National Physical Education

Curriculum was changed in 2006 and has been implemented in all primary schools since 2007. This new curriculum has altered its' focus from traditional sport-based activities (for example basketball, volleyball and track and field), to the lifelong physical activities (such as fitness, dance, games, and outdoor activities). In addition, one of the important changes is that it is now standards-based and the main focus of the curriculum is ensuring students' have the knowledge and experiences for enabling their choosing a life-long physical activity across their lives. Therefore, HRF is one of the main foci in the Turkish Physical Education Curriculum. Although since 2007 in-service teachers have been introduced to the new curriculum through workshops, seminars, and in-service training, limited research has been conducted both on CK or PCK of teachers in the area of HRF in the Turkish culture.

As a result, this research intends to examine a) the ways physical education teachers interact in CoP, b) the effects of participation in CoP on the physical educators' and their students' health-related fitness (HRF) content knowledge (CK), and c) the effects of physical education teachers' CoP experience on their HRF pedagogical content knowledge (PCK) construction process.

1.3. Significance of the study

Although many physical education studies (Chen, 2004; McCaughry & Rovegno, 2003) have argued that CK is related to the development of PCK, no study has yet to clarify this relationship between CK and PCK. Therefore, there is a necessity to investigate how teachers' construct their CK/PCK knowledge. This study is significant because it contributes to enhancing our understanding of teachers' knowledge construction process in a CoP and how this is transferred into their actual teaching.

As noted above, with the change in the Turkish National Physical Education Curriculum, the focus of physical education is now lifelong physical activity and ensuring students have the knowledge and experience to choose a physically active lifestyle. Due to limited research examining CK and PCK in the area of HRF in Turkey this study will play an important role in filling this gap in the literature.

Additionally, this study attempts to increase Turkish experienced teachers HRF CK to enable them to promote HRF outcomes in physical education which is known to be inadequate or inaccurate at present (Ince & Hünük, 2008).

From an applied perspective, it is intended that the findings of this study will allow greater insight into inservice PD and help PD providers in designing relevant and authentic education experiences by identifying the needs of teachers' in different contexts. In the Turkish context CoP has not yet been experienced.

1.4. Definition of the terms

Professional development: All types of professional learning undertaken by teachers beyond the initial point of training (Craft, 1996).

Community of practice: Groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly (Wenger, 1998).

Content knowledge: Knowledge of facts and concepts of a subject matter and the relationships among them (Grossman, 1990).

Pedagogical content knowledge: PCK is the act of selecting content from one's knowledge base for the purpose of teaching in a specific context (Ayvazo, 2007).

Health related fitness: Health related fitness includes four main components, including body composition, cardiovascular endurance, muscular strength and endurance, and flexibility (ACSM, 2010).

CHAPTER II

REVIEW OF LITERATURE

This literature review includes six sections; 1) educational curriculum reform and its relation with HRF concepts, 2) information about teachers' and students' HRF CK, 3) teachers' PCK, 4) PD in physical education, 5) CoP, and 6) focus group interactions.

2.1. Curriculum Reform in Physical Education

This section will provide an overview of the current situation of the PE curriculum.

Researchers currently studying curricula in physical education have suggested that physical education programs today are similar to programs of past decades (Ward, 1999). Curriculum implementation may be the major catalyst in creating change in physical education (Ward & Doutis, 1999).

As with educational reform in the wider education context, physical education has been evolved from three radical reforms and extinction in its' history (Kirk, 2010). The first, up until the 1950s held the dominant view of physical education as gymnastics. Between 1950s and 1990s, the idea of physical education shifted from physical education as gymnastics to physical education as sport-techniques. The effects of social conditions such as introduction of mass secondary education, contingent constraints of institutionalized schooling, and a greater number of male physical educators entering the profession during the 1950s marked this change (Kirk, 2010). Finally, reform after 1990 evolved as a result of emerging researchers who indicated that increasing non-communicable diseases, such as cardiovascular disease, diabetes, cancer, obesity rates and physical inactivity had become the most important public health issues globally (WHO, 2008; U.S. Department of Health and Human Services, 2000). The alarming rates of overweight and obese children needs to be addressed by health educators and professionals. Increasing regular physical

activity is widely accepted as an effective preventative measure for a variety of health risk factors across all ages and genders (Tremblay et al., 2011; World Health Organization [WHO], 2003). Considering these issues, current international and national physical education standards have stated that "regular physical activity participation", "performing and maintaining health enhancing physical activity" and "internalizing health related physical fitness concepts" are critical to provide a guide for school physical education curricula (MoNe, 2007; NASPE, 2004).

Accordingly, the Turkish National Physical Education Curriculum changed in 2006 as a result of the studies indicating that participation in health enhancing physical activity decreased and the number of hypokinetic diseases increased in the general population (Aktop, 2010; Kin-İşler, et al., 2009, Turkish National Burden of Disease Report, 2004). A number of studies focused on the physical activity behaviors and health related physical fitness of school age children and youth (Aktop, 2010; Kin-İşler, et al., 2009) have stated that physical activity levels have been decreasing by age with boys having a higher level of physical activity than girls (Kin-İşler et al., 2009).

The current Turkish curriculum is now a standards-based physical education program (Lund & Tannehill, 2009; NASPE, 2004). The curriculum is based on five standards where learners 1) demonstrate competency in motor skills and movement patterns to perform a variety of physical activities, 2) demonstrate understanding of movement concepts, principles, strategies, and tactics as they apply to the learning performance of physical activities, 3) participate regularly in physical activity, 4) achieve and maintain a health-enhancing level of physical fitness, and 5) exhibit personal and social responsibility in physical activity settings. The third and fourth standards are directly related to physical activity and HRF and are grouped under the "active participation and healthy living" learning area of the curriculum.

2.2. Content Knowledge

2.2.1. Content Knowledge in General Education

CK is defined as "the stuff of a discipline: factual information, organizational principles, or central concepts" (Grosman, Wilson & Shulman, 1989). Alternatively, it is also described as "the amount and organization of knowledge per se in the mind of the teacher" (Shulman, 1986). In his research, Shulman (1986) examined the annual reports of state superintendents of education and emphasized the absence of focus on subject matter among various research paradigms for the study of teaching as the "missing paradigm" problem. Therefore Shulman (1986) proposed three forms of CK: (a) subject matter CK (i.e., teachers' organization and breadth of knowledge about the subject matter), (b) PCK (i.e., the ways of representing and formulating content that makes it easy to understand for learners), and (c) curricular knowledge (i.e., a range of topics planned and sequenced for teaching specific content at a given level of learners). Shulman (1987) in his study proposed an argument regarding the content, character, and sources for a knowledge base of teaching that suggested an answer to the question of the intellectual, practical, and normative basis for the professionalization of teaching. As a result of this propose, Shulman (1987) extended his framework to seven categories to include: (a) CK, (b) general PCK, (c) curriculum knowledge, (d) PCK, (e) knowledge of learners, (f) knowledge of educational context, and (g) knowledge of contexts. The framework was developed due to the belief that educational research on teaching had been focused primarily on organizational and management skills and less on the actual content. According to Shulman (1987) CK is the basic knowledge and skills taught in schools including students' knowledge, understanding, skills and dispositions.

2.2.2. Content Knowledge in Physical Education

Siedentop (2002) discussed the issues related to the definition of CK for physical education and described his view about "subject matter CK" in physical education. Siedentop argued that the core subject matter of physical education is sport and the physical activities teachers will teach their students in school. Ward (2009), however suggested two forms of subject matter knowledge: (a) knowing how to perform an activity and (b) knowing what to teach as the activity. Ward raised an assumption that teachers must be able to perform the activity to teach the activity. Ward (2009)

also argued that physical education teachers should have more sophisticated knowledge for teaching beyond merely knowing the rules, techniques, and tactics for performing the activities. Therefore, Ward (2009) proposed four domains of CK in physical education: (a) knowledge of the rules and etiquette, (b) knowledge of technique and tactics, (c) knowledge of student errors, and (d) knowledge of the instructional tasks. With this in mind, Ward proposed that both knowing how to perform and knowing what to teach should be learned independently since knowing how to perform is only part of the knowledge necessary for someone to teach an activity (Ward, 2009).

Although Siedentop (2002) and Ward (2009) have a slightly different view of CK, both agree that the subject matter of physical education has been ill-defined and that teachers' understanding of their subject matter is an important omission. This is supported by Shulman (1986) when he cited physical education as a missing paradigm (p. 7). Both Siedentop (2002) and Ward (2009) suggested that teacher educators are emphasizing pedagogy without a corresponding focus on CK.

2.2.3. Health Related Fitness Content Knowledge

2.2.3.1. Research on Teachers' Health Related Fitness Content Knowledge

HRF includes four main components, including body composition, cardiovascular endurance, muscular strength and endurance, and flexibility (ACSM, 2010). In a study examining alumni attitudes about their college physical activity program and current exercise habits, Adams and Brynteson (1992) found that to become physically fit and promote positive attitudes toward fitness, it is critical to understand the concepts and principles of HRF. In their study with high school students in the USA, researchers have supported the notion that increased knowledge of HRF concepts such as fitness assessment, goal setting, and application of the FITT (frequency, intensity, time and type) principle may result in increased physical activity (Dale & Corbin, 2000; Dale, Corbin & Cuddihy, 1998). As a result, school physical education programs have become more focused on the HRF content area. Although physical education teachers' important role in promoting physical activity

and fitness has been well documented, limited research has been conducted on the CK of teachers in the area of HRF.

Miller and Housner (1998) assessed the health-related physical-fitness knowledge of preservice and inservice physical education teachers and graduate students in physical education and exercise physiology in the USA. The results indicated that exercise-physiology graduate students' surpassed all others in knowledge. Though preservice teachers had relatively poor knowledge levels, their knowledge progressively increased with experience in the preservice program. In the USA, Ayers (2002) conducted a study of sub-disciplinary knowledge in prospective teachers and results showed that individuals enrolled in their student teaching experience scored higher in biomechanics, exercise physiology, historical perspectives, motor learning, and social psychology tests than individuals enrolled in an introductory physical education course. They scored the highest in exercise physiology therefore corroborating that HRF CK can improve with training.

Consistent with these results, in their study Santiago et al. (2010) investigated the physical activity and HRF CK of physical education teachers as it relates to gender, years of teaching experience and level of education. The findings suggested that there were differences in level of knowledge for teachers based on their years of experience. Results revealed that physical education teachers with greater than 6 years and less than 19 years experience scored significantly higher than those physical education teachers with greater than 19 years of teaching experience.

Other studies also implied that there were deficiencies in the HRF CK level of in-service physical education teachers (Castelli & Williams, 2007; Ince & Hunuk, 2013; Santiago, et al, 2009). In their study in Turkey, Ince and Hunuk (2013) studied 79 volunteer experienced physical education teachers and examined their HRF knowledge level and knowledge internalization processes. Results revealed that teachers' HRF knowledge was low and teachers' HRF knowledge level and their experiences in knowledge internalization processes were quite varied. They

suggested that future PD programs should focus on teachers' specific needs related to their HRF knowledge levels.

2.2.3.2. Research on Students' Health Related Fitness Content Knowledge

Students HRF knowledge mastery has consistently emerged in the literature as one of the important areas that needs improvement (Kulinna, 2004). In a study identifying teachers instructional variables and high school students' knowledge and conceptions of HRF, Stewart and Mitchell (2003) found that increased HRF knowledge could lead to an increase of physical activity behaviors and students could be more capable of making appropriate physical activity/fitness decisions (Adams II et al., 2006). In spite of the support for teaching HRF concepts, there is a lack of research documenting what students know and do not know about fitness concepts (Stewart & Mitchell, 2003).

Across many contexts many studies examining the HRF CK of students in different age groups revealed similar knowledge deficiencies, such as low levels of knowledge (Hunuk et al., 2007; Keating et al., 2009) and related misconceptions (Placek et al., 2001). Keating et al. (2009) reviewed the research on HRF knowledge mastery in K-16 programs by examining the studies published in the literature. The research reviewed supported previous research findings such as the misconceptions about fitness and the lack of an adequate amount of HRF knowledge among students. Results are consistent with all educational levels (i.e., elementary, secondary, and college).

In their review on student HRF knowledge, Keating, et al. (2009) identified two types of determinants that have been investigated to date: instructional variables and demographic factors. Overall, the studies have examined instructional variables such as time allocation, resources, instructional strategies, and assessment strategies and reported that they have not been significantly related to student HRF knowledge learning. However, a few studies including interventions in K-12 physical education programs found that homework assignments, website-based fitness instruction

(Jorgenson & George, 2001) and parental involvement could significantly increase student HRF knowledge (Hopper et al., 1996).

The most common demographic that has been investigated in the studies about students' HRF knowledge are age and gender. As stated previously, students, regardless of grade level, did not master adequate HRF knowledge. In terms of gender, some studies suggested that girls' HRF knowledge was much better than their male peers (Hunuk & Ince, 2010; Keating et al., 2009).

2.3. Pedagogical Content Knowledge

2.3.1. Pedagogical Content Knowledge in General Education

According to Shulman (1986) PCK goes beyond knowledge of subject matter to the aspects that make the subject matter teachable to others. Shulman (1986) defined PCK as "the ways of representing and formulating the subject that is comprehensible to others". In 1987 Shulman extended his definition as "the blending of content and pedagogy into an understanding of how particular topics, problems, or issues are organized, represented and adapted to the diverse interests and abilities of learners, and presented for instruction". In 1990 Grossman conceptualized PCK differently. According to Grossman (1990), PCK was derived from four knowledge domains: (a) conceptions of purposes for teaching, (b) knowledge of students' understanding, (c) curricular knowledge, and (d) knowledge of instructional strategies.

2.3.2. Pedagogical Content Knowledge in Physical Education

The extension of the PCK definition by Grossman (1990) is commonly used in the general education and physical education literature (Ayvazo, 2007). Nevertheless, none of those definitions have been operationally defined to allow for measurement. Therefore, in her study Ayvazo (2007) tested a proposed operational definition of PCK and examined how the PCK of experienced teachers differs in the teaching of their stronger and weaker units of instruction. Ayvazo proposed a modified definition of PCK as "the act of selecting content from one's knowledge base for the purpose of teaching in a specific context" (p. 77). In her definition, Ayvazo (2007) emphasized

the selection process and adaptation which occurred when a teacher selected the content from their CK base in her postulation of PCK (Kim, 2011).

2.3.2.1. Research on Pedagogical Content Knowledge in Physical Education

Research has shown that teachers' PCK develops with experience in school settings. Teachers develop their knowledge of how students respond to, learn from and develop particular content; how to modify tasks and give content-specific feedback; how tasks and environment impact student responses; and ways to modify and adapt subject matter in their school context through experience (Cothran, 2001; Rovegno, 1992, 1998).

Researchers have mostly used comparative analyses to show the differences in PCK between experienced and inexperienced teachers, expert and novice teachers and teachers with and without training (Even, 1993; Rink et al., 1994). In a study, Even (1993) investigated teachers' subject-matter knowledge and its interrelations with PCK in the context of teaching the concept of function in the USA. The results indicated that experts know content in more detail and their knowledge is more accurate (Even, 1993). In another study, Rink et al. (1994) compared the pedagogical knowledge structures about effective teaching of preservice teachers and teacher educators in the professional preparation programs of two different institutions. Results revealed differentiated and integrated differences between the groups of preservice teachers and between the preservice teachers and the teacher educators. In a study examining one of the five case studies in a larger project to understand student teachers' PCK of and decisions about task content and progression. Results showed that expert teachers see the "big picture" of curriculum and can better link the content to broader objectives (Rovegno, 1995). Chen and Ennis (1995) by using an interpretive research method combined with cognitive knowledge elicitation and mapping approaches, examined the subject-pedagogical CK transformation process that was associated with the experienced teachers' curricular decision-making in secondary physical education. Findings indicated that expert in-service teachers also consider both CK and students' conceptions when selecting content for their curriculum (Chen & Ennis, 1995).

These researchers have shown that expert and experienced teachers plan better for student learning. In their research of describing four accomplished teachers' enacted PCK of teaching hand dribbling to third grade children Rovegno et al (2003) found that expert teachers were teaching students to monitor their own learning, to analyze and critique their performance and to anticipate students' prior knowledge and skill levels to make decisions about their students' performances. They also made connections between skills and learning cues.

Preservice and novice teachers have repeatedly reported difficulties and a lack of ability to appropriately respond to students' actions during the lesson (Graber, 1995). Research on preservice teachers' PCK has revealed that inadequate PCK for teaching was linked to weak CK (Graber, 1995) in a study examining how preservice teachers believed they incorporated general PCK into lesson and inaccurate prediction of how students learn (Rovegno, 1995). The inaccurate prediction of students' level was followed by inadequate lesson planning in a study by McCaughtry and Rovegno (2003) which used developmental theory to examine changes in four preservice physical education teachers' PCK during a 20-lesson middle school volleyball unit in the USA. McCaughty and Rovegno (2003) stated that preservice teachers were challenged when advancing to more difficult movement patterns. These results were similar to Graber's (1995) study and also pointed out that student teachers had difficulty incorporating PCK and admitted that they felt uncomfortable with content that was unfamiliar.

Research results has shown that in-service and expert teachers report acquiring CK from classes, workshops, textbooks and other curricular material (Kutame, 2002) while novice teachers mostly used books and classes as resources for planning (Graham et al., 1993).

2.4. Professional Development

The term ‘in-service training’ or ‘staff development’ that pervasively connoted learning opportunities for in-service teachers in the past are currently converted to ‘professional development’ (Feiman-Nemser, 2001).

As PD unifies various terms, the definition of PD is varied. According to National Association of State Directors of Teacher Education and Certification (NSDTEC, 2002), PD is defined as “any coursework, experience, training, or renewal activity required by a state to maintain the validity of a license” (p. E-2). Craft (1996) also defined continuing PD including “all types of professional learning undertaken by teachers beyond the initial point of training” (p. 6).

2.4.1. Theoretical Frameworks for Professional Development

It is believed that if you change teachers’ behaviors, it is possible to improve their teaching effectiveness (Guskey, 2002). Several theoretical frameworks related to teacher change have been developed and studied to better understand PD. In this section, two theories of teacher change are presented: Fullan’s Theory of Teacher Change and Guskey’s Model of Teacher Change.

2.4.1.1. Theory of Teacher Change

The phrase “change is a process, not an event” connotes that something is happening over a period of time to transform individuals and situations (Hall & Loucks 1977). According to Fullan (1985), many schools had been viewed as targets for change rather than the sites for change. This view meant that teachers and schools have been objects for PD rather than receivers of PD. This lack of ownership in PD programs has created problems in the process of teacher change (Bechtel & O’Sullivan, 2006).

In 1992, Fullan identified four key elements in his theory of teacher change that are needed to impact the change process at school level:

1. There needed to be active initiation and participation by all teachers.
2. There needed to be pressure and support for change at the local level.

3. There had to be changes in teachers' behaviors and beliefs regarding the change.
4. Teachers needed to feel ownership of change (Fullan, 1992, p. 5).

2.4.1.2. Model of Teacher Change

In a series of research studies, Guskey (1986, 2002) proposed a new model of teacher change because of the poor reputation of staff development among teachers. Guskey (1986, 2002) explained that the majority of programs failed because they did not take into account two crucial factors: (1) what motivates teachers to engage in PD, and (2) the process by which change in teachers typically occurs.

Guskey (1986) stated that teachers are required to take part in PD by certification or contractual agreements with most reporting that they engage in these activities because they want to become better teachers which means for the majority of teachers, enhancing student learning outcomes. According to Guskey (1986), the second important factor that many PD programs fail to consider is the process of teacher change. Most PD activities and PD leaders attempt to design changes in teachers' attitudes, beliefs and perceptions. It is presumed that such changes will lead to specific changes in their classroom behaviors and practices, which will result in improved student learning (Guskey, 1986).

Guskey (1986) proposed that when PD programs were based on the idea that change in beliefs comes first, PD was typically designed to gain acceptance, commitment, and enthusiasm from teachers and administrators before new practices or strategies are implemented. He also believed that the major outcomes of staff development were "change in classroom practices of teachers, change in teacher beliefs and attitudes, and change in the learning outcomes of students (p. 6)".

In his model, Guskey rearranged the order of the outcomes by emphasizing the importance of changing the learning outcomes of students to affect teacher beliefs and attitudes. He called this "backward planning" starting where the teachers wanted to end up and working backwards (2002). His model is presented in Figure 2.1.

Support for this model came from the ideas that addressed how teachers' viewed themselves as successful and this was usually when students improved how effective a particular model was in improving student performance in their own practice.

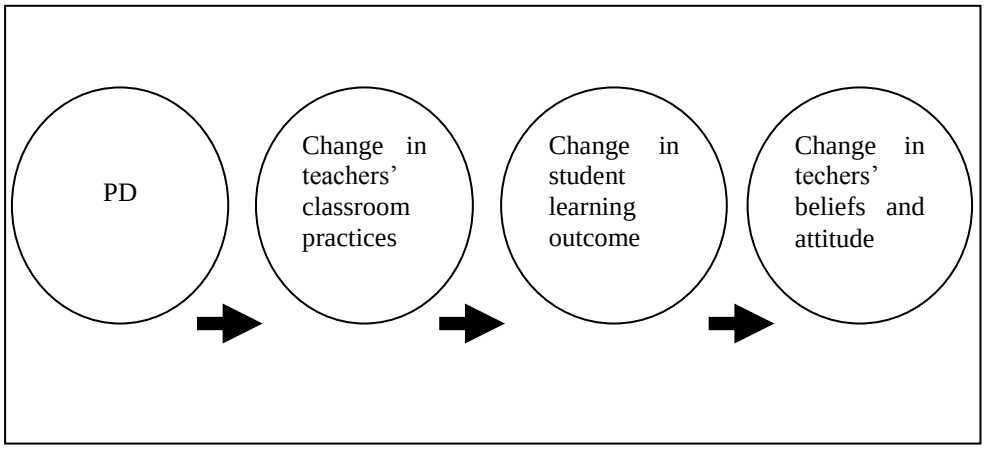

Figure 2.1. A model of teacher change

Guskey (1986, 2002) outlines three important principles for the design of high-quality PD programs. First, professional developers need to recognize that change is a gradual and difficult process for teachers. Learning to be proficient at something new and finding a new way of doing things requires time and effort. Guskey (2002) suggested presenting new teaching practices clearly with credible facilitators, addressing teachers' personal concerns about how the practice will affect them in their own settings, and then giving them the time to develop the new teaching practice. Second, teachers needed to receive regular feedback on student learning progress. Whatever the student learning outcome, it is important to have regular information and feedback on how teacher efforts are influencing student progress toward reaching the outcome. Third, professional developers should provide continued support and follow-up after the initial PD training. As it is suggested in this model, "change took place after the implementation and when there was evidence of student learning obtained (p.10)". This necessitates on-going support as critical for change to occur.

2.4.2. Research on Professional Development

Several studies have been conducted in general education to examine the impact of the PD experience on the attending teachers in PD (Darling-Hammond & Richardson, 2009; Lieberman & Pointer Mace, 2009). Despite the general acceptance of PD as essential to improvement in general education, results of the studies indicated the ineffectiveness of most programs. The results also indicated that PD programs made little change in teaching practice (Cohen & Hill, 2000; Desimon et al., 2002; Garet, Porter, Desimone, Birman, & Yoon, 2001). Darling Hammond and McLaughlin (1996) stated in their review study that helping teachers rethink practice necessitates PD that involves teachers in the dual capacities of both teaching and learning and creates new visions of what, when, and how teachers should learn.

The impact of PD is examined in studies not only by focusing on teachers who received a PD program but also their students (Darling-Hammond & McLaughlin, 1995; Weglinsky, 2000). In their study, Garet et al. (2001) surveyed 1027 mathematics and science teachers in each of the 30 schools within 10 districts across 5 states in the USA over three years. Results showed that PD programs made little change in teaching practice. However, the studies identified and recommended features of effective PD programs addressed by the teachers that influenced teachers' teaching practices: collective participation of teachers, active learning opportunities, coherence, and reform type PD. In another study, Kersiant et al (2001) examined teachers' perceptions who have participated in PD experiences provided by the Urban Systemic initiative in four sites in the USA. The study found that although teachers positively commented on their involvement and experience in PD, they concluded that PD was not applicable to their school settings. Most teachers in the study also suggested that site-based PD and additional training following formal PD schedule were desirable and effective. Relatedly, students' data also showed that there was little increase in student achievement on the test scores. Diem, Field, and Bernandez (2003) conducted a study to determine the effects of PD training on participating teachers as well as changes that occurred in the schools. As other studies found, the teachers were satisfied with the PD experience, which was considered informative and interesting. However, a lack of ability to deliver the

materials and have their students engage in classroom activities was found. Overall, the PD program resulted in little impact on teachers' teaching practices as well as student achievement. (Diem, Field, & Bernandez, 2003; Kersiant et al., 2001).

Along with some challenges with which researchers of PD in general education are faced, the physical education field has also faced some issues with PD. The results of many studies examining PD in physical education (Armour et al., 2007; Betchel, & O'Sullivan, 2006) suggest that little is known about what teachers learn during PD or the nature of the process that facilitates student learning (Bechtel & O'Sullivan, 2006). Although the processes of PD in physical education have been evaluated over time (Armour, Cale, & Webb, 2012), researchers looking at PD initiatives, especially evaluation of teaching practice in schools and its impact on students' learning are rare (Betchel, & O'Sullivan, 2006; Garet et al., 2001; Guskey, 2002).

In a study examining the PD opportunities of four experienced elementary physical educators and the extent to which their experiences informed the teaching- learning process and its' impact on student learning in USA, Sullivan (2000) found that teachers' PD experiences were not aligned with the needs of physical education teachers (Sullivan, 2000). Relatedly, in their study Armour and Yelling (2004) summarized current continous PD theory and research, and considered existing evidence on the nature and quality of physical education continous PD in the UK. The results showed that even when the PD was provided for physical education teachers, the PD programs were usually identified by a lack of coherence and progression related to teachers' instruction in schools (Armour & Yelling, 2004).

Several positive impacts of PD efforts have been presented in many studies about PD in physical education (Ward & Doutis, 1999; Ward & O'Sullivan, 2006). The Saber-tooth curriculum project (Ward & Doutis, 1999) and the Carol M. White Physical Education for Progress (PEP) (Ward & O'Sullivan, 2006) have been two large scalephysical education research project which have tried to explain teacher change and reform. In these projects the importance of developing a long term PD program for physical education teachers was stressed, including teachers in the actual PD

decision making process, providing teachers with support, and expecting teachers to be accountable for their practices after the PD intervention.

Ward and his colleagues (1999) "Saber Tooth" project focused on curriculum reform in middle school physical education in the USA. Results emphasized the strong and interconnected relationship between planning, teaching and assessment in which assessment represented important feedback to the teacher. The results of this project suggested that in order for teachers to implement changes in their curriculum they needed to revisit, and at times discover, alternative pedagogical practices. Teachers also changed their ideas, practices and values regarding student learning as a result of the study (Ward, Doutis & Evans, 1999).

PEP project (Ward & O'Sullivan, 2006) focused on teachers' exploring the impact of PD experiences on teacher change in terms of ideas, beliefs and practice regarding reform, classroom-based assessment and technology in urban schools. This project also supported the idea of long-term support and training for teachers. The entire project was reported in a research monograph in 2006.

Under this project, Deglau and O'Sullivan (2006) used a socio-cultural framework to examine the influence of 15 month PD on the ideas, beliefs and practices of teachers. The findings focused on the ways that these teachers' experiences with the content and topics of the staff development project influenced their beliefs about teaching and their teaching practice. Another study (Ko, Wallhead & Ward, 2006) in the project examined how teachers delivered what they have learned from the Sport Education PD workshop. Results showed a limited impact of the PD workshop on actual teaching practices through direct observation. This study suggested that effective PD experiences should be designed by considering teachers' prior knowledge on content, pedagogy and contextual barriers in their school setting. It was also suggested in this study that providing on-site support to help teachers integrate new-like learning into their context.

Deglau, Ward, O'Sullivan and Bush (2006) in the same project used a critical discourse framework to examine the nature of professional conversations called PEP-talk, that was designed to bring teachers together to discuss reflecting on their practices, sharing their teaching ideas, and issues confronting them in their roles as teachers. Their findings provided evidence that when teachers collaborate in such communities, they are more willing to take risks and share their successful programs and practices.

Some problematic issues are recognized in the research on PD in both general education and physical education. Feiman-Nemser (2001) examined what a professional learning continuum form initial preparation through the early years of teaching could be like. Feiman-Nemser (2001) stated that current PD programs in general are rarely tied to teachers' classroom practices. Also in their study, Desimone et al. (2002) examined the features of teachers' PD and its effects in changing teaching practice in mathematics and science from 1996-1999. They conducted a survey with 207 teachers in 30 schools, in 10 districts in five states and found little impact of current PD on teaching practice. However, these studies recommended that the features of effective PD programs addressed by the teachers that influenced teachers' teaching practice included collective participation of teachers, coherence and active learning opportunities (Desimone et al., 2002; Garet, et al., 2001). Darling-Hammond and McLaughlin (1995) stated in their article which focuses on policy problem for PD that "*The vision of practice that underlies the nation's reform agenda requires most teachers to rethink their own practice, to construct new classroom roles and expectations about student outcomes, and to teach in ways they have never taught before*" (p. 1). They also stated that helping teachers rethink their own practice necessitates PD which involves teachers creating new visions of what, when and how teachers should learn. Therefore, the current model of PD required a fundamental change from its traditional form.

2.5. Professional Learning Communities

Recently, there has been a growing research base on professional learning communities (PLC) for teachers (Darling-Hammond & Richardson, 2009; DuFour,

2004; Lieberman & Pointer Mace, 2009; Wenger, 1998). Research on PLC highlights that teachers learn in communities where learning is aligned, coherent and sustained (Cochran-Smith & Lytle, 1999; Lave & Wenger, 1991; Vescio et al., 2008). In their study, Darling Hammond and Richardson (2009) reviewed research to understand the kind of PD opportunities that improve instruction and student achievement. They suggested that in learning communities, teachers must learn to teach in ways that develop higher- order thinking and performance. Darling Hammond and McLaughlin (1995, p.1) suggest that effective PD 'involves teachers both as learners and as teachers and allows them to struggle with the uncertainties that accompany each role'.

There is a consensus in the research about the essential characteristics of effective PLC (DuFour, 2004; O'Sullivan and Deglau, 2006; Whitcomb, Borko, & Liston, 2009). Firstly, in his study, DuFour (2004) examined the "big ideas" that represent the core principles of effective PLCs. DuFour emphasized that effective PLC should *focus on student thinking and learning* he noted this notion is like "*is not simply to ensure that students are taught but to ensure that they learn. This simple shift- from a focus on teaching to focus on learning- has profound implications for schools* (p.8)". In addition, a study that highlights the design, implementation and impact of PD models and practices, Whitcomb et al. (2009) stated that PLC programs should help teachers learn how to interpret students' ideas, examine their work and use what they learn about students' ideas and work to inform their instructional decisions and actions. Researchers suggested that the positive impact on students included enhanced motivation and improvements in their performance (Whitcomb et al., 2009). In another study, Louis and Mark (1998) examined the impact of school professional community on the intellectual quality of student performance and on two dimensions of classroom organization, the technical and the social. They conducted a study in 24 nationally selected elementary, middle and high schools professional communities. The results showed that students achieved at higher levels in schools with positive PLCs. This was explained by teachers in classrooms focusing on "authentic pedagogy" – higher quality thinking, substantive conversations, deep knowledge and connecting with the world beyond the classroom.

Therefore, in their study O'Sullivan and Deglau (2006) summarized the 4-year long PEP PD initiative in terms of current perspectives on teacher learning and PD, shared lessons learned about the design and delivery of high-quality PD, and presented some principles to guide the development of future PD efforts as a part of the monograph in 2006. They suggested that effective PLC must be situated in classroom practice-not abstract theorizing about ideal environments and goals for physical education teaching and teachers.

Vescio et al. (2008) reviewed 10 American and one English study to understand the impact of PLCs on teaching practices and student learning. They concluded that the relationship between teachers' participation in PLCs and student achievement resulted in improved student learning based on the results of 6 studies. They identified one common feature facilitating success when analyzing these six studies; the persisting focus on student learning and achievement by the teachers in the PLCs. By analyzing these six studies, Vescio et al. (2008) documented that the collaborative effort of teachers were focused on meeting the learning needs of their students. They summarized that effective PLCs should meet the learning needs of their students (Vescio et al., 2008). Whitcomb et. al. (2009) suggested that although it is agreed that effective PLC should focus on student thinking and learning, too few studies demonstrate the value that quality PD adds to student learning.

Secondly, research highlights the importance of a *collaborative learning environment* for teachers to achieve their collective purpose of learning for all where teachers discuss and share collaboratively to inquire and reflect on their teaching (DuFour, 2004; Whitcomb et al, 2009). Vescio et al. (2008) in their review found that successful collaborative efforts include strategies that "open" practice in ways that encourage sharing, reflecting and taking risks necessary to change. Effective collaboration requires much more than simply bringing teachers together, it requires schools' learning how they can form and support teacher PLCs that engage in joint work (Darling-Hammond & Richardson, 2009). Research findings reveal that teachers shared an overall positive effect of collaboration on opportunities to review their practices through the use of critical friend groups. In critical friend groups,

teachers work in teams together and analyze and improve their classroom practices (Sato, Wei, & Darling-Hammond., 2008). This process in turn, leads to higher levels of student achievement (DuFour, 2004).

Another characteristic of effective PLC is *teacher authority* which (Vescio, et al., 2008) indicates is the ability of teachers to make decisions regarding both the processes of their learning communities and aspects of school. Supovitz (2002) examined the underlying theory behind building small learning communities by using the multiple sources of data from a 4-year evaluation of team-based schooling. Results suggested that giving teachers the power to be decision makers in their own learning process was essential to improving student learning. O'Sullivan and Deglau (2006) suggested that teachers should be treated as "active learners" who construct their own meanings and understanding from active participation in PD rather than acting as passive recipients of ideas or curriculum. It is also suggested that teachers should be empowered and treated as professionals and leaders and supported to set a continuous professional development (CPD) agenda based on their pupils' learning needs (Armour & Yelling, 2007; O'Sullivan & Deglau, 2006). The learning environment for effective PLC should provide teachers an ongoing opportunity for collegial work, allow teachers to learn about, try out, and reflect on new practices and share their individual knowledge and expertise with reflective dialog (Darling-Hammond & Richardson, 2009).

The other characteristic of effective PLC that supports overall changes in the teaching culture is that of *continuous teacher learning*. Armour and Yelling (2004) stated that PLC should be continuous and ongoing, involving follow-up and support for further learning. They also emphasized that an effective PLC should include support from sources external to the school that can provide necessary resources (such as external 'expert' support to help teachers to develop their theories and practices). Several researchers stated that PLC should be long-term – having sustained contact between facilitators and teachers (Desimone, et al., 2002; Garet, et al., 2001). Armour et al. (2012) considered the issue of learning "progression" which issue is aroused from an analysis of three research projects in pedagogy for PE

teachers in their career-long PD. The project was undertaken in three different national contexts (Ireland, Greece and England). The findings of the study cultivated the idea that supporting teachers to engage in progressive professional learning is something more than offering them the opportunity to engage in a series of individual and often not connected knowledge-bites over a career.

Effective PLCs should also *incorporate active learning and demonstrate teaching methodologies* (Desimone, et al., 2002; Garet, et al., 2001). Learning is an active process in which the learner constructs understanding through interactions and experiences. Louis et al. (1995) proposed a framework for professional community and stated that learning includes "*reflective dialogue*", conversations about serious educational issues or problems involving the application of new knowledge in a sustained manner, frequent examining of teachers' practice, through mutual observation and tacit knowledge constantly converted into shared knowledge through interaction. PLC interactions should focus on improving instructional practice (Darling-Hammond & Richardson, 2009). Change only occurs for teachers, when they learn to describe, discuss, and adjust their practices according to collectively held standards for teaching quality (Little, 2003). Makopoulou and Armour (2011b) analyzed national physical education- continuous professional development (PE-CPD) policy in Greece and they sought the insights of teachers and CPD providers on the nature and the quality of existing provision. In their study, they report on how PD activities which aim to enhance teachers' teaching skills, in an unreflective and transmission oriented way, could be useful in the short term; however it may have negative long-term effects on teachers' learning. Because these kinds of experiences may have been encouraging teachers to rely on others' expertise rather than building their own ability to generate ideas and knowledge.

Also, an effective PLC should *work to meet teachers' needs* while striving toward larger program goals (Armour & Duncombe, 2004). Armour and Duncombe (2004) examined the PE-CPD for primary school teachers within a new National PE-CPD Programme for Teachers and Others in England. Results show that PLC involves teachers identifying their own training needs and developing learning experiences to

meet those needs (Armour & Duncombe, 2004). Many research participants identified a significant mismatch between what physical education teachers and PLC providers perceived to be important PD (Makopoulou & Armour, 2011). Makopoulou and Armour (2011) stated that PD opportunities for the majority of research participants were perceived to be narrow and superficial in nature, mostly reflecting a coaching orientation to teaching physical education.

Another aspect of effective PLC was identified by O'Sulivan and Deglau (2006) when they emphasized the importance of a *balance between the teachers' needs with a program vision for the PD initiative.* PD developers need to recognize that change takes place gradually and is a difficult process for teachers. Armour et al. (2012) examined different aspects of PE teachers' learning, by asking similar research questions about the nature of effective – and ineffective- PD in three different national contexts (Ireland, Greece and England). Results showed that for both PD developers and teachers, the challenge is to create and engage in dynamic and fluid learning opportunities that are framed around the concepts of capacity building for learning and "becoming" a learner over time. Armour et al. (2012) also stated that universities have the clear task of developing teachers who can work effectively within a structure and need PD providers who can support and sustain these communities. Armour and Yelling (2007) defined the characteristics of effective PD providers; as needing to tread a careful line, simultaneously being leaders (providing expert input, helping teachers to work together) and followers (supporting the specific learning needs of PLCs as identified by them).

Respect and trust among members of PLC have also been identified as essential features of a productive PLC. In a safe and supportive environment, teachers are more likely to take risks and engage in critical discussions which trigger them to try new practices (Craig, 2004; Whitcomb et al., 2009).

However, the supporting characteristics of effective PLCs seem often to be ignored in most of the research. Armour and Yelling (2007) concluded in their study that *"continuing PD should be founded on a much better understanding of teacher*

learning in order to have an impact on pupil learning (p.196)". Whitcomb et al. (2009) indicated that PD from a situated perspective is particularly effective when teachers work collaboratively in a collegial learning environment to inquire and reflect on their teaching.

2.5.1. Theoretical Framework: Situated Learning Theory

The roots of situated approaches to learning can be traced to ideas on activity theory – with a view of human activity as complex and socially situated – held by Dewey (1916) and Vygotsky (1978). Situated learning theory provides a powerful framework for examining teacher learning and the successful facilitation of teacher development. Situated learning theory emphasizes the assumption that learning and forming who we are occurs in the process of engagement in social practice in a social setting. This theory is focused on the culture of learning rather than the learning task and accepts the fact that knowledge is socially constructed. From the situated learning theory perspective, participation implies not just "*local events of engagement in certain activities with certain people, but a more encompassing process of being active participants in the practices of social communities and constructing identities in relation to these communities*" (Wenger, 1998, p. 4).

2.5.2 Community of Practice

Lave and Wenger's (1991) model of situated learning proposes that learning involves a process of engagement in a CoP. In the current research study, we were drawn to Wenger's framework of *CoP* to analyze the teachers' learning experience in their own school settings. Wenger (1998) described CoP as "*groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly*". According to Wenger (1998) learning is mediated through social participation and learning can be the reason the community comes together. Kirk and Macdonald (1998) explained CoP as "any collectivity or group who together contribute to shared or public practices in a particular sphere of life" (p. 180). CoP is formed by people who engage in a process of collective learning in a domain of interest and as practitioners of that interest sharing ways of interacting (Lave & Wenger, 1991). Further, through teachers' engagement with each other's interests,

they share experiences, resources and work about their shared interest (Wenger, 1998). A critical distinction Lave and Wenger make is that learning is not "situated", it is just a matter of "learning by doing," rather, it is an "integral part of generative social practice in the lived-in world" (p.35).

The relationship between community and learning was first introduced informally in a business context (Wenger, 2006) and has been adapted and applied to educational settings. In an educational setting, the focus is on teachers developing their own collaborative culture and questioning, reflecting on and sharing their daily experiences of mutual interest to increase their knowledge and pupil learning (Tannehill, 2011). Lave and Wenger (1991) explained the meaning of learning specifically as "*the process of becoming a full participant in a socio-cultural practice*" (p. 29), which is called '*legitimate peripheral participation'* in the CoP. Lave and Wenger (1991) used this term to describe how new participants in a CoP move from being individual learners in the community to being full and contributing members through continued and sustained participation in authentic group efforts. When newcomers enter the existing community, they engage in peripheral participation in which they are "about being located in the social world" (Lave & Wenger, 1991; p. 36). As the newcomers acquire mastery knowledge and skills through direct involvement in the social-cultural practices of the community, they become part of the community of practice and engage in legitimate peripheral participation in which learning is considered an "integral constituent" of generative social practice in the live-in-world (Lave & Wenger, 1991, p. 35). Lave and Wenger (1991) suggest that when transforming from newcomers to full participants "*the purpose is not to learn **from** talk as a substitute for legitimate peripheral participation; it is **to** learn as a key to legitimate peripheral participation*" (p. 108, 9). It is through their peripheral participation that newcomers undergo identity transformation into full participation (Wenger, 1998). Therefore, a newcomer as a legitimate future participant in a community learns how to think, act, speak and be a full participant.

Wenger (1998) identifies four aspects as distinguishing a CoP from other communities and groups: community, practice, meaning, and identity. Wenger (1998) describes the ***community*** aspect as having three components that bind the CoP and give it coherence. These include: *joint enterprise*, a sense of mutual accountability, interpretations, and rhythms*; mutual engagement*, the act of doing things together, developing relationships, and working to maintain the community; and *shared repertoire*, the communitie's accumulated stories, artifacts, historical events, or concepts.

According to Wenger (1998), ***practice*** refers to explicit and tacit shared enterprise in which people with common references can "*sustain mutual engagement in action*" (p.5). They develop a shared repertoire of resources such as experiences, stories, tools etc.

Wenger (1998) posits that ***meaning***-making is ultimately transformative in that it is "*an experience of identity. It (learning) is not just an accumulation of skills and information, but a process of becoming or avoiding becoming a certain person*" (p. 215). Thus, with participation in CoPs, individual and group meanings are made; people experience, shape and take on new ***identities.***

Wenger (1998) suggested five stages of development for CoP: potential, coalescing, active, dispersed and memorable phase. O'Sullivan (2007) stated how PD structures in education might support these stages. Thus, she adapted Wenger's ideas of how these structures might relate to creating CoP among physical education teachers. O'Sullivan (2008) re-defined these stages as:

> *"Potential Phase: Assist physical education teachers to find each other and discover their commonalities*
>
> *Coalescing Phase: Explore connectedness, defining joint enterprise and negotiating how they will proceed with action*
>
> *Active Phase: Engaging activities, creating resources or other artifacts, developing commitment to task*
>
> *Dispersed: Staying in touch, calling for advice, communicating*

Memorable: No longer central but remembered as a significant part of their identities" (p. 11).

A community needs support, nurturing, consultation, recognition, and motivation to sustain itself and to progress through the different stages of development. While some communities need guidance to help recognize their own capabilities, others are able to survive and develop their own with little outside support (Tannehill, 2011). In a community, the skills and knowledge of teachers in the group needs to be leveraged and somebody has to maintain the focus and ensure resources are created, and their students will be enhanced by their collective and individual effort (O'Sullivan, 2007). Tannehill (2011) stated that a community functions most effectively when it is steered by its own members toward the goals they wish to achieve.

2.5.3. Research on CoP in Physical Education

CoPs framed by situated learning theories in education are not new and they are gaining momentum in physical education literature (Rovegno, 2006). There is a growing body of literature highlighting the values and benefits of being a member of a CoP in physical education (Armour & Yelling, 2007; Deglau & O'Sullivan, 2006; Parker, et al., 2010). Researchers have indicated that when teachers collaborate in such communities and discuss teaching with others and engage in critical dialogue about their work, they are more willing to take risks, reflect on their failures and share successful practices (Deglau et al., 2006). Moreover, positive outcomes of CoPs include teachers informally and collaboratively learning from each other (Armour & Yelling, 2007), forming strong identities as teaching professionals (Deglau & O'Sullivan, 2006), developing a commitment to advocate for their subject at a wider policy level (O'Sullivan, 2008), and creating new images of themselves as teachers (Deglau & O'Sullivan, 2006). In a study that examined a group of elementary physical education teachers as a CoP whose objective was to develop and disseminate district-wide elementary curriculum, Parker et al. (2010) found that developing confidence to pursue capacity building with purposeful facilitation was one benefit of an effective CoP. Finally, in a report discussing the benefits and challenges of CoP approach, O'Sullivan (2008) reported that teachers were also

highly motivated to reconsider their own practices for improving their students' learning and developing their physical education programmes while participating in CoP.

On the other hand, research examining teachers' CPD identified barriers that teachers encountered accessing effective PD (Armour, et. al., 2012; Betchel & O'Sullivan, 2006; Makopoulou & Armour, 2011). In their study, Armour, Makopoulou and Chambers (2012) investigated questions about effective/ineffective physical education CPD. Findings raised concerns about the inability to make progress in teachers' learning in a number of areas; across career phases and contexts (structural barriers); from passive to active learners (learning theory/model barriers) and in deepening their knowledge within specific areas of knowledge and interest (subject knowledge barriers). In a study that aimed to build upon previous PE-CPD research by exploring a Greek case study of PE teachers' engagement in professional learning, Makopoulou and Armour (2011) indicated that teachers' learning capacities and their motivation to change their practice have been negatively affected by limited structured PE-CPD opportunities, inadequate infrastructure and school cultures that promoted teacher isolation. Therefore they suggested that "*governments need to create an infrastructure for ongoing intensive professional development in order to ensure that all teachers can get access to high quality training in order to improve standards in schools*" (p. 587).

Despite evidence that CoP is an effective method of fostering physical education teachers' improved practices and developing their CK, there is a dearth of research examining or seeking to improve physical educators' HRF CK and PCK (Alfrey, Cale, & Webb, 2012; Ince & Hunuk, 2013,). It has been suggested that physical education has a role in promoting health, or even delivering health benefits to students. Trost (2006) explained this as: *"... physical education teachers will need to become critical consumers of scientific information pertaining to youth physical activity and public health*". Alfrey et al. (2012) examined English secondary physical education teachers' experiences, views and understandings of HRF and related CPD. Their results revealed approximately half of the physical education teachers taking

part in this study had no prior professional experience of HRF before teaching it and there was a lack of teacher engagement with any CPD related to health and lifelong physical activity. Results also supported the notion that teachers often had narrow understandings of HRF and how to best teach it. Relatedly, they had misguided confidence in their ability to teach it. In her research, Armour (2010) considered the importance of CPD about HRF and emphasized that the physical education profession needs health knowledge which is constantly updated and accurate for school context materials. She stated that a profession that claims to support teachers' professional learning and career-long development needs to ensure that they help teachers develop and maintain the ability to use research effectively (Armour, 2010).

CHAPTER III

METHOD

This chapter consists of nine sections that present an overview of the research methodology used in the study; overall research design, research questions, participants, intervention, data collection instruments, procedure, data analysis, researcher's role and limitations.

3.1. Overall Design of the Study

A mixed methods research design was used in this study. Creswell (2008) explains that "*mixed method research is a procedure for collecting and analyzing data, mixing both quantitative and qualitative data in a single study"* in order to understand a research problem. In the social sciences, mixed method research is increasing in popularity and considered a legitimate, stand-alone research design (Creswell, 2009; Hanson et al., 2005; Tashakkori & Teddlie, 2003). Mixed method design can utilize contextually detailed field-based information augmented with precise, instrument-based measures. Such designs enable researchers to draw on both qualitative and quantitative research traditions, giving researchers opportunities to obtain a more complete answer to complex research questions (Mertens, 2005).

There are different types of mixed method research designs, which have differing functions, procedures, strengths and challenges (Creswell, 2007). In this study, a Concurrent Triangulation Mixed Method Design was used (Figure 3.1). The purpose of this mixed method design is to simultaneously collect quantitative and qualitative data, merge the data, and use the results to understand a research problem (Creswell, 2007). This model is selected for use when a researcher uses two different methods with the intention to confirm, cross-validate, or corroborate findings within a single study (Morgan, 1998). The strength of this design is to take advantage of the strengths and minimize the weaknesses of quantitative (e.g., large sample size, trends, generalization) and qualitative methods (e.g., small sample size, details, in depth) (Patton, 1990).

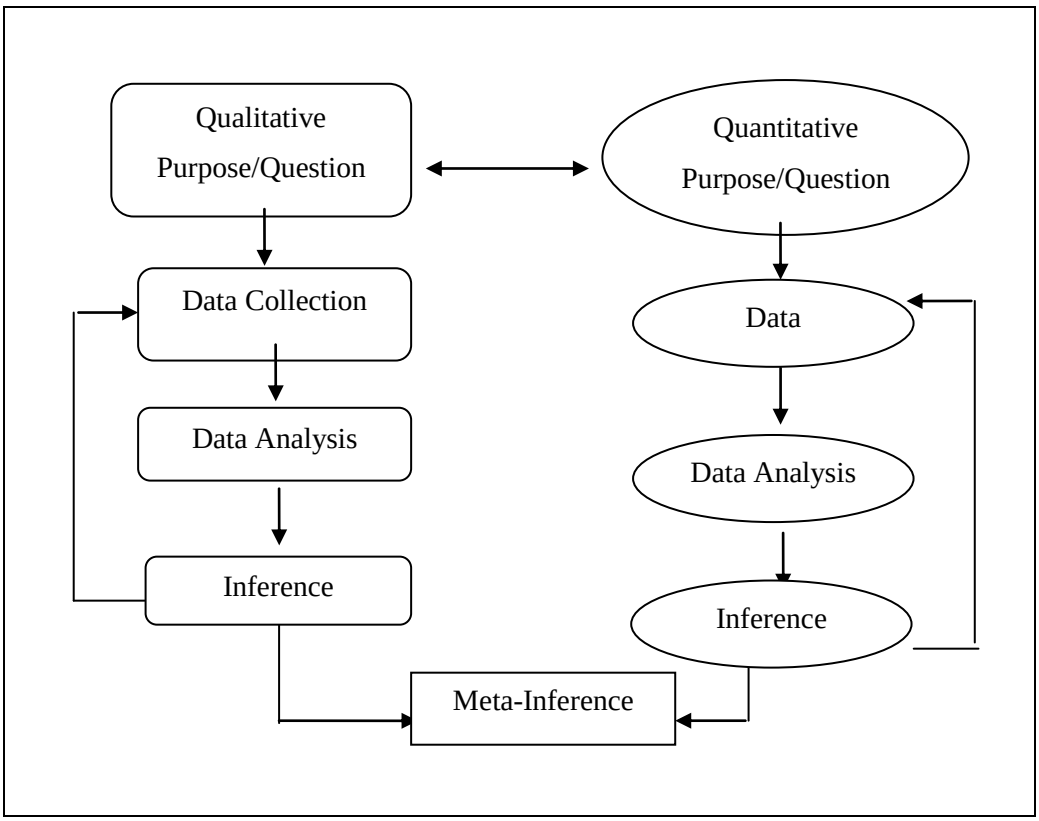

Figure 3 1. Concurrent mixed model design (Adapted from Tashakkori & Teddlie, 2003).

3.1.1. Quantitative Aspect of Study

The aims of the quantitative aspect of the study were (a) to understand how physical education teachers' interact within a CoP, (b) how a CoP affects teachers' CK about HRF, and (c) to assess improvement of the HRF knowledge level of students of CoP participant teachers'.

In the quantitative part of the research, a quasi-experimental (pre-post design) Between-Group Design (Figure 3.2) was used. In this design, the researcher uses control and experimental groups yet did not randomly assign participants to groups (Creswell, 2009). Both groups completed pre and post tests and only one group participated in the treatment. In the current study, all teachers and their students' completed pre- and post- tests measuring their HRF CK. The treatment for the study was the six weeks CoP meetings.

This study examined the effects of a six week CoP, composed of physical education teachers', on their HRF CK and PCK and their students' HRF CK. Twelve physical education teachers (six in treatment group, six in control group) and one of their sixth or seventh grade classes were chosen for the study. Quantitative data were obtained through a cross sectional survey method, which involved the administration of self-completed questionnaires to participants at one point in time.

Control Group	Pretest	No Treatment	Posttest
Experimental Group	Pretest	Experimental Treatment	Posttest

Figure 3 2. Quasi-experimental between-group design (Creswell, 2008)

3.1.2. Qualitative Study

The aim of the qualitative part of the study was to understand (a) how physical education teachers' interact within a CoP and (b) in what ways the CoP influenced teachers' HRF CK and construction of their PCK. To achieve this understanding, teachers in the treatment group were the only ones involved in the qualitative part of the study. Data triangulation techniques were used to confirm findings and interpretations from multiple data sources. The logic of the triangulation is based on the premise that:

> *Unfortunately, no single method ever adequately solves the problem of rival interpretive, causal factors. … Because each method reveals different aspects of empirical reality, multiple methods of observations must be employed. This is termed triangulation. I now offer an final methodological rule the principle that multiple methods should be used in every investigation, since no method is ever free of rival causal factors, can ever completely satisfy the demands of interaction theory, or can ever*

completely reveal all the relevant features of empirical reality necessary for testing or developing a theory (Denzin:1989, 25-26).

Triangulation within a qualitative inquiry strategy acquired by combining different data sources (e.g., both interviewing and field notes), mixing different types of purposeful samples (e.g., both intensity and opportunity sampling) or examining how competing theoretical perspectives inform a particular analysis (e.g., the transcendental phenomenology of Husserl vs. the hermeneutic phenomenology of Heidegger) (Creswell, 2007; Patton, 2002). In data triangulation, researchers explicitly search for as many different data sources as possible to shed light on a theme or perspective. By triangulating data sources, analysts can efficiently employ the same methods to maximum theoretical advantage (Denzin, 1989). In this study, the semi-structured post interviews with teachers and the CoP facilitator, researcher field notes and audio taped and fully transcribed text of the six-week CoP meetings were used as multiple data sources.

3.2. Research questions

The research questions guiding this study are: 1) In what ways do physical education teachers' interact in CoP? 2) How does a participation in CoP affect teachers' and their students' CK about HRF? and 3) How does a CoP experience affect teachers' PCK construction process about HRF?

Answers to research question two, two questions were pursued through examination of the following research sub-questions:

1. How does a participation in CoP affect teachers' CK about HRF?
2. How does a participation in CoP affect students' CK about HRF?

3.3. Participants

Teachers: Twelve post-primary physical education teachers, seven female and five male, from different districts of Ankara, Turkey were invited to participate in the study. Purposeful sampling was used to identify these teachers. In purposeful sampling, researchers intentionally select people and sites to best learn and

understand the central phenomena (Creswell, 2009); in this case, teachers in the Ankara region were selected to allow ease in teachers getting together frequently for CoP meetings. Patton (2002) defined the rationale of this type of sampling:

> *The fact that a small sample size will be chosen for in-depth qualitative study does not automatically mean that the sampling strategy should not be random. For many audiences, random sampling, even of small samples, will substantially increase the credibility of the results. The purpose of the small random sample is credibility, not representativeness (pp. 179–180).*

Students: Teachers in the treatment group asked one of their sixth or seventh grade classes taking place during the time of the study to participate. All of the students in those classes volunteered to participate to this study. Their class sizes ranged from 10 to 35 students with a total of 159 students voluntarily participating in this study (83 girls and 76 boys). Teachers in the control group asked one of their sixth or seventh grade classes to participate similar to the treatment group. They all agreed to take part in this study. Their class sizes ranged from 12 to 32 students with 119 students voluntarily participating in the control group (57 girls and 62 boys). Therefore, totally 278 students participated this study.

3.3.1. Treatment Group

Six of the invited teachers (four female and two male) volunteered to take part in the treatment group and to participate for six weeks in the CoP. All of these teachers were passionate teachers, who cared about the quality of the physical education curriculum, and willing to learn something new for themselves and their students. The selection criteria for inclusion in the treatment group were teaching elementary grades (sixth or seventh grade), type of school (public versus private), the schools' socioeconomic status (low, middle, high) and their districts being in Ankara (urban versus rural). In addition, the teachers volunteered to meet as a CoP once a week for six weeks and to teach two weeks of lessons with a common learning outcome focused on HRF.

Demographics of teachers' in the treatment group are presented in Table 3.1. Their ages ranged from 30 to 40 and their teaching experiences ranged from 4 to 17 years. Four of them were female and two were male.

Teachers chose one of their sixth or seventh grade classes that they teach during the time of the study. Their class sizes ranged from 10 to 35 students with a total of 159 students who voluntarily participated in this study, 83 girls, 76 boys (Table 3.2).

3.3.2. Control Group

The selection criteria for the control group sample involved the same teacher characteristics as the treatment group: teaching sixth or seventh grade, public or private school, low, middle or high socioeconomic status of school and located in the Ankara area. Six teachers (three female and three male) volunteered for the control group, their ages ranging from 33 to 48 years and their teaching experiences from six to 23 years (Table 3.1).

The teachers in the control group taught their regular classes during the 6 weeks but did not attend CoP meetings. They chose one of their sixth or seventh grade classes similar to the treatment group. Their class sizes ranged from 12 to 32 students. In all, 119 students voluntarily participated in the control group (57 girls, 62 boys) (Table 3.2).

Table 3. 1. Demographics of all teachers

		Teachers in treatment group	Teachers in control group
Gender	Female	4	3
	Male	2	3
Age	26-35	4	2
	36-45	2	2
	46-55		2
Years of Experience	4-8	3	1
	9-13	1	1
	14-18	2	2
	19-23		2

Table 3. 2. Demographic characteristic of students (N=278)

Students in treatment group		n	%
Gender	Girls	83	52.2
	Boys	76	47.8
	Total	159	100
Class Size	10-18	1	
	19-27	2	
	28-36	3	
Students in control group			
Gender	Girls	57	47.9
	Boys	62	52.1
	Total	119	100
Class Size	10-18	3	
	19-27	2	
	28-36	1	

3.3.3. CoP Facilitator

The facilitator was a 41 years old male working in the university for 17 years as a lecturer at the time of the study. He had one year of experience teaching 6th to 8th grade physical education after graduating from the university. He completed his PhD in the Curriculum and Instruction area of Educational Sciences with expertise in instructional design in physical education. He had experience teaching instructional design and supervising teaching practice courses in the university.

The role of the facilitator was to represent the university as a member of the CoP. He introduced himself as a seventh participant of the group who had experience both with university and post primary students. As a CoP generally needs guidance in its initial stages of development, his role was basically to prepare the six-week discussion plans for the CoP and facilitate the discussion process rather than actually

“ask the participants questions”. Thus, the role of the facilitator was to present key topics to the discussion groups, listen to participants’ voices, and keep the discussions focused.

3.4. Intervention (CoP)

The teachers in the treatment group participated in a six-week CoP. There were seven meetings during the six week period. Six of the meetings were in a classroom at the local university which was equipped with educational technology including audiovisual equipment. Participation in these meetings included all treatment group participants and the facilitator previously described as a lecturer in the physical education department. Additionally, each teacher had an independent seventh meeting with the facilitator and researcher (myself) in their own schools.

The weekly meetings lasted for approximately 1.5-2.5 hours. The CoP was designed to bring teachers together after school to talk about HRF. The goal was threefold: (a) to make teachers knowledgeable about HRF (b) to create an opportunity for teachers to share their teaching ideas and experiences by teaching HRF in the curriculum and (c) to allow teachers the opportunity to reflect on the physical education curriculum. The discussions in the CoP were lead by the facilitator.

Each discussion had a different focus directly related to HRF (MoNE, 2007). The focus of the first meeting was to discuss programme goals, the nature of a CoP, the reformed Turkish physical education programme and practices associated with HRF. The second week’s discussion revolved around CK of HRF related to learning (anatomy, exercise physiology, health). The third meeting was again focused on CK of a HRF learning area (training principles, exercise psychology, health promotion). A fourth meeting targeted PCK appropriate to HRF (instructional alignment, unit and lesson plan preparation) while the fifth week focused on PCK specific to HRF (teaching styles, use of technology, measurement and evaluation). The last meeting involved free discussion and general evaluation of the six weeks. All these sessions were audio-taped and later transcribed. General content of the six-week CoP program is presented in Table 3.3.

The intervention was developed around Wenger's (1998) CoP social learning model. Wenger posits that members of the community share a common interest (in this case physical education), collectively pursue that interest (increases teachers and their students' CK), and thus socially interact with each other (weekly discussion). Learning is generated through this social engagement within each participant. Moreover, trust and respect among members have been classified as other aspects of effective community (Whitcomb et al., 2009).

Table 3. 3. Weekly CoP topics

Week	Topic
1	• Presentation of the program goals. • Discussion on the "CoP". • Discussion on the reformed Turkish PE program. • Discussion on the "*Active Participation & Healthy Living*" learning area practices.
2	• Discussions on Content Knowledge of "*Active Participation & Healthy Living*" learning area. (Anatomy, Exercise Physiology. Health)
3	• Discussions on Content Knowledge of "*Active Participation & Healthy Living*" learning area. (Training Principles, Exercise Psychology, Health Promotion)
4	• Discussions of Pedagogical Content Knowledge of "*Active Participation & Healthy Living*" learning area. (Instructional Alignment, Unit & Lesson Plan Preparation)
5	• Discussions of Pedagogical Content Knowledge of "*Active Participation & Healthy Living*" learning area. (Teaching Styles, Use of Technology, Measurement & Evaluation)
6	• Free discussions and general evaluation.
4-6	• Meeting with each teacher in school settings. Expert will be a non participatory observer during a PE class of visited teacher and after the class, expert and teachers will discuss about the practices.

3.5. Data Collection Instruments

Data collection took place during 2010 (mid-January through the first week of June). In the present study, several data collection instruments for both quantitative and qualitative methodologies were employed. There were three quantitative data collection instruments and three qualitative data collection instruments. In Table 3.4. the data collection instruments aligned with each research and sub-question are presented.

Table 3. 4. Data collection instruments for each research and sub-question

Research Questions - Subquestions	Data Collection Instruments
1. In what ways do physical education teachers' interact in CoP?	- Audio-taped six-week Cop - Interaction Process Analysis
2. (a) How does a CoP affect teachers' CK about HRF?	- HRF Knowledge Test for Teachers - Audio-taped six-week Cop - Post-interviews
2.(b) How does a CoP affect students' CK about HRF?	- HRF Knowledge Test for Middle School Students
3. How does a CoP affect teachers' PCK about HRF?	- Audio-taped six-week Cop - Post-interviews - Field notes

3.5.1. Quantitative Data Collection Instruments

This section will describe the three quantitative data collection instruments used in the current study.

3.5.1.1. Interaction Process Analysis (IPA)

IPA was used to analyze the interactions among members of the CoP during the meetings. All CoP interactions were audiotaped with the transcribed audio-tapes used for later analysis.

IPA is based on two basic assumptions: (1) all small groups are similar in where they are, (2) each act of an individual in the group can be analyzed with respect to its reference to these problems (Bales, 1950). The present set of categories provides a systemic framework.

This analysis, developed by Bales (1950), includes twelve interaction categories as shown in Figure 3.3.

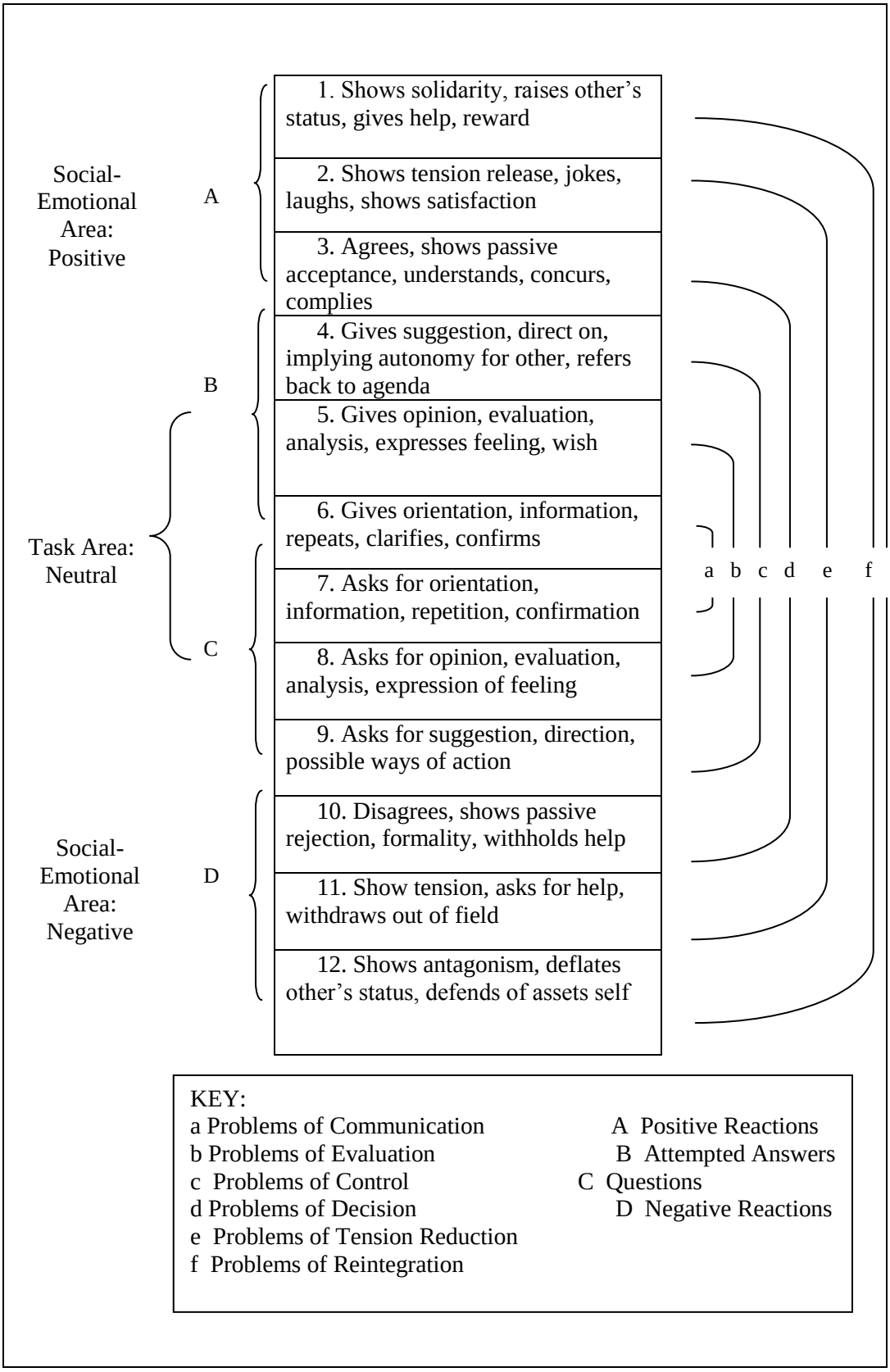

Figure 3 3. Interaction process analysis: a method for the study of small groups (Bales, 1950)

There are several different ways to analyze the data. According to Bales (1950), the simplest way is to conceive an idealized problem-solving sequence labeled A, B, C and D. Section A, contains several varieties of Positive Reactions, Section B, constitutes Attempted Answers Section, C constitutes a group of activities as Questions and Section D contains a similar group of Negative Reactions.

The more concrete conception of the problem-solving sequence may be outlined in terms of pairs of categories. According to Bales (1950):

> "*There is a symmetrical relation between the top half and the bottom half of the list of the categories, starting from Category 6 and 7. Each pair of categories can be regarded as concerned with particular aspect or phase of the complete problem solving process. In these one word terms, Category 7 and 6 are concerned with the functional problems of communication. The next pair, 8 and 5, are concerned with problems of evaluation, and following in order, Categories 9 and 4 with problems of control, 10 and 3 with problems of decision, 11 and 2 with problems of tension reduction, and 12 and 1 are concerned with problems of reintegration."*

In this case, IPA was conducted by the researcher (myself) on audio-recording of the six weeks CoP meetings. I attended all CoP meetings as an observer. As a researcher, I also following the six weeks CoP audio-records and transcribed text at the same time when coding subsequent meetings. I coded and analyzed the interactions using Excel Software and descriptive analysis.

Some social psychologists believe that, at the most basic level, it is social and task needs that drive social interaction between individuals (Bales, 1950). After making an extensive examination of interactive analysis tools, Bales's IPA is an influential method for analyzing the communication between individuals for this study of socio-emotional and task-oriented communication between individuals (McGrath, 1984). IPA consists of 12 content categories including giving and asking for suggestion, opinion, information, orientation which are important for communication and includes six categories for socio-emotional messages, with three positive and three

negative types of expressions. These categories seem parallel to understand some of the characteristics of PLCs. Within PLCs, in order to understand the personal and social dynamics (a culture of trust, mutual respect and collective engagement etc.), It is important to know the interactions among the participants. Also, creating a supportive condition is another dimension of PLCs which includes positive attitudes and relationships among participants. By analyzing socio-emotional messages with IPA, it gives us an understanding about the supportive condition in PLC. Therefore, in this study, IPA tool was used to analyze the individual interactions of the members in CoP.

3.5.1.2. Health-Related Fitness Knowledge Test for Teachers (HRF Knowledge Test for Teachers)

"HRF Knowledge Test for Teachers" created by Castelli and Williams (2007) was modified and translated into Turkish by Ince and Hunuk (2013) (Appendix A). This test is an open ended test designed to assess knowledge of HRF assessments and knowledge of optimum exercise frequency, intensity, time and type (FITT) for each component, including body. In the knowledge of assessment practices section, teachers were expected to answer questions about measurement methods that can be used in a school setting for each HRF component (ACSM, 2010). Possible scores that could be obtained from this part of the test ranged from 0 to 4. In the knowledge of FITT section, teachers were expected to identify an optimum FITT formula for each HRF component (Corbin & Lindsey, 2006). Possible scores that can be obtained from this part of the test ranged from 0 to 16.

3.5.1.3. HRF Knowledge Test for Middle School Students

The *HRF Knowledge Test for Middle School Students* was developed by Mott et al. (1991) to measure elementary and middle school children's knowledge of HRF concepts. This test is one component of the "Heart Smart" curriculum program, which was designed to reduce cardiovascular risk factors in elementary school-age children.

The instrument was translated into Turkish and validated in a series of studies by Hünük and İnce (2008, 2010) for Turkish post-primary school students (Appendix B). There were 25 items in the original questionnaire and 11 items were added by the researchers. Cognitive interviewing was done with two experienced physical education teachers and changes related to item language and item clarity were made in the questionnaire. Eleven validated questions (Hünük and İnce, 2008) were added to this questionnaire. The final version of the questionnaire was a 36-item multiple choice paper-pencil test and it was applied to 420 middle school students (121 sixth grades, 111 seventh grades and 188 eighth grades). Questions were adapted to address the Turkish PE standards in middle school curricula for HRF knowledge. For construct validity, "Iteman" analysis was used to analyze item and test-level (item difficulty, item discrimination, and reliability). Each item had three answers and participants selected one answer. The results of the Iteman analysis showed that item difficulty values ranged from 0.24-0.90, with average p-value of 0.60, and discrimination values ranged from 0.04-0.54. The reliability value of the questionnaire was 0.68. It is an acceptable value for multiple-choice tests' the average p value will range between 0.4-0.6 to increase reliability and discrimination (Nunnally, 1972). Based on these findings, the test is a valid measure of Turkish middle school students' conceptual HRF knowledge.

3.5.2. Qualitative Data Collection Instruments

This section will describe the three different qualitative data collection instruments used in this study; interview, researcher's field notes, audiotaped 6 week meetings.

3.5.2.1. Interview

All interviews were conducted by me, the researcher. All six teachers in the treatment group attended the interview held after six weeks of participating in the CoP meetings. Each interview was face to face. Both structured and unstructured approaches were used in the interviews which Patton (2002) refers to as a combining approach. With a combining approach, the interviewer can combine a guide approach with a standardized format by specifying certain key questions exactly as they must be asked while leaving other items as topics to be explored at the interviewer's

discretion (Patton, 2002). Converse and Schuman (1974) also observed that, "*There is no single interview style that fits every occasion or all respondents*" (Denzin & Lincoln, 2008). In a combined strategy, interviewers are aware of the respondents' differences and able to make proper adjustments called for by unanticipated developments. In this study, interviews involved using a standardized interview format at the early part of an interview and then leaving the interviewer free to pursue any subjects of interest during the latter part of the interview. In this situation, in the later part of interviews the interviewer mostly focused on each individual teacher's development over the six weeks of the CoP.

The interview protocol included questions about teachers' motivation to attend the community, perceptions of their own learning, views of content assessment and future expectations for their PD (See Appendix C). Interviews were held through face-to face meetings with individual participants. Each interview lasted between 25 to 40 minutes and was held in each teacher's own school.

One unstructured interview was also conducted with the facilitator. The focus of that interview was to understand the facilitators' role during the process, how he interpreted the weekly discussions in terms of teachers' CK and PCK and their knowledge construction process (Appendix D).

All the interviews were audio-recorded using a digital voice recorder and transcribed verbatim by me as a researcher for later analysis.

3.5.2.2. Field Notes

Field notes are *"the most important determinant of later bringing of a qualitative analysis"* (Lofland, 1971:102). They contain the description of what has been observed and everything that the observer believes to be worth noting (Patton, 2002).

As a researcher, I collected field notes by acting as a nonparticipant observer (Creswell, 2008) at each teacher's school and each CoP meeting. Field notes were taken to document where the observation took place, who was present, what the

physical setting was like, what kind of social interactions occurred in the CoP and includes a record of observed class events, teacher behaviors, student behaviors, my interpretations of events, and any activities that occurred throughout the class sessions and CoP meetings. Field notes were used to get a deeper understanding of teachers' PCK and informed us to support the interview responses. To record observation results, I kept a research diary.

3.5.2.3. Audio-taped Six-week CoP

The primary data source for this study was audio-tapes of the six weeks of CoP meetings with the permission of the participants. The primary purpose of audio-taping the CoP meeting was to understand teachers' interactions with each other and the facilitator throughout the six weeks. Secondly, to determine teachers' CK and PCK process in CoP. All the audio-taped data were transcribed for further analysis.

3.6. Data Collection Procedure

3.6.1. Ethical Procedure

Before commencement of the study, the purpose, rationale, design of the study in the form of a proposal was submitted to the Human Research Ethical Committee at the Middle East Technical University and was approved by the committee (Appendix F).

Written informed parental consent was obtained prior to participation in the study as was student written assent to participate in the study. The researcher sent home parent/guardian letters and informed consent forms with a return date. Permission to collect data from each school was provided from the school administration and District of National Education (Appendix G) before the intervention.

All completed informed consent forms and surveys were stored in a locked filing cabinet in the researcher's office. Only the researcher and her committee had access to the information. Once the research study was complete and all data from the

surveys were entered into excel, the informed consent forms destroyed. Only anonymous data remain.

3.6.2. Data Collection Procedure

Data collection occurred across 10 weeks during spring semester. Data were collected from one learning area of the Turkish Primary Physical Education Curriculum that is "Active Participation and Healthy Living" (Etkin Katılım ve Sağlıklı Yaşam). Collection of both qualitative and quantitative data was collected in that learning area.

Data collection occurred in three phases (baseline, intervention, post-test) during 10 weeks of spring semester of the 2010–2011 academic year. The first and last two weeks of the study were conducted in the teachers' schools and data were collected from teachers and their students. The six weeks of the actual intervention phase was conducted in Middle East Technical University, Faculty of Education, Department of Physical Education and Sport. The data collection methodology will be discussed in 3 phases (Figure 3.4.).

In the first phase, the 'Health-related Fitness Knowledge Test for Teachers' was given to all 12 teachers and the 'Health-related Fitness Knowledge Test for Middle School Students' was given to all students to determine their HRF CK. Moreover, six teachers in the treatment group for two weeks with a common learning outcome focused on 'active participation and healthy living', which was one HRF related learning area in the Turkish National Physical Education Curriculum (MoNE, 2007). Lessons were taught before and after the CoP intervention and videotaped/audiotaped by the researcher. I kept detailed field notes during and after each lesson and throughout school observations. Both facilitator and researcher observed and kept notes during the observation of videotaped lesson.

In the second phase (intervention), the treatment group teachers (n= 6) participated as members of a CoP. In this phase, the six weeks of CoP meetings were audio-taped by the researcher with the permission of teachers. Each audio-taped meeting was fully

transcribed for analysis. There were seven meetings during the six-week period. Six of the meetings were in a classroom at a university equipped with educational technology including audiovisual equipment. Participation in these meetings included all treatment group participants and the facilitator. Additionally, each teacher had an independent meeting with the facilitator and the researcher in their own school during a class as a seventh meeting session.

In the last phase, the "Health-related Fitness Knowledge Test for Teachers" was again completed by all teachers (both control and treatment group) to examine their CK about HRF after post interviews. Six teachers in the treatment group again taught two-weeks of lessons (2 class hours in two weeks) with the same common learning outcome about "Active Participation & Healthy Living" which were videotaped / audio-taped. Post- interviews were conducted with the teachers in the treatment group and the facilitator. All interviews were digitally recorded with permission of the respondents. The shortest interview was 25 minutes and the longest was 40 minutes. To determine students' CK about HRF in both treatment and control group, the same students were asked to complete the "Health Related Fitness Test for Middle School Students".

3.7. Researcher's Role

Given my background as a teaching assistant throughout my master's and doctoral programs, I had been conducting research focused on physical education teachers' in-service education and creating a HRF test for both students and teachers. I spent a lot of time with many physical education teachers and interacted with them in various settings (school, in service trainings, professional conferences). These experiences enabled me to clearly and easily identify and sort out what I was seeing during the observations. Given my relationship with the teachers, I also felt comfortable asking questions if I did not understand their feelings or actions.

As a researcher, in this study, I was responsible for collecting data from each teacher and student, analyzing the data, and documenting changes I observed teachers' behaviour, practices, and the nature of their work. Spending over three months with

these participants enabled me to establish a high level of trust. Participants appeared comfortable with my presence and freely interacted with me during the CoP discussions where I was a non-participant observer. Within the CoP, my role was basically assisting the facilitator with his responsibilities including recording the group discussions, taking notes, and creating an environment that was conducive to and safe and comfortable group discussion. I visited the CoP participant teachers' classes before, during and after the study, videotaped their examples and took field notes.

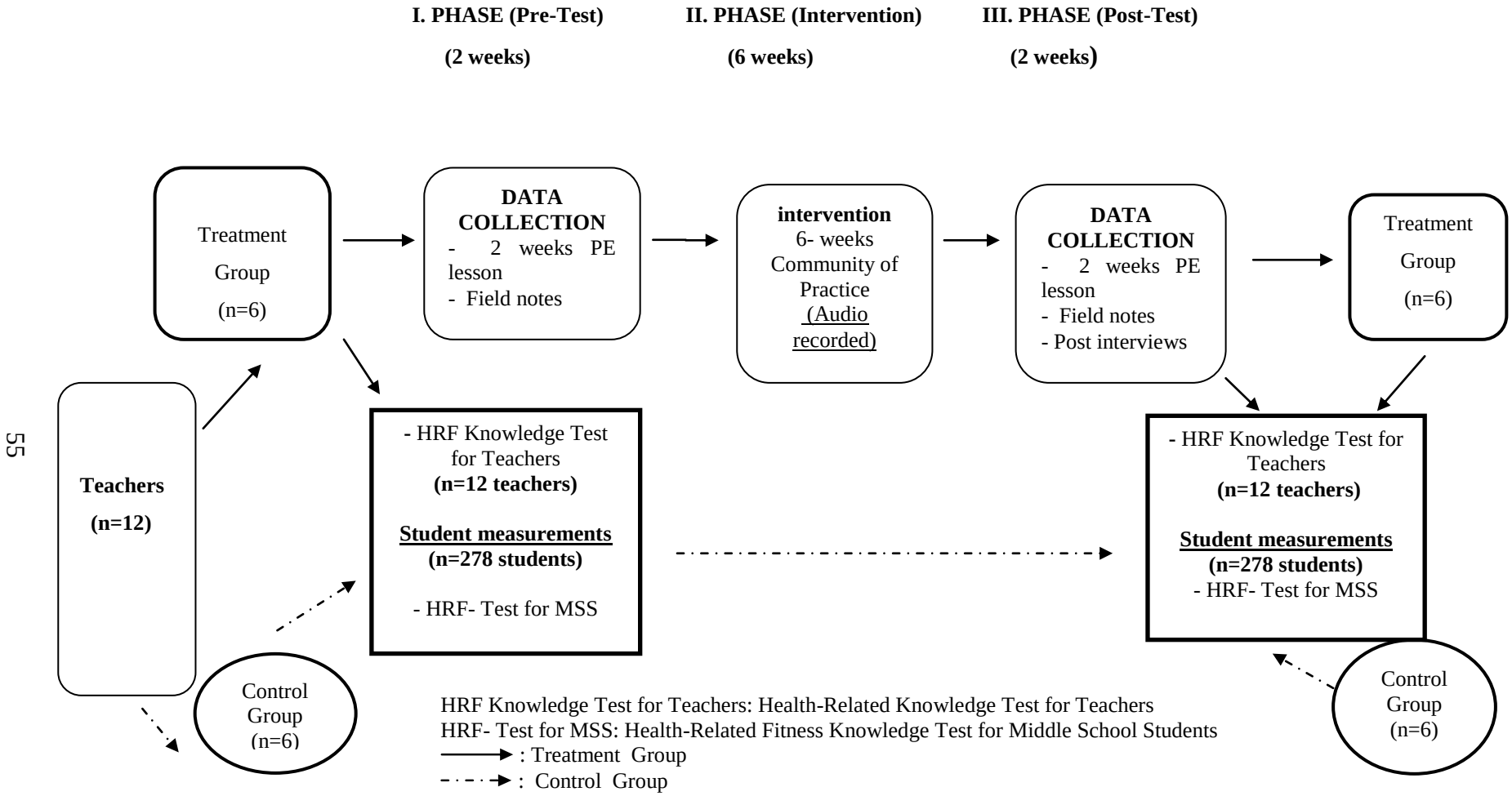

Figure 3 4. Overall design of the study and data collection methods

3.8. Data Analysis

In this section, data analysis will be explained for each research question (Table 3.5).

Table 3. 5. Data analysis for each research question

Research Questions - Subquestions	Data Collection Instruments	Data Analysis
1. In what ways do physical education teachers' interact in CoP?	- Audio-taped six-week Cop - Interaction Process Analysis (IPA)	- Content analysis - Interaction Process Analysis
2. (a) How does a CoP affect teachers' CK about HRF?	- Health-related Fitness Knowledge Test for Teachers - Audio-taped six-week Cop - Post-interviews	-Descriptive statistics - Content analysis
2. (b) How does a CoP affect students' CK about HRF?	- Health-Related Fitness Knowledge Test for Middle School Students	- Repeated Measure ANOVA and simple main effect analysis
3. How does a CoP affect teachers' PCK about HRF?	- Audio-taped six-week Cop - Post-interviews - Field notes	- Content analysis

Prior to data analysis, for the questionnaires, procedures of data screening were done to assess the accuracy of input, amount and distribution of missing data and to identify and deal with outliers. Descriptive statistics were used to provide the basic features of the variables used in the research including frequencies, percentages and distribution for the demographic variables. Then, in order to justify the usage of statistical models for data analysis, underlying assumptions approach was checked.

Quantitative data were analyzed using descriptive statistics, repeated measure ANOVA, simple main effect analysis and IPA. Semi-structured post interviews with teachers and the CoP facilitator, researcher field notes and audio-taped and fully

transcribed text of six weeks of CoP meetings were analyzed using the constant comparison approach (Glaser & Strauss, 1967). First, open coding was used to analyze the data by chunking data into small units, labeling ideas and creating codes. Second, analysis then focused on the large number of examples that defined the key points of the research questions by circling key words, phrases or sentences. This stage ended with creating the initial codes from each data source. Third, axial coding grouped codes into categories based on their relationship between concepts and subconcepts and grouped and labeled as categories related to the research questions. Finally, selective coding allowed the researcher to develop themes that express the content for each data source. At this point, analysis focused on merging related categories in chronological order to determine the teachers' content and PCK construction process.

The reliability and validity of the study was achieved through data and methodological triangulation (Patton, 2002), peer debriefing (Patton, 2002) and member checking (Creswell, 2009). Data triangulation can be achieved through the use of both a variety of data sources and multiple methods (Patton, 2002). This study used data collected from HRF tests, CoP discussions, individual interviews and field notes. Peer debriefing was conducted by the facilitator to confirm my findings and ensure validity of the data (Patton, 2002). Member checking (Creswell, 2009) was conducted with these teachers by asking them to identify any misinterpretations and clarifications in summaries of theie experiences during CoP. None of the participants requested changes.

3.9. Interactions among CoP Participants

The term focus group comes from the idea that groups are "focused" on collective activity (Kitzinger, 1994) which occurs within a social context. The rationale behind the use of focus groups is that knowledge is created through diverse experiences, forms of knowledge, and interaction between participants. The main advantage of focus groups involves how interactions highlight the participants' perceptions, thinking, attitudes and framework of understanding, as well as identifying group norms (Kitzinger 1994).

The analysis of focus group data is based on the methodological approach chosen by the researcher reflecting the specific aim of the study and best suited to the research purpose. (Belzile & Öberg, 2012; Duggleby, 2005). Thus, the method of analysis in focus group research may be different in each study based on the methodological approach used. In the literature on focus group research, there are three levels of data (individual, group and group interaction) to analyze.

Group interaction data can be found in focus group transcripts and observations documented in the field. Findings of focus group research mostly report results using quotations from one individual at a time. With this method, individuals can be isolated from the interactions between the group participants (Duggleby, 2005). Therefore, Belzile and Öberg (2012) stressed that participant interaction has to be the hallmark of the focus group method. Duggleby (2005) stated that "*a simple method might be to analyze group interaction data desperately from group or individual data using the same methodological approach and then integrate the findings with other data*" (p.838). Integration of group interaction data with other types of data could be the best way to analyze the data however it is achieved. Wilkinson (1998) also suggested that other than only reporting individual quotations, detailed data excerpts of group interactions should also be reported when it is congruent with the study purpose.

3.10. Limitations

Although the present study can generate a better understanding of a CoP of physical education teachers in Turkey, several limitations should be acknowledged.

Firstly, the teachers who participated in the intervention part of the study might have had different motivations for participating than those who did not participate.

Secondly, the results of this study were limited by the perspectives of six physical education teachers. They evaluated their own understanding of being a member of a

CoP and its applicability to other settings. These data were supported by researcher's observations.

Finally, the quality of the qualitative data collected and the results are limited by honesty of the participants. In the qualitative research study, the research skills of the researcher gained more importance as researchers are the center of the data collection and analysis. In this study, as a researcher, I spent time in the field, directly interviewed the subjects and lived the subjects' experience. Therefore, my perspective and the ability of reflecting my experience directly affect the quality of the research. Some precautions were taken to minimize these including: (1) the facilitator was someone apart from the researcher (2) the researcher did not actively participate in discussions with the participants.

CHAPTER IV

RESULTS

This chapter presents the findings of the ways teachers interact in CoP and its' effects on teachers' and students' HRF CK and also teachers' HRF PCK under three subheadings. Each subheading represents the research questions in order.

4.1. Results of the First Research Question

For the first research question, in what ways do physical education teachers' interact in CoP, and the interactions among CoP participants during 6 weeks of the CoP were analysed by using Interaction Process Analysis (IPA). Findings are reported here.

Interaction Process Analysis (IPA) results indicated three main trends in CoP interaction patterns of the participants. These trends were; 1) Most of the interactions fell into Categories 5 and 6; 2) Amount and type of interactions differed for each participant; 3) Interaction patterns changed throughout time from the first to the last week.

1. Most of the interactions fell into Categories 5 and 6.

Most of the interactions among the CoP participants were in Category 5 (giving opinions, evaluation, analysis, expressing feelings) and Category 6 (giving orientation, information) (Table 4.1.). Table 4.1. shows the frequency of interaction in each category for each participant in the six meetings. In the table, the first two most frequent categories of interaction are circled for each person. From this table, it is easy to see individual participant "tendencies" and the difference in frequency of their total interactions in the bottom line of the table. Category 5 was the most frequent category act for each participant and Category 6 and Category 3, agreeing, showing passive acceptance, concurring were the second most frequent categories for the most of the participants.

The reason Category 5 being coded such a large proportion of time was that it included a wide range of common attempts to interact, such as giving opinions, evaluating, analysing, expressing feelings, wishing, making decision, solving problems, and expressions of understanding. In this case, the range was huge including mostly expressing feelings (e.g., “hımm”, “very good”, “I like it”) to giving opinions to other members of the group (e.g., : “that is true”, “This is one of our biggest problem”, “I want to say something about this issue...”) or giving examples from his/her own case (e.g., “the situation is nearly same for my school”, “we were doing this in my school”).

As can be seen on Table 4.1., Category 6 was coded as the second most frequent category with its’ wide range of attempts such as giving orientation, information, repeating, clarifying, and confirmation. In this case, Category 6, range was wide mostly including clarifying (e.g., “I have been teaching 30 hours of PE in a week”, “I have 9 class”) to giving information (e.g., “the researches have shown that...”, “the new PE curriculum says that ...”, “today, we are going to discuss about ...”).

Table 4. 1. Frequency of interactions in each category for each participant over all six meetings

		Participants							
		1	2	3	4	5	6	7	**Total**
Categories	1	7	5	6	3	2	1	1	25
	2	9	3	7	10	15	1	3	48
	3	119	57	69	84	92	48	32	501
	4	66	6	2	5	8	3	8	98
	5	364	192	107	117	213	91	224	130
	6	333	58	30	41	91	80	70	703
	7	137	96	68	28	82	23	41	475
	8	50	16	5	4	8	2	5	90
	9	6	2	1	0	0	0	1	10
	10	20	12	22	5	31	6	26	122
	11	0	2	2	0	2	2	1	9
	12	0	0	0	0	0	0	1	1
Total		1111	449	319	297	544	257	413	3390

2. Amount and type of interactions differed for each participant.

Interaction analysis revealed that the amount and type of interactions differed for each participants as can be viewed by studying Table 4.1. According to the total interactions of each participant as noted in the bottom line of Table 4.1., with the exception of the facilitator (Member 1), member 5 had the highest number of interactions and member 6 was the person who had the lowest interactions in the group.

Looking at the frequency of individual members interactions provides an indication of social relationships. This could help in understanding the ways individuals differ and the possible implications of these differences for their social relationships.

Member 1 was the facilitator of the group and his role was only to present key topics for discussion, listen to participants' comments, speak plainly and keep the discussions focused on the subject of investigation. As a result, he received or started the topics for discussion for the group and guided the group by referring back to the agenda most of the time. This example comes from Week 3: "*we are going to talk about this issue today. So let's go back to the data that you collected from your students".* Member 2 was the person who most frequently asked for orientation and opinion comments in the group with the exception of the facilitator. For example in week 3, Member 2 asked for *"You said students motivation can increase. Did you experienced the similar situation for elementary school students? Do they realize this?".* Member 3 was the person who least frequently moved Category 6, giving orientation, information, repeating, clarifying, and confirmation. The reason could be that she had a lack of knowledge about HRF when compared to other group members. She repeated several times that she had not learned that information before. Member 4 was relatively high on Agreement interactions and the lowest one in Disagreement. For example in week 1, member 4: ""*hı hı. I agree with you*" in week 2: *"yes, it is same for our school*". She did not have high rates of Negative Reactions. Member 5 was the "leader" of the group with his enthusiasm and major opinions based on his own experiences during the weeks although Member 7 disagreed with these opinions and showed off his knowledge at the beginning. For example in week 3 the group was discussing about the students' pedometer scores. Facilitator was surprised when he saw the high scores of students and Member 5 said: *"It is normal, they are going to private courses after school hour by walking*". And Member 3 replies:*"It is not possible to make 21000 steps a day just by going to private courses. It is not that long way to go."* " Although Member 6 had small numbers of interactions in the total 6 weeks, she seemed usually high on giving objective and clear information and relatively low in disagreement. For example in week 4 Member 6 stated : *"We don't have problems with 6th to 8th grade students. We have a student observation forms for each students and in parents we share these with parents. So they could not ask why we gave their kids lower scores".* Another example about Member 6 comes from week 6: ""*actually ours is different than your case (private school case). When there is an in-service training about a subject, one*

of the teachers related with this subject has to attend this. Not all the teachers attend form the subject but all least one of them has to attend as a representative. Our school administers expected to do in this way". Interestingly, Member 7 was the only person whose number of the disagreement and agreement were close to each other. He was also the second person, after the facilitator, who seemed to be high on giving his opinions. For example, in week 3, Member 7 stated that *"now in my school playing with the ball is forbidden in recess time. Then students making group with 4-5 others and asked for playing basketball in the sport hall in recess time and they say because they are in the school basketball team and want to do training. just after I said ok, the number of the players have been increased in school basketball team.*

The above results of frequency of interactions, who was the most accepting, who gave the most opinions, who had the highest and lowest status rating provides insight into the differentiated roles and structural "positions" of each person in the group.

3. Interaction patterns changed throughout time from the first week to the last

Interaction analysis revealed that interaction patterns changed throughout the six weeks as can be viewed in table 4.2.

Table 4 2. Frequency of interactions in each category in each week of the six weeks

		Weeks						
		1	2	3	4	5	6	**Total**
Categories		17	2	1	0	1	4	25
		29	4	5	5	4	1	48
		103	93	135	59	50	61	501
		26	12	13	5	5	(37)	98
		166	149	268	236	257	232	1308
		146	130	(157)	95	89	86	703
		74	72	(119)	91	65	54	475
		15	7	10	17	(25)	16	90
		0	1	2	0	1	(6)	10
	10	27	12	17	30	7	29	122
	11	6	1	0	1	0	1	9
	12	1	0	0	0	0	0	1
Total		610	483	727	539	504	527	3390

Table 4.2. shows the frequency of interactions in each category in each week of the six weeks. In the table, the most frequent categories of activity are circled. According to Bales (1950), the more concrete and differentiated conception of the problem-solving sequence may be outlined in terms of pairs of categories. For example, in this table it was easy to see that Category 6, giving orientation, information, clarifying and confirming, was most frequently repeated in the 3rd week and Category 7 was repeated mostly in the same week. The rate of the activity in Category 6 may be taken as an index of the amount of interaction the group actually devoted to attempting to finding solutions to the problems of perception and communication (Bales,1950). Category 7, asking for orientation, information and confirmation, leads most frequently to answers that fall into Category, 6 (orientation, information, repeating, clarifying, confirming). He presumed that the rate of activity in Category 7 and 6 are focused on the amount of interaction the group actually

devotes to communicating with one another to ask, answer, clarify and exchange with each other (Bales, 1950). In the above case, however, the reason for higher frequency rate of Category 6 and 7 in week 3 fit the nature of the week's topic: "discussions on CK of the "*Active Participation and Healthy Living"* learning area (training principles, exercise psychology, health promotion)". For this topic, the facilitator (member 1) gave more explanations and provided more information about these topics during that meeting and the questions were mostly about his explanations and information. This can be seen in the following conversation:

Member 1: We should do the strategies together to apply all the tests (health-related fitness field tests) in your class in 40 minutes. You can do all the tests in 40-50 minutes. But you should give some responsibilities to students, you should trust them.

Member 7: I was measuring students' heights and giving responsibility to two students: when one was measuring his friends' weights, the other one was writing it up.

Member 1: hımm.. ok.

Member 5: Does that age group of students' have heart rates the same as us Is that 60-80rpm?

Member 1: Their heart rate could be higher. A little bit higher because you remember the formula: 220-age. Heart beat decreases with the age.

As can be was seen in this example, during that week, Member 1 did most of the explanations and gave information to the other members. On the other hand, in the following weeks, the interaction between members was more multi-directional. As can be seen in the following interaction during week 5:

Member 4: It is hard to communicate with the parents most of the time

Member 2: It is really hard to communicate with the parents' of 6^{th}, 7^{th}, and 8^{th} grades in public schools like ours. I always talk about it in parents' meetings. Parents are always at school when their kids are 1^{st} to 5^{th} grade. They are almost carrying their kids' school bags into the classroom. However, when their kids' graduate to the 6^{th} grade, we can see the with parents only once a year, if we call them. It is interesting. I am angry and

believe that is important for them to be very interested in the previous years. I believe that this lack of interest is affecting the students' self-confidence negatively.

Member 6: Does your counselling service give seminars to your parents?

Member 2: Yes, they do but the attendance rate in too low in our school.

Member 6: Our parents do not want to come to the parents' meetings because some of them know that their kid is very ill-behaved in school. Our counselling service wants to talk with the parents whenever they see them.

Member 4: There is no counselling service in my school. Classroom teachers' are giving guidance. When parents do not attend the parents' meetings, our classroom teachers call them if it is needed. It is hard to communicate with the parents' of 6th to 8th grades' parents as well.

As it was seen in the previous two examples, it has been obvious that the interaction between members became more multi-directional throughout the weeks. In Table 4.2., the most frequently repeated Categories, 4 and 9 are circled. Those categories were repeated the most in the same week, week 6. The rate of interactions in Category 4, giving suggestion, directions and referring back to the agenda, provide an index of the number of the interactions which the group actually devotes to attempting to find solutions to problems of control. Category 4 is the closest category to the point of decision (Bales, 1950) while Category 9, asking for direction and possible ways of responding, leads most frequently to answers in Category 4. The rate of activity in Category 9 may be taken as an index of the interactions which the group actually devotes to acknowledging that problems of control exist. Even though Category 4 and 9 were mostly repeated in week 6 followed by week 1 as second for Category 4. In that case, however, the reason for higher a frequency rate of Category 4 in 1st week could be that Member 1 (facilitator) gave so many suggestions and directions to explain group rules and the content to direct the following weeks as demonstrated in this initial statement below during week 1:

Member 1: Yes, we will have a chance to discuss deeply about the issues in the following weeks. So far as to get all together, we should concentrate on our working plan. Let's have a look at the plan.

Other more interactional examples between members during CoP are identified below. Although during week 1, Member 1 provided most of the suggestions and directions to make the rules and plan clear for the following weeks, in week 5 and 6 , the other members of the group asked for suggestions and directions from each other. The following conversation comes up in the week 6:

Member 2: Ok. Then what do you suggest we to do a student who is not attending PE class for the whole semester? We should le them to pass the class because that's what the regulation wants us to do.

Member 7: Yes, students do not repeat the class because of PE lesson. There is no fail for our course. Why? Because the regulations say if a student fail in PE you should do an individualized education programme for each student. We should separate the students according to their level on individualized education programme. If they fail again you should open a course for semester break and ask their parents for their opinion. They (parents) will decide whether he is going to fail or pass.

Another example comes from week 5 :

Member 4: Before I attend this study, I did not want to communicate with the parents. I was only considering my students. Well… After we had sent these papers to the parents, I started to get some feedback from them.

Member 1: Really? I wonder what kind of feedbacks did you get?

Member 4: hımm. Well. Mostly the mothers of the students responded to me. Only 3 or 4 of them told me that they did not understand the formula (calculating target heart rate formula) and asked me what they could do. I mean not so many of them but some asked me; they were interested. But I told my students that they can write on a piece of paper and bring to class any questions their parents have.

Member 1: That's a great idea.

Member 4: I told my students that if their parents don't understand or they are illiterate, you should read the instructions for your parents. Well, I

don't know, we will see. I think we are going to wait for a couple of weeks. But I can suggest you do this."

The other pairs of categories are Category 8, asking for opinions, evaluation and analysis, and it is most frequently answering Category 5, giving opinions, evaluation, analysis and expressing feelings. The rate of activity in Category 5 may be taken as an index of the amount of interaction the group devoted to attempting to find solutions to problems of evaluation (Bales, 1950). The rate of activity in Category 8 may be taken as an index of interaction the group devoted acknowledging there were problems with evaluation. In Table 4.2., it was seen that though the frequency rate of Category 8 increased in the last three weeks, the frequency rate of Category 5 was nearly the same throughout the six weeks. In that case, Category 5 was coded for nearly every kind of expressions and opinions so it was the mostly coded category for each individual. An example conversation emerges in week 2:

Member 1: The question is whether it is possible to do (health-related fitness assessments; 1 min push-up, 1 min sit-up, sit-reach test , 20 meter shuttle-run, body composition) it in 40 minutes class or not. Let's discuss it for a while. We have been saying that we have a 40 minute class and we want to do these tests (health-related fitness field tests), share with parents and share with our students. Do you think there will be any problem in the class or not?

Member 7: We can divide the students into two different groups to do these tests in 40 minutes.

Member 5: I think it won't be any problem.

Member 1: Do you think is it too much of a workload for a teacher to share these with the parents and students?

Member 5: No

Member 7: I don't think so.

Member 5: I think vice verse it could be good.

Member 4: In fact it brings so many advantages to make the teachers more knowledgeable.

Member 3: There are so many problems in the schools that have no sports hall. These could be done in the class as well.

The other example was from week 6:

Member 1: I can understand from your comments that if you explain the related information to a student about himself/herself and if you develop the related learning environment, there will be no motivational or classroom management problem anymore. Do you agree with me?

Member 3: Yes, that is true.

Member 1: Because everyone is motivated to learn something.

Member 7: Last week when I was going to the parent's meeting, I took the test results of the students with me. I could not leave the class because there were so many questions and so much curiosity, I only visited 3 class out of 15. I talked with the other parents on the corridor and they all are so interested in this topic. Because they picked up before, talking with another makes it more attractive.

As it was seen in the above examples, when Member 1 asked for members opinions in the later weeks of the CoP, members were intent to give their opinions based on their previous experiences. They were more willing to share their experiences with the other group members in the last weeks.

Table 4 3. Frequency of interactions of each participants in each week of the six weeks

		Weeks						
		1.	2.	3.	4.	5.	6.	**Total**
Participants	1	188	210	233	163	189	128	1111
	2	81	0/AB	95	80	92	101	449
	3	41	45	123	51	0/AB	59	319
	4	81	55	74	0/AB	87	0/AB	297
	5	102	74	128	140	0/AB	100	544
	6	67	21	27	37	64	41	257
	7	50	78	47	68	72	98	413
Total		610	483	727	539	504	527	3390

AB: Absent

Table 4. 3. shows the frequency of interactions for each member in each of the six weeks. This table reveals there were a total of 3390 interactions in 6 weeks. In some weeks, teachers were absent because of some unforeseen reason therefore some members' total frequency of interactions do not reflect a full and accurate portrayal of participation. For example, Member 4 could not attend the fourth and sixth meetings, even though, her total interaction was 297 which were higher than Member 6 who attended all the meetings.

As an indicator of change of social relationships throughout the 6 weeks, it may be interesting to look at the series of tables from 4.4 to 4.10 that provide profiles of individual members of the CoP group in each of the six weeks. In these tables, some of the categories of activity are circled for each individual to highlight change in 6 weeks. For example, the frequency of interactions in Category 8, asking for opinions, evaluation and analysis, increased in the last 3 weeks for Member 2 (Table 4.5). The frequency of interacting in Category 4, giving suggestion, direction and referring back to the agenda, and interrelatedly Category 9, asking for suggestions and

direction, also increased in the last 3 weeks. The following example provides a look at a substantive discussion to demonstrate interactions from member 2:

Member 2: Well. I don' know, maybe we should share the instructions with our students before starting to do these tests. Well, for example, I expect you to. I don't know, not a power play, not winning. I expect you to try yourself. or I don't know.. Maybe it should be like I expect you to do your best here without forcing yourself. I don't know.. This is a starting point. We will assess this at the beginning of the semester and we will assess the activities that you do in your daily life and we will assess this at the end of the semester. The aim will be to understand your improvement. I think that kind of speech and clear words can be effective on students and prevent them to force themselves.

Member 1: Great because when we started assessing the students all together in the test process; a psychology of competition has been started.

In this example, Member 2 gave a suggestion to a situation which had been discussed on a number of weeks. Another example emerges from Member 6 (Table 4.9.) who gave a suggestion in week 6 that she tried and succeeded in her own school case.

Member 2: Well, but the socio-economic and socio-cultural backgrounds of our schools are different. Your students have known who Michael Jackson was before you began. I think that there are some students in my school who have not heard his name before. And there is one more important point that in our schools there is gender discrimination and most of our students are shy.
Member 6: t is similar for our school, it is similar.
Member 2: A female student doesn't dance in front of a male classmate. They can dance in a group maybe but they don't dance individually. A male student has never wanted to do this. No way.
Member 6: It is again similar for our school. Some boys don't want to dance. They are dancing with a very heavy heart. What do we do at that time? They like hip hop dance. So we let them do hip hop dancing. Especially our high school male students, they only like hip hop.

It is possible to give more related examples from each member. As it was seen in the previous examples, it could be concluded that the social structure and culture of the group changed as a result of reactions and interactions among the CoP throughout the 6 weeks.

Table 4 4. Interaction profile of Member 1 in each of six weeks

		Weeks						
		1	2	3	4	5	6	**Total**
Categories	1	6	0	0	0	1	0	7
	2	8	0	0	0	1	0	9
	3	25	24	35	12	13	10	119
	4	19	12	10	4	3	18	66
	5	26	52	76	67	90	53	364
	6	62	81	74	53	31	32	333
	7	30	33	27	15	29	3	137
	8	8	5	5	6	19	9	50
	9	0	1	2	1	1	2	6
	10	4	2	4	6	3	1	20
	11	0	0	0	0	0	0	0
	12	0	0	0	0	0	0	0
Total		188	210	233	163	189	128	111

Table 4 5. Interaction profile of Member 2 in each of six weeks

		Weeks						
		1	2	3	4	5	6	**Total**
Categories	1	4	0	0	0	0	1	5
	2	2	0	0	1	0	0	3
	3	12	0	20	7	5	13	57
	4	2	0	0	1	0	3	6
	5	28	0	30	36	51	47	192
	6	14	0	16	7	16	5	58
	7	11	0	27	21	16	21	96
	8	2	0	1	7	2	4	16
	9	0	0	0	0	0	2	2
	10	4	0	1	0	2	5	12
	11	2	0	1	0	2	5	12
	12	0	0	0	0	0	0	0
Total		81	0/AB	95	80	92	101	449

AB: Absent

Table 4 6. Interaction profile of Member 3 in each of six weeks

		Weeks						
		1	2	3	4	5	6	**Total**
Categories	1	2	1	1	0	0	2	6
	2	4	0	3	0	0	0	7
	3	4	8	32	13	0	12	69
	4	0	0	1	0	0	1	2
	5	14	15	32	21	0	25	107
	6	7	7	10	2	0	4	30
	7	2	12	34	12	0	8	68
	8	0	0	3	1	0	1	5
	9	0	0	0	0	0	1	1
	10	6	2	7	2	0	5	22
	11	2	0	0	0	0	0	2
	12	0	0	0	0	0	0	0
Total		41	45	123	51	0/AB	59	319

AB: Absent

Table 4 7. Interaction profile of Member 4 in each of six weeks

		Weeks						
		1	2	3	4	5	6	**Total**
Categories	1	2	1	0	0	0	0	3
	2	8	1	0	0	1	0	10
	3	23	24	20	0	17	0	84
	4	3	0	0	0	2	0	5
	5	23	17	38	0	39	0	117
	6	13	6	10	0	12	0	41
	7	5	5	6	0	12	0	28
	8	1	0	0	0	3	0	4
	9	0	0	0	0	0	0	0
	10	3	1	0	0	1	0	5
	11	0	0	0	0	0	0	0
	12	0	0	0	0	0	0	0
Total		81	55	74	0/AB	87	0/AB	297

AB: Absent

Table 4 8. Interaction profile of Member 5 in each of six weeks

		Weeks						
		1	2	3	4	5	6	**Total**
Categories	1	2	0	0	0	0	0	2
	2	7	2	2	3	0	1	15
	3	22	21	23	14	0	12	92
	4	1	0	1	0	0	6	8
	5	31	26	53	62	0	41	213
	6	15	11	26	24	0	15	91
	7	17	12	19	22	0	12	82
	8	3	0	1	2	0	2	8
	9	0	0	0	0	0	0	0
	10	4	1	3	12	0	11	31
	11	0	1	0	1	0	1	2
	12	0	0	0	0	0	0	0
Total		102	74	128	140	0/AB	100	544

AB: Absent

Table 4 9. Interaction profile of Member 6 in each of six weeks

		Weeks						
		1	2	3	4	5	6	**Total**
Categories	1	1	0	0	0	0	0	1
	2	0	0	0	0	1	0	1
	3	14	4	2	9	10	9	48
	4	1	0	0	0	0	2	3
	5	18	9	12	15	28	9	81
	6	26	8	8	3	21	14	80
	7	2	0	5	8	2	6	23
	8	0	0	0	1	1	0	2
	9	0	0	0	0	0	0	0
	10	3	0	0	1	1	1	6
	11	2	0	0	0	0	0	2
	12	0	0	0	0	0	0	0
Total		67	21	27	37	64	41	257

Table 4 10. Interaction profile of Member 7 in each of six weeks

		Weeks						
		1	2	3	4	5	6	**Total**
Categories	1	0	0	0	0	0	1	1
	2	0	1	0	1	1	0	3
	3	3	12	3	4	5	5	32
	4	0	0	1	0	0	7	8
	5	26	30	27	35	49	57	224
	6	9	17	13	6	9	16	70
	7	7	10	1	13	6	4	41
	8	1	2	0	0	2	0	5
	9	0	0	0	0	0	1	1
	10	3	6	2	9	0	6	26
	11	0	0	0	0	0	1	1
	12	1	0	0	0	0	0	1
Total		50	78	47	68	72	98	413

4.2. Results of the Second Research Question

For the second research question focused on, how does a CoP affect teachers' and their students' CK about HRF. In the first part of the study, the effects of CoP on physical educators HRF CK development were examined both qualitatively and quantitatively. In the second part, the effects of CoP on their students' HRF CK were examined quantitatively.

4.2.1. Effects of CoP on physical educators HRF content knowledge development

Both quantitative and qualitative data provide insight into the HRF CK acquired by these teachers during participation in the CoP. Firstly, Health-related Fitness Knowledge Test for Teachers was applied to all teachers in both treatment and

control groups before and after the intervention. Quantitative data findings supported by qualitative findings will be reported under each dimension.

In the first part of this test, teachers' CK about HRF assessment techniques were assessed. It is noteworthy that the total scores of treatment group teachers increased more from pre to post test (Mpre=9, Mpost=21) when compared to the total scores of control group teachers (Mpre=9, Mpost=10) as is seen in Table 4.11. In the second part of the test, teachers' knowledge of the FITT principle was assessed for each HRF component. Again, the total scores of the treatment group teachers increased from pre to post test (Mpre=33, Mpost=85) more than the total scores of teachers in the control group (Mpre=45, Mpost=44).

Table 4 11. Descriptive results of the second part of KPP-HRF knowledge test (N=6 in treatment, 6 in control group)

	Content knowledge about assessment techniques*			FITT (frequency, intensity, time and type) principle of HRF**		
Treatment Group	Pre	Post	MD	Pre	Post	MD
Teacher 1	3	4	1	11	15	4
Teacher 2	0	4	4	6	14	8
Teacher 3	0	2	2	0	12	12
Teacher 4	3	4	1	0	16	16
Teacher 5	1	4	3	0	15	15
Teacher 6	2	3	1	16	13	-3
Total Pre Test Scores	**9**	**21**	**+ 12**	**33**	**85**	**+ 52**
Control Group						
Teacher 1	1	0	-1	11	6	- 5
Teacher 2	0	3	3	0	0	0
Teacher 3	4	2	-2	9	12	3
Teacher 4	0	0	0	9	12	3
Teacher 5	4	4	0	16	14	-2
Teacher 6	0	1	1	0	0	0
Total Post test Scores	**9**	**10**	**+ 1**	**45**	**44**	**-1**

*minimum score is 0, maximum score is 4
**minimum score is 0, maximum score is 16

To better understand how the CoP positively affected treatment group teachers' HRF CK, a constant comparison content analysis examined teachers and facilitator's post-interviews, researcher field notes and teachers' progress over the six-weeks of meetings. Two themes emerged to explain the teachers' HRF CK change process; (1) how teachers became aware of their needs about HRF CK through the CoP and (2)

the types of resources provided through the CoP that helped these teachers improve their HRF CK. These will be discussed here.

Theme 1: Awareness of their needs about health related fitness CK: Data from six weeks of CoP meetings, post-interviews with teachers and the facilitator and researcher's field notes suggested that initially, these teachers did not appear to internalize the HRF curriculum and its outcomes or they did not believe the outcomes were applicable or appropriate. As noted in the methodology, prior to CoP meetings, teachers were asked to teach two weeks of HRF focused on two outcomes drawn from physical education curriculum. Comments from teachers suggested;

> *Member 5: I disagree with those (outcomes related with health related fitness). How can I apply it in my class when I disagree on those outcomes?*
> *Member 7: They (students) do not participate enough when I tried to teach them the new curriculum.*

One teacher explained the reason why students did not internalize the curriculum in the first week. One of the teachers stated the reason:

> *Member 2: We did not get enough information about the new physical education curriculum. I think it was two years ago, there was a presentation in physical education teachers seminar at the beginning of the semester. They introduced us to the new curriculum but they just made a quick presentation. However, we did not get any information about how to apply it in our own schools.*

Another teacher extended this explanation:

> *Member 7: We also did not get any in-service training about the new curriculum. I attended some of in-service trainings but they were not good enough and specifically not related to the new curriculum.*

One of the teachers added:

> *Member 3: Yes, I also attended a seminar once about the new physical education curriculum in Kecioren (the district where her school is). As you*

said (pointed the other teacher) it was a one day seminar and they just made a quick presentation with many slides. Everything was uncertain, it was looking like. nothing has changed. At least I did not get any answers to my questions, actually nothing was asked in that seminar.

In the first two weeks of CoP, these teachers did not perceive the importance of health related outcomes of the HRF curriculum and merely focused on performance related fitness. In the Turkish physical education system, teachers are paid extra for training their school teams. Therefore, instead of satisfying the needs of all students in class, teachers tend to focus increasingly on the performance of their school team players. In the CoP discussions, teachers were eager to talk about the relationship between their school's team performance and their success in training them instead of focusing on HRF development of each student in their physical education classes:

Member 1: What do you think about the implementation of the current curriculum in your schools? Especially when you think about assessment and evaluation?"

Member 7: It really can be implemented. Actually, the system is good. I want to give an example about it. Last year our school volleyball team was in the major league. None of my players were playing in the club teams. I trained them in five years. And six of those students were in the honor degree in academic school rank. When these students are in that situation, it was not easy for them to do training once or twice in a week.

Member 4: I agree with that. I was training the folk dance team in my ex school in Konya (a city which is 3 hours away from Ankara) last year. But I was going and coming back after school hours every single day. We don't have extra hours to do training. I was using the lunch time or physical education hours to train them. So I prefer to have all those students in one class and train them together. I could not choose them according to their talent identification. But at the end we win the competition and we were in the first rank.

In the middle of the second meeting, one of the teachers extended this topic and noted:

Member 5: I know some of our colleagues (physical education teachers), I am not talking about the people in here; do not care about the all students improvement in a class. Let's say he is a good football player and just take care of his 11 or 15 students in a class and focuses on their skill development on football in 40 minutes. His aim in physical education is to improve the success of their school football team. Unfortunately, there are so many around.

Interrelatedly, physical education teachers were only collaborating with parents whose children were on their school teams. Teachers focused on their skill development/performance in parent-teacher meetings:

Member 4: Before I was making a team on folk dance in my school, I first talked with their families. Students were all girls from different classes and their families did not like the dance idea because they thought that their children will become a belly-dancer or something like that. I individually went and visited their homes and explained our aim to make a team on folk dance. It was for the show on 23rd of April (which is a national holiday celebrated in schools with shows and exhibitions). Then they allowed their children to be a part of the team and yes, we were successful. So I believe, collaboration with the families is a very important part of our job.

The facilitator commented in the post interview:

Member 1: Interestingly at the beginning, teachers were mostly getting contact with parents whose children are on school teams. Teachers were talking about their children's performance; how they can improve their performance, what kind of assistance they need or what they need to do as a family. They did not focus on each student's needs and their development in their classes.

In the second week of CoP, the facilitator lectured about health related CK. He explained the reason for lecturing about HRF in this way in the post interview:

Member 1: During the CoP, even though there is huge emphasize about health related fitness in the new physical education curriculum, I realized

that teachers have a lack of content knowledge about it. They did not understand and internalize the curriculum. I lectured on the related CK in the second meeting and they were more willing to use it in their actual classes. When I presented what they need as CK, they were more ready to use it. The key was that.

In subsequent weeks, teachers implemented some of the HRF assessment techniques and related HRF content in their classes. After CoP discussions on the importance of sharing CK with students they began to understand the relevance of the outcomes. Teachers realized that their students were more motivated toward the lesson and asked more questions during the lesson after hearing about HRF content in their class. One of the teachers articulated the change in his students' in this way in the post interview:

Member 7: I talked about the cardio respiratory system in the class. I talked about how body cells reproduce themselves, how bones enlarge as students' age, how muscles strengthen, the importance of flexibility and how it may affect the students future lifestyle in a positive or negative way… Then the students started to assess themselves… When they understand why they feel pain after exercise or feel out of breath, they were interested in and asked me some related questions.

Another teacher commented on her students' understanding of physical activity, saying:

Member 4: I used the pedometers in my class this week and my students' mostly asked about daily step count. They asked me what they should do if their daily steps are under 10,000. They also wonder…. I talked about body composition in the class and they wanted to know how we should interpret the result. Because this week I talked about the relation between body fat and exercise level. I said if you want to lose weight you should be careful about what you eat and what kind of exercise you do.

One of the teachers articulated in the post interview the importance of sharing CK with students in this way:

Member 2: I think those CoP meetings have another advantage like updating our content knowledge that we thought we forget or sometimes we really forgot. We also shared and learned how to present that knowledge to our students. We share with them how to calculate heart rate, what the maximum heart rate for their age is, how we can assess and improve our heath related fitness parameters etc. I remembered that knowledge once I applied and shared it them with my students. I think it was so useful.

Another teacher extended the previous comment and shared her experiences:

Member 4: In my class, at first students were bored with listening to some knowledge in physical education, however, later I realized that they applied what they learned. I put some information on the school board about the norms of heath related fitness parameters and encouraged them to look and read it… In the upcoming days, some students, especially those who were under or over the border according to norms came and asked me again and again what kinds of physical activities they have to do. Sure not all of the students are interested but most of them were.

CoP teachers realized their own lack of HRF CK primarily when students in their classes asked questions they could not answer. This was a concern to the teachers as they recognized how important CK is for motivating students toward physical education. Teachers acknowledged the need to improve their HRF CK with one of the teachers noting his CK needs during the post interview:

Member 7: I feel that I should update my knowledge after I had been in some of our meetings, in some groups with friends or in dialogue with my students in or after the class. I was thinking that I had enough content knowledge before attending this group (CoP) and I did not feel that I needed to update my knowledge. So I did not realize I needed to update my knowledge.

One teacher added:

Member 6: … When the students realized they are doing something important for their body and for their health, they are more open to use it in

their actual life. In relation to this, they listened to every word that we used in the classroom. … well.. They before were asking if they can play football in today's class but now they are asking what are we going to do today madam. What are we going to learn today? etc.

During the CoP discussions, every member had an equal voice. Over time, teachers came to feel comfortable sharing their ideas, expertise and questions in CoP discussions. The teachers themselves pointed out the importance of discussion within the small group and its impact on their development. One of the teachers pointed it out in this way:

Member 2: Our learning environment was very good. Firstly, we exchanged our opinions…. The teachers in the group were also very good. Each of us was representing a different district. Member 4 was working in an urban school; member 6 was representing the private school. Actually, the rest of us were representing similar districts but our problems were different and we tried to find the solutions to those problems collectively. So this kind of learning group is important for our development and careers.

One other teacher confirmed the importance of representing different schools in the meetings:

Member 2: It was definitely important and beneficial for us to representing different schools in the meetings.

One of the teachers articulated the importance of being a member of a CoP in this way in the 5th meeting:

Member 7: …the things make here (meetings) desirable and different. We are sharing here together. The facilitator does not teach us something, we are sharing with all together. We are realizing that we are learning something. We are discovering the pleasure of learning. However, if he (facilitator) had lectured us everything, I do not think that we will have an intention to pursue to learn and apply those.

Theme 2: Resources from the CoP that helped teachers improve their health related fitness CK: To better understand how teachers' HRF CK improved over time, the types of resources and references they requested and/or used are reported. As a result, the facilitator commented in this way:

> *Member 1: During the CoP, I worried a lot about was the teachers health related fitness CK. It was not good enough. Especially their exercise physiology and health related physical fitness CK was lower than I expected. So in the second week, I decided to lecture about health related fitness CK. Then they asked me where they could get that knowledge from. They asked me how to reach that knowledge. Interestingly, they explained that they preferred to listen to that knowledge from the facilitator instead of reading. The reason was they do not have a reading habit in their life.*

One of the teachers explained the reasons why she preferred to get CK from the facilitator:

> *Member 2: I believe that this group is very useful in terms of updating our knowledge. Honestly I am too lazy to study. I mean I do not forget whatever I hear but I am too lazy to read something. I believe most of us are like me. I mean we do not have time to read in our daily routines. So these group meetings are being very useful for me, I believe I am renewing myself.*

One of the teachers who was working on her PhD at the time of the study commented about what kind of resources she preferred to use in order to update her CK:

> *Member 6: .. Before we started those meetings actually I was mostly using traditional resources. But with this group I realize that I need to learn something new and more about these concepts (HRF) and searched some articles from the internet. I had known these concepts before indeed but I did not know how to use them in our classes. So I searched articles about how to use this knowledge in our actual class. I changed my keywords.*

Teachers were mostly using the resources that facilitator provided or suggested to them in the meetings. One of the teachers explained that in the post interview in this way:

Member 4: the resources that I used changed in time. I mostly used the booklet that facilitator gave us to read and internet source that he recommended (teachers tv).

In the post interview the facilitator explained a major reason why he believed the teachers are used to learning CK through lectures, stating:

Member 1: Actually more importantly I realized that there are not enough reliable books in Turkish about health related fitness CK. Teachers don't know English well enough to understand the English written books. Moreover, there are not enough reliable books in Turkish. So I decided to prepare a Turkish booklet including health related fitness CK for them. Interestingly, there are so many books in the Turkish language but those are not well qualified. It is the same for internet sources. Most of the teachers in this group are familiar with the technology and using the internet but they do not know how to reach the reliable internet sources. They mostly prefer to get knowledge about coaching not physical education. Those are the problems that I realized during our CoP meetings.

The facilitators' comments in the post interview:

It was clear that even though there has been a huge emphasis on health related fitness in the new PE curriculum, teachers had a serious lack of content knowledge. Actually, they had difficulty assimilating and internalizing the curriculum. The curriculum was not understandable or not clear enough.

4.2.2. Effects of CoP on students' HRF content knowledge development

To help us understand whether these CoP teachers' effectively deliver HRF CK in their classrooms, their students' CK was assessed quantitatively to reflect their learning of the HRF content. A total of 278 students (159 in the treatment group, 119 in the control group) completed the "Health Related Fitness Knowledge Test for

Middle School Students" before and after the intervention. 2X2 (time=pre, post; group=treatment, control). Mixed design ANOVA results revealed both a statistically significant main effect of time F (1, 276) = 15.9, $p < .05$, $\eta^2 = .05$ and an interaction effect of groups by time $F(1, 276) = 23.76$, $p < .05$, $\eta^2 = .08$. Simple main effect analysis was used to analyze the effect of one independent variable within one category of a second independent variable (Field, 2005). Results demonstrated that the HRF CK of students in the treatment group significantly improved from pre test to post test ($F(1, 276) = 45.88$, $p < .05$). Moreover, results show that while student scores were not significantly different in the pre-test ($F(1, 276) = 0.7$, $p > .05$), there was a significant difference at the post test ($F(1, 276) = 22.89$, $p < .05$) (Table 4.12.).

Table 4 12. Descriptive results of Health Related Fitness Knowledge Test for Students

		Pre		Post	
	N	***M***	***SD***	***M***	***SD***
Treatment Group	159	23.73	4.01	25.91	3.66
Control Group	119	23.6	3.85	23.38	5.1
Total	278	23.67	3.93	24.83	4.5

4.3. Results of the Third Research Question

For the third research question, the influence of CoP on physical educators' HRF PCK construction process was examined. Qualitative data provided insight into the HRF PCK acquired by these teachers during participation in the CoP. To understand how the CoP affected treatment group teachers' HRF PCK construction process, a constant comparison content analysis examined teachers and facilitator's post-interviews, researcher field notes and teachers' progress over the six-weeks of meetings.

Construction of teachers' health related fitness PCK

A key focus infused into the last three weeks of CoP discussions was PCK including instructional alignment, unit and lesson plan preparation, teaching styles, use of technology and measurement and evaluation. Analysis of CoP meetings and researcher's field notes revealed that these teachers' classroom practices and teaching culture changed positively after seeing their students' increased involvement in physical education. It became apparent that these teachers typically used a variety of teaching strategies, few of which were student centered as noted below.

In the third meeting, teachers watched a teaching dance video that used a student centered approach for delivering the dance lessons. The facilitator wanted the teachers to focus on how a new skill can be taught to students and to gain a perspective on classroom management skills that might be employed. In the video, teachers gave responsibility to the upper class students to teach the dance unit to their lower class peers. The facilitator asked the CoP teachers if it was appropriate to create these types of learning environments for their students. After considering the question, the teachers pointed out their concerns about and reasons for not using a student centered approach to teach HRF in their classes as can be seen in the following conversation:

Member 5: I believe classroom management would be a problem in our classes in such an example. Because in our schools the average class size is around 40. Plus, those students in the video look like they are ready to get that knowledge and ours are not.

Member 2: Yes, I agree. I think as in this example, students in the foreign countries are more ready to do some activities together than our kids.

Member 4: Absolutely.

Member 5: …I am not sure if all of you agree with me or not but our kids could not be well-disciplined enough.

Member 2: No, they could not.

Member 5: So what do you think? What could be the reason? Is this because of us?

Member 2: For example, in this video there is a special place for students to play. But in my school I do not have a gym. For example you have (motioning to one of the other teachers) one, but I don't. Our school garden is always so crowded, so many distractions around all the time.

A comment shared by the facilitator in the post interview which was based on his observations in the school visits shows his understanding of this concern, and perhaps why these teachers experience them:

Member 1: In the early meetings, I realized that these teachers are representing the general characteristics of PE teachers. They are more

teacher center oriented and mostly use the command or practice teaching styles in their classes. We discussed this in the following weeks and it was interesting for me to see that these teachers had gotten used to using those styles during their careers. I mean they mostly used the teacher centered approach because those were what they learned in their school years. They do not know the other styles. Everyone might have concerns about something that they don't know.

One of teachers noted the reasons for not to using a student centered approach in her classes in the post interview:

Member 2: Maybe I had to change the teaching styles that I used but I could not because our class size is very crowded and physical condition in our schools do not let us to do this. I mean there are sometimes two or three different classes in the school garden at the same time. For example, if I wanted to use reciprocal style instead of command style, I should give students working papers. It is a very big problem to teach 45 students how to use those sheets… There are many distractions around and it does not seem possible for a student to do the task and give feedback to her partner. Anyway, I am trying to use different styles in my class though but I have to consider the current potential/situation.

Teachers were not willing to use a student centered approach due to their concern for classroom management problems, number of students in their classes and poor facilities, and perhaps as the facilitator speculates, because they do not know how.

The second half of the meeting in week three focused on HRF CK, and specifically basic training principles, exercise psychology, and health promotion. Components of HRF and aligned assessment techniques for each were discussed. Teachers shared how they struggled to apply the assessment techniques introduced through the CoP in their classes. As a result, they requested that the facilitator show them, and let them experience the PCK for effectively using these assessments themselves:

Member 7: I am only able to assess their height and weight in 40 minutes.

Member 1: Let's try together to implement those assessments in your classes in 40 minutes. You are able to do that if you give responsibilities to students. We should trust them.

Member 7: For example, when I am measuring a student's weight, I requested another student to write their scores. He shifted. I don't understand how it did happen. Then I corrected them one by one.

Another teacher noted in the same week:

Member 3: I don't think that I am able to assess students' flexibility. I need to see how to perform those assessment techniques in class. You might have been using it in your classes (toward facilitator) but I have no idea.

As a result of teacher reactions, the facilitator decided to demonstrate how to perform each of the HRF assessment techniques in the teachers own school settings during his school visits. He also chose to prepare videos that demonstrate the assessments for teachers' to view and use. In the videos, the facilitator demonstrated HRF assessment techniques in a real classroom setting teaching the related CK to students. Over subsequent weeks, teachers who practiced some of those techniques in their schools shared their experiences with others in CoP in this way:

Member 7: This week I measured 5^{th} and 6^{th} grade students' ratio of weight to height. I taught them how to calculate their body mass index. But kids were mostly not willing to be weighed or be measured for height.

Member 2: Interesting. There are not so many overweight students in my class. Just one or two. When I said I will measure your weight and height next week, those two kids started to run around in the classroom. But none of them resisted.

Member 5: When I measured my students' body mass index, they were enthusiastically getting in the line and saying, "first measure me sir, measure me. They are always so excited to be measured and learn their scores.

Member 4: I also took 5^{th} grades' heart rate but some could not find their heart rate. Then I helped them to find their heart rate. We tried 3 or 5 more times till they found it by themselves. They liked to listen to their own heart

rate. I also measured their weight and height. They liked to be aware of their body composition scores.

Sometimes teachers shared their own experiences on assessment techniques with each other in the meetings as can be seen in the following conversation:

Member 7: ... I measured my students' height and weight this week.

Member 4: Me, too.

Member 5: I also calculated their heart rate reserve.

Member 1: There are many things to discuss today.

Member 7: I bought an electronic scale this week by 90 Turkish liras.

Member 4: How did you measure their height?"

Member 7: I used the basketball post to measure. I cellotaped the tape rule to the post.

Member 4: How did you do that?

Member 7: I first used ruler but it did not helped me and then used protractor. I put it in the middle of the tape rule and that's all.

Member 4: I used the same method but did not check it with the protractor.

One of the teachers continued by sharing the changes she saw in students' motivation as a result of using various instructional tools as a teaching method, noting:

Member 2: For example, when I let students use pedometers after school for one week, they were really motivated. They liked it. I was not in the CoP meeting last week so this week I tried the example with a larger group of students than yours. I honestly did not expect them to participate in such a way. When I took the pedometers back today, they said they got used to living with them, liked to use them and learned how to evaluate their scores every single day…. I believe this kind of thing could be useful to make the lesson more attractive for our students.

In the post interview another teacher emphasized the improvement in her students' understanding of the relationship between physical activity and daily life, saying:

Member 6: When kids understand that these things are important for their health, we realize that they use that knowledge. They were more motivated during the lesson. They realized that this knowledge is important for their lives, for their futures and asked related questions like, what are we going to learn today about our body? My flexibility is lower than the average, what should I do today? We allowed students to evaluate themselves with these assessments.

The facilitator summarized his perception of the teachers' PCK construction process in the post interview:

Member 1: I believe that teachers were impressed when they saw the different teaching methods used in their school settings, I mean in practice. We had a chance to discuss it in meetings. I videotaped some real class examples to show them different teaching methodologies. At first, they were worried about how to implement these, one or two weeks later they internalized and practiced in their own schools. Then, they became efficient at using them and were impressed with the outcome when they practiced. But the key was that I demonstrated them how to implement them and related CK, so they can more easily do it.

For teachers, seeing their students respond positively and enjoying learning encouraged them to change their classroom practices. These changes typically resulted from increased HRF CK, changes teachers' made in their classroom practice, implementing new instructional methods, developing instructional tools, giving responsibility for learning to their students or simply modifying their teaching culture.

CHAPTER V

DISCUSSION

This chapter presents the discussion of the quantitative and qualitative results of the study in line with the relevant literature.

As Guskey (2002) noted, the process of teacher change through PD is a gradual and difficult process for teachers. Any change to increase teachers' competence and enhance student learning is likely to require extra work, especially initially. Designing an effective PD programme that has its focus on teachers' and students' learning is also a demanding process. While a CoP has been identified as a promising way to accomplish this, it is also necessary to understand more about the effects of a CoP on teaching and on student learning outcomes and also the way and how it is developed.

Therefore, the purposes of this study were to understand (1) the ways physical education teachers interact in CoP, (2) the effects of participation in CoP on the physical educators' and their students' HRF CK, and (3) the effects of physical education teachers' CoP experience on their HRF PCK construction process.

For the first research question, Interaction Process Analysis (IPA) was used to analyze the interactions in the CoP during six weeks of meetings. Results indicated three main trends in CoP interaction patterns of the participants. These trends were; 1) Most of the interactions were in Category 5 (giving opinions, evaluation, analysis, expressing feelings) and Category 6 (giving orientation, information) in general, 2) Amount and type of interactions differed for each participant; 3) Interaction patterns changed throughout time from the first week to the last. These results showed that interaction patterns changed throughout the time for each participant and also for the facilitator. In a study examining a group of physical education teachers as a CoP whose objective was to develop and disseminate district-wide elementary

curriculum, Parker et. al. (2010) indicated the formation of a true Cop by using Wenger's (2007) elements (domain, community and practice). In terms of domain, the teachers and facilitators involved formed an identity defined by a shared domain (i.e., curriculum development). For community, teachers and facilitators pursued their interest in this domain by engaging in social interactions (i.e., discussing, helping, sharing). These strong professional and personal relationships allowed them to overcome the disagreements and conflict. In terms of practice, members developed a shared repertoire of resources and created a shared practice. In the current study, in order to develop their shared interest (i.e., developing theirs and their students' HRF CK), teachers engaged in social interactions (i.e., giving opinions, expressing feelings, giving suggestions) with each other and with the facilitator which enabled them to learn with and from each other. The personal and professional interactions over the weeks allowed teachers to overcome the occasional barriers and problems by valuing their own expertise.

In this study situated learning theory was used to understand the CoP framework. This theory depicts learning as a participation process and integral dimension of social practice. The action of participating in social practice can be read as a way of belonging to a community. Learning viewed as situated activity has as its central defining characteristics a process is called as "legitimate peripheral participation" (Lave & Wenger, 1991). It is viewed that learners inevitably participate in communities of practitioners and that the mastery of knowledge and skill requires newcomers to move toward full participation in the sociocultural practices of a community. According to Lave and Wenger (1991) legitimate peripheral participation provides a way to speak about the relations between newcomers and old-timers, and about activities, identities, artifacts, and communities of knowledge and practice. In this study, results of the IPA emphasized that most of the members of the CoP were full participants by sharing their own experiences that they had tried in their own schools, providing feedback for the other CoP members based on their own experiences, taking on one another's ideas and develop them further, guiding the discussions and asking related questions to other members in the meetings. This

analysis also makes a contribution to the literature about how one of the members becoming full participant in a newly constructed CoP.

Fontaine (2001) explained two different types of CoP. The first one is "Bottom-up communities" which are self-forming and evolve from a core group of people who share a similar passion. These communities tend to coalesce on their own without any outside intervention and they do not receive any support: financial or otherwise. The second one is, "top down communities" which are deliberately created in order to assemble people who may share a similar passion for a particular topic but who may not already be a part of a group, network, or community related to this topic. Fontaine explains that top down communities often suffer from lack of participation as one of the biggest problem. It has been asserted that in order to counter this limited participation, communities should be designed with specific roles, including the role of the facilitator. In many studies, the facilitation in CoP has been clearly identified (Tarmizi, de Vreede, & Zigurs, 2006; Tarmizi & de Vreede, 2005). Tarmizi et. al. (2006) identified the main roles of the facilitator in CoP as being an information source, guide, and inspiration for the group. In the same study, the researchers also explained that the most important tasks in CoP facilitation were "creating and maintaining an open, positive, and participative environment" and "listening, clarifying and integrating information."

In the current study, the facilitator let teachers have an equal voice during meetings, with the facilitator's role decreasing over time. Patton and Parker (2012) examined the facilitators' perceptions about successful PD in their research with facilitators indicating that success meant PD belonged to participants in the forms of voice, ownership and advocacy. The success in PD is also explained by the facilitators as when teachers find their voice, recognize their possession of expertise and take the ownership of their own learning. Similar to the finding of these studies, the teachers were more open to talk and discuss about their success and failures in CoP over time in the current study.

In the current study, facilitator took a more direct lecturing role at some point of the CoP to improve teachers CK about HRF. Teachers offered the facilitator to lecture the related CK because of their lack of CK about HRF. The major reason was that there were not enough reliable books in Turkish language and teachers didn't know English well enough to understand the English written books. Therefore it can be concluded in this study that the role of the facilitator may change according to communities.

For the second research question, by using Wenger's framework of a CoP, results from qualitative and quantitative data analysis indicated that teachers' participation in a CoP increased both their and their students' HRF CK. Two themes emerged to reveal these teachers' increased CK: (1) how teachers became aware of their needs about HRF CK through support of the CoP and (2) the types of resources that helped them improve their CK through the CoP. Quantitative findings related to students' HRF CK development revealed that for these teachers seeing their students respond positively to and enjoy HRF learning encouraged them to change their classroom practices.

Previous research has shown similar positive findings about increasing teachers' CK through participation in a CoP (Stoll et al., 2006; Vescio et al., 2008). Deglau et al., (2006) reported that teachers changed their role as content specialists by sharing, discussing and learning new strategies for dealing with issues important to them and engaging in conversation with a group of similarly interested peers who felt responsibility toward their PD community. Most studies examining CoP emphasize the importance of working collaboratively to increase teachers' CK. However, Vescio et al. (2008) stated in their review that working collaboratively is the process not the goal of a quality CoP, enhancing student achievement should be the goal. One of the key elements to achieve this goal is to meet the learning needs of students (Vescio et al., 2008). Therefore, the current study also adds to the body of evidence suggesting that teachers becoming aware of their own and their students' needs is a substantial part of enhancing student learning. The process of how teachers realized

and internalized these needs was examined and shared with further support provided by understanding the type of resources teachers used as a result of the CoP.

Although school physical education programs have focused more on the HRF content area in the last decades (MoNE, 2007), the literature reveals concerns about physical education teachers' CK about health and the extent to which they have engaged with continuing PD in this area (Alfrey et al., 2012; Castelli & Williams, 2007; Ince & Hunuk, 2013). Many studies also suggested that health and lifelong physical activity are two areas which tend to be absent from teachers' continuous PD profiles (Castelli & Williams, 2007; Trost, 2006). In their study Alfrey et .al. (2012) were concerned with how the content outlined by the NCPE in England to be taught within physical education does not stipulate how it should or could be taught. They also stated in their study that the majority of the teachers chose to teach HRF predominantly tough fitness related activities (fitness testing and circuit training were the most popular vehicles to teach HRE), with links often being made to sports performance. There was also a similar tendency among teachers at the beginning of the current study that they did not perceive the importance of health related outcomes of the HRF curriculum and merely focused on performance related fitness. However, with the positive effects of the CoP, this trend has changed over time and teachers began to focus on all students' CK about HRF.

There is an increasing amount of research suggesting that students have misconceptions about HRF and a lack of adequate knowledge at all education levels (Hunuk and Ince, 2010; Keating et al., 2009; Timothy et al., 2011). Many studies have documented that with teachers participating in professional learning communities, students' learning has improved (Supovitz, 2002; Zhao & Kuh, 2004). In the current study, results demonstrated that the HRF CK of students significantly improved from pre-test to post-test as a result of teachers participation in the CoP. Timperley (2008) suggested that success in PD needs to be defined not in terms of teacher mastery of new strategies, but in terms of the impact that changed practice has on valued outcomes such as student learning. Also in their study, Patton and

Parker (2012) described student learning as an ultimate measure of successful PD, indicating teachers' capacity to see beyond themselves to focus on learner's needs.

For the third research question, in line with other studies (Deglau and O'Sullivan, 2006; Guskey, 2002) the current study demonstrated that students' increased engagement and their positive response encouraged teachers to change their classroom practices, use new instructional methods and tools, give responsibility for learning to students and change their teaching culture. In their review, Vescio et al. (2008) indicated that teachers' participation in learning communities impacts their practice as they become more student centered. Initially, in this current study, teachers preferred not to use student centered approaches in their classes but ultimately they tried it and over time as a result of their own learning experiences found it resulted in increased student engagement, motivation and learning. Darling-Hammond and Richardson (2009) stated that when interactions in professional learning communities focus on improving instructional practice and helping teachers to develop the pedagogical skills to teach specific kinds of content, there has been a strong positive effect on teaching practice. The results of this study indicated that these teachers discussed how to interpret students' ideas, voices and work, and used that specific knowledge to inform their instructional decisions and practices.

The data also analyzed for negative or contrary findings for the CoP process. However, no negative or contrary finding was found from the available data in the current study. The reason could be that the CoP experience was new and enriching to participants with an opportunity to share their professional experiences for the first time. They had experienced only one-shot PD programmes which were presented by Ministry of Education experts through a lecturing style before.

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

This section includes three sections. First, conclusions of the study are presented. Secondly the implications of the study are presented. Lastly, the recommendations for inservice PD providers, physical education teachers and future research are made based on the findings of the study.

6.1. Conclusions

Within the scope of the study, following conclusions were drawn for each research question:

1. *The ways physical education teachers' interactions in CoP*

Results of the first research question indicated three main trends in CoP interaction patterns of the participants. These trends were; 1) Most of the interactions fell into Categories 5 and 6; 2) Amount and type of interactions differed for each participant; 3) Interaction patterns changed throughout time from the first to the last week. These results showed that interaction patterns changed throughout the time for each participant and also for the facilitator.

2. *The effects of participation in CoP on the physical educators' and their students' HRF CK*

a. For the second research question, the results of the quantitative data analysis indicated that teachers' participation in a CoP increased their students' HRF CK.

b. The results of the qualitative and quantitative data analysis indicated that teachers' participation in a CoP also increased their HRF CK. In qualitative analysis two themes emerged to reveal these teachers' increased CK: (1) how teachers became aware of their needs about HRF CK through support of the CoP and (2) the types of resources that helped them improve their CK through the CoP. Quantitative

findings related to students' HRF CK development revealed that for these teachers seeing their students respond positively to and enjoy HRF learning encouraged them to change their classroom practices.

3. *The effects of physical education teachers' CoP experience on their HRF PCK construction process*

Based on the results of the third research question, qualitative data demonstrated that for teachers, seeing their students respond positively and enjoying learning encouraged them to change their classroom practices. These changes typically resulted from increased HRF CK and made a change in teachers' classroom practice, implementing new instructional methods, developing instructional tools, giving responsibility for learning to their students or simply modifying their teaching culture.

Consequently, it can be concluded that CoP may be an appropriate method for Turkish context. Additionally, role of the facilitator may change according to different communities.

6.2. Implications of the Study

The findings of the present study provide number of implications.

1. Student learning was assessed as a result of their teachers' participation of CoP.

2. IPA gives a picture how becoming a membership starts in a newly developed CoP.

3. Facilitator can take more on roles as lecturer if it is the needs of the community.

6.3. Recommendations for Inservice PD Providers

The findings of the present study provide number of recommendations for inservice PD providers.

1. Wenger's framework of CoP seems to be an effective way to improve physical education teachers and their students' CK and also teachers' PCK in a specific context. Therefore, CoP based PD opportunities can be provided to physical education teachers in different districts and regions in Turkey.

2. Having a facilitator who has CK about the specific topic appeared an important factor in creating an effective CoP especially at the beginning stage of CoP. Furthermore, the facilitator who let teachers have an equal voice during meetings, with the facilitator's role decreasing over time seems more desirable for ensuring an effective discourse between members of CoP.

3. Developing trust and respect among CoP members is very influential to create an effective CoP. In order to develop trust and respect among the members who have different characteristics and backgrounds it is necessary that a CoP should be ongoing and persisting over time.

6.4. Recommendations for Physical Education teachers

The findings of the present study provided recommendation for physical education teachers as well.

1. Physical education teachers should be motivated to participate in CoP based PD.

6.5. Recommendations for future research

In light of the findings of the current study, the following recommendations were drawn for future research:

1. Having a facilitator in an effective CoP seems important. Therefore it can be recommended that the required characteristics and qualifications of a facilitator have been determined and training of an effective facilitator have been promoted.

2. In this study, in order to understand the effects of being a member of CoP, its' impact on students' learning as an outcome was assessed. Results showed that

students' CK improved as a result of their teachers' participation in CoP. Therefore, the long-term effects of CoP experience on students learning can be investigated in future research.

3. Teachers' participation in CoP resulted in improvement of their CK and PCK in HRF in this study. However, it is not well documented what changed in their CK and PCK when CoP was not in the central anymore. Therefore, investigating teachers' CK and PCK in a long-term follow-up study can be a fruitful research topic for the future.

4. In this study, CoP based PD was implemented on the topic of HRF. However, there are some other topics on which teachers need to improve their CK and PCK. Therefore, CoP based PD can be conducted with different subject matter for the futurere search.

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APPENDIX A

Health-Related Fitness Knowledge Test for Teachers

Değerli Beden Eğitimi Öğretmenimiz,

Bu anketin amaçları sizin sağlıkla ilgili fiziksel uygunluk bilgi düzeyinizi anlamaktır. Testi doldurmanız yaklaşık 5-10 dakikanızı alacaktır. Vereceğiniz bilgiler bu çalışma dışında hiçbir yerde kullanılmayacaktır. Bilgi düzeyinizin doğru ve güvenilir bir şekilde değerlendirilebilmesi için tüm soruların eksiksiz cevaplandırılması gerekmektedir. Göstereceğiniz özenden dolayı şimdiden teşekkür ederiz.

1. BÖLÜM

Yönerge

Aşağıda sağlıkla ilgili fiziksel uygunluk ölçüm yöntemleri ve fiziksel uygunluğa özgü antrenman yöntemleri ile ilgili açık uçlu sorular vardır.

A.

1. Aşağıda verilen "sağlıkla ilgili fiziksel uygunluk" boyutlarını ölçmek için bildiğiniz ölçüm yöntemlerini yazınız.

Boyut	Bildiğiniz ölçüm yöntemleri
Vücut kompozisyonu	
Esneklik	
Kas dayanıklılığı	
Kardiyovasküler dayanıklılık	

2. Beden eğitimi derslerinizde öğrencilerinizin **"sağlıkla ilgili fiziksel uygunluk" düzeyini belirlemek için** düzenli olarak kullandığınız ve kayıt altına aldığınız bir ölçüm var mı? varsa ne (ler)?

……
……

……
……

3. Aşağıda verilen herbir fiziksel uygunluk boyutunu geliştirmek için gerekli fiziksel aktivite tipi, haftalık uygulama sıklığı, süresi (dk, sn) ve şiddeti (kalp atımı, yüklenme düzeyi, ağırlık oranı vb) için önerilerinizi yazınız.

Boyut	**Egzersiz tipi**	**Sıklık** (haftada kaç kez)	**Süre** (dk, sn)	**Şiddet**
Vücut kompoziyonu-(Kilo vermek amaçlı)				
Esneklik				
Kas dayanıklılığı				
Kardiyovasküler dayanıklılık				

2. BÖLÜM

Kişisel bilgiler *

İsminiz :…….

Yaşınız (yıl) :…….

Öğretmenlik kıdeminiz (yıl) :…….

Eğitim verdiğiniz sınıf düzeyleri :…….

Lisansüstü eğitim (varsa) :……..

Anket Bitmiştir! Katılımınız için Teşekkür Ederiz.

APPENDIX B

Health-related Fitness Knowledge Test for Middle School Students

Adınız Soyadınız:

Sevgili öğrenci,

Bu çalışmanın amacı, sizin sağlıkla ilgili fiziksel aktivite bilgi düzeyinizi gözden geçirmenize yardımcı olmaktır. Testi doldurmanız yaklaşık 25-30 dakikanızı alacaktır. Vereceğiniz bilgiler bu çalışma dışında hiçbir yerde kullanılmayacaktır. Bilgi düzeyinizin doğru ve güvenilir bir şekilde değerlendirilebilmesi için tüm soruların eksiksiz cevaplandırılması gerekmektedir. Göstereceğiniz özenden dolayı şimdiden teşekkür ederiz.Her bir ifadeyi dikkatlice okuyunuz. Şıklardan en uygun olduğunu düşündüğünüz ifadeyi işaretleyiniz.

1. Kalp bir .....

a) kemiktir.

b) kastır.

c) ciğerdir.

2. Isınma (esnetme,açma-germe) ..... olmana yardımcı olur.

a) daha esnek
b) daha az esnek
c) kaslı

3. Kalp atımı .....

a) Kalbin büyüklüğüdür.
b) Kalbinin ne kadar sağlıklı olduğudur.
c) Kalbinin bir dakikada ne kadar attığıdır.

4. Mekik, barfiks ve şınav çekmek ..... geliştirir.

a) Kas dayanıklılığını
b) Kalp-dolaşım sistemi dayanıklılığını
c) Esnekliğini

5. Aşağıdakilerden hangisi aerobik (kalp-dolaşım sistemi dayanıklılığını destekleyen) bir aktivitedir?

a) Bowling
b) İp atlamak
c) Golf

6. Yürüyüş sırasında ayağının hangi kısmı ilk olarak yerle temas etmelidir?

a) Ayak ucu
b) Yan tarafı
c) Topuk

7. Aerobik çalışmada amaç ..... ulaşmaktır.

a) En düşük ağırlığa
b) Parmak uçlarına
c) Hedeflenen kalp-atım hızına

8. Kendi kendinize yapabileceğiniz en iyi fiziksel uygunluk etkinliği aşağıdakilerden hangisidir?

a) Evinizin çevresinde bir tur bisiklete binmek
b) 1.6 km yürüyüş yapmak
c) Bilgisayar oyunları oynamak

9. Bir egzersiz programını devam ettirebilmek için ihtiyacım olan şey ..... .

a) Özel bir plana sahip olmamaktır.
b) Yapmaktan zevk aldığım aktiviteleri seçmektir.
c) Arkadaşlarımdan kaçmaktır.

10. Aerobik bir aktivitenin sonunda önemli olan .....

a) Soğuma yapmaktır.
b) Oturmaktır.
c) Isınma yapmaktır.

11. Mekik hareketi ..... güçlendirmek için iyidir.

a) Karın kaslarımı
b) Bacak kaslarımı
c) Kol kaslarımı

12. Fiziksel olarak fit (formda olmak) olmak istiyorsanız ..... egzersiz yapmalısınız.

a) Haftada bir defa
b) Düzenli olarak
c) Sadece bir arkadaşınızla

13. Kalp-dolaşım sistemi ..... için önemlidir.

a) Sadece çocuklar için
b) Sadece büyükler için
c) Herkes için

14. Yürüyüş sırasında nefes alışverişi .....

a) Rahat olmalıdır.
b) Hızlı olmalıdır.
c) Durmalıdır.

15. Aerobik ..... demektir.

a) Oksijensiz
b) Oksijenli
c) Güçlendirme

16. Aşağıdakilerden hangisi egzersizin faydalarından biri **değildir?**

a) Stresi azaltır.
b) Kan basıncını azaltır.
c) Kan yağı değerini yükseltir.

17. 100m sürat koşusu ne tür bir etkinliktir?

a) Aerobik
b) Anaerobik
c) Kas dayanıklılığı

18. Gerdirme yaparken ..... .

a) Yavaş hareketler kullanmalısın.
b) Sıçramalısın.
c) Daima ayakta olmalısın.

19. Fiziksel uygunluğun en önemli parçası .....

a) Kassal kuvvetdir.
b) Kalp-dolaşım sistemi dayanıklılığıdır.
c) Esneklik

20. Soğuma egzersizleri önemlidir çünkü kalbin .....

a) Daha hızlı atmasını sağlar.
b) Daha güçlü olmasını sağlar.
c) Yavaşça toparlanmasını sağlar.

21. Kalp-dolaşım sistemi dayanıklılığının gelişmesini sağlayan en iyi aktivite ….

a) Yürüyüştür.
b) Futboldur.
c) Ağırlık kaldırmaktır.

22. Aerobik dansın en **öncelikli** amacı .....

a) İyi bir dansçı olmaktır.
b) Kalp-dolaşım sistemi dayanıklılığını arttırmaktır.
c) Dans rutinlerini öğrenmektir.

23. Doğru jogging (hafif tempo koşu) formunda, vücut .....

a) Kusursuz derecede düz olmalıdır.
b) Yavaşça öne doğru eğilmelidir.
c) Geriye, bele doğru yaslanır.

24. Aerobik dayanıklılığı geliştirebilmek için, ... egzersiz yapılmalıdır.

a) Haftada üç kez veya daha fazla
b) Haftada iki kez
c) Haftada bir kez

25. Bireysel fiziksel uygunluk programında .....
a) İhtiyaçlarına uygun olan egzersizleri kullanmalısın.
b) Sadece kolay olan egzersizleri yapmalısın.
c) Daima aynı egzersizleri kullanmalısın.

26. Uzmanların önerilerine göre fiziksel olarak sağlıklı kalabilmek için günde kaç adım atmalıyız?

a) 1000
b) 5000
c) 10000

27. Barış okulun atletizm takımındadır. Her antrenman öncesinde ısınma egzersizleri yapmaktadır. Aşağıdakilerden hangisi Barış'ın her antrenman öncesinde ısınma egzersizleri yapmasının **nedeni/nedenlerindendir?**

a) Ortaya çıkabilecek sakatlıkları önlemek
b) Vücudu fiziksel olarak yapılacak egzersize hazırlamak
c) Hepsi

28. Düzenli ağırlık antrenmanı yapan bir kişide belirli bir süre sonrasında kişinin kas yapısında ..... meydana gelir.

a) Kasın sayısında artış
b) Kasın büyüklüğünde artış
c) Kasın boyunda uzama

29. Fiziksel etkinlik sonrası soğuma için ..... **en uygundur.**

a) Basketbol oynamak
b) Yüksek tempoda bisiklet sürmek
c) Yürüme, yavaş tempoda koşu ve esnetme

30. ve 31. soruları aşağıdaki paragrafa göre cevaplayınız.

Nurdan'ın annesi sırt ağrısı problemi çekmektedir. Doktorları yaptığı testler sonucunda annesinin bel ve sırt esnekliklerinin düşük olduğunu ve bunu geliştirmesi gerektiğini söylemiştir. Nurdan annesi için egzersiz planı hazırlamak istemektedir.

30. Nurdan'a aşağıdaki esneklik hareketlerinden hangilerini mutlaka seçmesini önerirsiniz?

A)  B) 

C)  D) 

a) A ve B
b) B ve C
c) C ve D

31. Nurdan'ın annesi haftada en az ..... gün esneklik çalışması yapmalıdır.

a) 1 gün
b) 3 gün
c) 5 gün

32 . ..... sporcularının kaslarının daha esnek olması beklenir?

a) Cimnastik
b) Futbol
c) Voleybol

33. ..... kas dayanıklılığının geliştirilmesinde **daha etkili** olacaktır.

a) Yavaş tempoda koşu
b) Ağırlık kaldırma: 1-5 tekrarlı ağır yüklerle yapılan etkinlikler
c) Ağırlık kaldırma : 20-30 tekrarlı düşük yüklerle yapılan etkinlikler

34., 35. ve 36. soruları aşağıdaki paragrafa göre cevaplayınız.

Selçuk 13 yaşındadır ve kilo vermesi gerekmektedir. Bunun için fiziksel aktivite düzeyini artırmak istemektedir.

34. Selçuk ..... türde fiziksel etkinlikler seçmelidir.

a) Takım oyunları (futbol, basketbol vb)
b) Hızlı yürüyüş, yavaş koşu, bisiklet sürme, yüzme vb
c) Ağırlık kaldırma

35. Egzersiz yaparken dakikadaki kalp atım hızı hedefi nasıl olmalıdır?

a) 100 atım/ dk dan düşük olmalıdır
b) En az 20 dk egzersiz sürdürebilecek kadar olmalıdır
c) 180 atım/ dk dan daha yüksek olmalıdır

36. Selçuk, ... sıklıkta egzersiz yapmalıdır.

a) Tercihen hergün
b) Haftada 2 gün
c) Haftada 3 gün

Fiziksel Aktivite, kalp atımını hızlandıran ve ara sıra nefesinizin tükenmesine sebep olan her tür aktivitedir.

Fiziksel aktvite, sporun içerisinde, arkadaşlarınızla oynarken ya da okula yürürken yapılabilir.

Fiziksel aktiviteye ilişkin bazı örnekler koşu, hızlı yürüme, paten kaymak, bisiklete binmek, dans yüzme, futbol, basketbol ya da sörf yapmak olabilir.

Lütfen aşağıdaki soruyu cevaplandırırken **beden eğitimi dersiniz dışında** yaptığınız fiziksel aktiviteyi gözönünde bulundurunuz.

1. **Son 7 günü** düşündüğünüzde, haftanın kaç gününde **en az 60 dakikalık** fiziksel aktiviteye katıldınız.

0 1 2 3 4 5 6 7

2. **Sıradan bir haftanızı** düşündüğünüzde, haftanın kaç gününde **en az 60 dakikalık** fiziksel aktiviteye katıldınız.

0 1 2 3 4 5 6 7

KİŞİSEL BİLGİLER

1. Okulunuzun Türü	( ) Devlet Okulu ( ) Özel Okul	
2. Sınıfınız	( ) 6. sınıf ( ) 7. sınıf ( ) 8. sınıf	
3. Cinsiyetiniz	( ) Kız ( ) Erkek	
4. Anne ve babanızın eğitim düzeyi nedir?	Annem	Babam
	( ) Okula gitmedi ( ) İlkokul-ortaokul ( ) Lise ( ) Üniversite ( ) Bilmiyorum	( ) Okula gitmedi ( ) İlkokul-ortaokul ( ) Lise ( ) Üniversite ( ) Bilmiyorum
5. Spor ile ilgili güncel bilgileri nerelerden ya da kimlerden takip ediyorsunuz? (Birden fazla şık işaretleyebilirsiniz)	( ) Görsel ve yazılı basından (gazete, dergi, internet, tv. vb.) ( ) Ailem ya da akrabalarım ( ) Arkadaşlarım ( ) Beden eğitimi öğretmenim ( ) Okul/kulüp takımı antrenörüm ( ) Diğer	
6. Herhangi bir takımda oynuyor musunuz?	( ) Okul takımı Evet ise branşınız. ..... Haftada ..... gün antrenman yapıyoruz. ( ) Kulüp takımı Evet ise branşınız. ..... Haftada ..... gün antrenman yapıyoruz. ( ) Diğer	

APPENDIX C

Interview Protocol for Teachers

Introduction to interview

Interviewer:

First of all, before I start interviewing with you, I would like to explain you the purpose of this interview. With this interview, I want to understand your motivation to attend this learning community, perceptions of your own learning, views of content assessment and your future expectations about your PD. Your opinion and thoughts will be kept as secret, and will not be shared nominally. I have planned this interview to last no longer than one hour. During this time, I have several questions that I would like to cover. Our entire interview will be tape recorded if you accept.

Questions:

1. First of all, I'm interested in with the factors encouraging you to participate in this learning community. What are those factors?
   Prompt: About yourself, any other external factors...
2. You have participated in approximately 6-weeked learning community. At the beginning of semester and at the end of semester, you were provided with some outcomes about HRF and you were asked to teach one of your PE class in accordance with these outcomes. With respect to the **preparation of the lesson**, what kind of differences did you realized between your first and last class implementation?
   Prompt: using of resources, the perception of the related outcomes
3. What about your **implementation of the lesson**? What kind of differences did you realize on your implementation?
   Prompt: for example, in your implementation, you mostly pay attention to what? Why?

- The teaching method that you used
- Types of the activities you provided to students

4. Do you think are there any differences on your understanding of the **assessment and evaluation of your lesson** after you participated this learning community?

   Prompt: recording your student improvements

5. During this process, we also collected some data from your students and shared them with you. What do you think about being aware of your students' content knowledge? How did it affect your class implementation?

   Prompt: knowledge test

6. What do you think about being aware of your students' physical activity level? How did it affect your class implementation?

7. Except from the resources that we provided you in our learning community, did you use any other resources to update your knowledge?

   Prompt: any people, internet, articles

8. Did you get any feedback from the parents of your students during the time of the study? What do you think about the role of parents in PE?

9. Do the other stakeholders in your school know anything about our learning community? Did you share the experience that you get from this learning community with the other PE teacher/s or other subject teachers in your school?

   - If yes, what kind of things did you share with them?

   - Do they ask you anything about the topic? If yes, what kind of questions?

   - What do you think about the other PE teachers' perspectives on our learning community?

10. If we want to continue this professional learning community more, how this community should be constructed? What do you want to learn more about?

11. In the next semester, while you are doing your lesson planning, what kind of learning environment do you provide to your students considering the experiences that you get from this professional learning community? What will you care about first or what will you change?

12. Do you have any other further comments? If you do not have any other comment, I will end up the interview. Thanks for your cooperation and participation to this interview.

APPENDIX D

Interview Protocol for Facilitator

Introduction to interview

Interviewer:

First of all, before I start interviewing with you, I would like to explain you the purpose of this interview. With this interview, I want to understand your role in the learning community, how you interpreted the weekly discussions in terms of teachers' CK and PCK and their knowledge construction process and your future expectations about teachers' PD. Your opinion and thoughts will be kept as secret, and will not be shared nominally. I have planned this interview to last no longer than one hour. During this time, I have several questions that I would like to cover. Our entire interview will be tape recorded if you accept.

Questions:

1. First of all, I would like to thank you for being a member of this CoP and make a contribution to the group. Could you please explain briefly how did the last six weeks go with the group?

2. As you know we applied health-related fitness knowledge test to teachers at the beginning and at the end of this six weeks. As quantitatively, we found a significant improvement on their content knowledge about HRF. But how do you evaluate this process as a facilitator?

3. Did you get any question from these teachers outside of the learning community?

   Prompt: if yes, what kind of questions did you get?

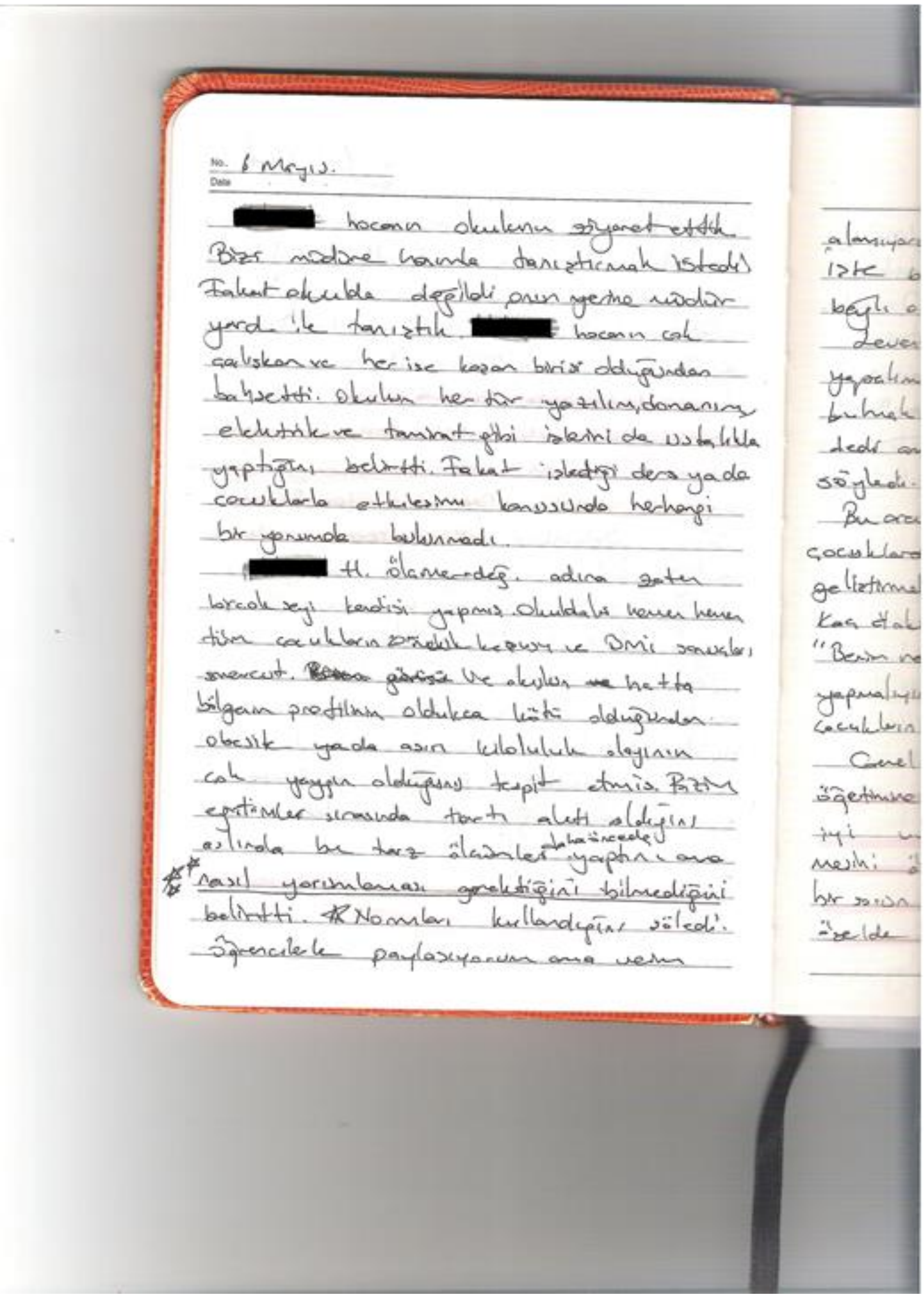
4. What do you think about teachers' realization of their own educational needs at the end of the six weeks? Do you think each of them has achieved this?

5. Do you think that six weeks learning community is enough for teachers to realize their own educational needs? If we would like to continue this learning community, what kind of learning environment would you like to provide teachers?

6. What do you think about the future roles of the teachers, who attended this kind of learning communities, in their school environment?
7. You also visited each of the teachers in their own school. What do you think about the other stakeholder's attitude toward the teacher who attended this learning community? Especially what about administers' attitude toward the teacher?
8. Did you have a chance to observe students in your school visits? What do you think about them?
9. Do you have any other further comments? If you do not have any other comment, I will end up the interview. Thanks for your cooperation and participation to this interview.

APPENDIX E

Researcher's Field Notes



6 Mayıs.

[redacted] hocanın okulunu ziyaret ettik. Bizi müdüre hanımla tanıştırmak istedi. Fakat okulda değildi onun yerine müdür yard. ile tanıştık. [redacted] hocanın çok çalışkan ve her işe koşan biri olduğundan bahsetti. Okulun her tür yazılım, donanım, elektrik ve tamirat gibi işlerini de ustalıkla yaptığını belirtti. Fakat işlediği ders ya da çocuklarla etkileşimi konusunda herhangi bir yorumda bulunmadı.

[redacted] H. ölçme-değ. adına zaten birçok şeyi kendisi yapmış. Okuldaki hemen hemen tüm çocukların [illegible] boyu ve BMI sonuçları mevcut. ~~[illegible]~~ görüşe ve okulun ~~ve~~ hatta bölgenin profilinin oldukça kötü olduğundan obezite ya da aşırı kiloluluk olayının çok yaygın olduğunu tespit etmiş. BTM eğitimler sırasında tartı aleti aldığını aslında bu tarz ölçümler [illegible] yaptırıp ama nasıl yorumlanması gerektiğini bilmediğini belirtti. *Normları kullandığını söyledi. Öğrencilerle paylaşıyorum ama velim

APPENDIX F

Ethical Committee Approval

1956

Orta Doğu Teknik Üniversitesi
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Sayı: B.30.2.ODT.0.AH.00.00/126/ 07-139

5.02.2010

Gönderilen: Yrd.Doç.Dr. M. Levent İnce
Beden Eğitimi ve Spor Bölümü

Gönderen : Prof. Dr. Canan Özgen
IAK Başkan Yardımcısı

İlgi : Etik Onayı

"Mesleki Öğrenme Grubu Oluşturarak Yapılandırılmış Bir Eğitimin Beden Eğitimi Öğretmenlerinin Mesleki ve Pedagojik Alan Bilgilerine ve Ders Uygulamalarına Etkileri" başlığı ile yürüttüğünüz çalışmanız "İnsan Araştırmaları Etik Komitesi" tarafından uygun görülerek gerekli onay verilmiştir.

Bilgilerinize saygılarımla sunarım.

Etik Komite Onayı

Uygundur

5/02/2010

Prof.Dr. Canan ÖZGEN
Uygulamalı Etik Araştırma Merkezi
(UEAM) Başkanı
ODTÜ 06531 ANKARA

APPENDIX G

Permission from District of National Education

T.C.
ANKARA VALİLİĞİ
Milli Eğitim Müdürlüğü

EĞİTİM FAKÜLTESİ DEKANLIĞI
Ev. Arş. Mu Sayı:

BÖLÜM : İstatistik Bölümü
SAYI : B.B.08.4.MEM.4.06.00.06-312/7524
KONU : Araştırma İzni
Deniz HÜNÜK

27./01/2010

ORTA DOĞU TEKNİK ÜNİVERSİTESİNE

İlgi : a) MEB Bağlı Okul ve Kurumlarda Yapılacak Araştırma ve Araştırma Desteğine Yönelik İzin ve Uygulama Yönergesi.
b) Üniversitenizin 12/01//2010 tarih ve 7 sayılı yazısı.

Üniversiteniz Eğitim Fakültesi Beden Eğitimi ve Spor Bölümü Araştırma Görevlisi Deniz HÜNÜK'ün **"Mesleki öğrenme grubu oluşturarak yapılandırılmış bir eğitimin beden eğitimi öğretmenlerinin pedagojik alan bilgilerine ve ders uygulamalarına etkileri"** konulu doktora tezi ile ilgili çalışma yapma isteği Müdürlüğümüzce uygun görülmüş ve araştırmanın yapılacağı İlçe Milli Eğitim Müdürlüğüne bilgi verilmiştir.

Mühürlü anketler (23 sayfa) ekte gönderilmiş olup, uygulama yapılacak sayıda çoğaltılması ve çalışmanın bitiminde iki örneğinin (CD/disket) Müdürlüğümüz İstatistik Bölümüne gönderilmesini rica ederim.

Gülçin UYSAL
Müdür a.
Müdür Yardımcısı

EKLER :
Anket (23 sayfa)

29.01.10 002240

29/01/02 BESB'ne Neteleme G.S

İl Milli Eğitim Müdürlüğü-Beşevler
İstatistik Bölümü
Bilgi İçin: Nermin ÇELENK

Tel : 212 66 40/200----223 75 22
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istatistik06@meb.gov.tr

Ek 1. Uygulama İçin İzin İstenen İlköğretim Okullarının Listesi

1.	ANKARA	ÇANKAYA	İlköğretim Okulu	Or-An Perihan İnan İlköğretim Okulu	701361
2.	ANKARA	ÇANKAYA	İlköğretim Okulu	DSİ İlköğretim Okulu	382256
3.	ANKARA	ÇANKAYA	İlköğretim Okulu	Arjantin İlköğretim Okulu	382232
4.	ANKARA	ÇANKAYA	İlköğretim Okulu	Gökay İlköğretim Okulu	224055
5.	ANKARA	ÇANKAYA	İlköğretim Okulu	Özel Yüce İlköğretim Okulu	11274
6.	ANKARA	ELMADAĞ	İlköğretim Okulu	Namık Kemal İlköğretim Okulu	120127
7.	ANKARA	ETİMESGUT	İlköğretim Okulu	Şehit Abdulkadir Yüzbaşıoğlu İlköğretim Okulu	957783
8.	ANKARA	ETİMESGUT	İlköğretim Okulu	Cahit Zarifoğlu İlköğretim Okulu	965382
9.	ANKARA	ETİMESGUT	İlköğretim Okulu	Kooperatifler Birliği İlköğretim Okulu	962500
10.	ANKARA	ETİMESGUT	İlköğretim Okulu	Samiye Naim Eğitim Vakfı İlköğretim Ok.	700786
11.	ANKARA	ETİMESGUT	İlköğretim Okulu	Özel Altın İlköğretim Okulu	11452
12.	ANKARA	KEÇİÖREN	İlköğretim Okulu	Çizmeci İlköğretim Okulu	331401
13.	ANKARA	KEÇİÖREN	İlköğretim Okulu	Ufuktepe İlköğretim Okulu	314709
14.	ANKARA	KEÇİÖREN	İlköğretim Okulu	Fevzi atlıoğlu İlköğretim Okulu	331391
15.	ANKARA	KEÇİÖREN	İlköğretim Okulu	Hüseyin Güllüoğlu İlköğretim Okulu	331449
16.	ANKARA	KEÇİÖREN	İlköğretim Okulu	Uygur İlköğretim Okulu	386266
17.	ANKARA	MAMAK	İlköğretim Okulu	Tuzluçayır İlköğretim Okulu	701995
18.	ANKARA	MAMAK	İlköğretim Okulu	Oruçreis İlköğretim Okulu	252892
19.	ANKARA	MAMAK	İlköğretim Okulu	Kayaş Sakarya ilköğretim Okulu	386146
20.	ANKARA	MAMAK	İlköğretim Okulu	Yahya Kemal İlköğretim Okulu	385954
21.	ANKARA	SİNCAN	İlköğretim Okulu	Malıköy Elektrik Santrali İlköğretim Okulu	970702
22.	ANKARA	YENİMAHALLE	İlköğretim Okulu	Mehmet Emin Yurdakul İlköğretim Okulu	288203
23.	ANKARA	YENİMAHALLE	İlköğretim Okulu	Kent Koop İlköğretim Okulu	123000
24.	ANKARA	YENİMAHALLE	İlköğretim Okulu	Ergazi İlköğretim Okulu	385942
25.	ANKARA	YENİMAHALLE	İlköğretim Okulu	Mimar Sinan ilköğretim Okulu	703323

APPENDIX H

TÜRKÇE ÖZET

GİRİŞ

Güncel alanyazında özellikle çocuklardaki hareketsizlik, aşırı kilo ve obezitenin artışına (Sanchez ve diğ. 2007, Türkiye Ulusal Hastalık Yükü Raporu, 2004) ve bunların çocukların ve gençlerin sağlığı üzerindeki olumsuz etkilerine vurgu yapan çalışmalara sık sık rastlanmaktadır (Tremblay ve diğ., 2011). Bu çalışma sonuçları ülkelerin beden eğitimi öğretim programlarının asıl vurgusunun daha çok sağlıkla ilgili fiziksel uygunluk (SiFU) olması gerektiğini öne çıkarmaktadır. Bu sebeple Türkiye'de de 2007 yılından itibaren uygulamaya konulan yeni Beden Eğitimi Öğretimi Programındaki vurgu daha çok SiFU üzerinedir.

SiFU konusunda yapılan çalışmalar, özellikle fiziksel etkinliğe katılımdan sağlık açısından elde edilecek en üst düzeydeki faydaya ulaşabilmek için, ne tür egzersiz yapılması gerektiği üzerine birçok bilgi içermektedir (Corbin and Lindsey, 2006). Egzersizin sıklığı, yoğunluğu, süresi ve türü her bir fiziksel uygunluk parametresi (vücut kompozisyonu, kalp-dolaşım sistemi dayanıklığı, kassal kuvvet, kassal dayanıklılık ve esneklik) için tanımlanmıştır. Beden eğitimi programları içerisinde bu kavramlara verilen önemin artmasıyla birlikte özellikle beden eğitimi öğretmenlerinin SiFU konusundaki alan bilgileri düzeyi önem kazanmaktadır (Castelli ve Williams, 2007; Santiago ve diğ., 2009; Ince ve Hunuk, 2013). Bununla birlikte çalışma sonuçları, beden eğitimi öğretmenlerinin SiFU alan bilgilerinde eksiklikler olduğunu, özellikle yetersiz alan bilgisine sahip olduklarını (Castelli ve Williams, 2007; Santiago ve diğ., 2009) ve öğretmenlerin bu konudaki alan bilgilerinin ve uygulamalarının hatalar içerdiğini (Ince ve Hunuk, 2013) ortaya koymuştur. Öğrencilerin SiFU alan bilgilerini inceleyen çalışmalara baktığımızda da bilgi düzeylerinde benzer şekilde yetersizlikler, özellikle düşük bilgi düzeyine sahip oldukları (Hunuk, Gursel, ve Ince, 2007; Keating ve diğ., 2009) ve bilgilerinin hatalar içerdiği (Placek ve diğ., 2001) görülmüştür.

Beden eğitimi dersi öğretim programında yer alan SiFU kazanımları ve öğretmen ve öğrencilerin bu konudaki alan bilgilerindeki eksiklikler arasındaki uyumsuzluk, beden eğitimi öğretmenlerinin SiFU alan bilgilerinin ve pedagojik alan bilgilerinin mesleki gelişim yoluyla geliştirilmesini öne çıkarmaktadır. Bu çalışmada "alan bilgisi" kavramı için Grosman, Wilson ve Shulman'ın (1989) tanımlaması kullanılmıştır: "bir tür disiplin: gerçeklere dayanan bilgi, organizasyonel temeller, ya da merkezi kavramlar" (s.27). Sadece alan bilgisine sahip olmak bu bilgiyi öğretme yetisini beraberinde getirmez, öğretmen aynı zamanda pedagoji konusunda da eğitilmelidir (Castelli ve Williams, 2007). Alan bilgisinin, pedagojik forma dönüştürülmesini Shulman 1987 yılında "pedagojik alan bilgisi" olarak tanımlamaktadır. Shulman'a göre (1987) pedagojik alan bilgisi öğretmenin öğretme kavramı konusundaki bilgisi olarak ifade edilmektedir.

Son yıllarda özellikle kaliteli mesleki gelişimin önemi ve özelliklerine vurgu yapan çalışmaların sayısı giderek artmaktadır (Betchel ve O'Sullivan, 2006, Armour ve Duncombe, 2004; Kulinna ve diğ., 2008, Armour ve Yelling, 2004). Çalışma sonuçları kaliteli bir mesleki gelişim programının, öğretmenleri zorlayıcı ve entellektüel olarak uyarıcı olmasının yanında öncelikle onların ihtiyaçları doğrultusunda hazırlanması gerekliliği üzerinde durmaktadır (Betchel ve Sullivan, 2006, Armour ve Yelling, 2007). Bunların yanında öğretmenler mesleki gelişim programlarında kendilerini grubun bir parçası olarak görebilmelidirler ve diğerleriyle işbirliği yapabilme fırsatlarına sahip olmalıdırlar (Betchel ve Sullivan, 2006).

İşbirlikçi mesleki öğrenme hem öğretmen hem de öğrenci gibi tüm öğrenenleri pedagojik sürecin içinde barındırmaktadır. İşbirlikçi mesleki öğrenme, içerisinde öğrenme grupları ve öğretmen sosyal etkileşim ağlarını kapsayan çok boyutlu bir kavramdır. Bu kavramların birçoğu Vygotsky'nin "mesleki öğrenme grubu" (MÖG) ve Lave ve Wenger'ın "durumlu öğrenme"nin (situated learning) temelini oluşturan sosyal yapılandırmacılığın kuramsal temeline dayanmaktadır (Armour ve Yelling, 2004). Durumlu öğrenme teorisine göre öğrenme, sosyal ortamda bulunan sosyal-kültürel uygulamadaki etkileşim sürecinde meydana gelmektedir ve MÖG'e tam

anlamıyla bir katılımcı (full participant) olmayı içermektedir (Lave ve Wenger, 1991). Bu kavrama topluluk, mesleki öğrenme grubu, öğretmen öğrenme topluluğu, bilgi toplululuğu gibi birçok isim verilmekle beraber, ortak amacı öğretmenleri bilgilendirmek, cesaretlendirmek, desteklemek ve uygulamarını geliştirmektir (Deglau, ve diğ., 2006).

Öğretmenlerin mesleki gelişimi konusunda yapılan çalışmalar, mesleki gelişim çalışmaları uyumlu, tutarlı ve sürekli olduğunda başarının arttığını göstermektedir (Cochran-Smith ve Lytle, 1999; DuFour, 2004; Lave ve Wenger, 1991;). Mesleki öğrenme topluluğu ya da MÖG, bu konuda çalışan birçok bilim adamı tarafından kabul görmekte ve öğretmenlerin mesleki gelişimlerinde etkin bir araç olarak kullanılmaktadır (Lieberman ve Mace, 2009; Parker ve diğ., 2010; Wenger, 1998;). Bu nedenle, bu çalışmada da beden eğitimi öğretmenlerinin SiFU alan bilgisi ve pedagojik alan bilgilerini geliştirmede MÖG oluşturmak ve sürdürmenin uygun bir yöntem olduğu düşünülmektedir.

Wenger (1998) MÖG'ü şu şekilde tanımlamıştır: "yaptıkları birşey için ortak bir ilgi ve tutkuyu paylaşan ve bunu karşılıklı etkileşimle daha iyi nasıl yapabilirimi öğrenen bir grup insan". MÖG üyeleri, uygulamaları ve meslekleri hakkında kendi anlayışlarını geliştirirler ve bu arada öğrenme onlar için temel amaçtır.

Wenger (1998), başarılı bir MÖG'ün öncelikle *karşılıklı sorumluluğa* (grup üyelerinin diğer üyelerle beraber bir uygulama içerisinde yer aldığı, birlikte nasıl çalışacaklarına ilişkin beklentilerin geliştirildiği ve bu iletişime bağlı olarak ilişkilerin kurulması durumu); *ortaklaşa girişime* (grup üyelerinin nasıl bir katkı sağlayacağı ve bireyler olarak MÖG'ün gelişiminde ne tür sorumlulukların alınması gerektiği durumu), *ortak bir repertuara* (bir seri kaynağı kullanılabilir ve işlevsel bir hale getirebilme durumu) bağlı olması gerektiğini önermektedir.

Beden eğitiminde MÖG üyesi olmanın faydaları ve önemi ile ilgili yapılan çalışmalar gün geçtikçe artmaktadır (Armour ve Yelling, 2007; Deglau ve O'Sullivan, 2006; Parker ve diğ., 2010; Tannehill ve Murphy, 2010). Araştırma sonuçları,

öğretmenlerin bu tür gruplar içerisinde işbirliği yaptığında, öğretme konusunda diğerleriyle paylaştığında, ve yaptıkları işler hakkında kritik dialoglara girdiklerinde, özellikle daha çok risk almaya başladıklarını, yaptıkları hatalar üzerine daha fazla yansıma yaptıklarını ve başarılı örneklerini diğerleriyle paylaşmaya daha açık olduklarını göstermektedir (Deglau ve diğ., 2006). Bununla birlikte yapılan araştırmalarda öğretmenlerin MÖG'e katılmalarının getirdiği olumlu sonuçlar şu şekilde sıralanabilir: öğretmenler; informal olarak ve işbirliği içerisinde birbirlerinden öğrenirler (Armour ve Yelling, 2007), meslek alanları ile ilgili olarak güçlü bir kimlik geliştirirler (Deglau ve O'Sullivan, 2006), politik düzeyde meslek alanlarının savunucu olurlar (O'Sullivan, 2008), öğretmen olarak kendileri için yeni bir imaj belirlerler (Deglau ve O'Sullivan, 2006) ve son olarak da öğrencilerinin öğrenme düzeylerini arttırabilmek için kendi uygulamalarını yeniden gözden geçirme ve programlarını geliştirme konusunda daha motive olurlar (O'Sullivan, 2008).

Her ne kadar hem mesleki gelişim hem de MÖG yöntemleri beden eğitimi öğretmenlerinin uygulamalarını ve SiFU alan bilgisi ve pedagojik alan bilgilerini geliştirmede etkili oldukları düşünülse de; öğretmenlerin bu konudaki alan bilgilerini inceleyen ya da araştıran çalışma sayısı oldukça azdır (Castelli ve Williams, 2007; Ince ve Hunuk, 2013; Santiago ve diğ., 2009). Bu sınırlı sayıdaki araştırma sonuçları, öğretmenlerin SiFU alan bilgilerinden özellikle fiziksel uygunluğun bileşenleri, fiziksel uygunluk hedefleri belirlemek ve öğrenciler için fiziksel etkinlik program tasarlamak konularında sınırlı bilgiye sahip olduklarını göstermektedir. Aynı zamanda bu çalışmaların hiç birinde öğretmenlerin SiFU alan ve pedagojik alan bilgilerinin, öğrencilerinin alan bilgisi üzerinde etkilerine bakılmadığı görülmektedir. Mesleki gelişim konusunda yapılan araştırmalarda özellikle öğretmenlerin MÖG'e katılmalarının, öğrencilerinin öğrenmeleri üzerine etkilerinin ve etkili bir öğretmen mesleki gelişim programının öğrenciler üzerinde kazanımlarının incelenmesi gerektiği önerilmektedir (Armour veYelling, 2004; O'Sullivan, 2008; Vescio ve diğ., 2008).

Yukarıda da belirtildiği gibi Türkiye'de 2007 yılında yenilenen 1-8. Sınıflar için Beden Eğitimi Dersi Öğretim Programı'nın asıl odaklarından bir tanesi de beden

eğitiminin artık yaşam boyu fiziksel etkinliği öne çıkarması ve öğrencilerin fiziksel olarak aktif bir yaşam stili seçmeleri için gerekli olan bilgi ve deneyime sahip olabilmeleridir. Türkiye'de de benzer şekilde SiFU konusunda öğretmenlerin alan ve pedagojik alan bilgilerini inceleyen çok az çalışma olması sebebiyle bu çalışmanın önemli bir boşluğu kapatması ve bu anlamda alanyazına katkı sağlaması beklenmektedir.

Yukarıda sayılan sebepler doğrultusunda bu çalışmanın amacı, MÖG'e katılan beden eğitimi öğretmenlerinin 1) birbirleriyle olan etkileşim yollarını, 2) kendilerinin ve öğrencilerinin SiFU alan bilgilerini ve 3) SiFU pedagojik alan bilgilerinin gelişimini incelemektir.

YÖNTEM

Çalışmada ön test-son test deney desenli karma yöntem (hem nitel hem de nicel veri toplama yöntemleri birarada) kullanılmıştır. Çalışmaya 12 deneyimli beden eğitimi öğretmeni (6'sı deney, 6'sı kontrol grubunda olmak üzere) ve 278 öğrenci gönüllü olarak katılmışlardır. Sadece deney grubundaki öğretmenler 6 hafta boyunca MÖG'e katılmışlardır.

Çalışmanın nitel bölümüne sadece deney grubunda yer alan öğretmenler dahil edilmişlerdir. Nitel bölümün amacı (a) MÖG'e katılan öğretmenlerin birbirleriyle nasıl etkileşimler kurduğunu ve (b) MÖG'ün öğretmenlerin SiFU alan ve pedagojik alan bilgileri gelişimi konusundaki etkilerini anlamaktır. Çalışmanın nicel bölümünde ise hem deney hem de kontrol grubundaki öğretmen ve öğrencilere SiFU alan bilgisi testleri uygulanmıştır. Nicel verilerin amacı (a) MÖG'e katılan öğretmenlerin birbirleriyle nasıl etkileşimler kurduğunu, (b) MÖG'ün öğretmenlerin alan bilgileri gelişimini nasıl etkilediğini ve (c) MÖG'e katılan öğretmenlerin öğrencilerinin SiFU alan bilgilerindeki değişimi incelemektir.

Veri toplama süreci 2010-2011 akademik yılı bahar döneminde 10 haftalık bir süreçte ve 3 aşamada gerçekleşmiştir (ön-test, müdahale, son-test). Çalışmanın ilk ve

son haftası öğretmenlerin okullarında gerçekleşmiş ve hem öğretmen hem de öğrencilerden gerekli veriler toplanmıştır.

Veri toplama sürecinin ilk aşamasında "Öğretmenler için Sağlıkla İlgili Fiziksel Uygunluk Bilgi Testi" hem deney hem de kontrol grubundaki öğretmenlere uygulanmıştır. Açık uçlu sorulardan oluşan bu test iki bölümden oluşmaktadır. İlk bölümde öğretmenlere SiFU parametrelerine ilişkin bildikleri ölçme yöntemlerini yazmaları istenirken, ikinci bölümde her bir SiFU parametresinin ideal sıklığı, şiddeti, süresi ve türünü yazmaları beklenmiştir. Öğrencilerin SiFU alan bilgi düzeylerini ölçmek için ise hem deney hem de kontrol grubundaki öğrencilere "İlköğretim ikinci Kademe Öğrencileri için Sağlıkla İlgili Fiziksel Uygunluk Bilgi Testi" uygulanmıştır. Çoktan seçmeli 36 sorudan oluşan bu testin daha önceki çalışmalarda bu yaş grubu için geçerliği ve güvenirliği sağlanmıştır. Bu aşamada, ayrıca deney grubunda yer alan öğretmenlerden 1-8. Sınıflar için Beden Eğitimi Dersi Programında yer alan "Etkin katılım ve Sağlıklı Yaşam" öğrenme alanına ilişkin 2 haftalık bir ders planı hazırlamaları ve uygulamaları istenmiştir. Bu dersleri MÖG'e katılmadan önce ve sonra işlemişler ve dersler hem video hem de ses kaydı ile araştırmacının kendisi tarafından kaydedilmiştir. Ayrıca araştırmacı her bir ders gözlemi sonunda o derse ve öğretmene ilişkin gerekli alan notlarını almıştır.

İkinci aşamada (müdahale) deney grubu öğretmenleri 6 hafta süresince haftada 1 kez ortalama 1.5-2.5 saatlik sürelerle bir kolaylaştırıcı ile beraber toplanmışlardır. Her bir toplantı araştırmacı tarafından ses kayıt cihazı ile kaydedilmiştir. 6 haftalık süreçte toplam 7 toplantı gerçekleştirilmiştir. Bu toplantıların 6 tanesinde öğretmenler, kolaylaştırıcı ve araştırmacı okul saatleri dışında Orta Doğu Teknik Üniversitesi, Eğitim Fakültesi, Beden Eğitimi ve Spor Bölümü'nde haftada bir kez biraraya gelmişlerdir.. Bu toplantılarda üç amaç benimsenmiştir: (a) öğretmenlerin SiFU bilgi düzeylerini artırmak, (b) programda yer alan SiFU konusunda ders işleyerek öğretemenlerin bu konudaki öğretime dair fikirlerini ve deneyimlerini paylaşabilecekleri bir platform yaratmak ve (c) beden eğitimi programı konusunda öğretmenlerin yansıma yapmalarına fırsat vermek. Bu toplantılar Wenger'ın (1998) MÖG sosyal öğrenme modeline göre biçimlendirilmiştir. Bunun dışında

kolaylaştırıcı ve araştırmacı her bir öğretmenle kendi okullarında bağımsız olarak bir defa biraraya gelmişlerdir

Son aşamada ise hem deney hem de kontrol gurunda yer alan öğretmen ve öğrencilerin SiFU alan bilgilerini belirlemek amacıyla ilk aşamada gerçekleştirilen tüm testler bir kez daha uygulanmıştır. Deney grubundaki beden eğitimi öğretmenleri bir kez daha "Aktif Katılım ve Sağlıklı Yaşam" öğrenme alanına ilişkin 2 haftalık bir ders planı hazırlamışlar ve uygulamışlardır. Bu dersler hem video hem de ses kaydı ile araştırmacının kendisi tarafından kaydedilmiş ve her bir ders gözlemi sonunda o derse ve öğretmene ilişkin gerekli alan notları araştırmacı tarafından alınmıştır. MÖG'e katılan beden eğitimi öğretmenleri ve kolaylaştırıcı ile yarı yapılandırılmış görüşmeler araştırmacının kendisi tarafından gerçekleştirilmiştir.

Araştırmaya katılan öğrenci ve öğretmenlerin SiFU alan bilgilerinin ölçülmesinde kullanılan nicel verilerin analizinde tanımlayıcı istatistikler ve bağımlı gruplarda varyans analizi (repeated ANOVA) kullanılmıştır. 6 haftalık MÖG'e katılan öğretmenlerin etkileşimlerini analiz etmek için ise Etkileşim Süreci Analizi (Bales, 1950) (Interaction Process Analysis) kullanılmıştır. Etkileşim Süreci Analizi 6 haftalık kayıt edilen ve çözümlemesi yapılan veriler üzerinde kullanılmıştır. Bu analiz iki temel hipotez üzerine kurulmuştur: (1) tüm küçük gruplar nerede olduklarına bağlı olarak aynıdırlar ve (2) gruptaki bireylerin her bir ifadesi bahsedilen probleme özgün olarak analiz edilebilir. Analizde MÖG'e katılan öğretmenlerin ve kolaylaştırıcının her bir ifadesi Bales'in (1950) belirlediği kategoriler altında araştırmacı tarafından kodlanmış ve tanımlayıcı istatistikle analiz edilmiştir. Etkileşim Süreci Analizi'nde toplamda 12 categori (öneri, fikir ya da bilgi vermek ya da sormak, fikre katılmak ya da katılmamak, olumlu ya da olumsuz tepki göstermek v.b gibi) bulunmaktadır. Kategoriler en basit haliyle 4 kategori altında tanımlanabilir: (A) Olumlu reaksiyonlar, (B) Teşebbüs edilen cevaplar, (C) Sorular ve (D) Olumsuz reaksiyonlar.

Araştırmaya katılan deney grubundaki öğretmenlerin SiFU alan ve pedagojik alan bilgilerininin gelişimlerini incelemek için ise öğretmenlerin katıldığı 6 haftalık MÖG ses çözümlemeleri, öğretmenlerle ve kolaylaştırıcı ile yapılan yarı yapılandırılmış

görüşmeler ve araştırmacının alan notları ise Glaser and Strauss'un (1967) sürekli karşılaştırmalı analiz (constant comparison approach) yöntemi kullanılarak analiz edilmiştir.

Çalışmanın geçerlik ve güvenirliğinin sağlanabilmesi için veri üçlemesi (Patton, 2002), katılımcı teyidi (Creswell, 2009) ve uzman görüşü (Patton, 2002) yöntemleri kullanılmıştır.

BULGULAR

Birinci Araştırma Sorusunun Bulguları

Birinci araştırma sorusunu, MÖG'e katılan beden eğitimi öğretmenleri hangi yollarla etkileşim kurarlar, cevaplayabilmek için 6 haftalık MÖG'e katılan öğretmenlerin ve kolaylaştırıcının ses kayıtları Etkileşim Süreci Analizi ile analiz edilmiştir. Etkileşim Süreci Analizi sonuçlarına göre MÖG'e katılan beden eğitimi öğretmenlerinin etkileşim örüntülerinde 3 temel tema ortaya çıkmıştır: (1) Etkileşimlerin birçoğu kategori 5 ve 6'da yığılmıştır, (2) Etkileşimlerin miktarı ve türü her bir katılımcı için farklılık göstermektedir ve (3) Etkileşim örüntüleri zaman içerisinde ilk haftadan son haftaya doğru farklılık göstermiştir.

(1) Etkileşimlerin birçoğu kategori 5 ve 6'da yığılmıştır

MÖG sırasında katılımcıların etkileşimlerinin birçoğu kategori 5 (fikir vermek, duygularını ifade etmek, dilekte bulunmak, karar vermek, anladığını ifade etmek vb.) ve kategori 6'da (bilgi vermek, yön vermek, doğrulamak, açıklık getirmek vb.) toplanmıştır. Bu çalışmada etkileşimler sırasında kategori 5'in çok sık tekrar edilmesinin nedeni konuşmalar sırasında çoğunlukla duygu içeren ifadelerin kullanılması (örneğin; "hımm", "çok iyi", "çok begendim" gibi) ya da kişinin diğer grup üyelerine fikrini ifade etmesidir (örneğin; "bu doğru", "bu bizim için de büyük bir problem", "bu konuda birşey söylemek istiyorum" gibi). Kategori 6'nın çok sık tekrar edilme sebebi ise konuşmalar sırasında açıklama ifadelerinin yer alması (örneğin; "haftada 30 saat beden eğitimi dersine giriyorum", "9 dersim var" gibi) ya

da konu ile ilgili bilgi içeren ifadelere (örneğin; “araştırma bulgularına göre...”, “yeni müfredata göre”, “bugün ... konusu üzerinde tartışacağız” gibi) yer verilmesidir.

(2) Etkileşimlerin miktarı ve türü her bir katılımcı için farklılık göstermektedir

Etkileşim Süreci Analizi için her bir katılımcı (öğretmenler ve kolaylaştırıcı) birer numara ile numaralandırılmıştır. Çalışma bulgularına göre kolaylaştırıcı dışında, en çok etkileşimi 5 numaralı katılımcı gerçekleştirirken, grup içerisindeki en az etkileşimi ise 6 numaralı katılımcı gerçekleştirmiştir. Katılımcıların kişisel olarak gerçekleştirdikleri etkileşimlerinin sıklığı aynı zamanda sosyal ilişkiler konusunda da bir kanıt olarak kabul edilebilir.

(3) Etkileşim örüntüleri zaman içerisinde ilk haftadan son haftaya doğru farklılık göstermiştir

Etkileşim Analizi sonuçlarına göre MÖG’deki öğretmenlerin ve kolaylaştırıcının etkileşim örüntüleri 6 hafta sürecinde değişiklik göstermiştir. Bu bölümde özellikle yapılan nicel analiz sonuçlarına ek olarak nitel olarak da katılımcıların etkileşim örüntüleri incelenmiştir. Sonuçlara göre ilk haftalarda daha çok kolaylaştırıcı gerekli bilgileri verip, gerekli açıklamaları yaparken; ilerleyen haftalarda MÖG’e katılan beden eğitimi öğretmenlerinin birbirleriyle çok yönlü olarak iletişime geçtikleri görülmüştür.

İkinci Araştırma Sorusunun Bulguları

İkinci araştırma sorusu kapsamında, MÖG’e katılan beden eğitimi öğretmenlerinin ve öğrencilerinin SiFU alan bilgilerini nasıl etkilemiştir, öğretmenlerin alan bilgileri gelişimini analiz etmek için hem nitel hem de nicel verilerden yararlanılmıştır. Öğrencilerin SiFU alan bilgilerini analiz etmek için ise öğrencilere ön-test ve son test olarak uygulanan “ilköğretim İkinci kademe Öğrencileri için SiFU Bilgi Testi” sonuçları tekrarlı ölçümlerde varyans analizi ile analiz edilmiştir.

Öğretmenlerin SiFU alan bilgileri gelişimini incelemek için uygulanan “Öğretmenler için Sağlıkla İlgili Fiziksel Uygunluk Bilgi Testi”nin birinci bölümünde öğretmenlere SiFU ölçme teknikleri sorulmuştur. Test sonuçlarına göre, deney grubundaki

öğretmenlerin ön- testten son-testte doğru aldıkları puanlar, kontrol grubundaki öğretmenlerin ön-testten son-teste doğru aldıkları puanlara göre daha yüksektir. Testin ikinci bölümünde öğretmenlere SiFU'nun her bir parametresinin ideal sıklığı, şiddeti, süresi ve türünü yazmaları istenmiştir. Sonuçlar yine deney grubundaki öğretmenlerin lehinedir.

Deney grubundaki öğretmenlerin SiFU alan bilgilerindeki gelişimi nitel olarak inceleyebilmek için öğretmenlerle ve kolaylaştırıcı ile yapılan yarı-yapılandırılmış görüşmeler, araştırmacının alan notları ve ses kaydı alınmış ve ses çözümlemesi yapılmış 6 haftalık MÖG analizi sonuçlarına göre öğretmenlerin SiFU alan bilgilerinin gelişiminde iki tema ortaya çıkmıştır: (1) öğretmenlerin MÖG yardımıyla SiFU alan bilgileri ihtiyaçlarının nasıl farkında vardıkları ve (2) MÖG yardımıyla öğretmenlerin SiFU alan bilgilerinin artmasına yardımcı olan kaynakların türü.

(1) Öğretmenlerin MÖG yardımıyla SiFU alan bilgileri ihtiyaçlarının nasıl farkında oldukları süreci nitel olarak analiz edildiğinde ilk haftalarda öğretmenlerin 2 haftalık ders işlemeleri için kendilerine verilen SiFU kazanımlarını anlamadıkları ya da algılayamadıkları ortaya çıkmıştır. Öğretmenlerin bu kazanımları daha çok performans amaçlı algıladıkları görülmüştür. Haftalar ilerledikçe öğretmenlerden bazıları SiFU ölçüm yöntemlerini uygulamış ve birtakım alan bilgilerini derslerinde öğrencileriyle paylaşmışlardır. Bu paylaşımlar sonrasında öğrencilerinin derse karşı daha ilgili olmaları özellikle bu öğretmenlerin motivasyonunu arttırmıştır. Aynı zamanda öğrenciler bu süreçte daha çok soru sormaya başlamışlar ve öğretmenler bu soruları cevaplandırmakta zorlanınca alan bilgisi eksikliklerini farketmişlerdir. Öğretmenlerin alan bilgisi ihtiyacı bu şekilde daha da belirginleşmiştir.

(2) MÖG yardımıyla öğretmenlerin SiFU alan bilgilerinin artmasına yardımcı olan kaynakların türü nitel olarak incelendiğinde öğretmenlerin SiFU alan bilgilerini geliştirmek için kaynaklara ulaşmak yerine gereken kaynakları kolaylaştırıcıdan talep ettikleri görülmüştür. Öğretmenler genellikle okumak yerine bu bilgileri kolaylaştırıcıdan dinlemeyi talep etmişlerdir. Yapılan görüşmede kolaylaştırıcı bunun sebebini Türkçe'de bu konuya ilişkin yeterli güvenilir kaynağın bulunmaması ve

öğretmenlerin İngilizce dil becerilerinin düşük olması sebebiyle orjinal kaynağı okuyamamalarına bağlamıştır.

278 öğrencinin SiFU alan bilgilerini analiz etmek için uygulanan "ilköğretim İkinci Kademe Öğrencileri için SiFU Bilgi Testi" sonuçlarına göre deney grubundaki öğrencilerin (n=159) test skorlarının ön-testen son-tete doğru istatistikel olarak anlamlı bir şekilde arttığı görülürken ($F(1, 276) = 45.88$, $p < .05$), kontrol grubunda yer alan öğrencilerin test skorlarında anlamlı bir değişim bulunmamıştır.

Üçüncü Araştırma Sorusunun Bulguları

Üçüncü araştırma sorusu kapsamında, MÖG beden eğitimi öğretmenlerinin SiFU pedagojik alan bilgilerini nasıl etkilemiştir, öğretmenlerin pedagojik alan bilgileri gelişimini analiz etmek için nitel verilerden yararlanılmıştır. Bu araştırma sorusu kapsamında öğretmenlerle ve kolaylaştırıcı ile yapılan yarı-yapılandırılmış görüşmeler, araştırmacının alan notları ve ses kaydı alınmış ve ses çözümlemesi yapılmış 6 haftalık MÖG'ün analizinde ise Glaser and Strauss'un (1967) sürekli karşılaştırmalı analiz (constant comparison approach) yöntemi kullanılmıştır. Nitel veri analizlerine göre öğretmenlerin, MÖG'e katıldıkları ilk haftalarda daha çok öğretmen merkezli öğretim yöntemlerini kullanma eğiliminde oldukları bunu sebebini ise sınıflarda öğrenci sayısının kalabalıklığına ve bu tür öğretim yöntemlerini daha çok sınıf yönetimi amaçlı kullanmalarına bağladıkları ortaya çıkmıştır. İlerleyen haftalarda MÖG içerisinde pedagojik alan bilgisi grup içerisinde tartışılmış, konu ile ilgili videolar izlenmiş ve kolaylaştırıcıdan özellikle SiFU ölçüm yöntemlerinin sınıf ortamında nasıl gerçekleştirileceği ile ilgili bilgileri paylaşmaları istenmiştir. Öğretmenlerden bazıları bu süreçte ilgili pedagojik alan bilgisini kendi okullarında denemişler ve MÖG'de yer alan diğer grup üyeleriyle yaşadıkları özellikle olumlu deneyimleri paylaşmışlardır. Öğretemenlerin ders ortamında yaptıkları yeniliklere öğrencilerinin olumlu tepki vermesi ve derslerden memnun olduklarını görmeleri, öğretmenleri sınıf içi uygulamalarını değiştirmeye teşvik etmiştir. Bu değişim genel anlamda SiFU alan bilgi düzeyinin artmasına da bağlanabilir. Bununla birlikte öğretmenler sınıf içi uygulamalarında yeni öğretim modellerinin kullanmışlar, öğretim materyalleri geliştirmişler ve öğrencilerine

sorumluluk vermişlerdir. Bu da genel anlamda okuldaki öğretim kültürlerini değiştirmiştir.

TARTIŞMA VE SONUÇ

İlk araştırma sorusu bulguları, MÖG'e katılan beden eğitimi öğretmenlerinin etkileşim örüntülerinin her bir katılımcı ve kolaylaştırıcı için haftalar içerisinde değişikliğe uğradığını göstermiştir. Parker ve arakdaşları (2010) yaptığı çalışmada Wenger'ın (2007) MÖG için belirlediği 3 temel elementi (ilgi alanı, topluluk, uygulama) kullanarak MÖG'ün doğru formunu ifade etmişlerdir. İlgi alanı açısından, öğretmenler ve kolaylaştırıcı bir kimlik oluşturarak ortak bir ilgi alanını ifade etmişlerdir: "program geliştirme". Topluluk açısından, ilgi alanında çalışmalarını sürdürebilmek için hem öğretmenler hem de kolaylaştırıcı "tartışma, yardımlaşma ve paylaşım" gibi osyal etkileşimlerde bulunmuşlardır. Bu mesleki ve kişisel ilişkiler, grup içerisindeki anlaşmazlıkların ve çatışmaların üstesinden gelmelerini sağlamıştır. Uygulama açısından da grup üyeleri ortak bir kaynak dağarcığı oluşturmuşlar ve uygulama örneklerini birbirleriyle paylaşmışlardır. Bu bağlamda bu çalışmada da ortak ilgi alanı "öğretmenlerin ve onların öğrencilerinin SiFU alan bilgilerini geliştirmek" olarak belirlenmiştir. Öğretmenler ilgi alanları kapsamındaki çalışmalarını sürdürebilmek için "birbirlerine fikirler verme, duygularını ifade etme ve önerilerde bulunma" gibi sosyal etkileşimlerde bulunarak birbirlerinden ve kolaylaştırıcıdan öğrenmeye devam etmişlerdir.

Bu çalışmada aynı zamanda kolaylaştırıcı toplantılar sırasında öğretmenlere mümkün olduğunca eşit söz hakkı tanımış ve süreçte kendi rolü yavaş yavaş azalmıştır. Patton ve Parker (2012) yaptıkları çalışmada başarılı bir hizmet içi eğitim konusunda kolaylaştırıcıların görüşlerini almışlardır. Kolaylaştırıcılar başarılı bir hizmet içi eğitimin, katılımcıların kendi seslerini bulduklarını, kendi konu alanı uzmanlıklarının tanındığı ve kendi öğrenmelerinin sorumluluğunu aldıkları yer olarak ifade etmişlerdir. Bu çalışmanın sonuçları da yukarıda çalışma sonuçları ile benzerlik göstermektedir. Öğretmenler bu öğrenme ortamı ile birlikte zaman içerisinde başarıları ve başarısızlıkları konusunda daha rahatlıkla konuşur ve tartışır hale gelmişlerdir.

İkinci araştırma sorusunun bulgularına göre öğretmenlerin MÖG'e katılmaları hem kendilerinin hem de öğrencilerinin SiFU alan bilgilerini arttırmıştır. Öğretmenlerin SiFU alan bilgilerinin gelişimi sürecinde iki tema ortaya çıkmıştır: (1) öğretmenlerin MÖG yardımıyla SiFU alan bilgileri ihtiyaçlarının nasıl farkında oldukları ve (2) MÖG yardımıyla öğretmenlerin SiFU alan bilgilerinin artmasına yardımcı olan kaynakların türü.

Daha önce yapılan çalışmalarda da, bu çalışma sonuçlarına benzer olarak MÖG'e katılan öğretmenlerin alan bilgilerinin arttığı görülmüştür (Stoll ve diğ., 2006; Vescio ve diğ., 2008). Deglau ve arkadaşlarının (2006) yaptıkları çalışmada öğretmenler paylaşarak, tartışarak ve kendileri için önemli olan konularla başetmek için yeni stratejiler öğrenerek kendi rollerini alan uzmanı olarak değiştirmişlerdir. MÖG'ü inceleyen birçok çalışmada öğretmenlerin alan bilgilerini geliştirebilmek için işbirliği içerisinde çalışmanın önemi üzerinde durulmuştur. Fakat Vescio ve arkadaşları (2008) yaptıkları derlemede işbirliği içerisinde çalışmanın bir sonuç değil, MÖG'de bir süreç olduğundan ve asıl sonucun öğrenci başarısını arttırmak olması gerektiğinden bahsetmişlerdir. Bu hedefe ulaşmanın önemli noktalarından bir tanesi de öğrencilerin ihtiyaçlarını belirlemektir (Vescio ve diğ., 2008). Bu nedenle bu çalışmada da öğrencilerin öğrenme düzeylerini arttırmak için öğretmenlerin hem kendilerinin hem de öğrencilerinin ihtiyaçlarını belirlemeleri gerektiği konusunda alan yazına katkıda bulunmaktadır. Çalışmada özellikle öğretmenlerin bu ihtiyaçlarını nasıl farkettikleri ve içselleştirdikleri ve bu süreç içerisinde kullandıkları kaynakların türü incelenmiştir.

Son yıllarda okul beden eğitimi programları SiFU alan bilgisine odaklansa da (MoNE, 2007), alanyazında beden eğitimi öğretmenlerin sağlık konusundaki alan bilgileri ve bu konuda aldıkları hizmet içi eğitimler endişe vericidir (Alfrey ve diğ., 2012; Castelli ve Williams, 2007; Ince ve Hunuk, 2013). Alfrey ve arkadaşları (2012) yaptıkları çalışmada İngiltere'nin beden eğitimi öğretim programı içeriğinin nasıl öğretilmesi gerektiğinin belirtmediğini ifade etmişlerdir. Aynı çalışmada yine beden eğitimi öğretemenlerinin çoğunluğunun SiFU konusunda ağırlıklı olarak

performasla ilişkili fiziksel uygunluk etkinliklerini öğretmenyi tercih etmişlerdir (fiziksel uygunluk testleri, dairesel antrenman gibi). Bu çalışmanın başında da beden eğitimi öğretmenlerinde benzer bir eğilim görülmekte idi. Öğretmenler öğretim programında yer alan SiFU kazanımlarının önemini algılayamamış ve sadece performansla ilişkili fiziksel uygunluğa vurgu yapmışlardır. Fakat MÖG'nun olumlu etkileriyle beraber bu trend zaman içerisinde değişmiş ve öğretmenler sınıflarındaki tüm öğrencilerin SiDU alan bilgilerine odaklanmışlardır.

Alanyazında, her yaş grubundan öğrencilerin SiFU alan bilgilerinin yetersiz ya da hatalı olduğunu vurgulayan çalışmalara rastlanmaktadır (Hunuk ve Ince, 2010; Keating ve diğ., 2009; Timothy ve diğ., 2011). Yapılan birçok çalışmada öğretmenlerin MÖG'e katılmaları, onların öğrencilerinin öğrenmelerinin arttığını göstermiştir (Supovitz, 2002, Zhao ve Kuh, 2004). Bu çalışmada da benzer şekilde, öğretmenlerin MÖG'e katılmalarının, öğrencilerinin ön-testten son-teste doğru SiFU alan bilgi düzeylerinin istatistiksel olarak arttığı ifade edilmiştir.

Üçüncü araştırma sorusunun bulgularına göre, diğer çalışmalara (Guskey, 2002; Deglau ve O'Sullivan, 2006) benzer olarak bu çalışmada da, öğrencilerin ders ortamındaki sorumluluklarının ve derse olan olumlu tutumlarının artması, öğretmenleri sınıf içi uygulamalarını değiştirmeye, uygulamalarında yeni öğretim modellerini kullanmaya ve öğrencilerine daha çok sorumluluk vermeye teşvik etmiştir. Bu da genel anlamda okuldaki öğretim kültürlerini olumlu yönde değiştirmiştir. Vescio ve arkadaşları (2008) yaptıkları derleme çalışma sonuçlarına göre öğrenme ortamına katılan öğretmenlerin okul uygulamalarını değiştirerek daha çok öğrenci merkezli öğretim yöntemlerini kullanmışlardır. Bu çalışmada da başlangıçta öğretmenler sınıf uygulamalarında öğrenci merkezli yaklaşımları kullanmayı tercih etmemişler fakat zaman içerisinde denemişler ve bu deneyim sonucunda öğrencilerinin ilgi, motivasyon ve öğrenmelerinin arttığını gözlemlenmiştir.

Bu çalışmanın bulguları ışığında, mesleki öğrenme grubu mantığıyla yapılandırılacak olan hizmet içi eğitimlerin Türkiye'deki beden eğitimi öğretmenlerinin alan ve

pedagojik alan bilgilerine ve öğrencilerinin öğrenmelerine olumlu katkı sağlayacağı düşünülmekte ve bu sebeple hizmet içi eğitimlerde kullanılması önerilmektedir.

APPENDIX I

TEZ FOTOKOPİSİ İZİN FORMU

ENSTİTÜ

Fen Bilimleri Enstitüsü ☐

Sosyal Bilimler Enstitüsü X

Uygulamalı Matematik Enstitüsü ☐

Enformatik Enstitüsü ☐

Deniz Bilimleri Enstitüsü ☐

YAZARIN

Soyadı : HÜNÜK
Adı : DENİZ
Bölümü : BEDEN EĞİTİMİ VE SPOR BÖLÜMÜ

TEZİN ADI (İngilizce) : USING COMMUNITIES OF PRACTICE IN DEVELOPING HEALTH-RELATED FITNESS KNOWLEDGE OF PHYSICAL EDUCATION TEACHERS: IMPACT ON STUDENT LEARNING

TEZİN TÜRÜ : Yüksek Lisans ☐ Doktora X

1. Tezimin tamamından kaynak gösterilmek şartıyla fotokopi alınabilir. X
2. Tezimin içindekiler sayfası, özet, indeks sayfalarından ve/veya bir bölümünden kaynak gösterilmek şartıyla fotokopi alınabilir. X
3. Tezimden bir bir (1) yıl süreyle fotokopi alınamaz. X

TEZİN KÜTÜPHANEYE TESLİM TARİHİ:

APPENDIX J

Curriculum Vitae

PERSONAL INFORMATION
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EDUCATION

Degree	Institution	Year of Graduation
MS	Hacettepe University, School of Sport Sciences and Technology	2006
BS	Hacettepe University, School of Sport Sciences and Technology	2003

WORK EXPERIENCE

2010-2011	University of Limerick, Physical Education and Sport Sciences Department	Visiting Scholar
2006- Present	METU, Department of Physical Education and Sports	Research Assistant
2005-2006	Pamukkale University, School of Sport Science and Technology	Research Assistant

PUBLICATIONS

1. Hünük, D. Ince, M. L. & Tannehill, D. (2013). Developing teachers health-related fitness knowledge through a community of practice: Impact on student learning. *European Physical Education Review*, *19*(3), 3-20.
2. Ince, M. L. & Hünük, D. (2013). Experienced physical education teachers' health-related fitness knowledge level and knowledge internalization processes. *Education and Science Journal*, *38*(168), 304-317.
3. Hünük, D., & Demirhan, G. (2010). Turkish adolescents' attitude toward physical education. *Perceptual and Motor Skills*, *111*(2), 324-332.
4. Ince, M. L. & Hünük, D. (2010). Experienced physical education teachers' use and perceptions of teaching styles during the educational reform period. *Education and Science Journal*, *157* (35), 128-139.