# AN EXAMINATION OF THE IMPACT OF AN ONLINE PROFESSIONAL DEVELOPMENT PROGRAM ON LANGUAGE TEACHERS' COGNITION AND TEACHING PRACTICES

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## ABSTRACT

### AN EXAMINATION OF THE IMPACT OF AN ONLINE PROFESSIONAL DEVELOPMENT PROGRAM ON LANGUAGE TEACHERS' COGNITION AND TEACHING PRACTICES

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In recent decades, there has been a corrective move towards constructivist approaches to Online Professional Development (OPD) (Whitehouse, McCloskey & Ketelhut, 2010). Encapsulated in a professional learning community paradigm, recent OPD efforts aim to address the professional needs of the teachers by providing them with collaborative, reflective and situated learning opportunities (Lantz-Andersson, Lundin & Selwyn, 2018). Despite these developments, very few studies have addressed the cognitive and behavioral changes of teachers who attended such OPD programs. To address this gap, this study set out to contribute to this stream of research by examining the impact of an OPD program that included webinars and online or face-to-face lesson procedure on Turkish EFL teachers' professional development.

In this multiple case study, the research focus was on uncovering how the processes of participating in both webinars and face-to-face or online LS groups helped teachers' professional growth during the OPD program. The effective features of the OPD program that led to the teachers' professional development were also aimed to be

revealed. The participants of the study consisted of 10 female Turkish EFL teachers teaching at secondary or high school level. To provide a qualitative description of teacher learning within the groups, two online and one face-to-face lesson study group were formed with the inclusion of 3 to 4 teachers in each group. For online lesson study procedure, Dudley's (2014) version of Lesson Study (LS) was adapted to the online medium with the inclusion of some synchronous and asynchronous tools. In addition, as part of a Marie S. Curie Project, these teachers attended six webinars about English language teaching methodology and the integration of web 2.00 tools in language classes. To delve into the processes of teacher change, Clarke and Hollingsworth's (2002) Interconnected Model of Teacher Professional Growth, which includes four domains representing teachers' world was used to examine not only short term changes (change sequences) but also long-term changes (growth networks) in language teachers' cognition and teaching behaviors To this end, a bulk of qualitative data collection tools were used including the video-recordings of pre-lesson and post-lesson discussion meetings, video-recordings of the taught lessons, interviews, lesson plans, teacher posts in online platforms, reflection reports and pre- and post-observation data.

The findings of the study demonstrated that all of the teachers in online and f2f lesson study groups were subject to substantial change in cognition and behavior as a result of their participation in OPD program. These changes were shown to be caused primarily by the webinars and the lesson study discussions in the External Domain and the lesson planning and teaching practices in the Domain of Practice despite varying degrees and patterns of change among teachers. The scrutiny of growth networks indicated that reflections on classroom outcomes led to the formation of growth networks representing long-lasting changes in teachers' cognition. It was also revealed that teachers' long-lasting changes centered mostly on technology integration rather than more general pedagogical transformations. The study proposed a set of important considerations for the effective functioning of online and face-to-face lesson study procedure for future OPD efforts.

Keywords: Lesson Study, Online Lesson Study, EFL Teachers, Interconnected Model of Teacher Professional Growth, IMTPG

# ÖZ

## ÇEVRİMİÇİ BİR MESLEKİ GELİŞİM PROGRAMININ İNGİLİZCE ÖĞRETMENLERİNİN BİLİŞİ VE SINIF UYGULAMARI ÜZERİNE ETKİSİNİN İNCELENMESİ

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Son yıllarda çevrimiçi mesleki gelişim uygulamalarında yapısalcı yaklaşımlara doğru bir yönelim meydana gelmiştir (Whitehouse, McCloskey & Ketelhut, 2010). Bu uygulamaların bazıları mesleki öğrenme toplulukları modeline dayanmakta olup öğretmenleri işbirliğine, sınıfları ile ilgili uygulamalar yapma ve bunlar üzerine düşünmeye yönlendirmeyi amaçlamaktadır (Lantz-Andersson, Lundin & Selwyn, 2018). Bu gelişmelere rağmen oldukça az sayıda çalışma, bu tarz mesleki gelişim programlarına katılan öğretmenlerin bilişsel ve öğretmenlik uygulamalarındaki değişiklikleri ele almıştır. Bu araştırma boşluğunu doldurmak için bu çalışmada, bir dizi internet seminerinin yanı sıra çevrimiçi veya yüzyüze yapılan ders araştırması uygulamalarını içeren bir çevrimiçi mesleki gelişim programına katılan Türk İngilizce öğretmenlerinin mesleki gelişimi incelenmektedir.

Bu çoklu durum araştırmanın amacı öğretmenlerin katıldıkları internet seminerleri ve yüz yüze veya çevrimiçi DA gruplarında yaşadıkları öğrenme süreçlerinin mesleki gelişimlerine olan katkılarını ortaya çıkarmaktır. Aynı zamanda bu çevrimiçi mesleki gelişim programının mesleki gelişime katkı sağlayan yönleri araştırılmaktadır. Çalışmanın katılımcılarını Türkiyede ortaokul ve lise düzeyinde çalışan 10 İngilizce öğretmeni oluşturmaktadır. Grupların içinde gerçekleşen öğrenmenin nitel olarak

tarifini sunmak için, her birinde 3 veya 4 öğretmen olmak üzere 2 çevrimiçi ve 1 yüz yüze ders araştırması grubu oluşturulmuştur. Çevrimiçi olacak bir ders araştırması uygulamasını belirlemek için Dudley'nin (2014) çalışmasında önerdiği DA modeli eş zamanlı ve eş zamanlı olmayan araçların kullanımı ile çevrimiçi öğrenme için adapte edilmiştir. Bu öğretmenler aynı zamanda bir Marie S. Curie Projesi kapsamında İngilizce öğretim teknikleri ve dil sınıflarında teknoloji kullanımı konuları ile ilgili 6 webinara katılmışlardır. Programa katılan öğretmenlerin düşünce ve pratiklerindeki kısa süreli ve uzun süreli değişimlerini incelemek için öğretmenlerin dünyasını yansıtan alanları içinde bulunduran Clarke ve Hollingsworth (2002)' a ait Bağlantılı Öğretmen Gelişimi Modeli kullanılmıştır. Bu amaçla, veri toplama araçları olarak; ders araştırması toplantı kayıtları, araştırma derslerin vidyo kayıtları, öğretmenlerle yapılan görüşmeler, ders planları, kullanılan çevrimiçi platformlardaki öğretmen gönderileri, öğretmenler tarafından yazılan yansıtma raporları, çalışmanın başında ve sonunda yapılan sınıf gözlemini takiben çağrışım tekniğine dayalı görüşmeler dahil edilmiştir.

Araştırmanın bulgularına göre, hem çevrimiçi hem yüz yüze ders araştırması gruplarındaki tüm öğretmenlerin bu çalışmada sunulan mesleki gelişim programına katılımlarından sonra düşünce ve sınıf pratiklerinde çeşitli derecelerde ve şekillerde bazı değişiklikler gözlemlenmiştir. Araştırmanın bulguları, hem çevrimiçi hem yüz yüze ders araştırması gruplarındaki tüm öğretmenlerin mesleki gelişim programında elde ettikleri öğrenme deneyimlerine bağlı olarak düşünce ve sınıf pratiklerinde çeşitli derecelerde ve şekillerde değişiklikler gösterdiğini ortaya çıkarmıştır. Bu değişikliklerin çoğunun öğretmenlerin dış dünyasını yansıtan Dışsal Alanda yer alan webinarlar ve ders araştırmasındaki öğretmenler arası tartışmalardan kaynaklandığı görülmüştür. Aynı zamanda öğretmenlerin uygulama alanını yansıtan Pratik Alanda bulunan ders planlama ve ders anlatımı uygulamalarının da öğretmenlerin gelişimine katkı sağladığı bulunmuştur. Sınıf uygulamalarının öğrenci ile ilgili sonuçları üzerine yapılan yansıtmaların, öğretmenlerin bilişinde uzun süreli değişikliklere sebep olduğu bulunmuştur. Bu veriler sınıf gözlemleri ile desteklendiğinde, öğretmenlerin sınıf pratiklerindeki değişikliklerin çoğunun pedagojik değişimlerden çok teknoloji

entegrasyonu ile ilgili olduğu görülmüştür. Çalışma, çevrimiçi ve yüzyüze ders araştırması uygulamalarının etkili bir şekilde işleyebilmesi için önemli öneriler sunmuştur.

Anahtar Kelimeler: Ders Araştırması, Çevrimiçi Ders Araştırması, İngilizce Öğretmenleri, Bağlantılı Öğretmen Gelişimi Modeli, BÖGM

To my mother Ayşen Cengiz and to my father Rüstem Yılmaz Cengiz

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LS- Lesson Study

PD- Professional Development

OPD- Online Professional Development

PLC-Professional Learning Community

OPLC-Online Professional Learning Community

IMTPG- Interconnected Model of Teacher Professional Growth

OLS- Online Lesson Study

FLS- Face-to-face Lesson Study

EFL-English as a Foreign Language

ED- External Domain

PD- Personal Domain

DC- Domain of Consequence

DP- Domain of Practice

# CHAPTER 1

# INTRODUCTION

## 1.1.Introduction

This study strives to uncover the effects of an online professional development(OPD) program built on a constructivist paradigm of teacher development on a group of Turkish EFL teachers' changes in cognition and teaching practices. In this OPD program which combines an online or face-to-face lesson study procedure with webinars, teacher development is examined within the framework of Clarke and Hollingsworth's (2002) Interconnected Model of Teacher Professional Growth. In this chapter, the following sections are included: background of the study, problem statement, purpose of the study and research questions, significance of the study and definition of terms.

## 1.2.Background of the Study

Approaches to professional development (PD) have transformed in time due to "paradigm shifts in teacher learning"(Hung & Yeh, 2013, p. 153). Earlier perceptions of teacher change, which was built on a training paradigm implied that teachers have deficits in their knowledge and skills and these deficits can be compensated through one-shot workshops or trainings (Clarke & Hollingsworth, 2002). However, these short-term workshops or courses mostly made few contributions to the knowledge base and identity of the teachers (Flint, Zisook& Fisher, 2011) due to the short duration of the courses, lack of ongoing support (Cimer , Çakır & Cimer, 2010; van Es, 2012) and lack of relationships with colleagues for exchange of ideas and practices (Wood, 2007). Research has shown that professional development is most fruitful when it is linked with "immediate school practice" ,and also when teachers are given the opportunity to reflect on their practice and exchange ideas with colleagues "in a

trusted, confident and constructive atmosphere" (Postholm, 2016, p.457). Teacher learning is built socially (Korthagen, 2010), therefore professional development initiatives should emphasize teacher collaboration as a critical component of teacher development (Forte & Flores, 2014).

The last two decades of teacher education field has witnessed the development of an exponential interest in professional learning communities (PLCs) as a promising avenue for teacher PD (van Es, 2012). Teacher networks, developed through PLCs, have been found as favorable (Attard, 2012) since they provide unique learning opportunities for teachers (Witterholt, Goedhart&Suhre, 2016). Teachers in PLCs engage in collaborative inquiry processes (Butler &Schnellert, 2012) by sharing knowledge and experiences and reflecting on each other's practice, which results in teachers' developing of new insights and viewpoints related to teaching (Basile, Olson & Nathenson-Majia, 2003). There is also compelling evidence in the literature showing that improvements in teachers' teaching practices and student learning occur as a result of teachers' PLC activities (Borko, 2004; Putnam &Borko, 2000). In this study, Lesson Study (LS), which is a world-wide recognized PD activity that is considered to possess the core features of PLC (Bae, Hayes, Seitz, O'Connor & DiStefano, 2016; Pella, 2011; Vrikki, Warwick, Vermunt, Mercer & Van Halem, 2017) was examined vis-à-vis its impact on Turkish English as a Foreign Language (EFL) teachers' development of new knowledge and practices.

Lesson study originated in Japan early in the 1900s, and became popular before the mid-1960s as a commonly used form of professional development throughout the country (Fernandez & Yoshida, 2004). In 1999, LS started to receive worldwide attention with the writings of US scholars Stigler and Hiebert who pointed at Japanese students' superiority in international tests compared to American students and their counterparts in other countries (Pang & Ling, 2012) Additionally, Third International Math and Science Study (TIMSS) group's ethnographic accounts of Japanese schools, in which the success of Japan was attributed to the use of LS across the country bolstered the spread of LS all over the world (Lewis, 2009).

In lesson study, groups of four to six teachers come together to identify an overarching learning goal for their students (e.g. such as being able to speak English fluently for language learners). These teachers collaboratively produce a series of research lessons that address these goals and also particular difficulty areas for their students. While planning the research lesson, teachers benefit from various sources of knowledge including curriculum materials, relevant research literature provided by outside experts, and any other resources. Once the lesson is collaboratively designed, it is taught by one of the teachers whereas other teachers act as observers. During the observation, teachers focus on student learning and collect relevant data (Dudley, 2015). Later, teachers meet for a post-lesson discussion evaluating and critiquing the lesson. Then, they revise the lesson based on the joint efforts of the teachers (Hiebert & Stigler, 2000). The revised lesson is taught by another teacher while the lesson is again observed by the remaining teachers. During the second post-lesson discussion, teachers once more reflect on the lesson evaluating whether/ how students learnt. They also provide suggestions related to the improvement of the lesson. In the final stage of LS, the whole lesson study procedure is shared with colleagues in the same or other schools through seminars or publications (Pang & Ling, 2012).

Review of LS literature shows that research into LS has been conducted in numerous countries including US (Fernandez, Cannon & Chokshi, 2003; Lewis, 2000; 2006), UK (e.g. Cajkler, Wood, Norton & Pedder, 2014), Australia (e.g. Hollingsworth & Oliver, 2005), China (e.g. Yang, 2009), Indonesia and Malaysia (e.g. White& Lim, 2008) amongst many other countries (Doig & Groves, 2011). Despite a huge world-wide interest in LS, this stream of research has not paid particular attention to an online version of lesson study so far. Online lesson study had been only mentioned in Yursa and Silverman's (2011) and Sharma and Pang's (2015) studies by the time this study was conducted. Yursa and Silverman (2011) implemented an online lesson study with teachers enrolled in a graduate program in mathematics education. In their study, they concluded that although online LS served effective for the professional development of these teachers, it was not appropriate to directly transfer LS into an online environment (as cited in Sharma & Pang, 2015). Similarly, Sharma

and Pang (2015) implemented an online lesson study with elementary classroom teachers enrolled in a graduate course. In their analysis of teachers' "pedagogical movements" during the LS process, they found that teachers experienced "growth in their knowledge of assessment and diagnosis" and gained instructional skills (Sharma & Pang, p.424). However, as a limitation of their study, they used solely written reflections as self-report instruments.

Similar to the advantages of online PD over face-to-face PD, online lesson study holds great potential for teachers' PD compared to original LS. Overcoming the challenges of lesson study related to logistics is one of the key affordances (Yursa & Silverman, 2011). Getting teachers from the same or different schools to gather at particular times for research lesson planning, live observation of lessons and discussion meetings can be quite challenging. With the use of various synchronous and asynchronous communication tools, online LS can serve to provide teachers with higher degrees of communication and interaction and with increased time for reflection and dialogue (Sprague, 2006). Through online LS, teachers can also get easier access to teachers from different schools and field experts (Nistor, Baltes, & Schustek, 2012). Accessing a large body of knowledge and resources with few time and space limitations is also a bonus (Blitz, 2013). On top of these, online LS can help the development of online PLCs (Lewis & Perry, 2015) as a relatively recent concept in online education (Wideman, 2010).

In this study, IMTPG is used to identify the short-term and long-term changes (Clarke & Hollingsworth, 2002) in the cognition and teaching practices of Turkish EFL teachers participating in face-to-face versus online LS groups. The use of IMTPG will serve to account for mechanisms through which teacher growth occurs (Widjaja, Vale, Groves & Doig, 2017) and indicate whether these mechanisms function differently in face-to-face or online LS groups. In IMTPG, Clarke and Hollingsworth (2002) propose four different domains that represent teacher's world. These are the personal domain ("teacher knowledge, beliefs and attitudes"), the domain of practice (where teachers' professional experimentation occurs), the domain of consequences (the salient outcomes recognized by the teachers as a result of their experimentation)

and the external domain (provider of external source of information) (Clarke & Hollingsworth, 2002, p.957). According to Clarke and Hollingsworth (2002), change can occur in these domains through the mediating processes of enactment and reflection. Enactment is putting new ideas into action by trying out these new ideas or practices as professional experiments (Wang et al., 2014). Reflection, on the other hand, refers to teachers' examination of the effectiveness of the enacted pedagogical practices (Hung & Yeh, 2013).

IMTPG has been used in many studies of teacher professional growth so far (Widjaja et al., 2017) as displayed in well-known journals such as *Teacher Education and Teaching* and *European Journal of Teacher Education.* In the current study, IMTPG is utilized as an analytical framework to look into the temporary and long lasting changes of teachers who attend an online PD program that encompasses a series of webinars and online or f2f lesson study procedure. This analysis will be done both for face-to-face and online LS groups and through cross-case analysis, the unique factors or processes that contributed to teachers' learning will be aimed to be unraveled.

Despite several affordances of online lesson study, the literature is mute on its impact on teachers' knowledge base and teaching practices compared to a face-to-face lesson study. This study, using Clarke and Hollingsworth's (2002) Interconnected Model of Teacher Professional Growth (IMTPG) as an analytical lens, investigates the processes of Turkish EFL teachers' change processes both in face-to-face and online lesson study groups. With the incorporation of webinars into the design of the program, it is also aimed to reveal what features of the OPD program that include both webinar and lesson study procedure consolidate teacher learning.

### 1.3. Problem Statement

Conventional approaches to PD which include one-time training efforts with few examples of effective teaching and few opportunities for teacher collaboration and reflection have been maligned for their inefficacy in leading to teacher change (Bickerstaff & Cormier, 2015). More constructivist forms of PD which are situated in

teachers' daily teaching practice and view teachers as "active and reflective practitioners" have been shown to contribute to teacher development (Wideman, 2010, p.4). With a common goal, collegial support and activities that focus on student learning, teachers are found to be better positioned to alter their teaching practices (Prenger, Poortman&Handelzalts, 2017). The observations from the extant body of research in PD also point out that teachers feel the need to try out new teaching strategies and materials in socially bound professional learning communities (Schipper, Goei, de Vries & van Keen, 2017). In the last decades, the online PD programs have been shown to meet many of the teachers' professional needs (Dede, Ketelhut, Whitehouse, Breit& McCloskey, 2009; Wynants& Dennis, 2018). When OPD appears in the form of online professional learning communities, it presents a wealth of advantages. First and foremost, the teachers have the opportunity to get connected with other teachers having similar problems (Lieberman &Pointer Mace, 2010), to engage in joint enterprise for improving their practice(Lantz-Andersson et al., 2018) and to perpetuate these activities in an ongoing manner by transcending time and place limitations (Powell &Bodur, 2019).

Despite the affordances of OPD programs for teacher professional development, research on OPD converges on the acknowledgement that the field lacks a sufficient knowledge base concerning how professional learning comes about in these programs (Teräs & Kartoglu, 2017). In order to uncover their potential, there is a pressing need for understanding the "nature", "form" and "consequences" of teacher learning in OPDs(Lantz-Andersson et al., 2018, p.303). As already indicated in past research, very few studies have addressed the changes in teachers' mentality and classroom practices as a result of their participation in OPD programs (Wideman, 2010). Moreover, the literature is too fragmented with few empirical evidence to delineate the key characteristics of these programs for their effective functioning (Blitz, 2013; Ewans & Powell, 2007). To address these research gaps, this study sets out to look into the temporary and long lasting changes of Turkish EFL teachers who attend an OPD program that encompasses a series of webinars and online or f2f lesson study

procedure. IMTPG is utilized as an analytical framework to delve into the change processes of these teachers and to throw more light into the effective features of the OPD program for teacher development. This analysis is done both for face-to-face and online LS groups and through cross-case analysis and the unique factors or processes that contribute to teachers' learning are aimed to be unraveled.

### 1.4.Purpose of the Study and Research Questions

This study has two main purposes. One of them is uncovering how teacher learning occurs through an OPD program consisting of webinars as well as face-to-face or online LS procedure. Not only short term changes (change sequences) but also long-term changes (growth networks) in language teachers' cognition and behaviors are examined for three different teacher groups. Additionally, the features of the OPD program that are effective in leading to teachers' professional growth are under scrutiny in the current study. Accordingly, the research questions are as follows:

1. What sequences of change are observed in Turkish EFL teachers participating in the OPD program?

    a. What sequences of change, mediated by reflection or enactment processes are observed for Turkish EFL teachers in the online LS group 1?

    b. What sequences of change, mediated by reflection or enactment processes are observed for Turkish EFL teachers in the online LS group 2?

    c. What sequences of change, mediated by reflection or enactment processes are observed for Turkish EFL teachers in the face-to-face LS group?

2. Which growth networks are identified for these teachers?

    a.Which growth networks are identified in the online LS group 1?

    b. Which growth networks are identified in the online LS group 2?

    c. Which growth networks are identified in the face-to-face LS group?

3. What features of the OPD program were effective in leading to teachers' professional growth?

### 1.5. Significance of the Study

This study is significant on many grounds. Firstly, there is a paucity of research related to online lesson study (Sharma & Pang, 2015) which has great potential as a relatively new approach to OPD. To the best of the researcher's knowledge, only two studies about online lesson study were located by the researcher (e.g. Sharma & Pang; Yursa& Silverman, 2011). Grounded in a constructivist and situated paradigm of professional development, online lesson study is not well-represented in the literature todate and deserves more attention in OPD research. As also indicated by Sharma and Pang (2015), the extent to which online lesson study helps the pedagogical development of teachers is quite unknown. In this study, this research gap will be addressed with the use of IMTPG for looking into how teachers' cognition and teaching practices are transformed as a consequence of their participation in an OPD program that include webinars and online or face-to-face lesson study. The findings of the study will also yield valuable design considerations for such OPDs, which will guide future research.

Secondly, no studies conducting a cross-case analyses for the learning processes of face-to-face and online LS groups could be located. Through this study, the idiosyncratic nature of face-to-face and online LS learning will be revealed. Furthermore, the effective and ineffective features of the OPD program that complements webinars with a face-to-face or online LS procedure will be uncovered.

Thirdly, as Wideman (2010) argued, very few studies had a direct assessment of the changes in teachers' classroom practices after their participation in an OPD program. Additionally, in some other studies, teacher development was explored only at the end of the program without any measures of teacher outcomes before their participation in the program (Blitz, 2013). As a methodological limitation in OPD research, even when teacher change was investigated in few number of earlier studies, mostly self-report instruments such as interviews or open-ended surveys were used as data collection tools (Blitz, 2013).In this study, to delve into the impact of the teachers' participation in the OPD program on their teaching practices, one teacher from each group is observed before and after they attended the OPD program. In this way, how

the changes in teachers' cognition are manifested in their classrooms are aimed to be scrutinized in great detail.

### 1.6.Definition of Terms

*Online Professional Development Program*: It includes workshops, seminars, courses or programs that are offered online for people from the same profession with the integration of synchronous or asynchronous tools.

*Online Professional Learning Community*: It refers to an online community of people from the same profession who share common goals, are bounded with a set of norms and responsibilities towards each other and contribute to each other's learning(Grosmann, Wineburg & Woolworth, 2001).

*Teacher Cognition*: It represents an "an integrated whole of both theoretical and practical insights, beliefs and orientations (personal goals, emotions, expectations and attitudes)" of teachers (Zwart, Wubbels, Bergen & Bolhuis, 2007, p.172).

*Lesson study*: Lesson study is an approach to teacher professional development which draws on teachers' joint efforts towards the improvement of practice and student learning. In lesson study, small groups of teachers work collaboratively for identifying student difficulties and doing joint lesson planning. The co-planned lesson is taught by one of the teachers while others observe the lesson which is followed by the post-lesson discussion. Based on the class observation and the data collected to measure student learning, in the post-lesson discussion, teachers discuss about the effect of the lesson on student learning. Later, the lesson is revised for the second teaching. This procedure can be repeated a few times.

*Webinar:* It is the seminar offered on the web.

*Interconnected Model of Teacher Professional Growth*: It is a model of teacher professional growth which acknowledges the non-linear, active, dynamic and individual change processes of teachers. Teacher growth occurs in four different

domains of change (Personal Domain, External Domain, Domain of Practice and Domain of Consequence) through the processes of enactment and reflection.

*Change sequence*: It refers to the temporary changes in teachers' mentality and practices, the effect of which continues for a short time.

*Growth network*: It refers to the long-lasting changes in teacher cognition and behavior as an indicator of professional growth.

*Enactment*: Enactment is putting new ideas into action by trying out these new ideas or practices as professional experiments (Wang, Kim, Lee & Kim, 2014).

*Reflection*: It is teachers' evaluation of their "students' learning outcomes" and their self-analysis of their "teaching beliefs, attitudes and knowledge" as a lens for examining the effectiveness of the enacted pedagogical practices (Hung & Yeh, 2013, p.154).

*External Domain*: It consists of external source of information or stimulus which teachers have access to.

*Personal Domain*: The personal domain consists of teachers' knowledge, beliefs and attitudes.

*Domain of Practice*: It refers to teachers' professional experimentation.

*Domain of Consequence*: The domain of consequences is related to the inferences teachers draw from their practices about themselves and their students.

*Synchronous tools*: It refers to the online tools that allow for real time interaction between the instructor and students or among professionals.

*Asynchronous tool*: It refers to the online tools that do not require real time interaction but allow learners to learn anytime and anywhere at their own convenience.

# CHAPTER 2

# LITERATURE REVIEW

The aim of this chapter is to review the literature concerning the research focus of the current study. To this end, firstly the effective features of teacher professional development are proposed in reference to the past literature. Secondly, the characteristics of professional learning communities are described and explained in detail while the online professional learning communities are also discussed in terms of their affordances and drawbacks. Later, the theoretical background of the study is explicated. Finally, lesson study procedure as an approach to teacher PD and Interconnected Model of Teacher Professional Growth as an analytical framework for teacher development are elaborated with a detailed explanation of terms and a review of related previous studies.

## 2.1.Teacher Professional Development

Teacher professional development is seen as one of the key enablers of improving and transforming the education systems (Butler, Schnellert & Cartier, 2013; Collinson et al., 2009). Teachers are considered as the main agents of educational change (Hargreaves, 1996) and for educational innovations to be realized, there is a need for addressing teacher learning on an ongoing manner (Lieberman & Pointer Mace, 2008). To this end, teacher professional development, which serves to affect teacher knowledge and practices (Borko, 2004; Guskey, 2000) is viewed as a vehicle for enhancing the quality of teaching and learning (Widjaja et al., 2017), for promoting teacher retention (Gaikhorst, Beishuisen, Zijlstra & Volman, 2015) and also for improving student outcomes (Putnam & Borko, 2000).

The “paradigm shifts in teacher learning” has led to a reconceptualization of approaches to professional development (Hung & Yeh, 2013, p.153). According to

Clarke and Hollingsworth (2002), teacher professional development models need to reflect "the key features of contemporary learning theory" by viewing teacher change not as training but change as a growth or learning. Change as training perspective has the underlying assumption of "change as something done to teachers" (p.948). One-shot workshops, seminars, etc., which require teachers to master the prescriptive knowledge and skills (Witterholt, Goedhart, Suhre & Streun, 2012) is based on this deficit model. This approach has been subject to various criticisms in the literature (Guskey, 1986; Hoban, 2002) since this training model minimized the roles of teachers to passive recipients of knowledge devoid of active and reflective participation in their professional learning processes (Clarke & Hollingsworth, 2002). Transmission models of professional development models have also been found to be ineffective in supporting teachers to change their knowledge and practices (Borko, 2004; Butler, Lausher, Jarvis-Selinger & Beckingham, 2004; Fullan & Stiegelbauer, 1991; Schnellert, 2011) as they ignore teachers' already existing beliefs, attitudes and experiences (Verloop, Van Driel & Meijer, 2001). Literature shows that top-down initiatives also fail to capture the local and contextual needs of teachers and underestimates their crucial role in bringing about educational change (Butler & Schnellert, 2012; Guskey, 2002). When the professional development is in the form of traditional training that forces teachers to implement mandated curricula or instructional strategies without a consideration of teachers' concerns, teachers feel demotivated and alienated (Schnellert, Butler & Higginson, 2008). It also hampers teacher empowerment, which is important for teachers' development as professionals (Dutt, 2001). Change as growth or learning perspective, on the other hand, asserts that change comes naturally through professional activity and teachers learn actively in their learning community (Clarke & Hollingsworth, 2002). These contemporary approaches to teacher professional development, therefore, view teachers as more self-directed in their professional growth in contrast to passive receivers of knowledge as in transmission model (Hung & Yeh, 2013). Hence, it can be said that there is a shift in more recent professional development initiatives to move away from these

tranmission models to more situated, inquiry-based, collaborative, practice-oriented and reflective forms of models (Butler & Schnellert, 2012; Horn & Little, 2010).

Literature identifies several key features of effective teacher professional development grounded in contemporary approaches to teacher professional development. Firstly, they accentuate the importance of authentic teacher learning communities in which teachers work jointly and are involved in collaborative and reflective processes of learning (Darling-Hammond, Hyler & Gardner, 2017; Schnellert et al., 2008; Witterholt et al. 2012). As stated by Smith (2014), teacher professional development can be realized through "a process of putting knowledge into practice within a community of actively engaged practitioners" (p. 469). Teacher learning can be promoted and sustained on the grounds that changes are implemented in teachers' local educational communities (Wells, 2014). According to Darling-Hammond and Richardson (2009), active teacher learning communities, which function collaboratively on an ongoing basis are conducive for teacher professional growth. For this reason, it is of great importance to provide opportunities for collaboration with peers working towards jointly set decisions, goals and needs (Penuel, Fishman, Yamaguchi & Gallagher, 2007; Voogt et al. 2011).

Practice-orientedness and reflective practice are other key features of effective professional development. There is a high demand for contextualizing teacher learning in realistic contexts so that teachers' practices can be influenced more deeply by the professional development opportunities (Clarke & Hollingsworth, 2000). Content and structure of the PD should be embedded in teachers' classroom practices (Hung & Yeh, 2013) and teacher learning should be located in authentic contexts directly relavant to teachers' practices thereby bridging the theory and practice divide (Putnam &Borko, 2000).To this end, it is important to provide teacher learning "in and from practice" (Witterholt et al., 2012, p.661). In other words, in order for professional development to be effective, it needs to have a situated focus on teachers' classrooms, get teacher to implement new strategies and reflect on these activities together with colleagues (Clarke & Hollingsworth, 2002; Guskey, 2002). Thirdly, there should be a

form of inquiry in teacher professional development in that teachers need to be given chances for actively constructing knowledge through practice and reflection (as in action research, lesson study, etc.) (Mayer, Mitchell, Macdonald,& Bell, 2005; Wongsopawiro, 2012). Inquiry-based learning activities should be utilized to promote active construction of knowledge on part of the teachers (Hung &Yeh, 2013).

Viewing professional learning as an ongoing process (Owston, 2007; Yates, 2007) that is sustained over time is another key component of effective professional development. There should be ongoing teacher support by an external facilitator or moderator not only during but also after the professional development programme (Penuel et al. 2007). The guidance of an expert both in theoretical and practical terms (Darling-Hammond & Richardson, 2009) can help to enhance the collaborative and evidence-based learning of teachers (Deppeler, 2007). Finally, effective TPD needs to have an intense focus on student learning (Owston, 2007; Smith, 2014). Administrative support should also be available as conducive for teachers' development (Neil, 1986; Postholm, 2016).

### 2.2.Professional Learning Communities

Originating from the concept of "learning organizations" in business sector (Vescio, Ross & Adams, 2008, p.81), learning communities were adapted to the education arena by Dufour and Eaker (1998). Viewing schools as social organizations (Clausen, Aquino & Wideman, 2009), professional learning communities refer to the the participatory activities of teachers for creating a common community culture and and for promoting a collaborative environment for solving the identified problems at schools (Feger& Arruda, 2008). In contrast to the "traditional workshop approach" to TPD, which is criticized for putting little or no emphasis on the processes of active participation, "reflection", "putting into practice", "collegial discussion" and "continuing support for implementation"(Chappuis, Chappuis & Stiggins, 2009, p.57), professional learning communities stand as viable and "powerful professional development contexts" for teachers (Popp & Goldman, 2016, p.347).

In professional learning communities, teachers' own concerns, needs and experiences are at the forefront of their professional development (Vangrieken, Meredith, Packer & Kyndt, 2017). According to Hord (1997, 2003), these learning communities have certain characteristics and functions. First of all, the members of the community share common goals and are bounded with a set of norms and responsibilities towards each other (Grosmann, Wineburg & Woolworth, 2001). Teachers are to contribute to each other's learning in several ways (Wideman, 2010). Focusing on the identified needs of the group members, teachers co-construct knowledge by engaging in collaborative discussion, sharing resources and testing out new knowledge and skills. They also observe and critique each other as well as engaging in joint inquiry processes with a focus on the curriculum, student achievement and instructional methods. Literature to date has presented compelling evidence that professional learning communities have resulted in (a) increasing teacher collaboration (b) improving student achievement (c) dealing with teacher isolation in efficient ways (Vangrieken et al., 2017).

### 2.3. OnlineProfessional Learning Communities

The advent of internet and mobile technologies has opened up new venues for professional development in many fields including education, business and industry (Bates, Phalen, &Moran, 2016; Vrasidas & Zembylas, 2004). Compared to traditional face-to-face professional development, online professional learning holds various advantages related to the flexibility of anytime, anywhere learning that fits well with teachers' busy programs (Galley, 2002). Other advantages of online professional development (OPD) include reaching geographically dispersed groups of teachers, underserved groups of teachers (Lebec & Luft, 2007) and massive groups of teachers with reduced costs. The availability of synchronous and ascynchronous tools enable enhanced communication and interaction opportunities among teachers (Garrison & Anderson, 2003) providing them with increased time for reflection and dialogue (Sprague, 2006). Through the use of online technologies, teachers have the opportunity to connect with other teachers from different schools and experts. They

can share their expertise and ideas (Gray & Smyth, 2012; Kim, Miller, Herbert, Pedersen & Loving, 2012), engage in collaborative work by trying out new practices (Yang & Liu, 2004) and gain sustainable support in their implementations (Dede et al., 2009). They can also access a large body of knowledge and resources with few "time, space and paceC limitations. (Blitz, 2013, p.1). In addition, through OPD, they can meet their ongoing professional development needs in easier and more practical ways (Zucker, 2008).

Despite a wealth of advantages vis-à-vis OPD, literature shows that OPD also presents many challenges. Research indicates that the feeling of isolatedness, lack of participation and presence shown by the participants in the online course/training, lack of technical skills, low motivation for learning online and consequently high drop-out rates are potential problems in OPD (Chen, Chen & Tsai, 2009; Nasseh, 1998; Preece, Nonnecke, & Andrews, 2004; Schlager & Fusco, 2004; Zou, Varnhagen, Sears, Kasprzak & Shervey, 2007). Due to these problems, there has become a recent shift in OPD from the one-shot online workshops, trainings and webinars grounded in traditional professional development models (Prestridge & Tondeur, 2015) to the online professional learning communities designed through constructivist pedagogies (Whitehouse et al., 2010). Whitehouse et al. (2010) identify three pedagogical models of online teacher professional development: neo-traditional, social constructivist and tele-mentoring, which lie in a continuum that views teacher learners "as receiver of knowledge" versus as "co-constructors of knowledge" (p.256) (See Figure 2.1). According to Whitehouse et al. (2010), online professional learning communities, which lie towards the constructivist end of the continuum, have arisen as a result of thinking on how to improve online teacher learning in harmony with the "current and emerging models of 21st century online pedagogy" (p. 250).

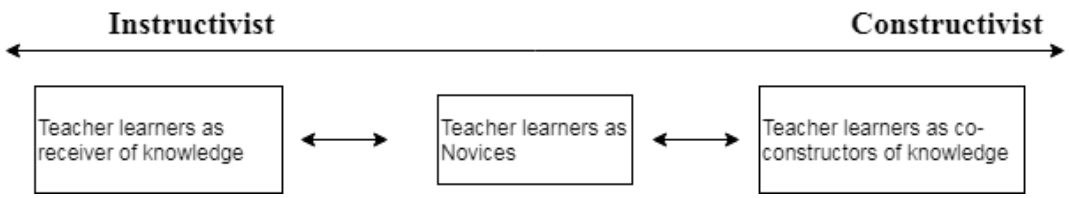


*Figure 2.1* A Classification of Pedagogical Models of Online Teacher Professional Development (Reprinted from Whitehouse et al., 2010)

Online community is defined as a group of people who have shared interests and goals and utilize online technology for communication in lieu of face-to-face communication (Hew, 2009). As a relatively recent professional development model (Barab, Kling & Gray, 2004; Lock, 2006), the idea of online community, which bolsters the sociocultural approaches to learning (Mackey & Evans, 2011), can be either in the form of *communities of practice* or *professional learning communities* (Whitehouse et al., 2010). Communities of practice (CoPs) are comprised by a group of teachers who develop "mutual engagement", "joint enterprise" and "shared repertoire" with a history of learning together (Wenger, 1998, p.73). Communities of practice do not develop immediately. Rather, there are old members; as new comers get into the community and as their activity increases, they gradually reach the core of the community from the periphery. Learning communities, on the other hand, have more explicit aims of learning compared to CoPs and are aimed at achieving certain pre-defined outcomes, which is not available in CoPs (Whitehouse et al., 2010). Outside experts are also welcomed in online professional learning communities whereas they are not preferred in CoPs where peers that can be trusted are viewed as the main source of knowledge and change (Lloyd & Duncan-Howell, 2010).

The advantages of online professional communities are numerous especially in handling time and space limitations associated with face-to-face professional communities. For instance, teachers in an OPC find the opportunity to access teachers with similar interests and professional development goals from different schools or even districts which may not be possible otherwise (Lock, 2006). It is also through the use of online tools that the interaction and communication of these teachers can be promoted and sustained over time. In addition, among a panoply of other advantages, teachers can get prompt, even daily feedback and guidance from other teachers and experts in their application of new pedagogies through OPLC (Nistor et al., 2012). Despite these advantages, literature also identifies particular challenges related to

OPLCs, and puts forward a set of design considerations for creating well-functioning OPLCs.

Research shows that one of the keystones of successful OPLCs is developing clear and relevant community purposes and goals shared by teachers (Keown, 2009; Lai, Pratt, Anderson, & Stigter, 2006). Without a clear purpose and relevance to teachers' immediate needs and teaching contexts, teachers are very likely to leave OPLCs (Baek & Barab, 2005). In a large OPLC called the Inquiry Learning Forum (ILF), for example, designers built smaller groups within the large community where teachers with an interest in similar topics, or those teachers with similar teaching experience or work contexts, could work together to meet their common needs. The findings of their study showed that these small teacher groups were able to engage in meaningful and extended dialogue related to improving their practice (Moore & Barab, 2002).

Another challenge of OPD programs is concerned with the building of mutual trust among the community members so that they feel comfortable with engaging in critical dialog with their peers (Lock, 2006). With the absence of face-to-face contact in OPLCs, teachers become more reluctant to share their ideas or practices with the online peers and thus critical dialog remains only at a superficial level (Barab, 2006). 'Strong leadership and facilitation' strategies (Keown, 2009) are needed here to help teachers feel welcomed by the group and get started with the group activities. In ILF, Baek and Barab (2005), for example, built 'my profile area' into their platform which enabled teachers to set up personal profiles and to develop social bonds with each other. Another recommended strategy for developing community relationships is arranging initial face-to-face meetings with community members (Barab, MaKinster & Scheckler, 2004) or combining face-to-face and online gatherings (Prestridge, 2009) as fruitful for creating a sociable community (Lazar &Preece, 2002). "Providing a rich resource base" is another strategy recommended by Wideman (2010, p.14), which included the provision of research summaries, "pedagogical and technical guides", tutorials, "classroom videos", teaching artefacts (e.g. lesson plans, multimedia materials), "external experts" and reference to other external sources.

Teachers should be able to share documents, co-edit these documents and co-develop new materials. Classroom videos can also be shared to foster discussion and reflection amongst the teachers (Moore & Barab, 2002). Wideman (2010) also suggested providing a blend of synchronous and asynchronous tools in OPLCs in order to benefit from their different affordances. Research shows that there should be "experienced facilitators" to "moderate group activities" for creating a truly 'knowledge-sharing environment' (Blitz, 2013, p.11).Designing the OPD program reported here, the researcher benefited from these suggested strategies in the literature.

Wideman (2010) indicates that although OPLCs are around at least for a decade, the number of studies that examine their effectiveness and sustainability are quite limited. Most of the research centers on a description of teachers' experiences through the use of self-reports (Blitz, 2013) whereas the impact of collaborative teamwork on teachers' processes of learning are quite unstudied. There are also very few studies that looked at changes in teachers' classroom practices as an outcome of their participation in OPLC or the impact of community activities on student learning (Wideman, 2010). This study is grounded in the assumption that online lesson study, when designed in light of the critical features of effective OPLCs, can serve as a promising model for teachers' professional development. This study, which focuses on teachers' development of new knowledge and skills through online lesson study, also aims to fill in the gap in the literature related to the effect of OPLCs on teachers' knowledge development and pedagogical practices.

### 2.4. OPD in Turkish Context

A review of studies on online training or professional development of teachers in Turkish context indicated that this topic received only scant attention and needed more intensive research. In the existing body of research, three participant groups were identified: (a) pre-service teachers (b) in-service teachers and (c) university teachers. When the literature on the online training of Turkish pre-service teachers were reviewed, it was seen that a large body of studies focused on reporting the processes and outcomes of implementing pre-service Distance English Language Teacher

Training Program (DELTT) at Anadolu University (e.g. Aydin, 2008; Aydın & Yuzer, 2006; Keçik & Aydin, 2011; Koç, 2012; Ozkose Bıyık, 2007). Although most of the OPD literature on pre-service education predominantly concentrated on the training of EFL teachers in DELTT program, some studies also included other subjects including pre-school education albeit too limited in number (e.g. Gültekin, 2009). Apart from these, one study which was centered on the formation of an online community of practice (oCoP) for Turkish pre-service teachers was located by the researcher as a study with a different research theme (Baran & Cagiltay, 2010).In addition to the pre-service context, OPD has also been proposed as a viable means of improving "the quality of university teaching and learning in Turkey" (Latchem, Odabaşi & Kabakçı, 2006, p. 23).

A scrutiny of the studies on OPD for in-service teachers demonstrated that a majority of these studies focused on the perceptions of teachers about their online learning experience (e.g. Baran & Cagıltay, 2006; Koç & Özden, 2013; Sezer, KaraoğlanYılmaz & Yılmaz, 2017; Taşlıbeyaz, Karaman, & Göktaş, 2014) or their opinions about online in-service education and traning (INSET) activities in general (e.g. Kokoc, Ozlu, Cimer, & Karal, 2011). The overall findings in these studies showed that the teachers appreciated the flexibility and accessibility aspect of online training (Sezer et al., 2017; Taşlıbeyaz et al., 2014). As for the problems of online training programs, the high number of participants, the lack of interaction between the trainer and the learner and among the learners, the overemphasis on theory and the lack of practical focus in these programs and the lack of technical support were presented as challenges of these programs (Baran & Cagıltay, 2006; Koç & Özden, 2013; Sezer et al., 2017). Alongside these studies, which were mostly qualitative in nature with relatively small sample size, only one experimental study was located by the researcher in which the effect of in-service teacher education on the teachers' computer literacy was compared in face-to-face and online modalities (Sezer et al., 2017). According to the results of this study, no significant difference was detected between the experimental and control groups.

## 2.5. Theoretical Background

This study was built on the premises of both situated learning theories and cognitive theories of teacher learning (Lewis et al. 2009; Prince, 2016) due to the unique features of LS compliant with these theories. Situated learning theory accounts for "the role of embodied social learning" whereas cognitive theory concentrates on identifying "the characteristics of knowledge and knowledge development" (Korthagen, 2010, p.99).Therefore, a combination of both theories as a theoretical lens was deemed as beneficial for analyzing the contextual and cognitive elements of teacher learning during and as a result of LS.

Situated learning theory puts emphasis on the "socio-cultural setting and the activities of the people within that setting" as conducive for their learning (Driscoll, 2000, p. 158). As Clancey (1997) states, "every human thought is adapted to the environment, that is situated, because what people perceive, how people conceive of their activity, and what they physically do develop together" (p.1-2). According to Lave and Wenger (1991), the processes of learning are realized through the involvement of other learners, the environment and the meaningful activities contributing to the development of new knowledge (Lave & Wenger, 1991). Thus, rooted in Vygotsky' s (1978) socio-cultural theory, situated cognition recognizes the interplay between the individual and social along with the particular socio-cultural context in which learning takes place (Schnellert et al., 2008). It is through participation in a community that teachers develop cultural knowledge (Lave & Wenger, 1991), "identities and modes of belonging" (Wenger, 1998, p.263), which affect their future practices and actions (Prince, 2016). In a community of practice, teachers co-construct knowledge as they work towards "an appropriation and transformation" of available resources to find solutions for local problems related to teaching and learning (Pella, 2011, p.109). In lesson study, teacher learning is grounded in collaborative inquiry that focuses on target-oriented and strategic activities of teachers (Butler & Schnellert, 2012). Knowledge of effective practices are developed through teacher collaboration in designing, teaching and critiquing

lessons and the situated nature of LS is reflected in intense focus on practice, which stand at the core of LS process. The development of a learning community, which is related to situated learning theory, enables teachers engaged in LS to benefit from *distributed expertise* (Driscoll, 2000) with teachers bringing different ideas and experiences to the forefront of the LS agenda.

Cognitive theories of teacher learning are also fruitful for examining teacher development due to the relation between the mentalities of teachers and their real practices in their classrooms (Borg, 2006). Changes in identity, attitudes and actions in the classrooms are quite intertwined (Hunter & Black, 2011), which makes studying all of these components in tandem in order to address the 'dynamic nature' of teacher development (Widjaja et al. 2017). In LS, teachers are confronted with many tasks that challenge their cognition throughout the process. They engage in discussions starting from the co-planning of the research lessons to the critiquing of the observed lesson and later the revising of the lesson plan. By participating in pre-and post-lesson discussions, observing lessons, collecting data on student learning and getting the help of facilitators during the process, teachers' mentality is subject to change at various moments. In this study, changes in teacher growth are analyzed with the use of Clarke and Hollingsworth's (2002) Interconnected Model of Teacher Professional Growth (IMTPG). IMTPG identifies four interrelated domains that represent the teacher's world. External domain consists of "external source of information or stimulus" that teachers access while "personal domain refers to teachers' knowledge, beliefs and attitudes (Clarke & Hollingsworth, 2002, p. 951). Domain of practice, on the other hand, includes teachers' trials of "professional experimentation" whereas domain of consequence is the "salient outcomes" that teachers infer from their actions (Clarke & Hollingsworth, 2002, p. 951). According to Clarke and Hollingsworth (2002), change between domains can take place through two mediating processes of *reflection* and *enactment.* Enactment is putting new ideas, knowledge or experiences into action and reflection is the process of reflecting on knowledge, attitudes and beliefs to evaluate the consequences of the enacted practices (Hung & Yeh, 2013). Lesson study has

inherent characteristics related to both situated and cognitive theories of teacher learning. This study, which is grounded in these theories addresses how teacher growth accrues through an online LS procedure.

### 2.5.LessonStudy

Lesson study originated in Japan early in the 1900s (Cheung & Wong, 2015; Fernandez & Yoshida, 2004) and since then has become widespread in many countries all over the world. (Clivaz & Ni Shuilleabhain, 2017) In LS, generally, small groups of teachers (usually four to six teachers) (Fernandez &Yoshida, 2004) work collaboratively to set goals for student learning and co-plan research lessons that target these goals. One of the teachers teaches the lesson in his/her own classroom while other teachers act as observers and collect data on student learning. In post-lesson discussion, they reflect on the data to improve the lesson, and if possible teach the revised lesson in one or more classes (Lewis 2002; 2009). In Japan, nearly all Japanese teachers engage in LS teams on a regular basis by observing research lessons in their schools (Cerbin & Kopp, 2006) or at other schools hosting 'open lessons' that allow for a vast amount of observers (Stigler & Hiebert, 1999). The practices of lessons study groups and the research lessons are also disseminated throughout the country through publications or conferences (Pang & Ling, 2012).

The recognition of LS in the international platform came with the publication of US scholars Stigler and Hiebert in 1999 called *The Teaching Gap: Best Ideas from the World's Teachers for Improving Education in the Classroom* (Dudley, 2015).This writing drew on the results of Trends in International Mathematics and Science Study (TIMSS) data that showed large achievement differences between American students and their counterparts in other countries (Xu & Pedder, 2015). In their study that examined videotaped mathematic lessons in US, Germany and Japan, these researchers attributed the high quality of mathematics teaching observed in Japan ranking in the top five in TIMMS to LS practice becoming commonplace in its educational culture (Xu & Pedder, 2015). Since then, LS has started to be adopted

worldwide as a viable means for supporting teachers to improve their professional knowledge and practices. For instance, the World Association of Lesson study founded in Hong Kong in 2005, has 'members from over 60 countries' now (Xu & Pedder, 2015). Some countries took initiatives to conduct lesson study nation-wide as a school improvement policy or fostering reform-minded teaching (e.g. Cheung, 2011; Hadfield & Jopling, 2016). Moreover, there is even an academic journal called 'International Journal for Lesson and Learning Studies', which is specifically dedicated to dissemination of scientific knowledge related to Lesson and Learning study. Extensive studies conducted in different parts of the world such as US (Fernandez et al., 2003; Lewis, 2000; 2006), UK (e.g. Cajkler et al., 2014), Australia (e.g. Hollingsworth & Oliver, 2005), China (e.g.Yang, 2009) Indonesia and Malaysia (White & Lim, 2008) among many others (Doig & Groves, 2011) also reflect the growing interest for LS all over the world.

Lesson study represents many key features of effective professional development by incorporating an explicit focus on "student learning", on processes of teacher learning through "reflection and inquiry into their practice" (Widjaja et al., 2017, p.358) and on promoting collaborative inquiry (Borko, 2004; Darling-Hammond & Richardson, 2009). In contrast to transmission-based approaches to teachers' professional development such as short term workshops, seminars, etc., lesson study is a teacher-driven PD (Vrikki et al., 2017) providing teachers with the opportunity to collaboratively implement, test, reflect on and refine their pedagogical practices (Bae et al. 2016). It helps teachers become *reflective practitioners*, which is essential to affect teachers' beliefs and practices (Borg, 2015). Through LS, teachers find the opportunities for reflection, collaboration and professional experimentation which are conducive for improving their classroom practices. Lesson study also enables teachers to "develop their own communities of inquiry" (Doig & Groves, 2011, p.77 ) that has a situated interest in their daily classroom practices and addresses the local needs of teachers and their students (Putnam & Borko, 2000)

### 2.5.1. LSProcedure

According to Fernandez & Yoshida (2004), a lesson study cycle consists of the following nine steps (p.25):

1. Setting an overarching goal
2. Identifying a topic for the research lesson
3. Exploring how topic is taught and learnt
4. Creating artifact(s) for the research lesson
5. Writing the research lesson plan
6. Teaching and observing the lesson
7. Critiquing the lesson
8. Making the knowledge public
9. Repeating the cycle with the same or new goal

The LS process starts with determining an overarching goal such as "developing lessons that encourage students to learn from each other", improving "students' ability to wrestle with topics they discover on their own" (Fernandez & Yoshida, 2004, p.12), developing students' skills to work collaboratively in groups (Murata & Pothen, 2011), fostering students' motivation for learning' (Pang & Ling, 2012), etc. Upon the selection of these long-terms goals, teachers agree on narrower goals such as improving students' understanding of how to solve quadratic equations' in mathematics classes (Pang & Ling, 2012) and mastering past passive voice in English as a foreign language classes (Coşkun, 2017). Teachers identify these topics considering the gap between the current level of the students and the desired level espoused by the teachers (Fernandez & Chokshi, 2002). While deciding on the topic, teachers also analyze how that topic is taught in the "textbooks", is addressed in literature, "by outside experts and other teachers in the school" (Fernandez & Yoshida, 2004, p.24). An outside expert can provide the findings of relevant literature (Fernandez, 2002). By also building on the available teaching sources and their own classroom practices (Pang & Ling, 2012), they plan a research lesson along with possible data sources including artifacts and tools that will provide evidence of students' learning during the research lesson (Chokshi & Fernandez, 2004). These

artifacts can include transcripts of student interactions, written materials produced by students (Fernandez & Yoshida, 2004), data from the interviews made with students (Dudley, 2015) or any other data. When the teachers decide on the lesson plan and evidence tools, one of the teachers in the group teaches the lesson, which is observed real time by the other teachers. The live observation can also be complemented with video recording (Doig & Groves, 2011). The observers are given the lesson plan and are expected to take detailed notes of the lesson focusing on student behavior and learning. During the observation, teachers not only observe the "critical moments in the teaching and learning process" but also "collect evidence of student learning" (Widjaja et al. 2017, p.359). In some LS practices, the observers focus on certain students (Doig & Groves, 2011; Dudley, 2015) although this is not obligatory. Following the lesson, teachers come together for a post-lesson discussion in order to evaluate how the lesson served to improve students' learning. The post-lesson discussion is mostly accompanied by an outside expert, who facilitates the discussion by focusing teachers' attention on the pivotal moments of their teaching and the students' response to their activities. As a keystone of LS, the critical reflection and evaluation of the lesson (Dudley, 2015) are centered on not only teachers' teaching practices but also students' learning. Based on the teachers' evaluation of the taught lesson, they revise the lesson and at a later time the lesson is taught by either another teacher or the same teacher in another class (Pang & Ling, 2012). The taught lesson is again critiqued and evaluated. Teachers can complete one research lesson in this way or conduct a longer research cycle (Fernandez & Yoshida, 2004). In Dudley's (2015) version of LS, there are 3 cycles in that the planning, implementation and critiquing of the research lessons happen three times. However, in the current study, two circles were preferred studies since it was seen as enough for testing out the revised lesson and evaluating how it works (Cerbin & Kopp, 2006).

Finally, as an output of LS process, teachers produce a written report summarizing the main themes, striking experiences and conclusions drawn from the actual classroom implementations and post-lesson discussions. The report can also be

coupled with lesson plans, materials, student work samples and other artifacts (Fernandez & Yoshida, 2004). It is also possible that teachers share what they learnt during the LS process with other teachers through seminars or publications (Pang & Ling, 2012).

### 2.5.2. Review of LS Studies

A relatively recent review of literature on LS shows that the studies on LS can be divided into four main categories: Those focusing on (a) the benefits and constraints of using LS in different contexts, (b) the use of LS by teachers and teacher educators with a focus on some facets of teaching and learning, (c) the learning processes of teachers involved in LS and (d) contextual factors that affect the successful implementation and sustainability of LS (Xu & Pedder, 2015). In their review of 67 studies on lesson study published between 2002 and 2013, Xu and Pedder (2015) concludes that there is an abundance of research focusing on the benefits and constraints whereas studies that concentrate on teacher learning through LS are quite limited in number. When more recent studies as of 2013 are examined, however, it is seen that there is an increase in the amount of studies focusing on the processes of teacher learning as a promising avenue of research (e.g. Bae et al. 2016; Dudley, 2013; Vrikki et al., 2017; Widjaja, et al. 2017). It also arises from the synthesis of these studies that discourse analytic approaches towards analyzing teacher learning are quite prominent in the last years (e.g. Warwick, Vrikki, Vermunt, Mercer & Van Halem, 2016).

Literature to-date presents good examples and various benefits of LS implementation in different parts of the world. This stream of research highlights many benefits of LS such as the development of teacher collaboration and a professional learning community, deepened focus on student learning among teachers, the development of teacher knowledge and practice as well as the improvement of teaching and learning (Cajkler, Wood, Norton, Pedder & Xu, 2015; Xu & Pedder, 2015). In regards to teacher collaboration, lesson study is reported as a professional

development activity that allow teachers to engage in joint work during the planning, teaching, observing and critiquing of research lessons (Lewis, Perry & Hurd, 2009). Through LS, teachers have a chance to get involved in free discussion about their ideas and assumptions related to teaching and student learning (Lee, 2008) thereby building collective knowledge as an outcome of these activities (Lewis, Perry, Hurd & O'Connell, 2006). By involving teachers in classroom-based inquiry (Edwards, 2014) through peer observation and feedback (Nami et al., 2016), LS enables the creation of a culture of learning from a colleague (Lee, 2008). LS also helps teachers to share teaching and learning resources (Sibbald, 2009), ask more questions around their practice to each other, and engage in discussions of student thinking (Perry & Lewis, 2009). Through LS, teachers are also given opportunities for setting common long-term aims, gaining ownership of their joint learning through the development of norms and tools, and sharing sense of responsibility for the improvement of each other and their students (Groves et al. 2013; Lewis et al. 2009) all of which contribute to the development of a teacher professional community (Lewis & Perry, 2015).

The development of teacher knowledge and practice (Cajkler & Wood, 2016) is evident in studies that show improvements in teachers' subject content knowledge, pedagogic knowledge, pedagogic content knowledge and knowledge about students (Xu and Pedder, 2015). Qualitative data gathered from interviews, recordings of research lessons and teacher meetings generally serve as sources providing compelling evidence for the emergence of these themes although some quantitative data were also reported in some studies (e.g. Lewis & Perry, 2015). For example, Clivaz & Ni Shuilleabhain (2017), analyzes the types and levels of mathematical knowledge for teaching developed as a result of LS activity. Lewis and Perry (2014, 2015) report improved outcomes related to mathematics teachers' subject content knowledge (of fractions). In addition to these, teachers' improved knowledge of subject content, pedagogy, pedagogical content, and student thinking/learning were also reported in other studies (e.g. Cajkler & Wood, 2016; Fernandez, 2005, 2010; Hunter & Back, 2011; Lee, 2008; Leavy & Hourigan, 2016; Lewis & Takahashi, 2013; Lewis et al.,

2006; Lewis et al., 2009; Ni Shuilleabhain, 2016; Verhoef & Tall, 2011), which substantiate the role of LS in improving teachers' knowledge and practice in different domains.

Literature also shows that the development of the above mentioned professional knowledge along with the changed beliefs about the profession and self-efficacy of teachers as a result of LS activity help teachers to improve their teaching practice at least during the LS process (Chong & Kong, 2012; Dudley, 2013; Robinson & Leikin, 2011; Sibbald, 2009; Xu & Pedder, 2015).These studies, however, do not focus on what happens after LS procedure ends or the sustainability of the changes observed during the LS process over extended amount of time. Regarding student learning, some studies report student data collected at different stages of LS process as an indicator of their increased knowledge and understanding of subject matter content.

Lastly, the final category of LS research delineates the processes of teacher learning, which provides a reading of how teacher learning is realized (Bae et al. 2016; Dudley, 2013; Pella, 2011; Ricks, 2011; Robinson & Leikin, 2012; Vrikki et al., 2017; Warwick et al. 2016; Widjajaet al., 2017). The general trend in some of these studies is the use of discourse analysis for analyzing data from the video recorded discussions of LS teachers. Dudley (2013), for instance, analyzed teacher talk as a mediator of teacher learning and provided evidences of instances in which exploratory talk of teachers helped them access and use "otherwise invisible tacit knowledge" (p.119). Simulation and imaginative enactment also served as important mechanisms that enabled this process. Similarly, Warwick et al. (2016) examined the "dialogic mechanisms" that underpinned teachers' "pedagogical intentions" and indicated the role of "dialogic space" in fostering teacher learning from LS. (p.555).

Bae et al. (2016), Vrikki et al. (2017) and Warwick et al. (2016) developed coding schemes to scrutinize teacher learning in lesson study. Using the categories of teacher learning and change postulated in Lewis et al.'s (2009) study, and adopting an iterative model of professional development (Clarke & Hollingsworth, 2002), Bae et al. (2016)

applied the codes to the discourse of middle school science teachers involved in an LS. They concluded that the codes consisting of three main categories: teachers' knowledge and beliefs, teachers' professional learning community and teaching-learning resources helped to document how changes accrued in these domains. Vrikki et al. (2017), on the other hand, focused on the relationship between "dialogue and teacher learning processes" (p.215) as an element of exploratory talk. In their coding scheme, they related the "dialogic moves", the "scope of the conversation" and "the descriptive and interpretative learning processes" displayed in the discussions to the "nature and quality" of teachers' learning (Vrikki et al., p.216). They posited that with a high reliability for all of the codes, the coding scheme can be used to analyze teacher learning to understand how teachers engage in descriptive learning processes (e.g. teacher noticing, reflection-on-action), and in interpretative learning processes (e.g. deducing pedagogical conclusions from the study of case students ) through LS.

Other studies on processes of teacher learning threw light on how LS process enabled the teachers to learn through reflecting on practice. Ricks (2011), for example, investigated the reflective activity of teachers through a process reflection framework developed from the ideas of Dewey and Schön. In their analysis, they were able to identify various examples of "reflective incidents", which fostered "the stimulation, continuation and application of reflective processes" evident in different stages of LS (p.265). In a similar vein, Robinson and Leikin (2011) focused on the thinking processes of teachers and underscored the important roles of "collaborative noticing", "collaborative awareness" and "brainstorming" as mechanisms of teacher change (p139). Pella (2011), on the other hand, examined the learning processes of teachers who participated in LS from different schools. He reported that 'theoretical equilibrium' emerged while teachers tried to balance competing knowledge, values, beliefs, experiences and resources. Coupled with the synthesis of new set of knowledge and experiences, this led to 'transformative shifts' among the participating teachers. Finally, among the above-mentioned studies which look into teacher learning was a more comprehensive study that approached teacher learning from a wider

perspective. Through the use of IMTPG, Widjaja et al. (2017) analyzed the change sequences and growth networks of math teachers who participated in LS procedure, which is also the focus of this research. The findings of her study substantiated the importance of the interplay between the domains of IMTPG and the mediating processes of reflection and enactment in leading to teacher growth.

It arises from the synthesis of all studies reported so far that all LS studies were conducted through a face-to-face medium only except for two (Sharma and Pang, 2015; Yursa and Silverman, 2011). Yursa and Silverman (2011) implemented an online lesson study with teachers enrolled in a graduate program in mathematics education. For collaboration purposes, they used only synchronous tools, and instead of live observation, they used video-recording. In their study, they concluded that although online LS served effectively for the professional development of these teachers, it was not appropriate to directly transfer LS into an online environment (as cited in Sharma & Pang, 2015). Similarly, Sharma and Pang (2015) implemented an online lesson study with elementary classroom teachers enrolled in a graduate course. Unlike the original LS procedure, they asked each participating teacher to implement and video-record the collaboratively designed lesson in their own classes and post three video-segment that showed striking "aha" moments. In their analysis of teachers' "pedagogical shifts" during the LS process, they found that teachers experienced growth in their "knowledge of assessment and diagnosis" and gained instructional skills(Sharma & Pang, p.415). However, as a limitation of their study, they used self-report instruments, namely written reflections. In the current study, not only some self-report instruments such as interviews and reflection reports but also observation data were included as instruments in addition to the recordings of the research lessons and group meetings.

This study set out to advance the OPD literature with a cross-case comparison of face-to-face and online LS groups and examine the joint effect of lesson study practice and a set of webinars on the development of small groups of teachers. As different from other OPD research, not only short term changes (change sequences) but also

long-term changes (growth networks) in language teachers' development were examined in the current study with the use of Clarke and Hollingsworth's (2002) Interconnected Model of Teacher Professional Growth. The enabling factors of teacher learning in online teacher study groups were also aimed to be revealed through this analysis.

## 2.6.Interconnected Model of Teacher Professional Growth

In their classification of teacher change as used in the literature, Clarke and Hollingsworth (2002) identified six ways in which teacher change was conceptualized. These were (a) change as training (b) change as adaptation (c) change as personal development (d) change as local reform (e) change as systemic structuring and (f) change as growth or learning. Clarke and Hollingsworth (2002) argued that current professional development programs should be in line with the change as growth or learning perspective giving teachers active roles in making changes in their ideas and practices. Rather than the viewing of change as something done to the teachers', teachers need to be viewed as *learners* and schools as *learning communities* that hold a constructivist approach towards teacher learning(Clarke & Hollingsworth, 2002; Hung & Yeh, 2013). Until the middle of 1980s, the general tendency was to view change in knowledge, beliefs and attitudes as preceding changes in practice (Wongsopawiro, 2012). This premise postulated that change in knowledge, beliefs and attitudes yielded changes in better practice, which led to better student outcomes. Fullan (1982) argued that it was this misleading model that grounded many of the ineffective professional development programs. Guskey (2002) proposed an alternative model (see Figure 2.2) by stating that only when teachers implemented changes in their practice and this implementation resulted in increased student learning outcomes, could they change their beliefs and attitudes. Guskey's stance on teacher change emphasized the role of positive evidence provided by the improvement in student learning outcomes (Zwart et al., 2007). For Guskey, reflection mediated these change processes.

Clarke and Hollingsworth (2002) criticized Guskey's model of professional development since it reflected a linear process of teacher change. The "unidirectional pathway from professional development to improved student learning outcomes" (Goldsmith, Doerr& Lewis, 2014, p.6) disregarded the active and dynamic learning processes of teachers and fails to identify different patterns of change. Some authors also referred to how the "cyclic nature of the learning and change process" explained the disappointing results gained through correlational research on teacher professional development and teacher change (e.g. Opfer & Pedder, 2011, p.385). Unlike the linear models, Clarke and Hollingsworth proposed Interconnected Model of Teacher Professional Growth (IMTPG) (see Figure 2.2) to indicate the "individual pathways in teacher development" that display the "underlying processes" of teacher change (Voogt et al. 2011, p.1236).

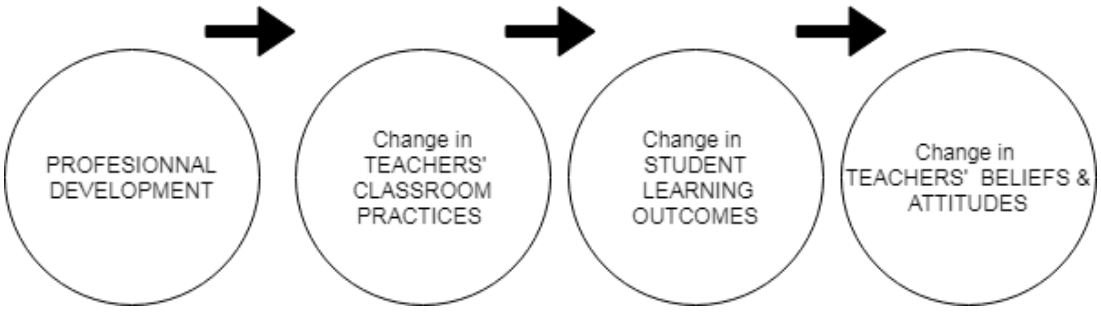



*Figure 2.2* A Model of Teacher Change (Guskey, 2002)

In IMTPG, Clarke and Hollingsworth (2002) proposes four different domains where change can occur: the personal domain, the domain of practice, the domain of consequences and the external domain. The personal domain consists of teachers' knowledge, beliefs and attitudes. When new knowledge, beliefs and attitudes are acquired, there is a change taking place in this domain (Voogt et al. 2011). The domain of practice refers to teachers' professional experimentation. This experimentation occurs when teacher try out new practices. The domain of consequences is related to the inferences teachers draw from their practices about themselves and their students as affected by their value system (Witterholt et al., 2012). In order for a change to happen in this domain, the consequences need to be salient to the teacher. For example,

when a teacher observes improvement in student outcomes consequent to the use of a new teaching practice, this can be perceived as salient by the teacher and change this domain. Finally, the external domain refers to the "outside of the teacher's personal world"(Witterholt et al. 2012, p.663),and is composed of any external source of information that yields change such as meeting with colleagues, attending professional seminars, etc.

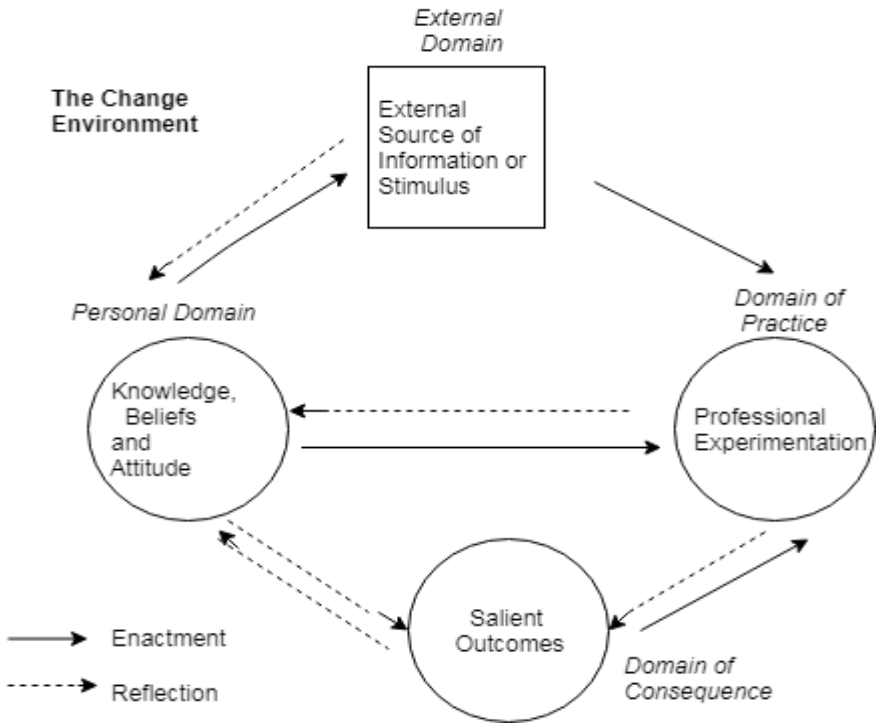



*Figure 2.3* The Interconnected Model of Teacher Professional Growth (Clarke & Hollingsworth, 2002)

There are two mediating processes that enable a change between the four domains: enactment and reflection. Enactment is putting new ideas into action by trying out these new ideas or practices as professional experiments (Wang et al., 2014). Reflection, on the other hand, refers to teachers' evaluation of their "students' learning outcomes" and their self-analyses of their "teaching beliefs, attitudes and knowledge" as a lens for examining the effectiveness of the enacted pedagogical practices (Hung & Yeh, 2013, p.154). The processes of enactment and reflection have the primary function of enabling multiple pathways between the domains. According to Clarke

and Hollingsworth (2002), these pathways can lead to two types of teacher change: either temporary or more lasting changes. Called as change sequence, the temporary changes represent the learning processes, the effect of which continues for a short time on teachers' mentality and practices. When the change in any of the three domains (domain of practice, personal domain, domain of consequence) is long-lasting, it is seen as an indicator of professional growth and the change sequence turns into a growth network. Growth network is a more meaningful outcome of professional development initiative compared to short-lasting effect of a change sequence (Clarke & Hollingsworth, 2002). An example of a growth network can be given as the following. After a teacher learns a new instructional strategy as a result of his/her participation in a PD program, he/she may integrate it into his/her teaching. Following this implementation, he/she may evaluate how students react to this new strategy and these outcomes can result in her changing some of her earlier conceptions about teaching. Based on these changes in her cognition, she makes this new practice as part of her common teaching practice. These long-lasting changes that are typically aimed in PD programs are also within the scope of the current study in order to uncover the processes of more permanent teacher learning.

### 2.7. The Use of IMTPG as the Analytical Framework

To investigate the changes in the participating teachers' cognition and teaching practices, IMTPG was chosen as the analytical framework. This decision was grounded in the following assumptions about this model. Firstly, in line with earlier research on teacher change, this model allowed for addressing the complexity of learning processes of teachers when they are engaged in active and meaningful learning (Clarke & Hollingsworth, 2002). Assuming that teacher change is ongoing and is affected by different domains representing teachers' world, the model served to uncover patterns of teacher change explicating the processes of how teacher learning occurs (Zwart et al., 2007).Secondly, since this model was built on the premise that teacher change is non-linear and iterative, it helped me to identify the idiosyncratic effects of the different aspects of the OPD program including webinars, lesson

implementations and teacher discussions on the participating teachers' development. Finally, it provides the opportunity to represent professional growth of teachers in the form of growth networks (Hollingsworth, 1999) which enables to distinguish between more "straightforward" and "superficial" changes and "straightforward" and "lasting changes" (Justi & Van Driel, 2006, p.443).

### 2.8. Summary and Conclusion

Literature presents an abundant body of studies that focus on the benefits and constraints of lesson study while there is a need for more studies that explicate how teachers learn through LS (Xu & Pedder, 2015).It is also evident in the research to date that the face-to-face medium was used in all LS studies whereas the online LS procedure was only reported to be conducted in two studies (Sharma and Pang, 2015; Yursa and Silverman, 2011). Additionally, in OPD literature, to the best of the researcher's knowledge, few studies have examined the effect of an OPD program on the changes in teachers' classroom behaviors (Wideman, 2010). In this study, it is aimed to fill the research gap in the OPD literature through a cross-case comparison of face-to-face and online LS groups and examine the joint effect of lesson study practice as well as a set of webinars on the development of small groups of teachers. Both short term changes (change sequences) and long-term changes (growth networks) in language teachers' development are investigated with the use of Clarke and Hollingsworth's (2002) Interconnected Model of Teacher Professional Growth.

# CHAPTER 3

# METHODOLOGY

In this chapter, firstly research questions are provided with a detailed presentation of information about the research design and the participants in each LS group. Secondly, Dudley's version of lesson study and the procedure adopted in the current study in the online and face-to-face groups are explained. This is followed by a description of data collection, adaptations made to the IMTPG model and data analysis procedures. Later, how trustworthiness is promoted in the study is explained. Finally, the limitations of the study are discussed by the researcher.

## 3.1. Research Design

In this study, multiple case study was adopted as a qualitative design method. Case study allows for the exploration of "a bounded system" (a case) (Merriam, 1998, p.9) over time through detailed data collection including multiple data sources (e.g. interviews, observations, documents, etc.) (Creswell, 2005). In multiple case study, researchers choose to study several programs from different research sites or multiple programs from a *single site* (Creswell, 2007). The unit of analysis in the current study consisted of face-to-face and online lesson study groups. Multiple case study approach enabled me to (a) identify the unique pathways of change experienced by face-to-face and online LS group teachers (b) investigate the short term and long term changes in their beliefs, cognition and behaviors and (c) do a cross-case comparison to reveal certain similarities and differences in the functioning and learning of these groups.

In this study, I aimed to delve into the professional development processes of the participating teachers who engaged in an OPD program that merged lessons study practice and a series of webinars. The change processes of teachers were analyzed using Clarke and Hollingsworth's (2002) Interconnected Model of Teacher

Professional Growth. Both change sequences (short-term changes) and growth networks (long-term changes) of teachers were examined in order to come up with an in-depth understanding of the effective features of the OPD program.

### 3.2.ResearchQuestions

The following are the research questions of the study.

1. What sequences of change are observed in Turkish EFL teachers participating in the OPD program?

    a. What sequences of change, mediated by reflection or enactment processes are observed for Turkish EFL teachers in the online LS group 1?

    b. What sequences of change, mediated by reflection or enactment processes are observed for Turkish EFL teachers in the online LS group 2?

    c. What sequences of change, mediated by reflection or enactment processes are observed for Turkish EFL teachers in the face-to-face LS group?

2. Which growth networks are identified for these teachers?

    a.Which growth networks are identified in the online LS group 1?

    b. Which growth networks are identified in the online LS group 2?

    c. Which growth networks are identified in the face-to-face LS group?

3. What features of the OPD program were effective in leading to teachers' professional growth?

### 3.3.Participants

The participants of the study consisted of ten Turkish EFL teachers from various middle and high schools who volunteered to take part in the study. Due to the voluntary nature of the PD program, convenience sampling was used as the sampling method. The teachers in online lesson study (OLS) group 1 and face-to-face lesson study (FLS) group were included in the study when the researcher visited various schools in Zonguldak city and got their consent for doing all of the assigned activities in the study. The teachers in OLS group 2 were accessed via social media and therefore

were from different parts of Turkey. In order to motivate the teachers to fully participate in the study and to do the assigned tasks, the researcher informed the teachers about a free trip to be offered after the OPD program.

### 3.3.1.TheParticipants in the OLS Group 1

At the beginning of the study, there were 6 teachers in online lesson study group 1. Two of these teachers left the OPD program in two weeks' time; therefore, the group continued with the following 4 teachers. These teachers worked at different high schools in Zonguldak and they did not know each other before they met face-to-face in the initial introduction meeting. All of the teachers were female whose teaching experiences ranged between 7 and 15 as given in Table 3.1 below.

Table 3.1 *Demographic Information about the Participants in OLS Group 1*

| | Gender | Years of Experience | BA degree |
|---|---|---|---|
| Sanem | Female | 15 | Translation & Interpreting |
| Beste | Female | 7 | ELT |
| Ayla | Female | 8 | ELT |
| Sevgi | Female | 14 | English Language and Literature |

A background questionnaire showed that Sanem had her undergraduate degree in Translation and Interpreting and held MA degree in Curriculum and Instruction (See Appendix 1 for the background questionnaire). She had fifteen years of teaching experience apart from working in Research and Development Division at Ministry of Education. Sanem took part in some PD activities in Turkey and travelled abroad for some Erasmus projects. At the beginning of the online PD program, she expressed her

desire to improve her teaching skills since she was not a graduate of English Language Teaching Department, and felt the need for professional development. She followed some teacher, project or graduate research groups in Facebook.

Ayla had a bachelor's degree in ELT and had 8 years of teaching experience. At the time of the study, she has just been transferred from a secondary school to a high school. Therefore, she was in the process of getting used to the new school environment and to teaching relatively older students. The questionnaire data showed that she did not attend any in-service training program before and did not go abroad for any personal or professional reasons. In one of the interviews, she stated that she forgot most of the information she gained during her undergraduate studies. She saw the need to improve her teaching skills and upgrade herself by acquiring new knowledge and skills about teaching methods. At the beginning of the online lesson study procedure, she expressed her desire to watch the recordings of the teaching done by other teachers and not to do any teaching in her own classroom. Hence, none of the co-planned lessons were taught by Ayla.

Beste had a BA in ELT and 7 years of teaching experience. According to questionnaire data, she has never participated in a PD program before and she indicated her need to learn about English language teaching methods and techniques as well as web 2.0 and mobile technologies that can be used in language classes. Apart from following some websites for language teachers in which activities and lesson plans were shared, she did not benefit from other web 2.0 tools either for her professional development or for using in the classroom. As revealed in the interview data, she was not confident about her teaching skills. Although she knew that she should create more student-centered lessons, she did not know how to achieve this. Classroom management was another big problem for her, for which she could not find a solution herself.

Sevgi had her BA degree in English Language and Literature and had 14 years of teaching experience. As shown in the questionnaire data, she participated in

professional development activities abroad and did some Erasmus projects. She also integrated English into her private life to a great extent by doing reading, listening and writing in English on a frequent basis. She mentioned two websites she used in her classes and stated that she heard but did not use some mobile apps that can be utilized in language classes. She also followed some teacher groups in Facebook for her professional development.

### 3.3.2.TheParticipants in the OLS Group 2

The online lesson study group 2 contained three teachers, two of whom worked at the same school in İzmir city. The remaining teacher, Nermin, was from Diyarbakır city and did not have any face-to-face meeting with the other two teachers. All of these three teachers worked at secondary school level and they complained about the low profile of their students at the beginning of the OPD program. In terms of teaching experience, Asu had more experience compared to the other teachers who were in their early years of their teaching career as shown in Table 3.2.

Table 3.2 *Demographic Information about the Participants in OLS Group 2*

| | Gender | Years of Experience | BA degree |
|---|---|---|---|
| Sedef | Female | 2 | ELT |
| Nermin | Female | 4 | ELT |
| Asu | Female | 11 | ELT |

Sedef was a graduate of an ELT department and she had 2 years of teaching experience. The questionnaire data showed that she did not read or do listening in English. She also did not communicate in English with any foreigners. These indicated that she did not incorporate English into her daily life. She neither followed any blogs or forums for her professional development nor attended any conferences before. She, on the other hand, reported to exchange ideas with teachers in her school about her

teaching practices as the only effort she put for her professional development. Additionally, she declared that she did not benefit from any websites or mobile phones while designing activities in her classes.

Nermin, with a major in ELT, was a teacher with 4 years of teaching experience. She has been involved in some Erasmus projects and gone abroad twice for these projects. Her questionnaire data showed that she put effort towards her PD activities by following some academic journals and attending some conferences. However, she did not harness the potential of the websites, Facebook groups or forums about English language teaching except for using one or two of them. She expressed her desire for learning about web 2.0 tools in the webinars.

Asu had 11 years of teaching experience with a bachelor degree in ELT. She worked at the same school as Sedef. Although she cared about professional development and strove for it in individual ways, she did not participate in any professional development activities before. She had an interest in learning about web 2.0 tools and testing. She did not use any websites, blogs or forums other than following teacher groups in Facebook.

### 3.3.3.TheParticipants in the FLC Group

The face-to-face lesson study group contained three teachers who worked at different secondary schools in Zonguldak city. The teachers' teaching experience varied between 9 and 20 as shown in Table 3.3 below. The teachers first met in face-to-face introduction meeting before their participation in the program.

Table 3.3 *Demographic Information about the Participants in FLS Group*

| | Gender | Years of Experience | BA degree |
|---|---|---|---|
| Handan | Female | 20 | ELT |

| | | | |
|---|---|---|---|
| Meltem | Female | 11 | English Language and Literature |
| Ezgi | Female | 9 | ELT |

Handan was the oldest teacher in the lesson study group with 20 years of teaching experience. She had a BA in ELT. As demonstrated in the questionnaire, she had fewer PD activities during her teaching career compared to the other teachers in that she has not attended any conferences, followed any academic publications or integrated English in her life by reading or communicating in English. At the beginning of the project, she indicated her need to learn about web 2.0 tools since she believed her students really enjoyed it and she did not have any technological know-how. She stated to follow only one FB group for her PD and the only website she utilized in her teaching was British council's website. She typically followed the activities and tasks in her textbook in her daily instruction.

Meltem was a graduate of English Language and Literature department. She was 34 years old, had 11 years of teaching experience and was currently pursuing a master's degree in ELT. Her current school was a Science and Art Center. Therefore, unlike other teachers, she did not teach a whole class but she had a small group of students who came to this center as part of extra-curricular activities. Due to the different structure of the school, she preferred preparing personalized activities and tasks for her students depending on their interests and levels. She had an immense interest in harnessing the potential of web 2.0 tools in her teaching. She was an e-twinner who actively took part in many online projects with partners from other countries. Being an e-twinner helped her to learn a wide variety of web 2.0 tools and adapt these tools into her teaching. As shown in the questionnaire data, she put effort for her PD development by attending conferences in Turkey and following many teacher groups in Facebook. She also had her own teacher group in FB in which she

shared good practices and web 2.0 tools that can be integrated into language classes with other teachers.

The questionnaire data showed that Ezgi had a BA degree in ELT and 9 years of teaching experience. She was currently teaching at a middle school, but was about to be transferred to a high school in the second semester. She was a teacher who tried to use interesting and fun activities for her students. She often surfed on the internet to look for these activities instead of following the textbook at all times. She has not been abroad before but at the time of the study, she was planning to initiate an Erasmus project between her students and a group of students abroad. For her PD, she stated to follow academic publications occasionally, but she had not participated in any conferences before. She followed some groups in Facebook in which teachers exchanged ideas about class activities.

### 3.4. Dudley's Version of Lesson Study

In this study, Dudley's (2014, 2015) version of lesson study was chosen among different versions of LS as a baseline for designing face-to-face LS group activities. However, some adaptations were made to this version of LS for the design of online lesson study procedure. In the lesson study procedure described by Dudley (2014), a group of teachers work together to improve students' learning by first identifying difficulties or barriers students face during their learning and to implement teaching strategies that will address these difficulties. According to Dudley (2014), improvement aimed in LS can take in place in two ways: (a) by motivating the less engaged students in the lesson or (b) by teaching a topic in the curriculum (e.g. ratios in math classes) in new ways so that students make progress in this topic at least as much as they do in other topics.

In LS, teachers plan and teach a number of research lessons (usually three) in order to facilitate their students' learning. Since LS draws on a professional development activity that is grounded in teacher-to-teacher learning, creating a collaborative environment that is built on mutual trust and that is conducive for collegial discussion

and critique is of pivotal importance. Therefore, at the outset of LS procedure, teachers agree to conform to the regulations of LS group protocol (Appendix 2). The first stage of LS is planning research lessons after having done some research on different ways to motivate students or better ways to teach a certain topic. Research lessons are planned with three case students in mind. These case students can be those having problems with motivation or making enough progress in the lesson or they can be those belonging to the higher attaining, lower attaining or middle attaining groups in the class. While planning the lesson, teachers also think about how these students can react to different stages of the planned lesson by using 'research lesson planning, observation and discussion sheet'(Appendix 4). Teachers' predictions of possible student behaviors later serve as the basis for comparison with observed behavior in post-lesson discussions.

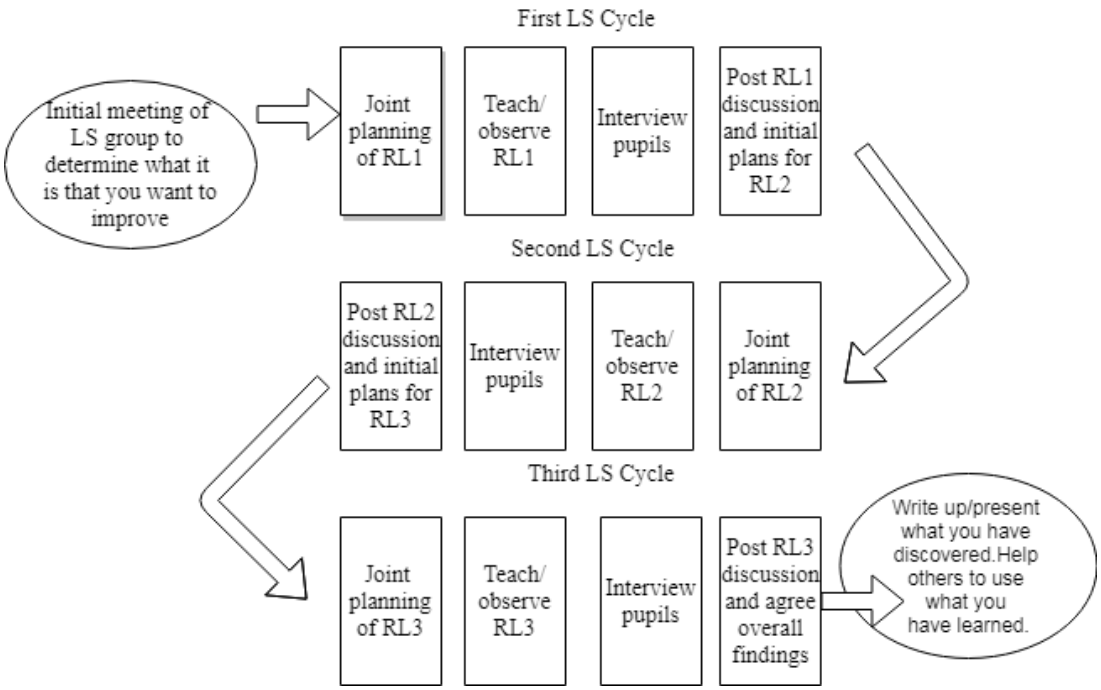



*Figure 3.1*Lesson Study Procedure. Reprinted from Dudley (2015, p.8)

Consequent to research lesson planning, one of the teachers in the LS group teaches the planned lesson while other teachers engage in live observation. During the observation, teachers observe student learning rather than teaching by using a copy of

the research plan and filling in the Research Lesson Planning, Observation and Discussion Sheet. Focus on student learning helps teachers to develop a better understanding of the impact of the lesson on students' cognition and learning (e.g. revealing assumptions about learners, possible student misunderstandings). Also it gives the teachers the impression that the problems with the lesson are not a big issue since lesson belongs to the whole group, not individual teachers (Dudley, 2015). Additionally, at this time, students can be interviewed to learn about their experiences with the research lesson (see Appendix 4 for interview questions). Following the observation, teachers attend post-lesson discussion. Post-research Lesson Discussion Protocol (see Figure 3.2) guides teacher discussions in that the flow of conversation proceeds from a focus on the learning of case students to that of other students and finally to teaching related issues. Based on the evidence related to students' learning and the effect of the teaching approach, teachers revise the lesson plan, which is again taught by one of the teachers and observed by others. The LS cycle of research lesson planning, teaching, observing and discussion are implemented three times.

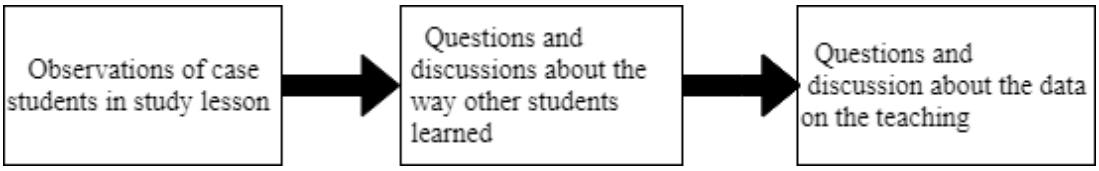



*Figure 3.2*Post-research Lesson Discussion Protocol. Reprinted from Dudley (2015, p.11)

### 3.5. Procedure

During a timeframe from 30th of October, 2017 to 19th of January 2018, the participating teachers engaged in two activities for their professional development by attending (1) webinars, which were hosted by the researcher and her academic advisor as part of a Marie S. Curie Career Integration Grant that was aimed for language teachers' professional development in Europe (2) face-to-face or online lesson study groups that were designed specifically by the researcher for creating a local professional learning community. There were six webinars, the topics of which were

identified by a nation-wide survey data collected from Turkish EFL teachers (OzkoseBıyık & Uslu, 2016).

The topics and dates of the webinars are given in Table 3.4 below. For the webinars, WizIQ was used as the platform, which has many interactivity features such as whiteboard, raisehand, video, audio and chatbox and also enables the recording of the webinar. Although some of the teachers were not able to attend some webinars due to some personal reasons, the researcher made sure that they viewed the recordings of the webinars at most in a four week period.

Table 3.4 *Webinar Topics and Dates*

| Webinar Topics | Dates |
|---|---|
| Reflective Practice for Language Teachers | October 30, 2017 |
| Innovative Techniques in Teaching English I | November 6, 2017 |
| Innovative Techniques in Teaching English II | November 13, 2017 |
| Using New Technologies in Language Teaching I | December 11, 2017 |
| Using New Technologies in Language Teaching II- | December 18, 2017 |
| Using New Technologies in Language Teaching III | December 25, 2017 |

In lesson study procedure, it is a common practice to provide teachers with various resources such as professional literature, recommended readings, teaching sources, classroom videos etc. (Fernandez & Yoshida, 2004). In this study, webinars served as an external source of information for teachers to increase or support their knowledge of language teaching methods and web 2.0 tools that can be used in language classes.

In September 2017, a face-to-face meeting was held in Zonguldak city in which the teachers in the online lesson study group 1 and face-to-face lesson study group participated. In this orientation meeting which aimed at developing social bonds among the teacher learning community, all members of the community introduced themselves to the group. The researcher gave introductory information about lesson study procedure along with handouts describing how LS is implemented. An extra

handout that showed the activities and assigned tasks was also given to teachers. Finally, for the online group 1, the researcher gave a brief workshop on how to use the synchronous and asynchronous communication tools to be used throughout the study. Additional tutorials about these tools were uploaded on the class group in Edmodo for teachers' later viewing. For the teachers in online group 2, this introduction was made online since it was not possible for these teachers to attend the orientation meeting due to the considerably long distance between the two cities.

### 3.5.1. The Procedure in the Face-to-Face Lesson Study Group

The face-to-face lesson study group followed the procedures described by Dudley (2014). However, instead of three research lesson cycles, two cycles were preferred as a common practice in various LS studies (e.g. Cerbin & Kopp, 2006) since two cycles, that's the implementation and discussion of a research lesson twice were considered to be enough for testing out the revised lesson and evaluating how it works. By meeting f2f once a week, the face-to-face group took part in 11 lesson study meetings.

During the given timeframe, the teachers completed the following LS procedure three times. First, teachers identified a specific learning challenge of their students to address it in the research lesson. Having agreed the focus, the group teachers planned the research lesson in detail focusing on the intended learning of 3 case students. They also devised a small- scale data collection tool to measure the learning of their students such as interviews with students after the research lessons or student work samples. Later, the co-planned lesson was taught by one of the teachers. As different from Dudley's (2014) version of lesson study, however, the other members watched the video recordings of the research lessons instead of live observation due to the tight schedules of the teachers. The video recordings of the research lessons were shared with teachers via Google Drive and the teachers were expected to attend the post-lesson discussion meetings having viewed these recordings. Watching the video recording, the teachers observed the whole class but they were more focused on the

learning of three *case students*. The group evaluated the lesson focusing on evidence for student learning and engagement during each phase of the lesson. Later, discussion was centered on the quality of teaching during the lesson. Based on the issues raised in post-lesson discussion, the group revised the research lesson followed by the planning of another research lesson. The second research lesson was taught by another member of the group while other teachers again watched the recording. Finally, another post-lesson discussion was held to evaluate how lesson went first in terms of student learning, and later in terms of teaching. During these activities, lesson study proposal and the research lesson planning, observation and discussion sheet (Dudley, 2014) were used to focus the teachers' attention on the lesson study procedure (see Appendix 3 and 4)

### 3.5.2. The Procedure in the Online Lesson Study Groups

For the online LS group, both synchronous and asynchronous tools were intended to be utilized in order to promote seamless communication among teachers. WizIQ was used for synchronous meetings whereas Edmodo was opted for promoting asynchronous communication among teachers. At the beginning of the study, Edmodo was considered as an online platform to enable the teachers to sustain their collaborative dialogue during the week apart from the live meetings. Therefore, the researcher posed some discussion questions on the class page in Edmodo related to the teachers' suggestions or reflection on the research lessons. Although Edmodo was used by some of the teachers in order to engage in an asynchronous dialogue with other teachers, most of the teachers did not prefer to contribute to these discussions due to time limitations. The teachers who initially posted their comments also gave up doing so in the first two weeks of the study. Therefore, the researcher decided not to keep the Edmodo discussions as a task for the teachers. Instead, the online meetings in WizIQ were used by the group for lesson planning and post-lesson discussions.

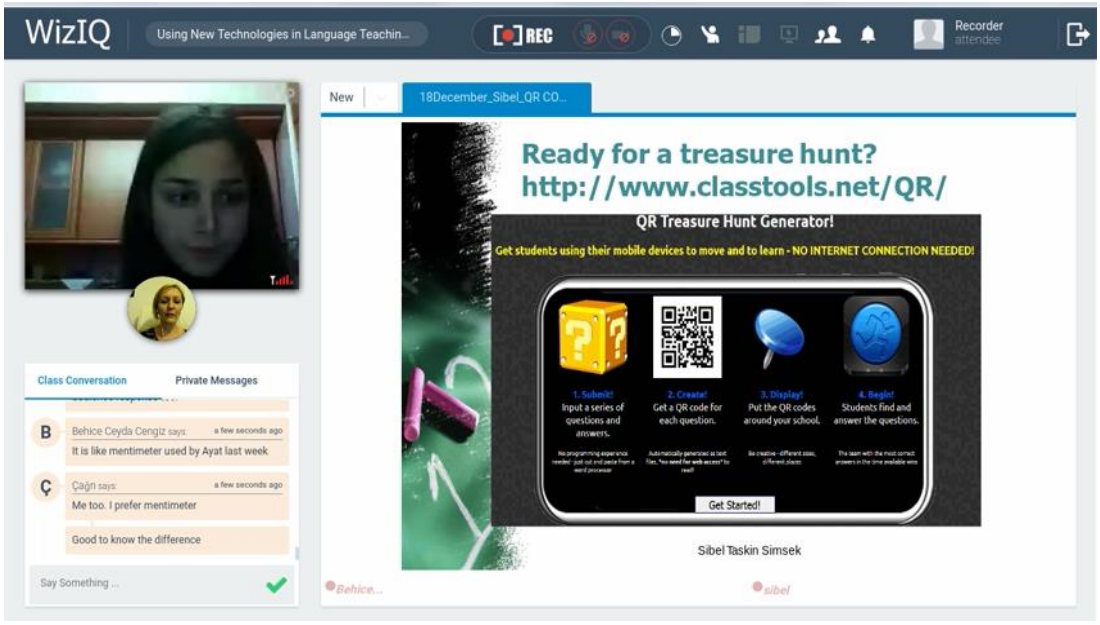



*Figure 3.3*Webinars and Live Sessions Held in WizIQ

In this group, the teachers met online once a week for implementing the lesson study procedure. In online meetings, the teachers exchanged ideas about lesson planning filling in the lesson study proposal and the research lesson planning, observation and discussion sheet collaboratively with the use of Google Docs. The focus of the research lessons was again 3 case students and the teachers did the lesson planning with these 3 students in mind. The co-planned lessons were taught by one of the teachers and some small- scale data were collected from the students including interviews or student work samples. Later the video recordings of these lessons were shared with the other teachers with the use of Google Drive. Following the implementation of the research lesson, the teachers had a post lesson discussion in which they referred to their observations about the efficacy of the lesson for student learning. Based on the teachers' joint contributions, the research lesson was revised and taught by another teacher in the group. After the second implementation, the group held another post-lesson discussion in order to evaluate the impact of the lesson on the students. This LS procedure was completed 3 times in online lesson study group 1 while it was done four times in the online lesson study group 2.

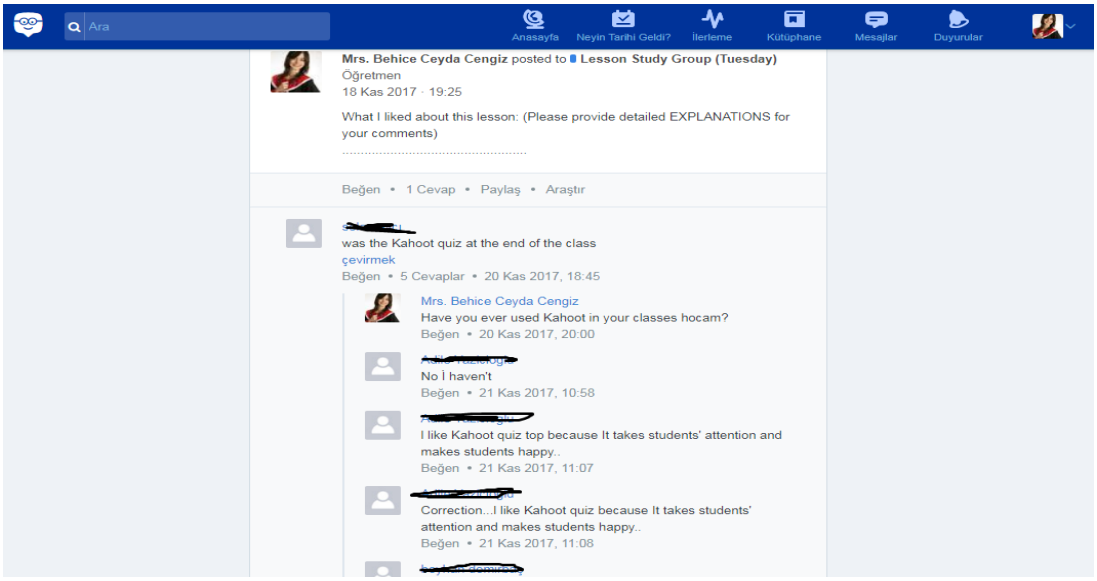



*Figure 3.4*Discussion Posts in Edmodo

## 3.6. Data Collection

Data collection tools consisted of a background questionnaire, the video-recordings of pre-lesson and post-lesson discussion meetings (in both face-to-face and online LS groups), teacher posts in Edmodo, reflective journals, semi-structured interviews, classroom observations, stimulated recall interviews and document analysis. The document analysis included the video-recordings of the research lessons, lesson plans, the '*research lesson planning, observation and discussion sheets'* filled by teachers, and student work samples or student interviews (see Appendix 5 for interview questions). The data collected from each teacher was presented below in Table 3.5, 3.6 and 3.7.

Table 3.5 *Data Collection Tools Used in OLS Group 1*

| | Background Questionnaire | Interviews (3) | Observation & SR interviews | Reflective Journal | Number of LS meetings attended (11) |
|---|---|---|---|---|---|
| Sanem | √ | √ | √ | - | 10 |
| Ayla | √ | √ | - | 2 entries | 11 |
| Beste | √ | √ | - | - | 10 |
| Sevgi | √ | √ | - | - | 11 |

At the beginning of the study, the teachers were asked to fill in a questionnaire, which included questions about their educational and teaching background. The questionnaire also included sections about the professional development activities the teachers are engaged in to improve their language and teaching skills. The aim of the questionnaire, therefore, was to provide an in-depth description of each teacher, which was used in the analysis and explanation of their change patterns.

Table 3.6 *DataCollection Tools Used in OLS Group 2*

| | Background Questionnaire | Interviews (4) | Observation & SR interviews | Reflective Journal | Number of LS meetings attended (11) |
|---|---|---|---|---|---|
| Sedef | √ | √ | - | 3 entries | 11 |

| | | | | | |
|---|---|---|---|---|---|
| Nermin | √ | √ | √ | - | 11 |
| Ayla | √ | √ | - | - | 11 |

As a commonly used instrument in LS studies, semi-structured interview was employed in the current study to provide a detailed picture of the changes in the teachers' beliefs, cognition and teaching practices (Xu & Pedder, 2015). When the teachers completed two research lessons in each LS procedure, they were interviewed by the researcher. Hence, the teachers in online lesson study group 1 and face-to-face lesson study group were interviewed three times. On the other hand, four interviews were made with the teachers in the online lesson study group 2. The interview questions were taken from Cajkler et al.'s (2015) study; however, the teachers were allowed to adapt the flow of the conversation depending on their salient experiences in the program (see Appendix 6 for interview questions). Interviews were made in the native language of the teachers in order to create a stress free and natural environment.

Due to the importance of reflection in PD programs (Ricks, 2011), reflective journals were included as a data collection tool and the teachers were asked to write weekly journal entries. The teachers were not provided with any specific reflection questions but they were motivated to write about their learning experiences in lesson study meetings and webinars. Despite several reminders sent by the researcher, only two teachers wrote two reflective journals throughout the program due to their heavy workload.

To examine the effect of the OPD program on teachers' teaching practices, one teacher from each group was observed for three hours before they participated in the program. These teachers were also observed for three hours after 5 months passed since the end of the program. In each observation, the researcher sat at the back of the class and took field notes on the teaching style and techniques of the teachers, L1/L2 use in the classroom, classroom activities and the communication patterns between the teacher and the students and among students. Following the observation,

stimulated recall interviews were made with the teachers to understand the rationale behind their teaching practices and decisions and their philosophical orientations towards teaching.

Table 3.7 *Data Collection Tools Used in FLS Group*

| | Background Questionnaire | Interviews (3) | Observation & SR interviews | Reflective Journal | Number of LS meetings attended (11) |
|---|---|---|---|---|---|
| Handan | √ | √ | - | - | 11 |
| Meltem | √ | √ | - | - | 9 |
| Ezgi | √ | √ | √ | - | 11 |

### 3.7. Adaptations to the IMTPGModel

To reflect the idiosyncratic features of the OPD program, two main adaptations were made to the IMTPG model in the current study (Wongsopawiro, Zwart & Van Driel, 2017; Zwart et al. 2007). Firstly, the external domain, which refers to any external source of information provided to the teachers, was separated into two parts as *webinars* and *lesson study discussions*. The webinars served to present information to the teachers about language teaching methodology and web 2.0 tools for language classes. The lesson study discussions, on the other hand, represented any peer-to-peer learning arising in group meetings when the teachers exchanged ideas with each other.

Secondly, some elaborations were made on the Domain of Practice to include the practice-oriented activities in lesson study procedure. Hence, Domain of Practice was divided into *lesson planning, teaching, revising* and *reteaching* which are the components of LS procedure and *common teaching practice* which is distinct from

these LS components. The common teaching practice was included in this domain in order to display professional experimentations in teachers' own classes apart from the teaching practices inherent in LS procedure.

### 3.8. Data Analysis

To initiate the analysis process, firstly, all of the qualitative data were transcribed verbatim and the participating teachers were provided with pseudonyms to promote confidentiality. As the analytical framework, Clarke and Hollingsworth's (2002) model of Interconnected Model of Teacher Professional Growth was used for investigating the learning processes of teachers who attended the OPD program. For the analysis, constant comparison method was employed throughout the analysis comparing new codes with old ones and being open to new codes (Merriam, 1998). Therefore, various data sources were examined in tandem, which involved a "recursive process of searching across data sets" (Hung & Yeh, 2013, p. 158). The indicators of change presented in Table 3.8 were utilized for the coding of the data in order to display the changes in teachers' "cognition", in "attitude or beliefs", in "perceived or intentional behavior" or in teachers' common teaching practices (Wongsopawiro, 2012, p. 100). In this study, an indication of change represented changes in cognition or behavior where cognition referred to "an integrated whole of both theoretical and practical insights, beliefs and orientations" whereas behavior represented "the reported actions undertaken by a teacher" (Zwart et al. 2007, p.172).

Table 3.8 *Indicators of Teacher Change Adapted from Zwart et al. (2007) and Hung & Yeh (2013)*

| Coding examples |
| --- |
| 1. Statements regarding learning outcomes, made by the teachers themselves or the use of some adjectives that signify positive learning experiences during the PD program such as: beneficial, helpful, instructive, thought- provoking, etc. |
| An example: *I have learnt how to create vocabulary sets in Quizlet.* |
| An example: *The observation of research lessons was very instructive for me.* |
| 2. Statements concerning observations of classroom outcomes in research lessons or other new insights gained in research lessons |

An example: *I have seen thatKahoot might be troublesome in some classes.*

An example: *I have realized thatbeing more active as a teacher motivates the students a lot.*

3. Statements concerning observations or evaluations of student learning outcomes

An example: *I observed that my students learnt from this activity.*

4. Teacher reports of the wish to carry out the behaviour more often

An example: *I'm sure I'm going to do this the same way next time.*

An example: *I plan to complement the book with other materials from now on.*

5. The use of comparative and superlative degree in teacher reports of events

An example: *I believe I should integrate technology more into my classes.*

6. The use of change signaling adverbs in teacher reports of events, like: before, different, a different way, suddenly, never before

An example: *I started to think differently about how I should teach vocabulary.*

7. The use of verbs that incorporate change in teacher reports of events, like: to change, to move, to gain, to modify, to improve, etc.

An example: *We gain more when we use activity-based teaching in the class instead of traditional teaching methods.*

An example: *I started to use more games in my classes.*

To examine the pathways of change in the domains specified in IMTPG (external domain, personal domain, domain of practice and domain of consequence), Justi and Van Driel's (2006) criteria were used (Table 3.9). The entry points of change domains and how they influenced the other domains were analyzed with the use of these criteria. For each group, change sequences and growth networks were identified. The frequency of change sequences initiated by one of the four domains was also provided in each group in addition to a presentation of the common entry points, the first mediating processes, the end points in change sequences (Wongsopawiro, 2012; Zwart et al., 2007). Finally, based on the identified change sequences and growth networks, effective features of the OPD program were proposed. An example is presented in Appendix 7 to show how data analysis process was conducted.

Table 3.9 *Criteria Used in this Study to Establish Relations in the IMTPG (Adapted from Justi& Van Driel, 2006).*

| Relation | Mediating process | Criterion |
|---|---|---|
| From PD to ED | Enactment | When a specific aspect of the teacher's initial cognition or belief influenced what s/he did or said during the lesson study meetings or during the webinars |
| From ED to PD | Reflection | When something that happened during the lesson study meetings or during the webinars modified the teacher's initial cognitions or beliefs |
| From ED to DP | Enactment | When something that happened during the lesson study meetings or during the webinars influenced the lesson planning, teaching, revising or reteaching of the research lessons or teachers' own teaching practices |
| From PD to DP | Enactment | When a specific aspect of the teacher's cognitions or beliefs influenced the lesson planning, teaching, revising or reteaching of the research lessons or teachers' common teaching practices |
| From DP to PD | Reflection | When the lesson planning, teaching, revising or reteaching of the research lessons or teachers' experimentations in his/her own teaching practice modified his/her cognitions or beliefs (without reflection on classroom outcomes first) |
| From DP to DC | Reflection | When the teacher noticed and reflected on something that the teacher or the students in the research lessons or s/he or his/her own students did in teaching practice that caused specific outcomes (such as student learning, teacher control, student motivation, and student development) |
| From DC to DP | Enactment | When a specific outcome made the teacher state how s/he would modify the associated teaching practice in the future<br><br>When a specific outcome made the teacher change his/her practice at that moment (reflection-in-action) or make him/her state how s/he would revise the research lesson |

| | | |
|---|---|---|
| From DC to PD | Reflection | When the teacher reflected on a specific outcome, thus changing a specific aspect of his/her previous cognitions or beliefs |
| | | When a teacher's evaluative reflection on the salient outcomes led to a change in cognition |
| From PD to DC | Reflection | When a specific aspect of the teacher's cognition helped him/her in reflecting on/analyzing a specific outcome of the research lesson or that of his/her own teaching practice |

According to Clarke and Hollingsworth (2002), the difference between a change sequence and a growth network lies in the fact that growth networks present "explicit evidence of lasting change in practice or in teacher knowledge or beliefs" (p. 958) whereas change sequences do not. In the current study, due to the relatively short duration of the OPD program, which makes it hard to observe the long-lasting teacher change (Justi& Van Driel, 2006) , a difference stance needed to be taken in our view of change sequence and growth network in line with Clarke and Hollingsworth's (2002) descriptions and the purposes of the current investigation. To make a distinction between the two, several criteria were utilized. Firstly, according to Clarke and Hollingsworth (2002), change sequence referred to one or two relationships between different domains whereas growth networks represented more complex processes of teacher change with more than two relationships between the domains. In this study, since online or face-to-face lesson study procedures inherently consisted of many phases including lesson planning, teaching, revising and reteaching processes, the number of relationships between different domains could potentially be more than two although they indicated short term changes as change sequences. Therefore, instead of using this number as the criterion, I opted for labeling longer pathways of change as growth networks indicating more complex processes of teacher change. Secondly, for an indicator of a long-lasting change, I expected to see the ending point of a growth network to be in the Personal Domain since this domain encompasses teachers' knowledge, attitudes, beliefs and cognition and tended to

reflect more enduring learning on part of teachers (Wongsopowiro et al., 2017). Another criteria for growth network was the observation of *adoption* in teachers as a professional growth type identified by Hollingsworth (1999). According to Hollingsworth, adoption referred to lasting change in teachers' knowledge and practices in congruent with the ideas presented in the PD program. Therefore, when I observed the teachers making use of new teaching practices in their own classrooms or during the lesson study procedure in accordance with the ideas presented in the OPD program and noticed their reflection on the outcomes which were followed by their making this new practice as part of their regular teaching practice, I categorized these instances of teacher change as growth networks.

In order to differentiate between a change sequence and a growth network, earlier work by Hollingsworth (1999) and Clarke and Hollingsworth (2002) were also used as a reference in the current study. In his study, Hollingsworth (1999) termed the simple and short-lasting changes in teachers' cognition and behavior as change sequences. For example, when a teacher implements a new teaching strategy in her classroom following a professional development program, this change is called as a change sequence representing a temporary teaching behavior (see Figure 3.5a). Consequent to this change in practice, the teacher can reflect on the general quality of the implementation (3.5b) or alternatively focus on the student outcomes of the new teaching practice (3.5c). According to Hollingsworth (1999), all of these change patters are referred as *change sequences* as seen in Figure 3.5 below.

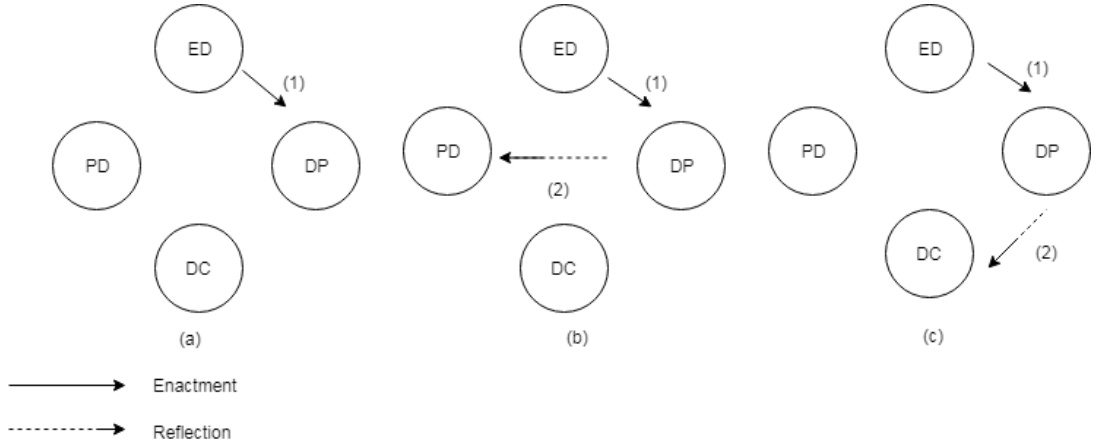



*Figure 3.5* Examples of Change Sequences

In his study of the professional growth of primary teachers who partook in a PD program, Hollingsworth (1999) found that some of the change sequences did not go any further, thereby not leading to professional growth. However, he also identified some instances of enduring and long-lasting changes in teachers' practice, which were labeled as growth networks. An example of a growth network is depicted in Figure 3.6 below. In this growth network, a teacher is introduced to a new teaching strategy in a PD program, therefore a change is initiated in the External Domain. The new teaching strategy is put into practice in the Domain of Practice and the teacher reflects on the student outcomes of her teaching practice such as improved student learning and increased motivation in addition to her satisfaction with the new strategy in the Domain of Consequence. The salient outcomes of implementing the new teaching practice results in a change in teachers' belief about the teaching strategy in the Personal Domain. Consequently, this strategy is integrated into the teacher's common teaching practice in the Domain of Practice.

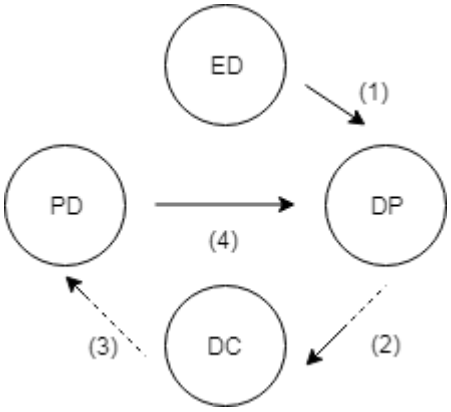



*Figure 3.6* An Example of a Growth Network

In their seminal article on the Interconnected Model of Teacher Professional Growth, Clarke and Hollingsworth (2002) presented other examples of growth networks as provided in Figure 3.7 below. The figure 3.7a presents a growth network which occurs when a teacher who participated in a PD program was observed to engage in "ongoing refinement of practice" as a representative of a long-term change in her classroom practices (Clarke & Hollingsworth, 2002, p.959). The following teacher quote exemplifies the teachers' professional growth in which External Domain and Personal Domain triggers changes in teachers' teaching implementations. A reflection on the new teaching practice results in a change in her cognition and beliefs.

*[Now] I use groups and pairs and things like that rather than just this is how you do it, putting thirty problems up on the board and saying open your books and go for it. So a lot of it's different…Just a whole lot of things to make maths more interesting.* (Clarke & Hollingsworth, 2002, p.959)

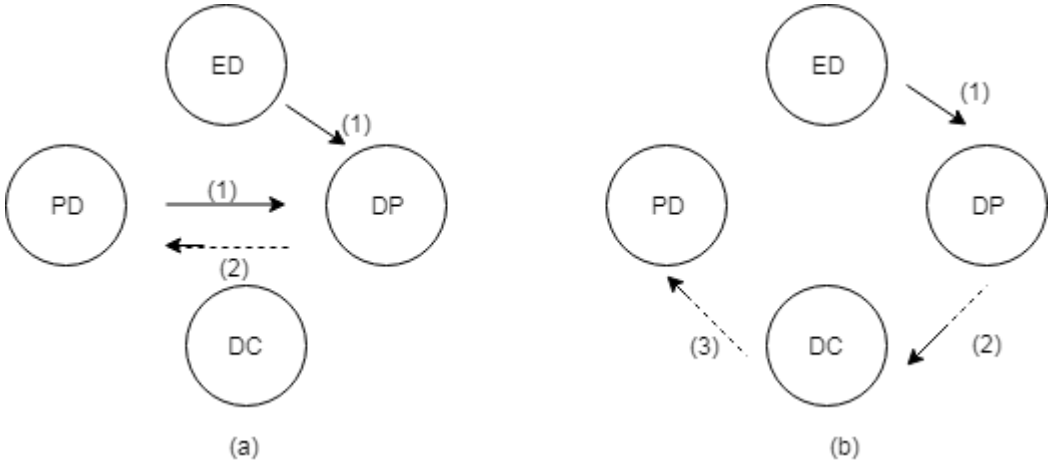



*Figure 3.7* Other Examples of Growth Networks

In figure 3.7b, the professional growth of a teacher is illustrated where long-term changes to her knowledge and beliefs are reported. In this growth network, the teacher incorporates innovative teaching practices into her classes after she participated in a PD program (change in Domain of Practice). Later, she reflects on the student outcomes of this enactment (change in Domain of Consequence) and this reflection brings about a lasting change to her cognition as shown in the following quote (change in Personal Domain):

*Well, when I first spoke to you about this I was always extremely formal, my maths teaching was always really formal. Obviously I've learnt that there are better ways and more interesting ways to teach maths.* (Clarke & Hollingsworth, 2002, p.959)

### 3.9. Trustworthiness

As an important quality criteria in qualitative research, trustworthiness was introduced by Lincoln and Guba (1985) as a substitute for validity in quantitative studies (Dörnyei, 2007). According to Lincoln and Guba (1985), trustworthiness was composed of 4 components, which included credibility, transferability, dependability and confirmability. In order to address these components, the following measures were taken during the design and implementation of the OPD program, data collection and analysis processes.

*Triangulation*

Triangulation is a commonly used strategy in qualitative research to ensure the "accuracy" and "credibility" of the findings (Creswell, 2012, p.259). It refers to the strategy of utilizing multiple methods or various data sources in tandem (Patton, 1999). In the current study, the triangulation strategy was used with the incorporation of different data sources including background questionnaire, interviews, recordings of group meetings, reflective journals and document analysis. For one teacher in each group making up three teachers in total, teacher self-reports were also complemented with observation and stimulated recall interview data in order to triangulate the findings' accuracy and to disclose the impact of the OPD program on the teachers' cognition and common teaching practices.

*Peer debriefing*

Peer debriefing refers to the process through which the researcher works with one or several colleagues in the review and analysis of data to promote trustworthiness (Lincoln & Guba, 1985). In the current study, the researcher got help from two colleagues who were also PhD students in the review of the analyzed data. For peer debriefing, it is essential that the peer debriefers are exposed to the data along with the research questions and have face-to-face meetings with the researcher at different times (Barber & Walczak, 2009). To start the process, firstly, these two researchers were given information about the coding scheme and all components of the IMTPG model were explained in great detail to these researchers. The researcher also provided them with research articles in which this model was used subsequent to demonstrating the differences between a change sequence and a growth network. Besides, by choosing a random set of transcript, she showed them how to conduct the analysis using the coding scheme and criteria for establishing the relation between the domains.

In order to consolidate her own competency to use the IMTPG as a framework of analysis, the researcher also shared the analysis of data that belonged to one of the online lesson study groups with these colleagues. They reviewed the identified pathways of change and provided their suggestions when they had a different idea

about the entry points, endings points or mediating processes. Following the discussion among the researchers about certain pathways, the researcher took notes of the required changes and integrated these insights into the analysis of further data.

During different phases of the analysis, the researcher consulted the peer debriefs to obtain their ideas when she had certain doubts about the analysis. When the amount of data is large and there are resource and efficiency issues (Garrison, Cleveland-Innes, Koole & Kappelman, 2006), it can be ideal to have this kind of interaction with the peer debriefer at specific intervals instead of the full emergence of the peer debriefer in the analysis process. In earlier research, it is also indicated that the reviewing of the 20-25% of the analysed data by a peer debriefer is an acceptable procedure (Barber & Walczak, 2009). With this information in mind, in the current study, the final report of the researcher about the identified change sequences and growth networks in all groups was also checked by these two colleagues and revisions in the report were made when the researcher agreed with the peer debriefs. In some situations in which the researcher did not reach an agreement with the peer debriefs, she kept her own analysis.

*Member Checks*

Member checking is the act of reporting the results of data analysis back to the participants to check the accuracy of the findings (Merriam, 2009). Thus, all of the teachers except for two were shown the growth networks identified by the researcher and they were asked to express their opinions regarding their validity and accuracy. Due to heavy workload of the teachers, only growth networks were shown to the teachers instead of change sequences. The two teachers did not reply to the request of the researcher due to time limitations. Based on the feedback received from the teachers, some changes were made in the identified growth networks. For instance, some of the entry points in the identified growth networks were changed after the teachers provided explanations about what triggered the change in the first place. Similarly, some changes were made in the ending points as suggested by the teachers.

*Prolonged Engagement*

Prolonged engagement is the researcher's being present in the research site for an adequate time to build a rapport with the participants, to understand the cultural dynamics and variations within the group and to resolve the dilemmas (Bassey, 1999). In this study, the researcher spent ample amount of time with the participants starting from the face-to-face meeting at the beginning of the study. She attended all of the webinar sessions and the meetings of both online and face-to-face lesson study groups. In this way, she gained a considerable amount of insights about the group culture and the characteristics of each teacher in the group.

*Inter-coder Reliability*

Inter-coder agreement is necessary in qualitative research in order to verify and strengthen the reliability of the findings (Creswell, 2007). It refers to the coding of data by two independent coders to ensure the dependability of the analysis. In the current study, a negotiated approach to coding the transcript (Garrison et al., 2006) was adopted due to the exploratory nature of the study, the qualitative orientation of research questions and the multi-phase data analysis procedure. In negotiated approach, data are coded separately by different coders and there is an active discussion process among these coders in order to reach a final version of the codes. To this end, the coders compare and contrast their ideas and interpretations in order to check to what extent they can reach an agreement. According to Garrison et al. (2006), this approach to coding, which is also opted for in earlier studies that use IMTPG for data analysis (e.g. Wongsopawiro et al., 2017; Zwart et al., 2007), holds various advantages. Firstly, it offers the opportunity of "hands-on training" and collaboration for inexperienced researchers and helps "coding scheme refinement", both of which contribute to the reliability of the analysis (Garrison et al., 2006, p.3). Through this approach, the risk of misinterpretation of data and erroneous coding can be minimized; besides, this approach to coding is convenient to be used in exploratory research which requires gaining "new insights" about the data (Garrison et al., 2006, p.3).

During the different phases of data collection, the researcher benefited from the negotiated approach to coding. Due to the arduous task of coding huge amount of data, independent coding was done for the analysis of data that belonged to 3 teachers. As explained in methodology section, each of these teachers was from a different group: one from the OLS group 1, one from the OLS group 2 and the other from the FLS group. These 3 teachers were the ones researched in greater scrutiny than the other teachers since they were the ones who were observed before and after their participation in the OPD program. To this end, the researcher and a colleague of her who was a doctoral student in the Faculty of Education with substantial experience of conducting qualitative data analysis and excelled in the field of teacher education worked independently for the analysis of the data.

Firstly, to initiate the process, the researcher provided her colleague with the coding scheme, explained the domains and mediating processes in IMTPG and showed how to establish the relationships between the domains with the use of the identified criteria. In that first meeting, the researcher also provided the second coder with a set of interview transcripts. Acting like a coding trainer, the researcher showed her how to code the transcript using the coding scheme (Garrison et al., 2006). In addition, the researcher demonstrated some examples of a change sequence to the second coder. For illustrating the difference between a change sequence and a growth network, she benefited from the examples provided in the research articles using the IMTPG model. Later, she gave her other sets of interview transcripts by asking her to do the coding on her own. In this way, the researcher made sure that the rater had a complete understanding of how to use the coding scheme. Through this practice, the coders also had the chance to practice discussing and negotiating for their interpretations. As a result of this practice, some minor adaptations were made to the coding scheme. Some details were added to the statements in the coding scheme to make them more general and understandable.

Since teacher change was investigated in the current study, it was necessary to delineate the processes of change throughout the data by looking at the statements that

indicate a change and find the linkages between these statements in different data sets. However, one major problem felt during these preparation sessions was that even when the coders identified the statements related to teacher change correctly, they were not able to detect the whole pathway of change. The reason was that data analysis required looking at different data sets in tandem and it was quite probable to miss some parts of the pathways. In these situations, the coders showed each other the related part of the data to be included in the pathway of change and necessary revisions were made in the identified pathways.

For the actual data analysis, both coders first identified the statements that indicated teacher change independently for 3 teachers. The percent agreement was calculated as described by McHugh (2012). To make it clearer, the coded instances of teacher change were listed in a table. In the rows, the codes identified by each coder were presented while the columns were used to represent the two coders. The presence of a code was given the score of *1* and the score of *0* was provided for the absence of a code. To calculate the percent agreement, the number of agreed codes were divided by the sum of the agreed and non-agreed codes multiplied by 100. In the initial analysis, the percent agreement was between 60-65 % for the data belonging to each of the 3 teachers. According to Miles and Huberman (1994), this ratio is acceptable in the first analysis. Later, the researcher and the other coder looked at the differences in coding and discussed if the codes found by either of the coders should be included as a statement that shows teacher change.

Following the coding of the statements, the coders established the relation between the domains using the identified criteria individually. When there were differences in identifying the mediating processes, the entry points or the ending points, the coders discussed these differences and most of the time they reached an agreement. In some situations in which they could not reach an agreement, a peer who is knowledgeable about the analysis procedure was consulted. For determining whether a particular pathway of change is a change sequence or a growth network, percent agreement was

calculated. The agreement was found to be close to 80% which is considered as a strong agreement (Cohen, 1960).

*Thick description*

Thick description refers to the elaborate contextualization of the setting and observed phenomenon in relation to the surrounding intentions and actions (Denzin, 1989). A detailed presentation of the study and the procedures helps one to make judgments about the transferability of the findings to other contexts (Dörnyei, 2007). To this end, in the current study, the researcher provided a detailed account of the research setting, participants, cases, procedures, data collection tools and analysis techniques in order to enable the transferability of the findings to similar contexts.

### 3.10. Researcher Role and Bias

The researcher had prior research experience on online teacher professional development. She also had a good command of OPD literature and had initial thoughts about the strengths and weaknesses of online and face-to-face lesson study groups. Therefore, it was quite possible that her awareness about potential problems and challenges in OPD as well as the inherent advantages might have resulted in researcher bias affecting her way of thinking during data analysis and her interpretation of the findings. To minimize these biases, the researcher utilized various data sources including self-report and observation data and took field notes during the webinars and group meetings to record her thinking and realizations about teacher learning throughout the study.

The researcher had an observer as participant role in the study (Stake, 1995). She designed all of the learning activities in the OPD program, guided the teachers through the process of lesson study procedure and attended all the webinars and the lesson study group meetings. These enabled her to better observe the impact of the program on the teachers' professional growth. However, in line with Dudley's (2014) version of lesson study, she took a neutral role in the group meetings in order not to interfere in group thinking and decision making. She only facilitated teacher dialogue by

focusing on their attention on the research lessons and she only interfered in group discussions when the teachers went off topic.

### 3.11.Limitations

One of the limitations in the study was that by virtue of its qualitative methodology and small sample size, the study only strove to provide a qualitative snapshot of teacher learning that played out in an OPD program. Hence, it was not asserted that the findings could be generalized to other contexts. Besides, since this is not an experimental study, it was not possible to establish a cause and effect relationships between teachers' participation in the webinars, in face-to-face or online lesson study procedure and their learning outcomes. Instead, the impact of these PD activities were analyzed qualitatively for an in-depth exploration of teachers' learning processes and the unique contributions of these activities. As participants, the focus of the current study was only the teachers who attended a particular PD program. Although a small scale analysis of student learning was done in research lessons and discussed during group meetings, the impact of LS procedure on students' learning was not examined in any systematic ways. Another limitation was that the OPD program presented in this study had a relatively short duration and whether teachers were able to develop a truly professional learning community was not examined in this study. Finally, although the importance of the quality of teacher discourse in PLCs is well-acknowledged, the lesson study discussions during the teacher meetings were only analyzed with the use of IMTPG without any discourse analysis approaches.

# CHAPTER 4

# RESULTS

In this chapter, the findings of the study are presented in relation to the research questions. Firstly, the change sequences identified in the groups are presentedrespectively for the OLS group 1, 2 and FLS group to illustrate the short-term changes in the participating teachers. This will be followed by a display of the growth networks detected in each group as a representative of the long-term changes in their cognition or teaching behaviors. Later, based on the identified change sequences and growth networks, the effective features of the OPD program are proposed. Finally, at the end of the chapter, a summary of the findings is given.

## 4.1. The Change Sequences Observed for Turkish EFL Teachers Participating in the OPD Program

The analysis of the change sequences in the online and face-to-face lesson study groups demonstrated that these groups had many similarities in terms of common entry points, ending points and mediating processes. When the change sequences identified in all groups were scrutinized, it was seen that all domains except for Domain of Consequence served as an entry point despite some variations between the groups in terms of the frequency of the domains as entry points. In OLS group 1 and FLS group, DP was the most common entry point for teachers whereas the lesson study discussions in the External Domain was more prevalent in OLS group 2. It was also the case that the impact of the lesson study discussions was less salient in the online lesson study group 1 compared to the other groups. Another finding was that the webinars in the External Domain did not yield detailed change sequences in face-

to- face lesson study group unlike the other two groups where the webinars were effective in yielding short term changes in the teachers.

Table 4.1 *Most Common Entry Points in the Change Sequences of the Groups*

| Domains | OLS group 1 | OLS group 2 | FLS group |
|---|---|---|---|
| PD | 5 | 6 | 3 |
| ED (LSD) | 11 | 31 | 17 |
| ED (webinars) | 15 | 17 | 2 |
| DP | 35 | 20 | 18 |
| DC | 0 | 0 | 0 |

In all of the groups, the ending points were in the Personal Domain, Domain of Consequence or Common Practice in the Domain of Practice. However, the most common ending point was Domain of Consequence in each group. In online lesson study group 1 and face-to-face lesson study group, the frequency of reflection outnumbered the frequency of enactment as the first mediating process of change while enactment was more common in the online lesson study group 2.

Table 4.2 *The Frequency of the First Mediating Processes in the Change Sequences ofthe Groups*

| | Mediating Processes | |
|---|---|---|
| Groups | Reflection | Enactment |
| OLS group 1 | 46 | 20 |
| OLS group 2 | 35 | 39 |
| FLS group | 28 | 12 |

It seemed that the different aspects of the program and the various domains that represent teachers' world contributed to teacher learning in each group. Personal knowledge, beliefs and attitudes of the teachers (Personal Domain), lesson study discussions (External Domain), webinars (External Domain) and the implementations of the research lessons (Domain of Practice) were influential in triggering short-term changes in the teachers' cognition, beliefs and teaching practices. When the entry point was in the Personal Domain, the teachers in OLS or FLS groups tended to follow a similar pattern of change. Firstly, a specific aspect of the teacher's initial cognition or belief influenced what s/he did or said during the group meetings (Personal Domain

→ External Domain). The idea suggested by the teacher was integrated into the research lesson (External Domain → Domain of Practice) and following the teaching of this lesson, the teachers tended to reflect on the general results (Domain of Practice → Personal Domain) or the student outcomes of the lesson (Domain of Practice → Domain of Consequence). This change sequence was observed in one teacher of the OLS group 1, in two teachers of the OLS group 2 and one teacher of the FLS group.

When the entry point was the lesson study discussions in External Domain, 9 different pathways of change were identified in OLS and FLS groups. The comparison of the groups showed that the lesson study discussions resulted in more detailed change sequences in OLS group 2 with more mediating processes and more revising and reteaching processes included in the pathways of change. In all of the groups, every teacher simply reflected on the ideas they gained from the peers during group meetings (External Domain → Personal Domain). These reflections sometimes continued when what teachers said during the group meetings (Personal Domain → External Domain) affected lesson planning or revision of the first research lesson (Personal Domain → Domain of Practice) *(2 teachers in OLS group 2, 2 teachers in FLS group).* Other times, the lesson study discussions ended up with planning of the research lesson (External Domain → Domain of Practice ) and the teachers evaluated the student outcomes in this lesson (Domain of Practice → Domain of Consequence) (*2 teachers in OLS group 1, 3 teachers in FLS group*). Other change sequences occurred when certain general or student outcomes noticed by the teachers led to the revision of the taught lesson (Domain of Consequence→ Domain of Practice), which was followed by a reflection on the student results of the revised lesson (Domain of Practice- Domain of Consequence) *(3 teachers in OLS group 2).* Finally, the new knowledge gained from lesson study discussions resulted in one teacher's from OLS group 1 making changes in her common teaching practices (External Domain- Domain of Practice) whereas for other teachers reflection on the general or student outcomes of the research lessons were necessary for adding to one's classroom practices (Domain of Practice→ Personal Domain or Personal Domain→ Domain of

Consequence) (1 teacher from OLS group 1, 1 teacher from OLS group 2, pictogram 5, 15)

Table 4.3 *Most Common Ending Points in the Change Sequences of the Groups*

| | Domains as ending points | | |
|---|---|---|---|
| Groups | PD | DC | DP(common practice) |
| OLS group 1 | 26 | 32 | 8 |
| OLS group 2 | 24 | 42 | 8 |
| FLS group | 7 | 33 | 0 |

The webinars in the External Domain started various change sequences in all of the groups. Only in FLS group, there was just one change sequence initiated by the webinars which included a reflection process on the benefits of the webinars as perceived by the teachers (External Domain→ Personal Domain). In this group, webinar content was also not included in any of the research lessons as different from the other groups. One teacher from OLS group 1 was able to transfer the newly gained information from the webinars directly to her own class by using some new web 2.0 tools (External Domain → Domain of Practice) and later looked at student reactions (Domain of Practice →Domain of Consequence). In OLS group 1 and 2, ideas from the webinars were often incorporated into the research lessons (External Domain → Domain of Practice) and the teachers reflected on the general classroom or student outcomes of these lessons (Domain of Practice → Personal Domain or Domain of Practice →Domain of Consequence) *(2 teachers in OLS group 1)* and this reflection motivated some teachers to make changes in their own teaching practices (Personal Domain → Domain of Practice) *(2 teachers in OLS group 2)*. At other times, reflection on the consequences of the research lessons in terms of student learning led to the revision of that lesson (Domain of Consequence → Domain of Practice) and the teachers reassessed the student outcomes of this lesson (Domain of Practice → Domain of Consequence) *(2 teachers in OLS group 2).*

Finally, the change sequences initiated by Domain of Practice were very common in all of the groups. The teachers tended to notice and reflect on something that the

teacher or the students in the research lesson did in the research lesson that caused specific student outcomes or other classroom outcomes (Domain of Practice →Domain of Consequence or Domain of Practice → Personal Domain) *(4 teachers in OLS group 1, 2 teachers from OLS group 2, 3 teachers from FLS group 1).* Sometimes, this reflection continued with some teachers' changing their own classroom practices *(2 teachers from OLS group 1, 2 teachers from OLS group 2).* At other times, it proceeded with the revision of the first research lesson and the following focus on the student results of the revised and retaught lesson *(3 teachers from OLS group 2 and 3 teachers from FLS group).*

### 4.1.1. The Change Sequences Observed for Turkish EFL Teachers in the OLS Group 1

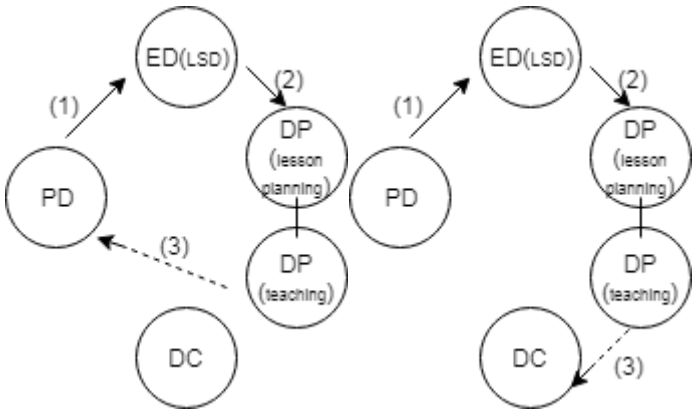
The analysis of the OLS group 1 showed that different domains led to the formation of various change sequences. It was found that the webinars in the External Domain and the teaching component of the Domain of Practice especially yielded many change sequences for all of the teachers. It was seen that the webinars in External Domain led to change sequences for all of the teachers especially when the ideas presented in the webinars were integrated into the research lessons. In addition, the Domain of Practice was also an efficient information source for the teachers since it provided the teachers with the opportunity to observe the effect of the research lessons and each other's teaching practices and techniques. In general, the effect of the lesson study discussions in External Domain was less paramount for the teachers since teacher contributions to the lesson study discussions were not even with some teachers having few contributions to the discussions.

The most common entry point in teachers' change sequences were Domain of Practice for all of the teachers, which was followed by the webinars in External Domain except for one of the teachers. The lesson study discussions in the External Domain did not yield many change sequences especially for two of the teachers. It arose from the data that all of the four teachers were able to enact new practices in

their classroom upon their participation in this online professional development program (OPD). Despite the wide presence of enactment process, reflection outnumbered enactment to a great extent as the first mediating process of change in three of the four teachers. As another finding, it was revealed that the degree and means of enacting new practices in one's classes varied across the teachers. Some teachers needed to see evidences of positive student outcomes in research lessons in order to transform their teaching practice while some teachers were ready to add to their practice without any evidence following their learning during the program.

#### 4.1.1.1. Change sequences initiated by Personal Domain

As seen in the Figure 4.1 presented below, 2 different pictograms were identified based on an analysis of the change sequences initiated by Personal Domain. Pictogram 1 was only found in Sanem whereas Pictogram 2 was seen both in Sanem and Sevgi.




Pictogram 1 — Sanem*(2)*

Pictogram 2 — Sevgi (2), Sanem (1)

*Figure 4.1* Change Sequences Initiated by Personal Domain in OLS Group 1

Observed two times, pictogram 1 belonged to Sanem who was an active teacher in group meetings who expressed her opinions while planning and critiquing the lessons. The change sequence displayed in this pictogram started when she offered a particular activity to the group (Arrow 1) and it continued with the acceptance of that idea by the other teachers (Arrow 2). Following the teaching of the co-planned lesson, she reflected on the general quality of the lesson (Arrow 3). To illustrate, firstly, she

suggested using Kahoot in the research lesson: “We can use Kahoot at the end of the lesson. I use it for revising vocabulary” (Source: Group meeting 2). Kahoot is integrated into the lesson plan and in group meeting 3, she evaluates the lesson as follows:

> I have seen that Kahoot might be troublesome in some classes. The internet problems in the class culminated in utter chaos. Not sure it is good to use all times. It could have been better to think of a b plan when using technology in case of any technical problems (Source: Group meeting 2).

Similar to Sanem, Sevgi showed active participation in lesson study discussions by suggesting activities on many occasions for the research lessons. This often continued with the incorporation of her suggestions into the lesson plan. Concomitantly, she evaluated the research lesson in terms of student outcomes as indicated below.

While the group was discussing about pre-teaching some vocabulary before the reading passage, the teachers were divided on pre-teaching some keywords or all the words that the students did not know. Sevgi suggested pre-teaching the keywords since she thought they were enough for understanding the text as seen below (Arrow 1):

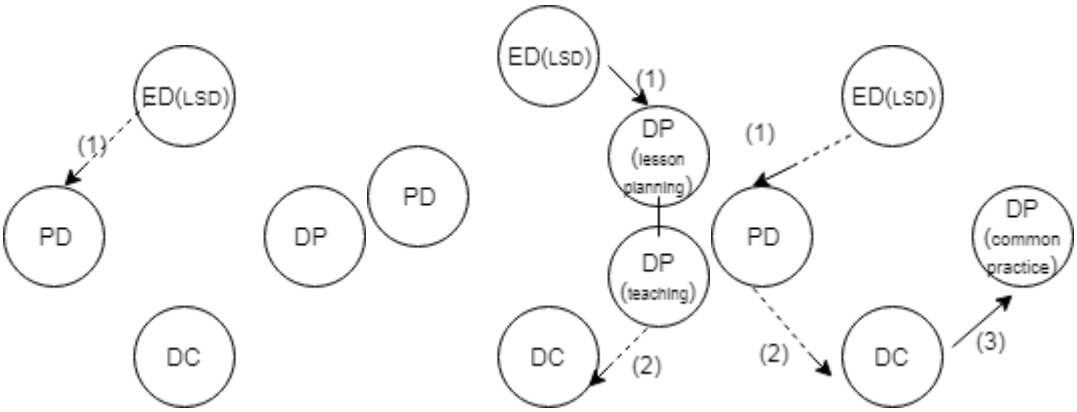
> Beste: I am not sure that teaching only keywords is a good idea. They will not understand the text.
>
> Sevgi: It is enough that we choose some of the words for pre-teaching. That’s the ideal thing, I believe. If we teach all of the unknown words, we ignore the rule that says we should not exceed 6 to 7 words in a lesson. We can teach the words by using a ppt. Pictures will help them elicit the meaning of these words (Source: Group meeting 1).

The group decided to include her ideas in the lesson plan (Arrow 2). After the research lesson was implemented, she focused on the student learning she observed in the lesson as she stated below (Arrow 3):

> The students did a good job answering the comprehension questions. I think it was because they knew the vocabulary well. It is good that we used a trailer at first and took their attention. It seemed they also learnt the words from the pictures (Source: Group meeting 2).

#### 4.1.1.2. Change Sequences Initiated by External Domain: Lesson Study Discussions

The pictograms illustrating the change sequences initiated by LSD in External Domain showed that these change sequences took place in three different ways. Pictogram 3, which was observed in all four teachers, included the mediating process of reflection which helped them to reflect on the collegial discussions they had in online lesson study meetings. It was seen that this reflection gave them the opportunity to have an increased awareness about their teaching practices and to gain new perspectives on teaching.




Pictogram 3 Pictogram 4 Pictogram 5

Sanem, Ayla, Beste, Sevgi Sanem (3), Beste (2) Beste (2)

*Figure 4.2* Change Sequences Initiated by LSD in External Domain in OLS Group 1

In all of the interviews, Sanem stated that during lesson study discussions, she did not learn very different things from her colleagues since the suggested activities or tasks by her peers were already familiar to her and similar to her own classroom practices. Despite this comment, Sanem indicated that having lesson study discussions with colleagues was of great benefit for her:

> I believe these kinds of meetings are very beneficial. Even if you don't learn something new in every meeting -I believe I have learnt many new things though- it definitely has many contributions for you. At least, it helps you to

> think about your practices and what you can do about it. It is a thought-provoking process (Source: Interview 1).

She also touched upon the importance of the discussions among the LS group teachers about her teaching in the classroom:

> We came together many times. Our lessons were observed and criticized by others. We talked about the lessons in a detailed way. We negotiated how to make the second lesson better. It was a new experience for me. It was the first time my lesson was observed by someone. We all have similar problems so it is so important to have this discussion with your colleagues. It was very instructive for me (Source: Interview 3).

Similarly, Ayla indicated that collaborative lesson planning and critiquing has been very effective for her since it allowed her to develop new perspectives on the taught lessons due to the exchange of ideas and experiences among the teachers.

> Group study has been so good for me. We learnt how to look at the lessons from a different angle. We discussed what to add to the lessons. All teachers were so knowledgeable. I gained lots of new ideas about what I can do in my classes (Source: Interview 2).

Beste indicated that she learnt from other teachers, especially from Sanem when they talked about some teaching practices that she herself did not apply in her own classes. These new practices were generally related to the use of technology and therefore eye-opening for Beste as shown below:

> Sanem said she used Vocaroo in her class. I didn't use it. I want to check it. The students may like recording themselves. During this program it has been quite good for us to hear from the teachers about what they used in their classes. Sanem also stated she used QR code, for example. These are motivating for us (Source: Interview 2).

For Sevgi, the lesson study discussions were not very fruitful in terms of learning new information or practices from the other teachers. Similar toSanem, she argued that the co-planned activities were already familiar to her. Still, she appreciated the value of teacher collaboration.

> I think that it is a good practice to exchange ideas with other teachers and to co-plan lessons. I cannot say I have learnt much from the other teachers. But it has been nice to hear the other teachers' opinions. I had the chance to see the other schools and the teachers and to do comparisons. It has been a nice experience to gather and discuss about the activities together. Still, I can say that I gained some ideas about teaching English in our meetings which I want to incorporate into my teaching.(Source: Interview 1)

Pictogram 4 started when the group members suggested some activities and some of these ideas were put into practice in research lessons (Arrow 1). Many times, the teachers reflected on how the co-planned and taught lesson turned to be effective in terms of student learning outcomes (Arrow 2). In group meeting 1, for example, Sevgi proposed a warm up activity to the group as seen below:

> For the first lesson, we can use a trailer to attract the students' attention as a warm up activity. We can ask the students some questions after watching the trailer to get them to guess the topic of the reading passage.(Source: Group meeting 1)

Upon Sevgi's suggestion, the group decided to find a trailer to use before the reading passage about Agatha Christie. In the group meeting in which the teachers evaluated the class implementation, Sanem reflected on that lesson as below:

> The idea of using a trailer as a warm-up activity worked well in the classroom. I did not try it before. The students' interest in the reading passage increased since they were wondering about what to read. Doing some speaking about the trailer was a good introduction to the lesson for the students, I think (Source: Group meeting 3).

This pictogram was also apparent when the teachers exchanged ideas for the revision of the research lesson. Following the incorporation of these ideas into the second research lesson, Beste reflected on the outcomes of that lesson for student learning. While assessing the quality of the second lesson, she referred to what helped this lesson become more effective as given below:

Sanem: The lesson was not very good. We had better change it. I think it was too loaded.

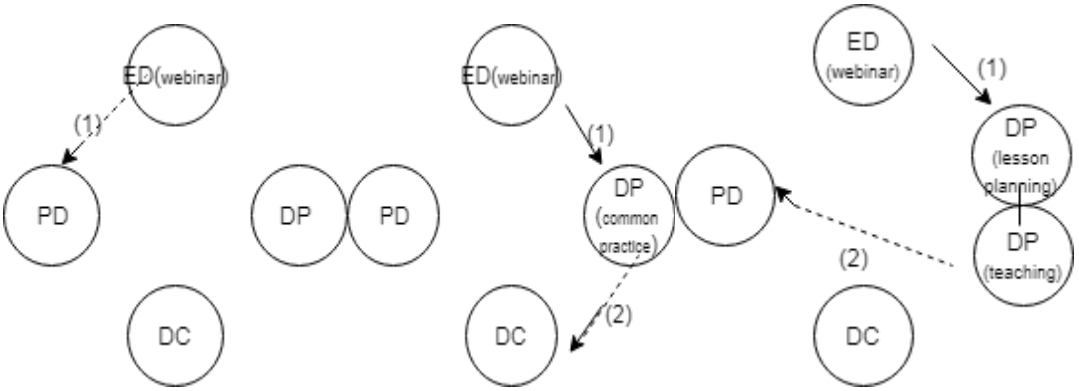
Sevgi: Agree. We can decrease the number of words and focus on the most important ones. We can also show some pictures about these words.(Source: Arrow 1. Group meeting 6)

Following the suggestions made by Sanem and Sevgi, the lesson was revised and taught in another class of Beste. Beste evaluated that lesson by saying: “In the first lesson, the visuals were not satisfactory and sufficient. In the second implementation, however, the students did better when we exposed them to more visuals”(Source: Arrow 2. Interview 2).

Pictogram 5 illustrated the following: For Beste who was not very active in terms of expressing her ideas during lesson planning meetings, the other teachers’ contributions helped her reflect on her teaching practices (Arrow 1). She realized that she taught in a more traditional way compared to some of the other teachers, who try out more innovative practices (Arrow 2). This realization got her to decide on making alterations in her future practices (Arrow 3).

> I can see that nothing is impossible. Motivation is very important. We all have our own problems as teachers. We need to act like an actor/actress in the classes. I see that the other teachers in our group are very active in this respect. In the meetings, they express their ideas about the co-planned lessons very actively. Looking at these teachers motivates me to do things differently. Unlike some of these teachers, I always take the easy way and teach my lessons in very traditional ways. I have never had a different teacher when I was a student. However, from some of the teachers, I have seen that being more active motivates the students a lot. I will try to achieve this from now on (Source: Interview 1).

#### 4.1.1.3. Change sequences initiated by Webinars in External Domain




| Pictogram 6 | Pictogram 7 | Pictogram 8 |
|---|---|---|
| Sanem, Ayla, Beste, Sevgi (5) | Sanem (5) | Ayla (2), Sevgi (3) |

*Figure 4.3* Change Sequences Initiated by Webinarsin External Domain in OLS Group 1

The change sequences initiated by the webinars in External Domain were represented by three different types of pictograms. Pictogram 6 which was seen in all of the teachers included a reflection process on the content covered in the webinars. Common to all of the teachers was the increased knowledge about using web 2.0 tools in language classes as a consequence of their learning from the webinars. In interviews, Sanem, for instance, posited that the webinars helped her develop her know-how in using new technologies. She reflected on the multifaceted benefits of the webinars as shown below (Arrow 1):

> In the webinars, I have learnt many Web 2.0 tools. Most of the tools covered in the webinars were new to me. In each webinar, I found many things to do research about. I started to search for other technologies. I thought more about what I can do with these technologies (Source: Interview 2).

In a similar vein, Ayla stated that one of the contributions of the webinars was that she learnt new language learning websites and mobile apps for using in her classes. As a result, this learning led to increased motivation for her professional development.

> I did not know any of the technologies introduced in the webinars. I learnt how to use them. I want to use them in my classes but I couldn't use yet since my class is too crowded. In the webinars, I felt myself like a student. This feeling rekindled my love of teaching. In eight years, I had started to lose my enthusiasm for teaching but this enthusiasm got fired again. I started to use the

> internet to improve my language skills. Also, I check the websites you've suggested in the webinars. I have never done anything to improve my professional skills before (Source: Interview 2).

Alongside their increased knowledge and skills related to using web 2.0 tools, all of the teachers expressed their intention to keep using these tools in their classes. Sevgi, for instance, argued that she decided to harness the potential of web 2.0 tools in her classes as shown below:

> I learnt a lot from the webinars about using technology in education. I had not heard about QR codes, Kahoot, etc. before. These heightened my awareness about using these tools in my classes. I started to think if I can also integrate them into my teaching. I have realized that I am quite inadequate in employing technology. I will try to change this. (Source: Interview 2)

Similarly, Beste's reflection on the webinars continued with a desire for changing classroom practice in the future. The quote provided below shows that Beste planned to integrate new practices into her teaching. Despite the benefits of webinars, however, she emphasized the important role of having a first- hand experience using these tools in class in order to fully master them:

> In the webinar, I learnt QR code. But I did not use it in my class. I don't know Kahoot. I was able to prepare Quizlet. We learnt many nice things. But if we don't use them in our classes, these new information will go away. We need to use them and I hope to do it soon (Source: Interview 3).

Some of the teachers highlighted the benefits of the webinars for giving them new ideas about teaching language skills and different kinds of activities that can be used in language classes. As shown in the following quote, Ayla indicated how she drew inspiration about teaching vocabulary from the webinar called "Innovative Methods in Language Teaching":

> I used to give the Turkish meaning of unknown vocabulary items in lessons without doing any teaching. It was very boring and monotonous not only for me but also for my students. Because my students are not very interested in learning new words, I preferred giving the Turkish meaning but when you do so, the students don't learn well. In the webinars, I have learnt that we can teach vocabulary in better ways by

> adding visuals, pictures and videos to the lessons. Our books are inadequate in this respect. I plan to complement the book with other materials (Source 2: Interview 2).

Best ealso found the activity suggestions provided in the webinars especially useful as she stated below:

> I remember Padlet from the webinars. We learnt about how to use it in class as a warm up activity. These ideas were so nice. Two truths and a lie activity, for example. The students try to guess which one is right and which one is wrong. Some good activities can be designed with these tools as long as you are a creative person. Since the webinarians gave us detailed ideas about how to use them in class, the webinars were very beneficial (Source: Interview 1).

Another perceived benefit of the webinars for Ayla was the opportunity to speak English during the webinars.

> English was used in all of the webinars. In webinars, I realized that I forgot how to speak English. We use English in very limited ways at school. It does not continue after the lessons. I have no one to speak English with. Our students' level is not satisfactory, so you can't do an advanced speaking lesson with them. We cannot develop our speaking skills, as a result. But I feel I have improved myself a lot thanks to the webinars (Source: Reflection paper).

Pictogram 7 was peculiar to Sanem who often transferred the know-how she gained in the webinars to her classes in an immediate fashion as different from the other teachers (Arrow 1).The integration of new practices was followed by her reflection on the student outcomes of these lessons (Arrow 2). For example, in the fifth group meeting, in which teachers were discussing about the activities to be used in the forthcoming lesson, Sanem talked about how she employed the treasure hunt activity she learnt in the webinars in her own class. In her reflection, she also explained the increased student interest in the lesson as given below:

> I used QR code and treasure hunt game in one of my classes. I was teaching present tense. I prepared five questions and QR codes for each of them. I posted the QR codes on different parts of the school. I chose a leader from each group. There were seven groups in total. Some instructions on how many questions they needed to answer appeared when they scanned the QR code. They

> answered the questions as a whole group. The activity was very nice, but chaotic, at the same time. The students had so much fun but when it is a crowded class, it is not quite possible to get rid of the noise (Source: Group meeting 5).

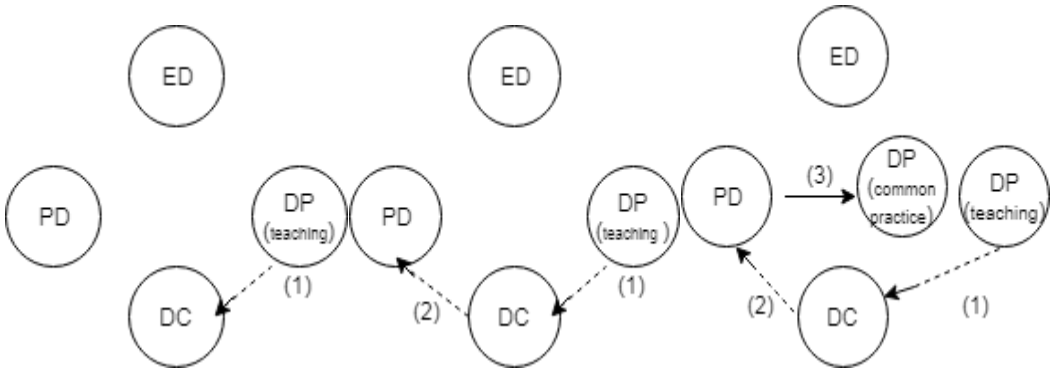
In the eighth pictogram, the teachers referred to the new information they gained in the webinars during lesson planning meetings and decided to incorporate them into the research lesson. For example, Ayla argued that web 2.0 tools and classroom ideas suggested in the webinars were more helpful when they were put into practice. Therefore, after the webinar ideas were implemented in the research lessons (Arrow 1), she frequently referred to the general outcomes of these lessons (Arrow 2): "The lesson in which Beste used Quizlet was very effective. I did not know Quizlet before. I thought the lesson was pretty good because of Quizlet. I am happy that I learnt it." (Source: Interview 2). She also showed her desire to try out the practices used in the taught lessons by saying:

> There are so many things I want to try next semester. We learnt about British council website, Padlet, Quizlet. We designed lessons in which these tools were integrated and since we already used them in our classes, I think I can use them in my own classes in the second semester (Source: Interview 3).

Pictogram 8 was also apparent in Sevgi's data. During lesson study discussions, she reflected on some of the web 2.0 tools introduced in the webinars and suggested using them in the upcoming research lesson: "We can do listening in this lesson using the materials in British council's website. I used to use that website in my earlier years of teaching" (Source: Group meeting 8). Upon her suggestion, the group decided to integrate it into the lesson plan (Arrow 2). In the group meeting, in which they evaluated the research lesson, Sevgi indicated her desire to use the co-planned activity in her teaching as given below (Arrow 3):

> It was very good that the students used their mobile phones for doing individual listening. I have thought that by using the listening materials on that website, we can have jigsaw listening activity with the phones and it can be quite interactive. I can do these in my classes, I believe (Source: Group meeting 10).

#### 4.1.1.4. Change sequences Initiated by Domain of Practice




Pictogram 8 — Sanem (7), Ayla (4), Beste (2), Sevgi (6)

Pictogram 9 — Sanem (3), Ayla (2), Beste (3), Sevgi (2)

Pictogram 10 — Ayla (3), Beste (3)

*Figure 4.4* Change Sequences Initiated by Domain of Practice in OLS group 1

In OLS group 1, there were three pictograms in which the entry point of the change sequence was Domain of Practice. Pictogram 8 displayed the most commonly observed change sequence in this group. Found across all teachers, this pictogram included a reflection process on the student outcomes of class implementations in research lessons (Arrow 1). This pictogram can be seen in the following quote. Here Ayla reflected on the student outcomes of a research lesson with a particular focus on the possible reasons of these outcomes as given below:

> In Beste's class, we had two videos for children. But there were too many vocabulary and the grammar was not easy for children. When I watched the video recording and listened to the interview, I realized that the students could not learn the words. As a consequence, I thought that it is better if we teach fewer words, use less technology in one class and choose materials that are better suited to the students' level (Source: Group meeting 5).

In another group meeting, Ayla referred to Sanem's use of Kahoot in a research lesson. She evaluated that lesson focusing on increased student engagement: "This is the first time I saw it used in the class. It was quite good. It really drew the students' attention. I thought it is a tool that can easily be used in classes" (Source: Group meeting 3).

Another example of this pictogram is from Beste who prepared a video for introducing the students some key words of the upcoming reading text in a research lesson. However, this part of the lesson did not turn out as she expected in terms of student learning (Arrow 1) and therefore she reflected as below:

> I thought that the students would watch the video I prepared more attentively but they did not find the video very interesting although I really made a lot of effort preparing it. When I asked some of the words to the students after the implementation, I saw that the students could not learn the words. They could not remember most of them. Therefore, I thought that we could have had more activities to teach these words. Using just a video did not serve its purpose (Source: Group meeting 5).

Another example is from Sevgi who often reflected on the student outcomes of the initial research lessons or the revised lessons. As provided in the quote provided below, Sevgi evaluated the revised lesson taught by Beste by assessing its effects on students' motivation and learning:

> In the first lesson, we saw that the students had difficulty learning new vocabulary. After we discussed about this lesson together and changed the first lesson plan, we realized that the second lesson was better and more effective. In the first implementation, there were too many unknown words and the students found it difficult to remember these words. In the second implementation, when Beste used Quizlet, the students were more active in the lesson and remembered most of the words when we asked them after the lesson. I witnessed the benefits of Quizlet for students (Source: Interview 2).

Similar to pictogram 8, pictogram 9 included a reflection process on the student learning or motivation observed in the research lessons (Arrow 1) which was followed by a change in teachers' previous cognitions or beliefs about teaching or learning (Arrow 2). In an interview, Sevgi, for example, referred to how the students responded to the co-planned activities, which led her to gain some new insights about teaching reading in her classes:

> It was nice to start the lesson with a video (a trailer). Sanem asked some questions about the trailer focusing on wh questions. Therefore, the trailer served as a warm up speaking activity and it was intriguing for the students.

> Later, she worked on the unknown vocabulary by presenting them visually in a ppt. The students did not have much difficulty understanding the text since their previous knowledge about the topic was activated and they learnt key vocabulary. I have seen that these practices proved to be effective for teaching reading. I figured that instead of starting with the reading text right away, it is better to use some activities. It is too much work maybe. But it's worth it (Source: Group meeting 4).

This pictogram can be also seen in the following group meeting extract. Here Sanem evaluated the consequences of the research lesson in terms of student outcomes by comparing it to a more traditional lesson (Arrow 1). Later, her realization about the favorable outcomes in the lesson led her to make new decisions about trying out a different approach to teaching listening in her own classes (Arrow 2):

> I really liked to see that doing individual listening instead of whole class listening can work well in the classroom. In the lesson, the students were able to concentrate better and did not get distracted as they did the other times. It is a pretty good practice we can use in our lessons. I plan to use it sometimes (Source: Group meeting 10).

Another example of this pictogram can be found in the following quote in which Beste reflected on the student outcomes of using group work in a writing lesson. The positive results motivated her to have group work in her future lessons as given below:

> We had group work in this lesson. It worked quite well for the students. They participated actively. I generally avoid group work in my classes. But I realized that this is a different and nice activity for the students. Even if they find it difficult to write down their own sentences, it is not good to have the same style all the time (Source: Group meeting 5).

In a similar vein, Beste evaluated the research lesson taught in Sevgi's class during a group meeting. The changes in her cognition about teaching writing are shown below:

> In Sevgi's class, the students did writing in Padlet and these writings were seen by all of the students. They corrected their grammar mistakes all together and they benefited from this activity. I think about implementing this in my own classes (Source: Group meeting 8).

Pictogram 10, which was observed in two teachers, exhibited the change sequence in which the video recordings of the research lessons acted as an initiator of change for these teachers. For Ayla, the video recordings of the research lessons were an important information source since she had the opportunity to observe the other teachers' teaching methods and techniques in the classroom. With this mindset,she scrutinized the teaching practices that resulted in positive student outcomes in the research lessons (Arrow 1), which helped her to gain new insights about teaching language skills or other techniques that can be used in language classes (Arrow 2). This reflection process sometimes continued with an enactment of the newly gained idea into classroom practice as seen below (Arrow 2):

> In the lesson taught by Sevgi, I realized that she did something to facilitate students' working with comprehension questions in a reading text. She guided the students and gave them some hints about the questions. As a result, the students were able to answer the questions more easily. I have never done this way and always expected the answers from them directly. I have never thought that I could give the students some examples. Later, I started to give more explanations and examples for comprehension questions in my classes. (Source: Interview 1)

This pictogram was also detected in Beste who often evaluated how the students reacted to certain teacher behaviors, teaching methods or techniques while watching the video recordings of the other teachers' classroom implementations (Arrow 1). The positive outcomes resulted in her reflecting on her own teaching practices (Arrow 2) and some of these reflections brought about making changes in some of her own teaching practices (Arrow) 3 as seen in the following interview excerpts:

> I used to explain everything in Turkish. When I watched the video recordings, I got very motivated by the fact that the other teachers used English a lot in their classes. The students were quite okay with it. They got used to it after some time, I believe. Therefore, I also started to use it more. Still don't know if the students understand me but I keep doing it (Source: Interview 1).

> The other teachers try to activate all the students in their classes. They ask them questions. Instead of sitting, it is better to stand up and to use mimics and gestures. These work in English lessons. In this way, students are more motivated. I have seen that I am not as active in the class as the other teachers.

I try to be more active in my lessons in order to help my students become more active too (Source: Interview 3).

### 4.1.2. The Change Sequences Observed for Turkish EFL Teachers in the OLS Group 2

In this group, the change sequences were found to be more detailed with a greater number of reflection and enactment processes and with active participation of the teachers in lesson study discussions. It was found that many change sequences were launched by the lesson study discussions in the External Domain reflecting instances of peer-to-peer learning. Due to the teachers' engagement in lesson study discussions, the lesson planning and revising of the research lessons were realized with the joint contributions of each teacher. The teachers reflected on the results of these lessons as a common change sequence. The webinars in the External Domain also served helpful for the teachers when they integrated the web 2.0 tools covered in the webinars into the research lessons and the teachers reflected on the outcomes of these lessons. Finally, it was apparent that the Domain of Practice promoted many change sequences for all of the teachers since the research lessons fostered teacher reflections on the results of the lessons and this often continued with the revision of the lesson plan for the second implementation. The second research lessons yielded new student outcomes, which in turn created a change in teachers' cognition and beliefs.

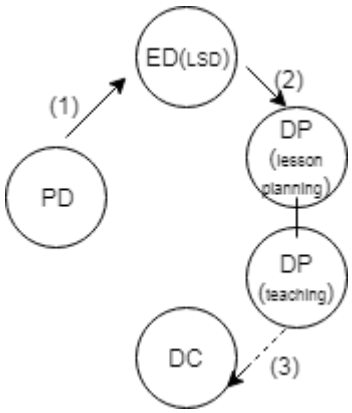
The findings suggested that there were variations and commonalities among teachers in terms of their change patterns and growth networks. The most common entry point in change sequences was the lesson study discussions in External Domain for two of the teachers whereas Domain of Practice was the most frequent entry point for Asu. The most common ending points were either Personal Domain or Domain of Consequence for all teachers. For Asu, Personal domain was more common than Domain of Consequence unlike the other two teachers.

All of the teachers were able to adopt new teaching practices as a concomitant of their participation in online professional development program. Due to the active lesson planning and revision processes in this group, enactment was more common as

the first mediating process than reflection for two of the teachers whereas reflection was more dominant for the other teacher. It was shown that the teachers sometimes were able to transfer the newly gained knowledge from the webinars, the lesson study discussions or the video recordings to their classes rightaway. At other times, they needed to see the results of the research lessons and later reflect on these outcomes to change their classroom practices.

#### 4.1.2.1. Change sequences initiated by Personal Domain

This change sequence found in Nermin and Asu was initiated by Personal Domain when these teachers offered some ideas to the group for lesson planning. It continued when the group members discussed these ideas and decided to integrate them into the research lessons. Following the teaching of the research lessons, the teachers tended to focus on the favorable or unfavorable student outcomes.




Pictogram 11

Nermin (2), Asu (4)

*Figure 4.5* Change Sequences Initiated by Personal Domain in OLS Group 2

To exemplify, Nermin was a teacher who actively participated in group discussions in that she often offered some activities to the group. When these activities were put into practice and resulted in learning gains or difficulties for the students, she ended up with a reflection on that activity. In group meeting two, for example, the focus of the research lesson was on reading and vocabulary. Nermin suggested an activity in which two groups of students would do matching by sticking some pictures and their names

on the board (Arrow 1). This idea was incorporated into the lesson plan (Arrow 2). When the lesson was taught by Asu, however, she had some chaos in the classroom brought about by group work. Nermin, in turn, stated the following indicating that she had new realizations about the effect of the proposed activity on students' learning (Arrow 3): "It could have been better to have a worksheet in that lesson instead of that sticking activity. In that way, the students could have learnt better. It would also have been way easier for the teacher" (Source: Group meeting 3).

In a similar vein, Asu frequently shared her classroom experiences with other teachers while designing the research lessons. Since the teachers were teaching the same grades and using the same textbook, they also referred to how they taught a particular unit in their classes or the difficulties that their students had in that specific unit. For example, for the second research lesson in which the focus of the lesson was on reading and vocabulary, she explained her own ideas to be included in the lesson plan (Arrow 1). She argued that the students might have difficulty understanding the title of the reading passage 'Hopes for future', which was an organization for protecting endangered animals. She, therefore, suggested that apart from creating a video in which the students would understand the meaning of the keywords in the reading text, they should also show them some posters about some organizations that protected wildlife and the nature as given below:

> While I was teaching that unit, the students had difficulty figuring out what Hopes for Future worked for and what its function was. Therefore, we need to make sure that they understand that it is an organization that works for protecting endangered animals. It can be a good idea to show some posters about such organizations and also make the meaning of some words such as 'organization', 'work for', 'endangered animals', etc. clear. We can talk about these posters and they can understand (Source: Group meeting 4).

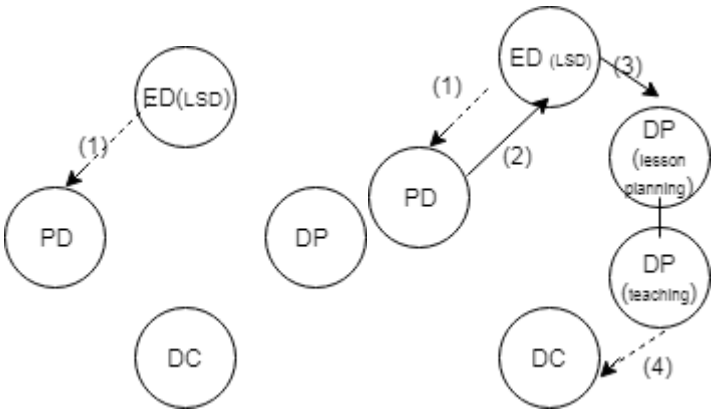
The group decided to incorporate her ideas into the lesson plan (Arrow 2). Following the class implementation, she evaluated the lesson referring to the positive student

outcomes (Arrow 3) by saying: “I see that since the students grasped the key words, they were better able to answer the comprehension questions. They did not have the problems we anticipated” (Source: Group meeting 5).

#### 4.1.2.2. Change sequences initiated by External Domain: Lesson Study Discussions

There were six pictograms which displayed the change sequences started by the lesson study discussions in the External Domain. In the first pictogram, all of the participating teachers reflected on the benefits of these discussions for their professional development as a language teacher. Sedef, for example, pointed at the value of teacher interaction and collaboration during lesson study meetings, which gave her new ideas about teaching and an opportunity to share their common problems about teaching as given below (Arrow 1):

> Learning from other teachers is so beneficial. In lesson study meetings, they express their ideas. These ideas are, most of the time, new things for me. I learn about the activities they use in their classes. I hear that our students have common problems (Source: Interview 2).




Pictogram 12

Sedef (1), Nermin (1), Asu (1)

Pictogram 13

Asu (3), Nermin (2)

*Figure 4.6* Change Sequences Initiated by LSD in External Domain in OLS Group 2

Sedef also indicated that the lesson study meetings helped her to be more reflective and critical about her teaching:

> We learnt many things during our undergraduate studies. However, when it comes to practice, language teaching is a great problem at state schools. I can say that the lesson study meetings broadened my horizons. They helped me to start questioning and rethinking about my teaching. (Source: Interview 1)

Nermin indicated that the lesson study discussions helped her to learn new teaching techniques from the other teachers and to better solve the learning problems of the students as she stated below (Arrow 1):

> I have realized that I always used the same techniques. The suggestions about teaching provided by the teachers were very helpful for me. Sharing our classroom experiences with other teachers was also very beneficial. When I teach, sometimes I may not realize if my students have learnt or not. But you and the other teachers can notice student learning better and also we have the chance to take measures against the problems together. (Source: Interview 1)

Asu stated that she benefited from the brainstorming in the online group and she gained new ideas about teaching from the other teachers as given below (Arrow 1):

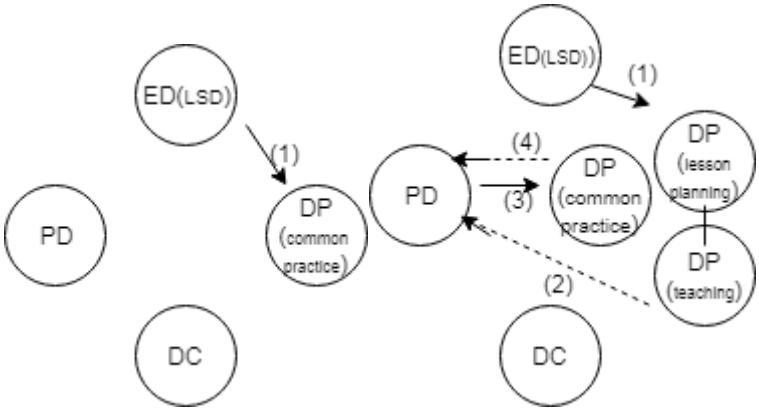
> Brainstorming in our group was so good. I really liked the exchange of ideas and our discussion on how to improve the lessons. We had the opportunity to witness our students' development and this increased the collaboration between us. I did not have anyone near me with whom I could do this activity. I only have one such friend but our teaching schedules clash so it is nice to do this with colleagues from other cities. I have learnt a wealth of ideas about teaching from my friends. (Source: Interview 2)

The second pictogram pointed at teacher learning which was initiated when something happening in the group meetings affected the teachers' thinking about a particular aspect of teaching. In the following group meetings, they expressed their ideas in accordance with the newly gained perspective. When these ideas were about the

planning of the research lesson, some of them were included in the lesson plan. After the lesson was taught by one of the teachers, they evaluated how the lesson went for the students. This change sequence was seen in Asu and Nermin as given below.

Asu oftentimes reflected on other teachers' contributions and expressed her own ideas in lesson study meetings. After elaborating on other teachers' suggestions, she raised a discussion among teachers about the activities to be used in research lessons. Many times her ideas were accepted by the group and included in the lesson plan. Later, she reflected on the effect of the activity she suggested on students as shown below. To illustrate, in the group meeting for the third research lesson, the teachers discussed about pre-teaching some important vocabulary before moving to the listening passage (Arrow 1). They also argued that to do a speaking activity at the end of the lesson, which they anticipated would be challenging for students, they needed to have some activities that will facilitate the students' speaking. Asu, in turn, stated to agree with teachers and suggested using a PowerPoint presentation in which the students would see the words in sentences (Arrow 2). Later, she also proposed a game in which the students would form sentences with weather expressions and their feelings. After the class implementation (Arrow 3), she commented on the taught lesson as below (Arrow 4):

> It was good to work on vocabulary so densely. I think that at the end of the lesson, the students were able to form their sentences because they already learnt the words by being exposed to them many times and seeing them in context. (Source: Group meeting 6)



Pictogram 14 Pictogram 15

Sedef (2) Nermin (4)

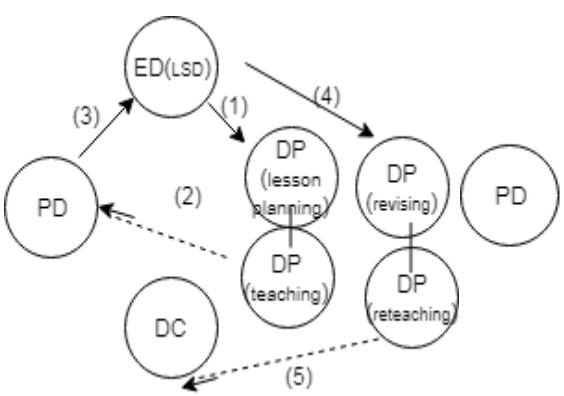
*Figure 4.7* Change Sequences Initiated by LSD in External Domain in OLS Group 2 (cont.)

Pictogram 14 and 15 showed that two of the teachers integrated new practices into their teaching as a result of their learning from the discussions in group meetings. In the change sequences depicted in these pictograms, therefore, the entry point was the lesson study discussion in the External Domain. In pictogram 14, Sedef integratedsome of the activities used in the co-planned lessons into her own teaching as indicated below (Arrow 1):

> During lesson study meetings, the activities or games suggested by other teachers have attracted my attention and I have already used some of them in my classes. For example, after Asu's teaching, I needed to teach the same topic and I used the weather game in my class, too (Source: Interview 3).

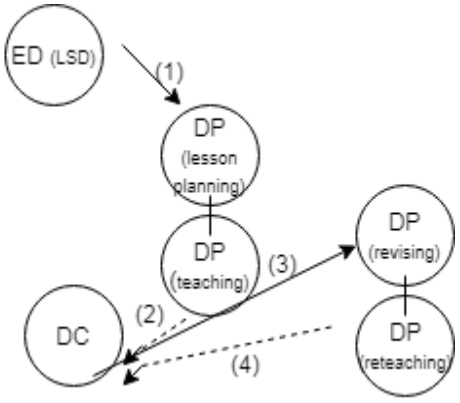
Pictogram 15 was more elaborate than pictogram 14, which required a greater number of mediating processes for adopting new teaching practices. Examples of this pictogram were seen in Nermin. In an interview, for example, she showed that when the classroom ideas suggested by peers in group meetings had positive classroom results (Arrow 1,2), this affected her decision to integrate these ideas into her own teaching (Arrow 3). When she employed them in her classes and got positive outcomes, this bolstered her intention to keep using them in class as seen in the following quote (Arrow 4).

> I utilized the activities suggested by other teachers during our online meetings in my own teaching. As a teacher, I already have my own ideas or practices but after I saw the ideas of other teachers in practice and saw that they really worked, I thought that I can take that idea and use in my own classes. I got positive results and therefore I plan to continue with these activities (Source: Interview 3).




Pictogram 16

Nermin (2), Asu (3), Sedef (2)




Pictogram 17

Sedef (8), Nermin (2)

*Figure 4.8* Change Sequences Initiated by LSD in External Domainin OLS Group 2 (cont.)

Pictogram 16 and 17 were similar since both of them were initiated by the lesson study discussions in the External Domain and included revision and re-teaching of the research lessons. However, there were some differences in the pathways of change followed by the teachers in these pictograms. After the research lesson was taught based on the joint lesson planning (Arrow 1), the teachers in pictogram 16 had a reflection on the general quality of the lesson while the teachers in pictogram 17 evaluated the student outcomes of the lesson (Arrow 2). In pictogram 16, the presentation of ideas concerning the weak sides of the lessons by the teachers were followed by their suggestions for improvement for the second research lesson (Arrow 3). These can be seen in the following quote from Nermin who offered some changes for revising the first research lesson when it did not result in favorable outcomes.

> In the first research lesson, although the aim was to get the students to write their own sentences on Padlet, it did not work since students generally have negative attitude towards writing. They simply don't like it. Maybe we can use a mind map to lead them to write. They will get the ideas from there (Source. Group meeting 9).

The group accepted Nermin's offer to create an online mind map to be shown on the smart board in addition to some other suggestions provided by the group members

(Arrow 4). Reflecting on the taught lesson, Nermin concentrated on the positive student outcomes as given below (Arrow 5):

> In this lesson, I see that using a mind map for getting students to write sentences was a very good idea as it really helped students to write. Normally, you know, they always complain about writing and they don't know what to write. I think that using mind maps in writing classes might serve to fill in this gap (Source: Group meeting 10).

In pictogram 17, the teachers suggested changing or replacing some of the activities since they felt the need for improvement in these lessons due to unfavorable student outcomes (Arrow 3). Following the revised and retaught lesson, the teachers reflected on how the students did in the lesson(Arrow 4) as seen in the following quote from Nermin:

> The students were more active in the second lesson. The reason is that in the second research lesson, we simplified the objectives and added more repetitive activities. We tried to make everything clearer. The students had fun but still it was a challenging lesson for them since we had too many activities. The activities looked good on paper but there was too much rush. The students needed to watch the videos about TV programs, look at the presentation and repeat the words. Then, they matched the pictures I distributed on the board. Later, they looked at the mind-map shown on the smart board and wrote their own sentences. I don't think it was a bad lesson but I realized I needed to give clearer instructions. The students did not understand me. I have seen that planning and teaching lessons are two different things (Source: Group meeting 10).

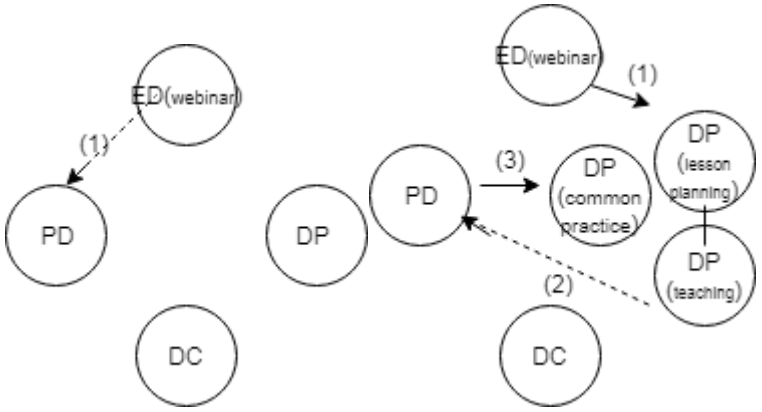
This change sequence was also evident in Sedef. For the first research lesson in which the focus of the lesson was 'can' and some words about hobbies and games, for example, all of the teachers provided ideas to be included in the research lesson as shown below (Arrow 1):

> Sedef: It can be good to start the lesson with a video. Maybe, we can show the students different videos about different celebrities and form sentences such as 'Messi can play football'. In this way, they can understand 'can'.
>
> Asu: We can sing a song together. During our undergraduate studies, there was a song about 'can'. I remembered we used it in our practice teaching. Maybe, we can find a song like that.
>
> Nermin: I think we can choose a student and give him/her some pictures about these hobbies. With some body movements and without speaking, she can help others to guess the word. In this way, we can check if the students have learnt these words (Source: Group meeting 1).

Hence, the lesson plan was made based on the contribution of all three teachers. Assessing the efficacy of the lesson, Sedef often reflected on the students' learning (Arrow 2): "The lesson did not work out as we planned. The students did not learn from the videos about the celebrities. It seems like we need to spend more time on vocabulary". (Source: Group meeting 2). In group meeting 2, the teachers co-provided their suggestions for improvement for the second research lesson. Nermin and Sedef offered to take the initial video about celebrities out. Asu stated that focusing on both words and 'can' in a single lesson was too demanding for the students. She, therefore, proposed creating more opportunities for students to hear and repeat the words and then to expose them to sentences with 'can' (Arrow 3). As a result of the revised lesson plan, Asu reflected on the student outcomes of the second research lesson as below (Arrow 4):

> It was good that we did not teach the words in a one-shot manner, but allowed them to work with words multiple times.Hearing and using the words in many activities helped them to master the words and later they were able to understand 'can' better (Source: Group meeting 3).

#### 4.1.2.3. Change sequences initiated by External Domain: Webinars




Pictogram 18

Sedef, Nermin, Asu

Pictogram 19

Sedef (4), Nermin (2)

*Figure 4.9* Change Sequences Initiated by Webinars in External Domainin OLS Group 2

In four pictograms, the webinars in the External Domain were found to be the entry points of change sequences. Pictogram 18 indicated how the webinars influenced teachers' cognition about language teaching in general and also using technology in language classes. For example, Sedef argued that the webinars helped her to get new ideas about integrating web 2.0 tools into her teaching (Arrow 1):

> In the webinars, I learnt many web 2.0 tools. I used to follow the textbook and did not prefer something else except for using flashcards and some videos. I have never used technology in my classes before. Only once or twice, we did the exercises in Eba or Morpha Campus when we had time. Thanks to the webinars, I gained so many ideas. I have many plans about my future practices (Source: Interview 3).

For Sedef, the webinars also served as a reminder of the ELT methods and techniques as she stated: "Thanks to the webinars, I remembered about language teaching methods and techniques we learnt during our undergraduate studies. I realized that I had deficiencies not only in my knowledge but also in terms of my practice".(Source: Reflection paper)

For Nermin, the webinars added new information to her knowledge base and refreshed her know-how in language teaching (Arrow 1). She also appreciated the emphasis on practice in the webinars as shown below:

> All of the webinars contributed a lot to me. My horizon was broadened. We had webinarians both from Turkey and abroad. Especially those in Turkey showed us that there are many things that can be done at state schools. The first webinars refreshed the knowledge I gained during my undergraduate studies. The ideas shared in the webinars were very beneficial for me. I learnt things that I did not know before. The undergraduate program I attended was too theoretical and we could not learn any of these. Seeing these in practice was useful. (Source: Interview 3)

Similarly, Asu stressed the importance of learning about new web 2.0 tools in the webinars as given below (Arrow 1):

> In the first webinars, we remembered the things we have learnt during university education. The webinars gave me great enlightenment about the use of web 2.0 tools. I did not know anything about utilizing them in language classes. Now, I know what and how to do much better. I also know where to find new information in this field. I have not used these in my classes yet, but I plan to do so in the second term. It is good that we have the recordings. I can go back to them whenever I want. (Source: Interview 1)

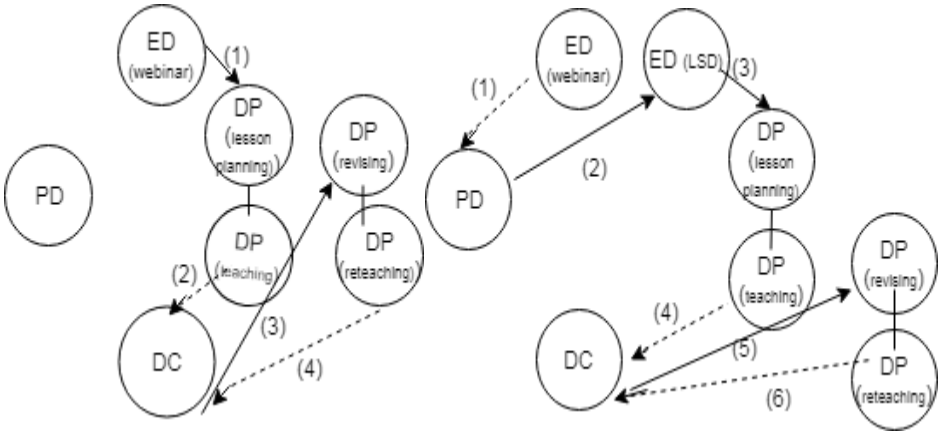
Pictogram 19 illustrated the following: some of the ideas presented in the webinars were incorporated into some lesson plans and later put into practice by the teachers in the research lessons (Arrow 1). It was seen that these ideas were mostly about web 2.0 tools which the teachers learnt from the webinars and through the implementation of the research lessons, the teachers had first- hand experience of using these tools. Following these lessons, they reflected on these lessons emphasizing the value of learning through webinars (Arrow 2). As a result of their awareness of these tools' affordances in the classroom and their increased competency to utilize these tools,

they began to integrate these tools into their own teaching (Arrow 3) as exemplified in the following quote from Sanem.

> The web 2.0 tools we have used during class implementations have been so beneficial. I prepared some electronic materials, used them with my students or shared these materials with the other teachers. I did not know any of these websites before. But here, I had the opportunity to see that they really worked in language classes and we should really know them. Now, I started to use them. I also began to produce my own teaching material. For example, I created my own video using Animoto. I did not use to employ technology beforehand. I only benefited from the PowerPoint presentations or worksheets that other teachers shared in the internet. Now, I am also able to produce things on my own (Source: Interview 2).

Similarly, Nermin showed that owing to the incorporation of the web 2.0 tools presented in the webinars into the research lessons, she not only reached a considerable level of competence in utilizing these tools but also developed positive ideas about their potential in language classes. In consequence, these motivated her to make some changes in her teaching practice as shown below:

> After the webinar, we decided to use Voki in our class implementations. By using Voki, we were able to turn the dialogue in the book into a real one in the form of a video with avatars. It was quite awarding. I also learnt how to use this tool better since I had first-hand experience. Later, I used it again in my lessons (Source: Interview 2).




Pictogram 20

Nermin (2), Asu (2)

Pictogram 21

Nermin (2), Asu (2)

*Figure 4.10* Change Sequences Initiated by Webinars in External Domain in OLS Group 2 (cont.)

In pictogram 20 and 21 that belonged to Nermin and Asu, some similarities were exhibited in terms of the entry and ending points and the revising and reteaching processes included in the pathways of change. Pictogram 20 was initiated when the group members referred to the information given in the webinars and decided to use it the research lesson (Arrow 1). For instance, the group members decided to use Kahoot for checking students' vocabulary learning and then go on with Padlet for a writing activity. In post-lesson discussion, they evaluated the student outcomes of the lesson (Arrow 2) by saying that the use of mobile phones resulted in classroom management problems and student distraction. Sedef said the following: "In this class, the use of mobile phones was a complete failure. The students got interested in anything but the lesson. Instead of writing sentences on Padlet page, they were using the internet and involved in other stuff".(Source: Group meeting, 9)

This specific outcome made the teachers state how they would modify the second research lesson (Arrow 3).Nermin, therefore, suggested taking the Padlet part out and getting the students to do writing on paper. In turn, the teachers accepted this idea and decided to collect students' writing and play a guess-who game using these writings. Finally, Nermin focused on the student outcomes of the revised lesson by stating the following (Arrow 4):

> We tried to use the phones in the first implementation. But it did not work as we planned. The students could not perform as well as we thought. When we did the paper version, it was much better. They were able to focus more. As a result, we once more saw that we needed to adjust these tools to the level of our students and to the subjects we teach. As we have these implementations, we have the opportunity to see when and how to see these tools in our lessons (Source: Group meeting 10).

In pictogram 21, there was an initial reflection process on the webinar content by the teachers (Arrow 1). This reflection represented a new learning that came out as a result of webinar participation. In the group meeting, they referred to this newly gained information and offered to use it in the research lesson (Arrow 2). Following the teaching of the research lesson, they evaluated how the lesson went for the students. When the lesson was not as it was expected, it was revised with the suggestions of the teachers and they assessed the student outcomes of the revised lesson once more.

For example, in group meeting 8, Asu first reflected on the activities about Padlet suggested by the webinarians (Arrow 1) and proposed using a similar activity to the group (Arrow 2). The group accepted her suggestion and it was put into practice by Sedef (Arrow 3). However, the outcomes of the lesson were unfavorable since there was chaos in the classroom (Arrow 4). The students could not write their sentences as some had internet problems and others were distracted. Due to this result, the group decided to revise the lesson by changing this activity to a paper-based version (Arrow 5) and Asu assessed the impact of the revised lesson on the students as below (Arrow 6):

> You know, our classes are too problematic. It is too difficult for us to do something new, especially with phones. That's why it is better not to use them when the students are not ready. Considering that not all of them have internet connection and even phones, it was not a good idea to integrate phones into that lesson. But when we did the same activity in a paper-based version, it

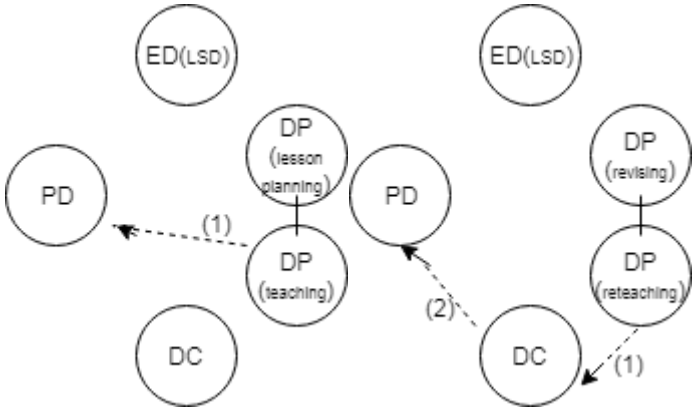
turned out better for students. They were more focused (Source: Group meeting 10).

#### 4.1.2.4. Change sequences initiated by Domain of Practice

All of the teachers had various change sequences initiated by the Domain of Practice with varying pathways of change. In pictogram 22, the teachers appreciated the value of the planning and implementations of the research lessons for their professional development. For example, the co-planned and taught lessons enabled Sedef to become more aware of her opinions that shaped her teaching practice and to change her beliefs and cognition about teaching English as seen in the quotes below (Arrow 1):

> The class implementations changed my perspective about teaching pronunciation. I did not use to pay any attention to pronunciation because I thought it was not possible to teach it to the students. I did not use to repeat the words much. I thought the students could not learn anything about pronunciation and as a result, I gave up teaching it. But I realized that I should put more emphasis on pronunciation. I realized that I should use some activities in which they hear the words over and over again. (Source: Interview 4)

> We teach grammar but it is too abstract for the students. I started to think that we need to make grammar teaching more concrete for the students. From our implementations, I started to believe that it is better for the students to first learn the words and then grammar. I will incorporate these ideas into my teaching. They already come to my mind when I am planning my lessons. (Source: Interview 1)




Pictogram 22

Sedef (1), Nermin (3)

Pictogram 23

Sedef (3), Asu (2)

*Figure 4.11* Change Sequences Initiated by Domain of Practice in OLS Group 2

Likewise, these lessons helped Nermin to look at her teaching practice from a different angle and to reach new conclusions about using technology in her class more (Arrow 1).

> Doing planning and applying something are quite different. By teaching the co-planned lessons and later watching the video recordings, we see our weaknesses better. These are all very helpful. Thanks to the video recordings, I had the opportunity to have a look at my students from the outside. I started to think that if I change something, students can also change. I realized that technology should be used more. I also became more aware of different learning styles (Source: Interview 2).

> When I watch the video recordings of the research lessons, I notice that the students learn better with videos. From now on, I plan to use more materials in my classes. This attracts the students' attention more. I create my own videos or find read-made ones. It is far better than simply lecturing to the students (Source: Interview 3).

The class implementations also led Nermin to make new decisions about how to balance the heavy curriculum and the integration of good practices into her practice as seen below:

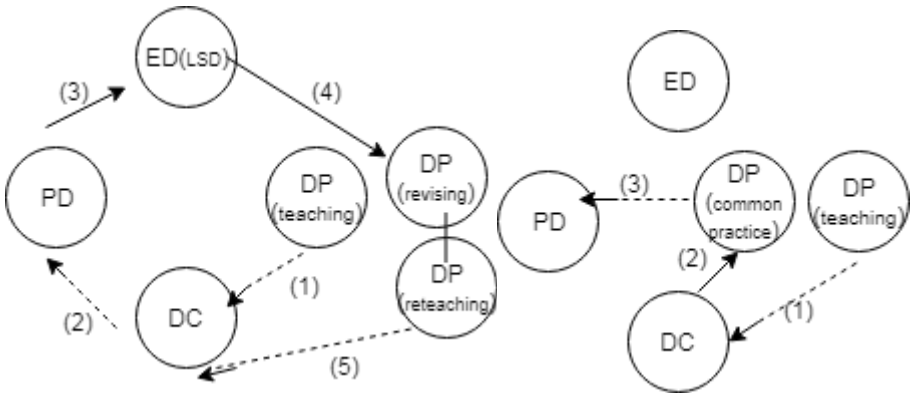
> The research lessons helped me to notice that it is better to use different teaching methods while teaching reading and writing. After our studies together, I decided to teach the most important activities in each unit by using the tools we have learnt. For example, if there are two to three writing activities in the book, I can do one or two of these activities in a more interactive way utilizing these tools. It would be great if it were possible to do these for all activities. But we have curriculum and time limitations (Source: Interview 4).

As different from pictogram 22, in Pictogram 23, the focus was on the student outcomes of the taught or revised lessons and this reflection ended up with changes in cognition or beliefs on part of the teachers. For instance, assessing the lessons that were revised and retaught, Sedef concentrated on students' motivation and participation in the lesson (Arrow 1). These perceived outcomes resulted in a reflection on what brought about these positive outcomes and led her to draw some conclusions about teaching as exemplified below (Arrow 2):

> In the second lesson, the students participated in the activities more attentively. The reason might be that we found really interesting activities. They learnt the words well and this motivated them to be more active in the lesson. After Nermin taught the words with some activities, she continued with exercises and this led to permanent learning (Source: Group meeting 5).

This change sequence was also observed in Asu. Watching the video recordings had a great impact on her since she frequently referred to the taught lessons both in group meetings and interviews. Assessing the taught lessons, she frequently focused on the student outcomes of these lessons (Arrow 1) and finally came up with new insights about teaching (Arrow 2). In interview 1, for example, she stated the following in regards to the use of Kahoot: "Thanks to Kahoot, the students had a lot of fun.

Therefore, I thought that it could be used for revision at the end of each unit" (Source: Interview 1).




Pictogram 24

Sedef (2), Nermin (3), Asu (1)

Pictogram 25

Sedef (3), Asu (2)

*Figure 4.12* Change Sequences Initiated by Domain of Practice in OLS Group 2 (cont.)

Pictogram 24 and 25 started when the teachers scrutinized the student outcomes in the video recordings of the research lessons (Arrow 1). In pictogram 24, these outcomes resulted in teachers' gaining new insights about the lesson (Arrow 2). These insights were verbalized by some of the teachers and this yielded discussion among the teachers (Arrow 3). Consequently, the group members decided to make amendments in the lesson plan for the second implementation (Arrow 4). Following the revised lesson, the teachers tended to make reference to their observations about student learning.

Here is an example of this change sequence from Sedef. In the quote given below, she mentioned students' low performance in the taught lesson and this realization got her to contemplate the possible reasons of this outcome. After developing some ideas about these reasons, she suggested making some revisions for the upcoming lesson:

> I will talk about the minuses of this lesson. We showed the students some video extracts of some TV programs to teach some vocabulary but it was not very effective since the students could not understand the difference between the word 'informative' and 'amusing'. Watching the video itself did not help them

> get the exact meaning of words. For the second lesson, it is better to give more explanations about these words. Maybe, some examples that will make their meaning clear (Source: Group meeting 9).

The group decided to integrate her idea into the second lesson plan and she, in turn, reflected on the positive changes in student learning as given below:

> In the second lesson, I focused on the words more. I repeated that many times in sentences both when watching the short videos and later showing the pictures in ppt. I tried to give some examples of amusing TV programs to explain the meaning of that word. By giving more explanations, I tried to elicit their meaning from the students and I figured that it was pretty good. They got the meaning (Source: Group meeting 10).

In a similar fashion, Asu referred to the student outcomes in class implementations (Arrow 1) and reflected on the possible reasons of these outcomes which helped to reinforce her earlier cognition and beliefs about teaching (Arrow 2). Later, she shared these insights with group members (Arrow 3) and this resulted in a revision of the lesson plan (Arrow 4). After the revised lesson was taught in another class, Asu again evaluated students' learning as shown below (Arrow 5).

In group meeting 2, Asu stated the following while assessing the taught lesson:

> In this lesson, we tried to teach both 'can' and the words at the same time. It turned out that this was too much for them. Then I thought about the rule of teaching one thing at a time. We should have prepared them beforehand for this lesson or we should have focused on vocabulary teaching more. Only then the children could have picked up 'can'. They were just confused (Source: Group meeting 2).

Following her suggestions, the group included many activities through which the students were able to hear the words and had the chance to use them multiple times. As a result of the class implementation, Asu's reflection on the lesson was as follows:

“In this lesson, I have seen that the students developed a more positive attitude towards the unknown vocabulary. They memorized more quickly. Their participation was also more compared to the first one”.(Source: Group meeting 3)

As distinct from Pictogram 24, Pictogram 25 showed that after the teachers evaluated student learning in the research lessons, they decided to make some changes in their own teaching based on their realizations about the research lessons. For example, Sedef focused on the increased attention of the students when the teachers employed some web 2.0 tools during the teaching of co-planned lessons (Arrow 1). Noticing these positive outcomes made her state that she would add to her teaching practice using these tools in her own classes: (Arrow 2).

> Using Quizlet and Kahoot attracted the students’ attention a lot in the co-planned lessons. I did not expect this. I plan to use padlet for giving homework in the second term. I will give them writing homework. I believe using these tools are so helpful in language teaching (Source: Interview 3).

> We did not have any time for testing Padlet with the students before the class. Although I told them to bring their phones, many of them did not bring. Those who had their phones used watsapp, engaged themselves in other things, they misused their phones. Because they did not use their phones in their lessons, they did not feel like it was a lesson. Although it was one of my best classes, they got so distracted. Despite this negative experience, some of the students asked me if we would do such activities again. They really like it. I plan to use it in the future (Source: Group meeting 9).

Following the new classroom implementations, she tended to evaluate the general outcomes of her teaching practice by saying (Arrow 3): “I used Padlet a few times for getting students to do writing. Even if such activities lead to some problems, they are worth doing” (Source: Interview 4).

Similarly, Asu evaluated the taught lessons generally by first reflecting on the student outcomes. These outcomes motivated her to try out the techniques and activities in the

research lessons in her own class, which ended up with changes in her prior beliefs about the value of these activities (Arrow 2):

> Lesson implementations bring new ideas to me when I am planning my lessons. For instance, in the research lesson which was taught first by Sedef and then me, we encouraged the students to make their own sentences first and later did speaking. It was effective, I believe. Before real time speaking, it is better to do it in controlled activities. I started to do so in my teaching. It is quite helpful. I am able to make such changes in my practice since I remember our class implementations very well (Source: Interview 2).

### 4.1.3. The Change Sequences Observed for Turkish EFL Teachers in the FLS Group

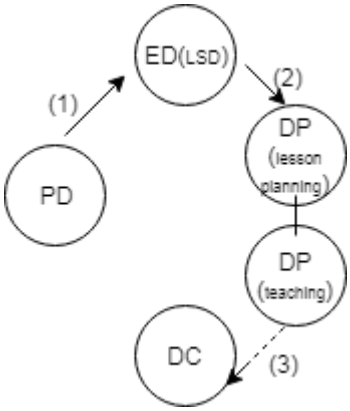
The teachers in this group showed many instances of learning as mostly affected by the lesson study discussions in the External Domain and the teaching component in the Domain of Practice. It was found that the lesson study discussions served as a more important source of information for the teachers compared to the other elements of the PD program. The effect of the webinars on the teachers, however, was not very salient in this group since one of the teachers was already a technology expert and the other teacher had technology phobia. In the planning of research lessons, the web 2.0 tools introduced in the webinars were not integrated into the research lessons, thereby not fostering any change sequence in the group. Rather, as a common change sequence, the activities suggested by the knowledgeable peer seemed to contribute to teacher learning when these activities were incorporated into the research lessons and teachers reflected on the results of these lessons.

The analysis of data showed that the lesson study discussions in the External Domain had an important impact on the teachers in face-to-face lesson study group as the most common entry point in teachers' change sequences. It was seen that the presence of a knowledgeable peer especially contributed to teacher learning with the integration of her suggestions into the research lessons. The lesson study discussions in the External

domain was followed by Personal Domain for two of the teachers and by Domain of Practice for the remaining teacher as the second most common entry point. The webinars, however, did not initiate many change sequences for the teachers except for the situations in which the teachers referred to the perceived benefits of the information presented in the webinars.

The findings demonstrated that the number of reflection and enactment as the first mediating process was quite close to each other in this group. Reflection, however, outnumbered enactment in two of the teachers and for Meltem, the number of enactment was higher than that of reflection. It was seen that due to the active teacher participation in lesson study discussions, the teachers had sufficient amount of information to reflect on and they were also able to enact new practices in the Domain of Practice. As another finding, the Domain of Consequence was the most prevalent ending point for three of the teachers. It appeared that teacher reflection on the student outcomes of the research lessons was more common than teacher reflection on the general results of the lesson.

#### 4.1.3.1. Change sequences initiated by Personal Domain




Pictogram 26

Meltem (3)

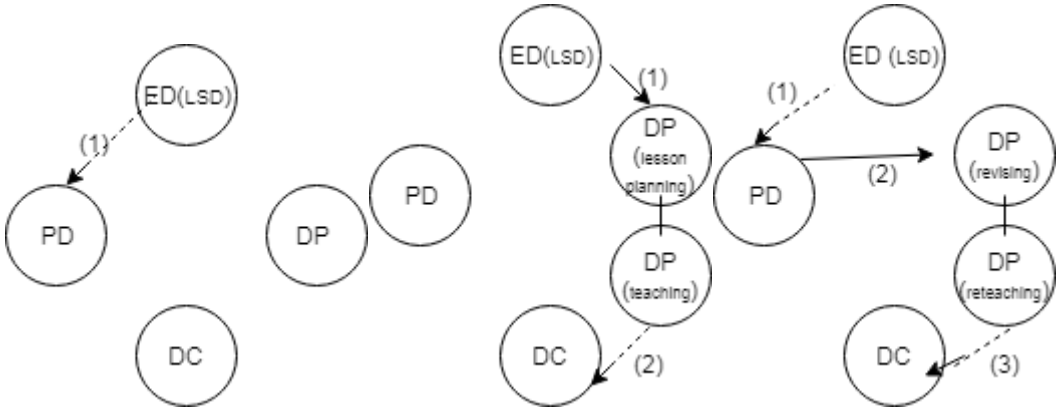
*Figure 4.13* Change Sequences Initiated by Personal Domain in FLS Group

This change sequence was only identified in Meltem. Many times during lesson study discussions, she shared her class materials with other teachers while co-planning the

research lessons (Arrow 1). She showed some print and online materials she used while teaching a specific topic or content in the classroom, which were generally found innovative by the other teachers. It was often the case that after Meltem suggested some materials or activities to the group, the teachers decided to utilize these materials in the class implementations (Arrow 2). Following the implementation of the taught lessons, Meltem evaluated these lessons focusing on the positive student outcomes (Arrow 3). To illustrate, for the first research lesson which was about 'have/has got' and the physical appearance vocabulary, Meltem shared the printables of a balloon filling activity with the other teachers. The teachers liked the activity and used it in the research lesson. In regards to this lesson, Meltem had the following reflection:

> Before the writing activity, it was good that Ezgi reminded the students of the words they already knew by using a video. She elicited the meanings of some physical appearance vocabulary from the students and later asked the students to fill in the balloons we created with these words and then write their own sentences using 'have got' and 'has got'. The students also did coloring and had fun. When the students like these kinds of activities, they become more creative and productive (Source: Group meeting 3).

#### 4.1.3.2. Change sequences initiated by External Domain: Lesson Study Discussions




Pictogram 27 Pictogram 28 Pictogram 29

Meltem, Handan, Ezgi Meltem (2), Handan (3), Ezgi (4) Handan (3), Ezgi (2)

*Figure 4.14* Change Sequences Initiated by LSD in External Domain in FLS Group

Pictogram 27 displayed teachers' reflection on the benefits of the lesson study discussions for their professional development. Meltem reported to benefit from the lesson study meetings since she found the collaborative lesson planning and joint revision of the taught lessons a rewarding experience as she indicated below (Arrow 1):

> I think that we had exchange of ideas and good planning of what will attract the students' attention more. We gained very positive results. All three of us had contributions to our group by adding their own perspectives and sharing their experiences. I really benefited from learning about the other teachers' opinions while designing the lessons. For example, we decided to choose a video and discussed about which video is the most suitable one. It was not something I did before. Despite many commonalities, all three of us had his/her own methods and we all talked about how we teach a certain topic in our classes. I gained many new insights since we, as teachers from different schools, had effective brainstorming when thinking about the common problems. While revising the lessons, we also understood it better to evaluate and make changes in the lessons (Source: Interview 2).

She also stated that she gained new ideas about some classroom activities during lesson study meetings: “In our meetings, we discussed about some activities that will get students to speak more in class. There were many activities I thought I could use in my own teaching” (Source: Interview 3).

In a similar vein, Handan noted that she got inspired by the lesson study meetings since the group had efficient discussion and collaboration while designing the activities to be used in the research lessons (Arrow 1). In these discussions, they also had the opportunity to share their teaching practices and materials, which was eye-opening for Handan. The intensive use of web 2.0 tools by Meltem was especially motivating for her as seen below:

> I think that our collaboration was at a very high level and our search for the best activities proved very useful in our meetings. We did search on the internet and discussed which material can work better for the students. I myself did research on something while Ezgi were preparing some other materials on her own. Meltem showed us many nice materials she uses in her own teaching. She uses web 2.0 tools a lot in her teaching and they are also the things I want to use in my own classes. I figured that I should not be so pessimistic about using technology and I started to believe in myself and in the idea that I can also apply these things in my teaching. Ezgi, for example, created a video using Animoto. She also makes use of very fun and interesting activities and games in her classes. It was good to learn from their practices since we were teaching classes at the same level (Source: Interview 2).

Handan also talked about her plans to make changes in her future teaching practices as shown below:

> I started to look for more different activities after I participated in this program. I always think what else I can prepare. These class implementation have changed my perspective. I plan to make changes in my teaching gradually. I can use the materials and web 2.0 tools suggested by Meltem and Ezgi. I cannot

> make big changes immediately since I am not as experienced in using technology as them¸ therefore, I need time (Source: Interview 3).

Likewise, Ezgi reported to benefit from learning about the other teachers' teaching practices since each teacher had a unique contribution to the group learning. That learning resulted in positive changes in her practices and increased her motivation to teach as expressed by her below (Arrow 1):

> In our meetings, I saw that Meltem uses technology very frequently. I myself learn from the internet but it is better to learn from the other teachers. It definitely adds excitement to my job. I feel very happy coming to these meetings. Co-preparing the lessons gave me new perspectives about teaching. Handan has immense teaching experience. Meltem follows all of the recent developments. We all have common interests and I can definitely say that these meetings affect my classroom teaching positively. I become more willing and enthusiastic after these meetings (Source: Interview 3).

In pictogram 28 which was seen in all of the teachers, the entry point was lesson study discussions in the External Domain where the teachers exchanged ideas with the group members for lesson planning. This mostly happened when one of the teachers in the group had a specific idea in mind while planning the research lessons and wanted to test it out in the class implementations. The suggestion of that teacher resulted in the integration of that idea into the lesson plan (Arrow 1). Assessing the taught lesson, the teachers scrutinized that lesson in terms of student performance (Arrow 2). Below is an evaluation made by Meltem about the student outcomes of a co-planned research lesson:

> The lesson went quite well. The students' participation was good. They found the video very interesting and most of them were able to do fill-in-the blanks activity. I guess we chose a good video and therefore, although we did not teach them wh questions explicitly, we elicited the form and meaning from the students (Source: Group meeting 5).

Another example of this pictogram is from Handan. For instance, the focus of the first research lesson was on physical appearance vocabulary and grammar and it was planned as a revision lesson. The teachers wanted the students to understand the situations when 'have got/ has got' and 'to be' are used with physical appearance words, which was identified as a problematic grammar topic for the students. Following the identification of the problematic area, the lesson plan was prepared as a result of all teachers' joint contributions. Meltem showed the teachers a writing activity which she earlier used with her students. This activity, which required the students to fill in the balloons in the shape of a tree was novel for the other teachers. Additionally, Ezgi suggested using a video to pre-teach some key vocabulary before the writing activity. These ideas were incorporated into the lesson plan (Arrow 1) and Handan evaluated the taught lesson by focusing on how the students responded to this lesson as given below (Arrow 2).

> It was so nice to see that all of the students were very engaged in the lesson. Normally, you know many of them daydream or look at the outside. But in this class it was so different. Writing in the balloons and the videos really drew their attention. They also seemed to learn about the difference between have got/ has got and to be. You know, I collected their writings after the lesson and I saw that most of the student were able to write grammatical sentences. However, it would have been better to do these activities in two lessons, not in one. We could not spare any time for speaking. Because of time limitations, we could not speak much about the video. Also, some students were still confused with 'to be'. Still, it was a good lesson (Source: Group meeting 3).

This pictogram can also be seen in the following quotes from Ezgi:

> In Handan's class, we focused on 'when', 'what' and what time' questions. We decided to find authentic materials. If I had planned that lesson on my own, I would not have had so many interesting activities since I am sometimes too lazy to find good activities. For that lesson, I prepared a new worksheet for the

> listening material and Handan edited it. We also used the wordart website Tagul which Meltem suggested to give the wh questions in a mixed form for students' writing. When I taught that lesson, I really enjoyed it. It was a pretty good lesson. The students also enjoyed it. It was not a boring class for them at all (Source: Interview 2).

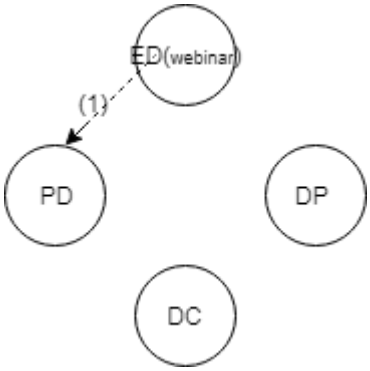
Pictogram 29 demonstrated that the teachers sometimes reflected on a comment that a teacher made in group meetings (Arrow 1) and suggested using that idea in the revised lesson. After this new idea was included in the second research lesson (Arrow 2),they paid attention to the positive student outcomes in the revised lesson (Arrow 3). Here is an example from Handan who referred to a comment made by a group member about the first research lesson and elaborated on this idea for revising this lesson:

"Ezgi said I should have provided the students with a reason for listening to the video. She's right. Not giving any instructions before the video resulted in a waste of time. I will give instructions in the second lesson" (Source: Group meeting 5).

Following the integration of this new insight into the second research lesson, Handan evaluated that lesson with a focus on student results:

> It was good that I set a task for the students in the first listening. I asked them to figure out the general differences between the 3 characters in the video in terms of their daily life routines. In this way, the students got more concentrated on the topic and later they were able to do more detailed listening (Source: Group meeting 6).

#### 4.1.3.3. Change sequences initiated by External Domain: Webinars




Pictogram 30

Meltem, Handan

*Figure 4.15* Change Sequences Initiated by Webinars in External Domain in FLS Group

The only change sequence initiated by webinars in the External Domain consisted of a reflection process on the affordances of the webinars by the teachers. ForMeltem, the webinars served as a reminder of some web 2.0 tools and some language teaching methods and techniques as given below (Arrow 1):

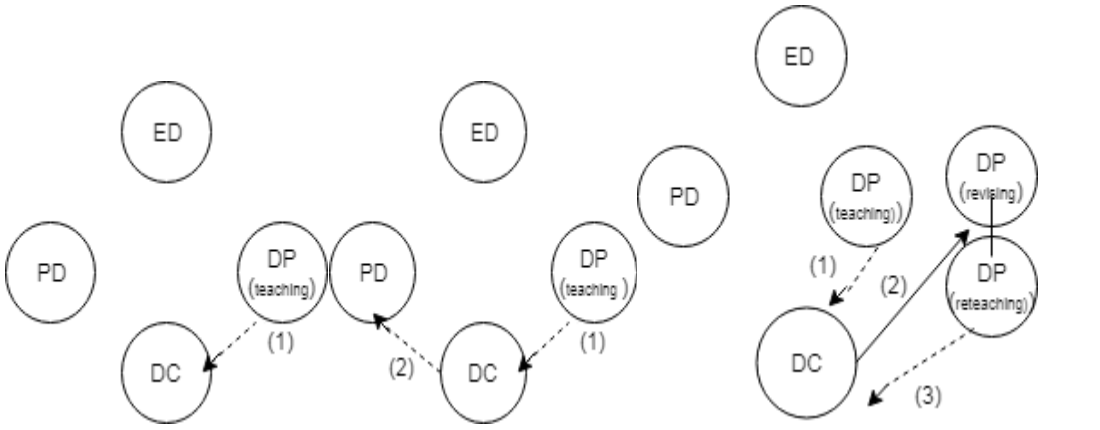
> The webinars were so beneficial. I already knew some of the tools introduced in the webinars. However, there were also many things I forgot and therefore, it was good to remember them. The websites presented by guest speakers were very good. I did not know learnenglishkids, for example. I knew QR code but the webinarian reminded us of how important it is. In the first webinars, you also gave us important information on some concepts I have forgotten. I really enjoyed the webinars. I learnt some web 2.0 tools such as Wordart and Quizlet (Source: Interview 2).

Handan indicated that the webinars served to remind her of the information she gained in her undergraduate studies. The speaking opportunity during the webinars was also a bonus of the webinars for her as seen in the following quote (Arrow 1):

> I found the webinars very beneficial. We expressed our opinions about a common topic together with teachers from different parts of Turkey. I figured that I have done many things right in my teaching or I also realized what else

I can do in my classes. I graduated 19 years ago; therefore, I encountered many things that I applied in my teaching but forgot by name. I remembered my prior knowledge. It was like I turned back to my first years of teaching and relearnt things. I also learnt about many technological tools and I think that I need to improve myself in this respect. Besides, I also benefited from the webinars since the the webinar language was English. It was good to listen to, speak and write in English since we normally don't have this chance in our environment (Source: Interview 2).

#### 4.1.3.4. Change sequences initiated by Domain of Practice




Pictogram 31 Pictogram 32 Pictogram 33

Meltem (2), Handan (4), Ezgi (3) Handan (2) Meltem (2), Handan (2), Ezgi (3)

*Figure 4.16* Change Sequences Initiated by Domain of Practice in FLS Group

In pictogram 31, the teachers focused on the student results of the research lessons (Arrow 1).Meltem, for example, often paid attention to students' performance while evaluating the research lessons as presented below:

> As far as I see, the students seemed to be very enthusiastic in the lesson. Nearly all of the students were able to make sentences in present tense by using the sticky cards and objects. Although they were not taught the grammar rule explicitly, they learnt the grammar point well as they were very active in the lesson (Source: Group meeting 5).

Similarly, Handan often had a reflection on the student outcomes in the taught lessons. She also considered what contributed to the success or failure in these lessons in terms of student learning as shown below:

> In Ezgi's class implementation, she showed the unknown words in a Word Cloud and asked the students to guess the content of the reading passage. Brainstorming about the reading passage, the students also guessed the meaning of unknown words with the visuals shown by their teacher. Ezgi also made sentences using these words using 'there is' and 'there are' structure. In this way, the students learnt both the meaning of words and the target structure. I think it was a very creative and fun lesson for the students (Source: Group meeting 8).

Pictogram 31 and 32 were similar since both started with the mediating process of reflection on the student outcomes of the taught lessons (Arrow 1). Pictogram 32 continued with further reflection processes, which brought about some changes in cognition or beliefs about some aspects of teaching on part of the teachers (Arrow 2).This change sequence can be displayed in the following quote from Handan.

> In class implementation, I have seen that many different activities can be incorporated into our lessons. For instance, in the lesson I taught, I used both the smart board to show students some avatars in physical appearance unit and then we watched a video. Later, we had coloring activity. The students got excited by these activities and their participation in the lesson increased overwhelmingly. I figured that rather than explaining things to the students over and over again, it is better to add variety to our classes (Source: Group meeting 2).

Pictogram 33 illustrated the following: the teachers reflected on the student outcomes of the taught lessons (Arrow 1) and then they provided their suggestions on how to revise that lesson (Arrow 2). After the lesson was revised and retaught, they reevaluated how the students responded to this lesson (Arrow 3). For instance, in

group meeting 9, Ezgi put forward her ideas about the lesson she taught in her class as provided below:

> I think that although my intention to use the video was to elicit the daily routine vocabulary from the students, it did not turn out as I expected. They could not remember the words and instead they told me some other words, those that we learnt in the unit about 'can'. It can be better to change the video with something else (Source: Group meeting 9).

This reflection yielded discussion among teachers who offered many different activities. Among those, the use of magnetic objects which belonged to Meltem was accepted by the group for revising the target vocabulary. The objects included real life objects and also some sticky cards which included s/es suffixes. They also suggested how to change the game in the first implementation with the use of these objects. Ezgi had the following comments focused on student learning for the revised lesson:

> In the second class implementation, the students were not only able to remember the words but also practiced present tense by using the objects and s/es suffix cards. When they chose a magnetic word, they acted it out and made a sentence with it in present tense. They also repeated all sentences that their friends made before them. Magnetic words did a great job here. I plan to order those words for my classes (Source: Group meeting 10).

### 4.2. Growth Networks Observed for Turkish EFL Teachers Participating in the OPD Program

When the growth networks in each group were scrutinized, it was seen that all teachers except for one teacher in face-to-face lesson study group had some long-lasting changes in their cognition and behaviors. To put in a nutshell, an analysis of growth networks revealed three main pathways of change which signified permanent processes of teacher development. These growth networks are presented in Figure 4.17, 4.18 and 4.19 below.

The first pathway of change, which was observed in four of ten teachers as the most common growth network included processes of enacting new practices both in research lessons and in teachers' own classes. This growth network also embodied

multiple reflection processes that focused on the outcomes of implementing new teaching practices. As displayed in Figure 4.17, this growth network had two variations. In the former (see Figure 4.17(a1)), the teachers enacted a new teaching practice in research lessons by using the new information learnt in the webinars or the ideas that arose in lesson study meetings. Thus, the teachers had a professional experimentation of a new teaching practice in research lessons (change in the Domain of Practice). They later reflected on the classroom outcomes of these lessons (change in the Domain of Consequence). The positive outcomes motivated the teachers to implement these teaching practices in their own classrooms (change in the Domain of Practice), which was complemented with a reflection on the student outcomes of these implementations (change in the Domain of Consequence). The favorable outcomes led to a change or reaffirmation of prior beliefs about teaching and the intention to keep using the new practice in their daily teaching (change in the Personal Domain). In the latter (see Figure 4.17(a2)), the teachers integrated the information taken from the webinar or from the peers in the LS meetings into the research lessons (change in Domain of Practice). They later reflected on the general quality of the research lesson, which modified their prior cognition and beliefs about teaching (change in the Personal Domain). The change in the Personal Domain led them to try out this new practice in their own class (change in the Domain of Practice). Following the implementation of the new practice, they evaluated the student outcomes (change in the Domain of Consequence) and the favorable outcomes resulted in the modification of their belief about teaching and served as a motivator for their future teaching practices (change in the Personal Domain).

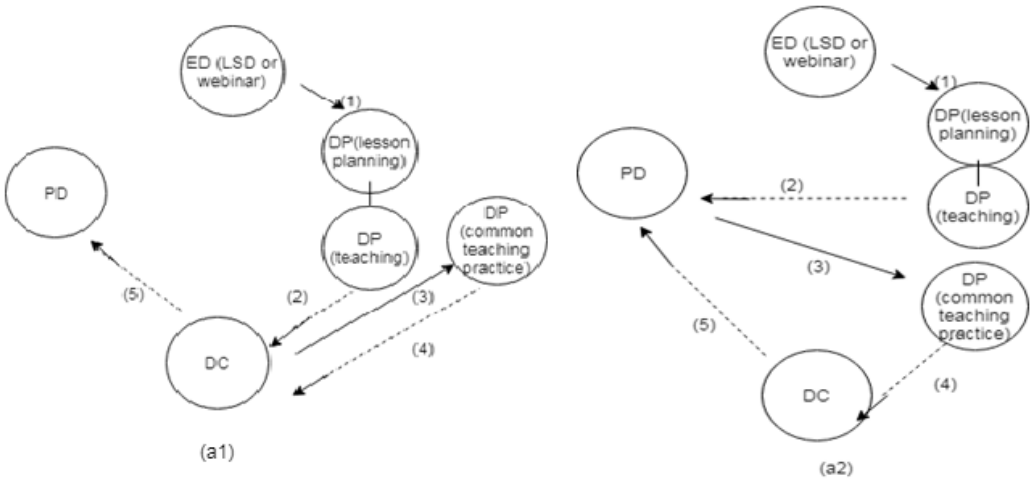



*Figure 4.17* Growth Network 1

Another pathway was seen in two teachers, one of whom was the member of online lesson study group 1 and the other from the face-to-face lesson study group. As different from the teachers following the pathways of change in Figure 4.17, these two teachers were able to enact new practices in their own classroom without the need to see the positive consequences in the research lessons (see Figure 4.18). These teachers, who were the ones who contributed more actively to the lesson study discussions implemented the ideas suggested in the webinars or in lesson study meetings in their own classes (change in the Domain of Practice). Later, they reflected on the student outcomes of these new practices (change in the Domain of Consequence). Reflection on student outcomes resulted in the alteration of their prior cognitions and beliefs about teaching and bolstered their intention to maintain this new practice (change in Personal Domain).

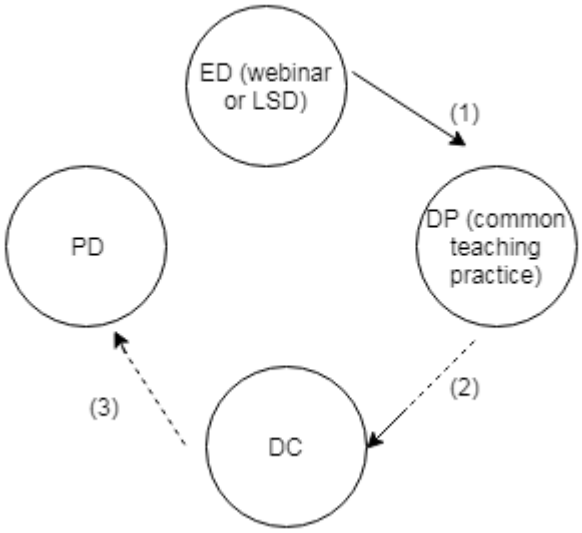



*Figure 4.18* Growth Network 2

Finally, one teacher from each group making up 3 teachers in total displayed another growth network depicted in Figure 4.18. This growth network was initiated when the teachers incorporated the information gained from the External Domain (webinar or lesson study discussions) into the research lessons (change in the Domain of Practice). Following the implementation of the research lessons, the teachers reflected on the student outcomes (change in the Domain of Consequence). As a result, this reflection modified the teachers' earlier beliefs and cognitions about teaching and fostered the teachers' desire to preserve this implementation for future teaching practices.

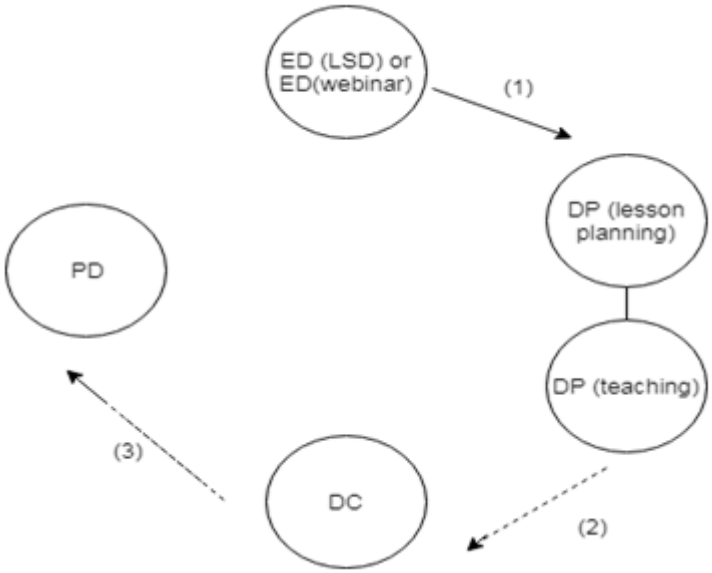



*Figure 4.19* Growth Network 3

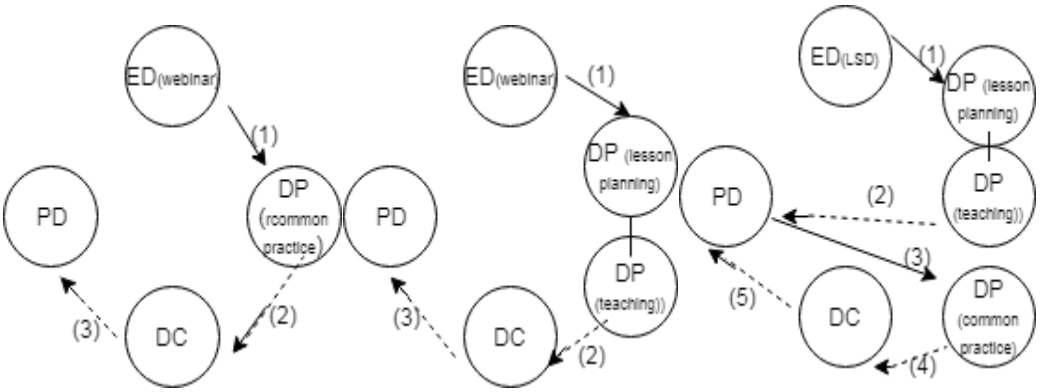
When the 3 lesson study groups were compared, it was seen that teacher learning was focused on the use of web 2.0 tools in language classes as a commonality across the groups. This was especially evident in online lesson study group 1 in which all of the teachers exhibited instances of learning centered solely on the integration of new technologies rather than on language teaching pedagogy. In online lesson study group 2, the general theme in the growth networks was found to be concerned with both increased technological and pedagogical knowledge in two of the teachers while one teacher only reported development in her knowledge of using new technologies. When it comes to the face-to-face group, one teacher was shown to gain new insights about the pedagogy of language teaching with increased knowledge of language teaching techniques and classroom activities. The growth networks of the remaning teacher, on the other hand, demonstrated that this teacher bolstered only her technological know-how by using new technological tools in her classes as a result of her participation in the OPD program.

### 4.2.1. Growth Networks Observed in the OLS Group 1

Nearly all of the growth networks were initiated by the webinars in External Domain and therefore, focused on the integration of technology. In all of these growth networks, the teachers reflected on the student outcomes of the research lessons or these of the new teaching practices in their own classrooms. These reflections led to a long-lasting change in the teachers' cognition or teaching behavior.

As a major finding, all of the teachers had at least one growth network indicating lasting changes in their beliefs about teaching or in their teaching behaviors. When compared to the change sequences, the growth networks displayed some differences in terms of entry points, the first mediating processes and common ending points. Analysis of growth networks showed that 4 out of 5 growth networks were initiated by the webinars in the ED and enactment was the first mediating process of change in these growth networks. It seemed that the implementation of the ideas introduced in the webinars in the research lessons or in teachers' teaching practices served as an enabling force for initiating the change process of teachers. Despite this commonality, variations were observed in the specific pathways of long-lasting changes followed by the teachers. Sanem, for example, integrated the knowledge she gained in the webinars into her own classes and reflected on the consequences of these lessons, which led her to change some of her previous cognition or beliefs. For some teachers, when the ideas or tools presented in the webinars were put into practice in the research lessons, the teachers reflected on the student outcomes of these lessons by transforming their earlier beliefs about teaching. Finally, for the last category of growth networks, it was found that teacher learning started when the technological tools covered in the webinars were incorporated into the research lessons and the teachers reflected on the outcomes of these lessons. These reflections yielded professional experimentations in teachers' classrooms with teachers trying out new practices similar to those in the research lessons. Following the implementation of these new practices, the teachers reflected on the salient outcomes of the lesson for student learning or motivation. This reflection resulted in teachers' changing of her former cognition about teaching.

Finally, common to nearly all of these growth networks was that following the class implementations in research lessons or in teachers' own classes, a reflection on the student outcomes (reflection from DC to PD) tended to lead to long-lasting change in teachers' cognition and teaching behaviors.




Pictogram 34 Sanem

Pictogram 35 Ayla

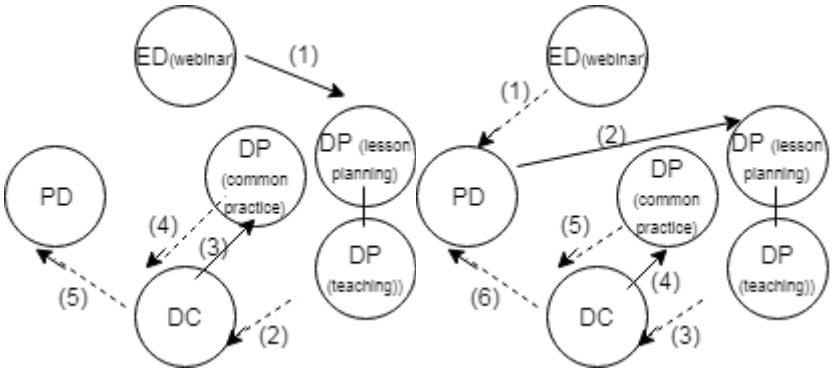
Pictogram 36 Sevgi

*Figure 4.20* Growth Networks in OLS Group 1

In OLS group 1, an analysis of the growth networks showed 4 different pictograms with different pathways of change albeit similar entry and ending points. The growth network depicted in pictogram 34 was initiated when Sanem incorporated the newly learnt web 2.0 tools introduced in the webinars into her common teaching practice. Consequent to her implementation of that new teaching practice, she reflected on the favorable student outcomes, which resulted in a change of her prior cognition about teaching.

To illustrate, in the third interview, Sanem talked about how she integrated Padlet in the fifth webinar into her own teaching. In the post-observation data, she was also seen to use Padlet for a writing activity in the classroom (Arrow 1). Evaluating the lesson, she first referred to the effects of using Padlet on students' writing performance (Arrow 2). Second, she explained her intention to use it in further lessons (Arrow 3).

In class, I sent my students a Padlet link and they did writing activity about the topic we covered that day. They really liked using Padlet. They enjoyed looking at their own writings and those of their friends. This time, they were more careful about grammar and they wrote more enthusiastically than they did other times. I believe when Padlet is used, they give more attention to the writing activity and the product is better compared to the times when classical methods are used. I will keep using it (Source: Interview 2).




Pictogram 37 Pictogram 38

Ayla,Beste Sevgi

*Figure 4.21* Growth Networks in OLS Group 1(cont.)

The growth network presented in pictogram 35 belonged to Ayla and started with the teachers' joint lesson planning using some of the ideas presented in the webinars and the implementation of this lesson plan in one of the teachers' classes (Arrow 1). Following the research lesson, Ayla first reflected on the student outcomes of this implementation (Arrow 2) and later based on these outcomes, she developed an awareness about the value of using technology in language classes (Arrow 3).

We used many web 2.0 tools in the co-planned lessons for teaching reading, writing and vocabulary. Quizlet, for example, was so good for vocabulary. In these lessons, I realized how we can make the lessons more fun for the students. I saw that the students wrote more eagerly when they used that new program, Padlet compared to traditional way of writing. I reached the conclusion that we can teach better by using technology (Source: Interview 3).

In pictogram 36, the long-lasting changes in Sevgi's cognition originated from the discussions among the teachers about the activities to be used in research lessons. For

instance, in the first group meeting, Sanem suggested using Kahoot as an activity for vocabulary revision and this suggestion was included in the lesson plan (Arrow 1). After Sanem had the first class implementation, Sevgi evaluated that lesson during the lesson study meeting by making a general positive comment about the use of Kahoot in the research lesson (Arrow 2): "I liked Kahoot most in that lesson. It is a nice tool that we can easily use in our classes". (Source: Group meeting 4)

In the last interview, it was seen that the changes in her beliefs about the value of using Kahoot motivated her to integrate it into her own teaching (Arrow 3). After she gained positive outcomes in terms of increased student interest (Arrow 4), her attitude towards using new web 2.0 tools was reinforced as seen in the following quote (Arrow 5):

> I used Kahoot to prepare quizzes three or four times at the end of units. The students loved it and wanted to do the quizzes many times. I used it for revising vocabulary. It worked quite well. I have seen that I can keep using it to add excitement to my classes. It is good to have some novelties in the classroom. Therefore, I try to integrate most of these novel things into my classes (Source: Interview 3).

In pictogram 37 which was seen in two of the teachers, the entry point was the webinars in the External Domain as an inspiration source for lesson planning on part of the teachers. Thus, they did joint lesson planning based on an idea given in the webinars (Arrow 1). Following the teaching of the research lesson, the positive student outcomes were salient to these teachers in their evaluation of the lesson (Arrow 2). Accordingly, these positive outcomes triggered their desire to transform their teaching by integrating a new practice that they have not tried before (Arrow 3). Evaluating the efficacy of the new practice, they again focused on the students' learning (Arrow 4), which supported their decision to sustain this new practice in their teaching (Arrow 5). This growth network can be seen below where Beste recounts her experiences of using Movie Maker in her classes and the consequent changes in her cognition about teaching and learning vocabulary in language classes.

> In one of the webinars, you introduced Movie Maker and we learnt how to make our own videos. For Beste's teaching, we created two videos. It worked well for children since they got motivated during the lessons. Later, I used Movie Maker in my class, too. I used the video to teach some vocabulary and integrate listening and speaking activities afterwards. I've come to the realization that I was able to teach vocabulary much better in this way. Even after reading many texts in class, none of the words stayed in the students' minds. Maybe they learnt two to three words out of thirty words. But I believe we attract the students' attention more in this way and they really memorize these words and don't forget them (Source: Interview 2).

As another example of pictogram 37, Beste's growth network was initiated with the inclusion of Quizlet into a research lesson as a web 2.0 tool from the webinars. When it was utilized in the research lesson, Beste reflected on the outcomes of this lesson in terms of student learning. The positive student learning outcomes, in turn, led her to change her practice at the moment with her starting to use it in her own classes. Later, the integration of this new practice was followed by a reflection on the lesson in terms of the student learning which was complemented in a change in her cognition and beliefs about teaching as given below. In group meeting 5, Beste evaluated the lesson in which Quizlet was used:

> I think Quizlet was a big success in this class. The students seemed to acquire all the words. I am happy that I had first-hand experience using it and realizing that it was really beneficial for my students. If I don't have internet problems in my class, I will definitely use it (Source: Group meeting 5).

Later in an interview, Beste indicated that she already employed Quizlet in her class. She also noted that it consolidated teachers' vocabulary learning to a great extent and therefore, she had an intention to keep using it for vocabulary teaching as she stated below:

> I used Quizlet in my class. There were some ready-made quizzes there. I decided to use them. It really attracted the students' attention. It was visual and the students retained the vocabulary items very well. Henceforth, I will use it in my class (Source: Interview 3).

Finally, pictogram 38 was observed in Sevgi who was very interested in the webinar content and had a desire for testing them out in the research lessons. She often referred to the web 2.0 tools suggested in the webinars during lesson study meetings and offered to integrate them into the lesson plan (Arrow 1). In group meeting 7, for example, Sevgi indicated that the information presented in the webinar concerning the use of Padlet in language classes motivated her to think about using it in her classes. As a result, for the last class implementation to be done in Sanem's class, she suggested using Padlet for a writing activity (Arrow 2): "In the webinar, you know, the invited speaker talked about how creatively we can use Padlet. I said to myself that I am going to use it for sure. Let's use it for this lesson, too" (Source: Group meeting 7).

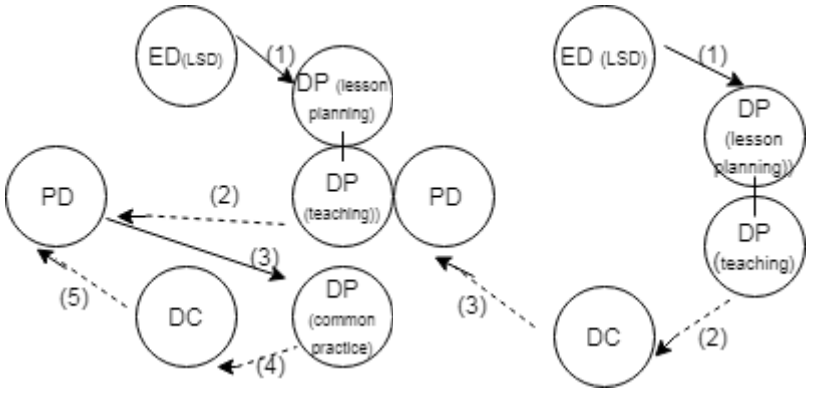
In the lesson study meeting in which they evaluated the taught lesson, she concentrated on the advantages of Padlet for students and the teachers (Arrow 3): "The students could do more writing in a shorter time and Sanem was able to correct their mistakes more easily thanks to Padlet" (Source: Group meeting 8). This student outcome led her to employ Padlet in her own teaching (Arrow 4). Subsequent to her reflection on the student outcomes of this teaching practice (Arrow 5), she concluded that Padlet is a nice tool for using in her classes (Arrow 6) as can be seen below:

> We first used Padlet together. Later, I used it in my class, too. I used it for revision or to get students to do writing about a topic we have just learnt. Students liked it very much. It is indeed a quite beneficial and practical tool. I will keep using it from now on (Source: Interview 3).

### 4.2.2. Growth Networks Observed in the OLS Group 2

In addition to the change sequences, all of the teachers in the group were found to have at least one growth network representing long-lasting changes in their cognition and behaviors. These growth networks were primarily initiated by the teaching component of Domain of Practice or by the lesson study discussions in the External Domain. They occurred mostly when the first or the revised research lesson yielded some general or student outcomes, which triggered teacher reflection on these

outcomes and led teachers to change their previous cognition or beliefs. The changes in cognition resulted in teachers' professional experimentations in their classrooms. These experimentations again brought about certain student outcomes and the teachers reflected on these outcomes as a precursor of permanent teacher learning. Other rarer growth networks also happened when the teachers reflected on the research lessons and added new teaching practices to their classes based on these reflections. Or it was also possible for lasting changes to occur when the lesson study discussions contributed to the planning of the research lesson and the teachers evaluated the student outcomes of this lesson, which promoted changes in their cognition and beliefs.




Pictogram 39 Sedef

Pictogram 40 Sedef

*Figure 4.22* Growth Networks in OLS Group 2

The scrutiny of the growth networks yielded 4 different pictograms with similar entry and ending points and with small changes in pathways of change. Three of the four pictograms started with the lesson study discussions in the External Domain when the ideas provided by the teachers in group meetings were incorporated into the first or revised research lesson (pictogram 39, 40, 42, arrow 1) whereas the webinars were the entry point in one of the pictograms (pictogram 41, arrow 1). All of the pictograms included a reflection process on the research lessons either in the Personal Domain (pictogram 39, arrow 2) or Domain of Consequence (pictogram 40, 41, 42, arrow 2).

Some of these reflections resulted in teachers' making changes in their teaching practices (arrow 3), reflecting on the student outcomes of these new practices (arrow 4) and the changes in prior beliefs and cognitions were the end products of all these processes (pictogram 39, 41, 42, arrow 5). In pictogram 40, on the other hand, the teacher' initial reflection on the student results of the research lessons did not end up with a change in teaching practice. Rather, this reflection resulted in a modification of teachers' prior beliefs about teaching (pictogram 40, arrow 3).

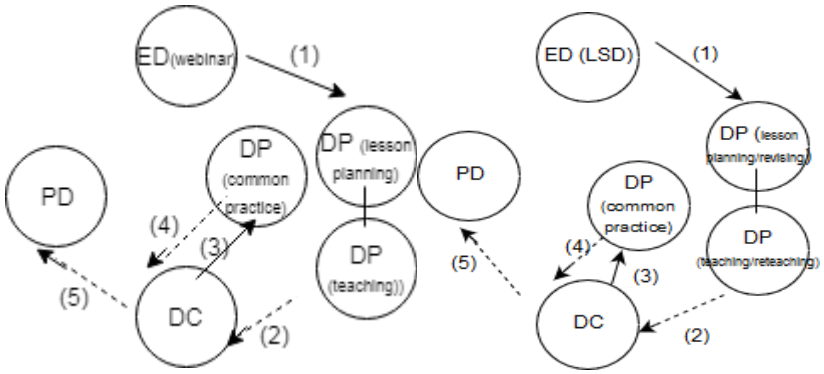
An example of pictogram 39 is from Sedef. After the teachers did lesson planning focused on vocabulary teaching in group meetings, the lesson implementations demonstrated to Sedef the importance of vocabulary teaching in language classes, for which she did not use any planned activities beforehand (Arrow 1). Before her participation in the online lesson study procedure, her only method was giving her students vocabulary lists and quizzes. This realization got her to change her practice (Arrow 2). The positive outcomes of the changed practice (Arrow 3) led to a lasting change in her cognition and her teaching practices as shown below (Arrow 4):

> Nowadays, I try to put more emphasis on vocabulary teaching. I started to think that the students are able to learn grammar better in this way. This is what I observed in the co-planned lessons. I used to give the Turkish meaning of unknown words and had vocabulary quizzes in order to get the students study the words. For some time, I've started to spare more time for vocabulary teaching. Sometimes, I use the whole of the lesson for vocabulary teaching. Since the students like it, they don't think it is boring. When they learn vocabulary, they also become more self-confident in my classes. Therefore, I see that I should keep going this way (Source: Interview 3).

Pictogram 40 was also observed only in Sedef. She argued that the teachers designed lessons which included many activities she normally did not incorporate into her teaching (Arrow 1). She considered the increased student motivation when different kinds of activities were used in the classroom (Arrow 2). As a result, she concluded

that activity planning was a very important part of language teaching as she stated below (Arrow 3):

> In this lesson, they saw the words in the PowerPoint presentation and did role play. I distributed face pictures to them. They raised them up according to the mood I showed them. I believe all of these have been effective. I would not have been able to think of so many activities if I planned these lessons on my own. Our school is problematic due to the low student profile. Since they don't have a good educational background, our lessons are too bad. When we exchanged ideas with other teachers and applied innovative practices, I see that they got excited. When they see that they can actually succeed in the lesson, they become more and more enthusiastic. I think that these are all the outcomes of the activities we plan together. I better saw the importance of designing activities in the language classroom. I know I should be in search of interesting activities from now on (Source: Interview 4).




Pictogram 41 Pictogram 42

Nermin, Asu Asu

*Figure 4.23* Growth Networks in OLS Group 2(cont.)

This growth network depicted in pictogram 41 began when the web 2.0 tools and classroom ideas introduced in the webinars were made part of the research lesson. It continued with the implementation of the research lesson and the concomitant positive student outcomes perceived by Nermin. Afterwards, these salient student outcomes

motivated her to change her practice in her own classes. Finally, when the changes in her practice also yielded increased student learning, this aroused permanent change in her beliefs and cognition.

In group meeting 4, Asu proposed using Quizlet for vocabulary teaching. Upon her suggestion, Quizlet was used to do practice with some keywords before passing to a reading passage (Arrow 1). Nermin assessed the taught lesson with a focus on the positive consequences of the lesson for the students (Arrow 2):

> We had Quizlet, you know. It really worked pretty well in class. The students liked it and later when I asked them the meaning of the words, they remembered. I also gave them a vocabulary quiz in class a few days later and the scores were really good (Source: Group meeting 5).

Reflecting on these positive outcomes, Nermin integrated Quizlet into her own teaching practice (Arrow 3). Her realization about the gains in student interest in vocabulary learning in this lesson (Arrow 3) reinforced her earlier conceptions of Quizlet as seen below (Arrow 4).

> I started to use Quizlet for vocabulary teaching and especially for vocabulary practice. They like it very much. They are able to memorize more words thanks to it. It is a very practical program. I want to group the students and give them assignments using these tools. Some of them already started to study the vocabulary sets prepared by other people in Quizlet. They loved it. The students I am referring to are not the best ones in the class. Harnessing the potential of these tools is definitely motivating and worth doing (Source: Interview 2)

Pictogram 41 was also seen in Asu. Below is an interview excerpt in which this growth network can be identified.

> After we decided on Quizlet, Nermin used it in her class implementation. I also utilized it when teaching the same unit and realized the students learnt better

> with Quizlet. Those students who attended that class later had very high scores in the vocabulary quiz. In Nermin's teaching, we also realized that learning the unknown vocabulary helped the students to answer the comprehension questions better. We added keywords in Quizlet and it really worked. Following this experience, I started my own lesson with Quizlet. The students learnt the words more permanently in this way. It was also fun for the students. As a result, I concluded that web 2.0 tools are really important for memorizing words, arousing the students' interest and increasing their participation in the lesson. I really experienced that they are effective. Another time, I used Quizlet with 8th graders in communication unit for reminding them of the words. I again felt like the students learnt better (Source: Interview 2).

Finally, pictogram 42 showed the following: In the lesson study discussions, Nermin stressed the importance of exposing the students to the target words many times in a lesson. Due to this suggestion, the group decided to come up with more than one activities in which the students would see the words in context (Arrow 1). The lesson adapted in this way had positive outcomes in terms of student learning (Arrow 2). This result reinforced Asu's belief that repetition, hearing and the provision of multiple activities help vocabulary learning (Arrow 3). This belief motivated Asu to make changes in her classroom teaching (Arrow 4). Since the results were positive in terms of student learning (Arrow 5), this motivated her to draw some conclusions about teaching accordingly (Arrow 6).

> In these lessons, I have seen that the more repetition we have, the better it is for the students. Especially, in the second lesson taught in Sedef's lesson, she repeated the same words so many times that it resulted in permanent learning for the students. I think that seeing the word in unity is very important. I mean hearing the word again and again, repeating it again and again and later supporting these with activities. Even if we don't use a web 2.0 tool, it is very essential that the students hear the words many times in a lesson. I used to pay attention to this before but I have seen that too much repetition for us is effective

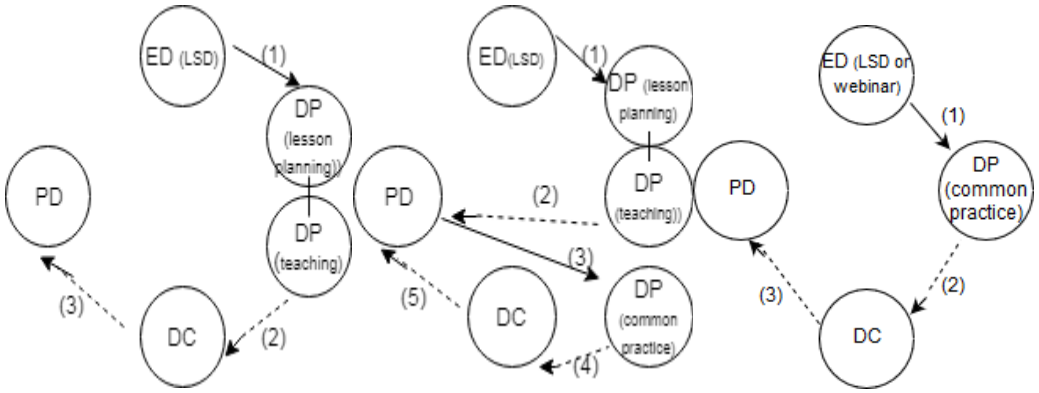
for them. With this realization, I started to give more importance to repeat words. For example, I use Quizlet, we played Kahoot in class and I have become more insistent to motivate them. Instead of saying 'Okey, this word means this' and telling them to write it on their notebook, I try to give more hints about its meaning or ask them to guess the word's meaning. It has proved effective so far. They've responded to this way of teaching in a better way than I anticipated (Source: Interview 4).

### 4.2.3. Growth Networks Observed in the FLS Group

In this group, various instances of long-term learning were found except for one teacher for whom no growth networks were identified. The analysis of growth networks pointed at 3 pictograms that represented permanent changes in teachers' cognition and beliefs. In all of these pictograms, the entry point was the lesson study discussions in the External Domain (pictogram 43, 44, 45, arrow 1). In pictogram 45, the webinars in the External Domain was another entry point (arrow 1). Two of the pictograms were quite similar since the teachers in these pictograms were able to add to their common teaching practices as an outcome of their learning from the OPD program. However, they were some changes in the particular pathways of change followed by the teachers. Pictogram 44 embodied a reflection process on the taught research lessons in the Personal Domain (arrow 2) and this reflection brought about some changes in common teaching practice (arrow 3). Following this change, the teachers focused on how the students responded to this new teaching practice (arrow 4). Finally, the favorable outcomes motivated the teacher to sustain this new practice (arrow 5).

Pictogram 45 was less elaborate than pictogram 44 with less mediating processes. The teacher in pictogram 45 integrated the new insights she gained from the webinars into her classroom practice (arrow 1), used student results to reflect on the new implementation (arrow 2) and the positive results led to a permanent belief about the value of this new practice (arrow 3). Finally, as different from the other pictograms, pictogram 43 depicted the following: after the research lessons were planned and

taught with the joint contributions of the teachers, the teacher evaluated the student learning in these lessons (arrow 2) and the positive outcomes led to long-term change in the teacher's prior cognition and beliefs (arrow 3).




Pictogram 43 Handan

Pictogram 44 Handan

Pictogram 45 Ezgi

*Figure 4.24* Growth Networks in FLS Group

Pictogram 43 which was apparent in Handan's data can be seen in the following excerpt from a group meeting.

> In my lesson, we aimed to see if the students were able to understand some wh questions in sentences and answer those kinds of questions. I have been teaching for years. This was the first time I taught this topic in this way. Normally, I used to teach in the traditional way to guarantee that there is no misunderstanding on part of the students. I make an explicit explanation, write example sentences on the board and ask the students some questions. In this lesson, the students did not know these questions and by showing them some words and making the meaning clear with the use of a video, we got them to answer these types of questions. Even one word answer elicited from the students was acceptable for us and we got positive feedback from them in return. The results of the test we gave them after the lesson were also very good. In this lesson, I have seen that this lesson can be taught in this way, as

> well. I think I can sometimes use this way of teaching in my classes. I do not need to explain every rule explicitly. I should also leave some space for students by providing them with a context so that they get the rule themselves. I plan to do so in the future (Source: Group meeting 5).

An example of pictogram 44 is from Handan and presented below:

> I can easily say that the lesson implementations affected the way I think and behave in my classes. I started to question my common teaching practices and thought that I can teach in less traditional ways. The other day, I was teaching the health unit. Normally, I used to give the students some example sentences and expect them to memorize the unknown words in these sentences and make their own sentences. They only heard the words from me. Instead of these practices, I used a game which exposed them to the unknown words and got them to guess their meaning. This proved effective for the students and I plan to use this type of games in my other classes, as well (Source: Interview 3).

Pictogram 45 belonged to Ezgi. It was evident in Ezgi' data that she gained a wealth of new information related to the use of web 2.0 tools from Meltem. She was also able to transfer this knowledge to her classroom by using these tools with her students. Despite her reservations about the effective use of time in the computer lab, she concluded that these kinds of activities resulted in many positive student outcomes. These outcomes led to the reaffirmation of the idea that these tools are worth utilizing in the language classroom as displayed in the following extract.

> I use many things I have learnt from Meltem. That day, she was talking about video tools. Later, I took my students to the computer lab. I showed them how to create a folder, add photos and music, go to the website, etc. Still, my students create their own videos and send me as an email. They like it very much. They often thank me for introducing them these websites. Another thing is when I take them to the lab, I sometimes feel myself bad thinking if we are wasting our time there instead of being in the class and teaching something. I

> also feel anxious about whether this practice affects exam scores negatively. But I definitely know that the students like these activities. They write in English while creating their videos. They express themselves somehow by using vocabulary and doing writing. Their computer skills also get improved at the same time. They did not have any email addresses before. They learnt how to become a member, send an email, etc. Therefore, I will keep using these tools in my future classes, as well (Source: Interview 3).

For Ezgi, the webinar had content that she already wanted to learn; therefore, she was quick to integrate the new learning into her teaching in an immediate fashion. Following the integration of new practices, she came to the realization that the use of web 2.0 tools ended up with student enjoyment and increased student motivation. Due to these positive results, Ezgi expressed her desire to learn more about the tools that will boost the students' motivation to learn English.

> I learnt many things from the webinars. I learnt Edmodo. We shared some videos in Edmodo. We have polls about these videos. The students did writing in Edmodo discussing about how to prepare for the exam. They created their avatars using Voki for physical appearance unit and shared them in Edmodo. The students managed to do many things by putting lots of effort. I already wanted to learn and use web 2.0 tools in my classes. I always postponed it. Instead of watching YouTube videos to learn these tools, learning from the webinars was much better and they motivated me to take action immediately. I used many of these tools in my class in two to three weeks. I tried to use more technology in my classes. We did not have our own computer lab in our school, but I took the students to a close school. The students enjoyed this process a lot. I used Animoto, Voki, etc. I utilized Kahoot for revising some vocabulary. The students had real fun since it was like a competition. I plan to look for others which will entertain them more (Source: Interview 2).

### 4.3. Effective Features of the OPD program

The findings of the study indicated that different features of the OPD program were effective in fostering changes in teachers' cognition and teaching behaviors. The webinars in External Domain served to provide teachers mostly with new information regarding the use of web 2.0 tools in language classes. Some of the teachers were able to incorporate this know-how in their teaching by using these tools in his/her classes. The lesson study discussions in External Domain, on the other hand, helped teachers to learn from each other's knowledge and teaching experiences and to engage in collaborative lesson planning and revision activities as part of the lesson study procedure. Key enabling activities in the program, therefore, were the teachers' participation in the webinars and their involvement in lesson planning and revision activities and their watching the video recordings of the research lessons. The reflection and enactment aspects of the lesson study procedure also aided in teachers' reconsidering their learning experiences in the OPD program and taking new action in the research lessons or in their own classes. Since Dudley's (2014) version of lesson study stressed the importance of focusing on student learning and motivation in the post-lesson discussions, it was also found in this study that reflection on student outcomes of the research lessons brought about changes in teachers' prior cognition or beliefs about teaching.

### 4.4. Summary of the findings

In this study, Clarke and Hollingsworth's (2002) Interconnected Model of Teacher Professional Growth was used in order to illuminate the processes of teacher learning as a result of participation in an OPD program. The research questions sought to find out the change sequences and growth networks in the OLS and FLS groups and to shed light on the effective features of the OPD program that complements online or face-to-face lesson study with webinars. The findings showed that the teachers in all three groups had many short-term changes initiated by all domains except for Domain of Consequence. These change sequences often included many enactment processes such as lesson

planning, teaching, revising and reteaching of these lessons and further reflection processes such as reflection on classroom or student outcomes of the research lessons.

An analysis of pathways that led to more permanent changes revealed that all of the teachers except for one from FLS group had at least one growth network. Contentwise, most of these growth networks were found to be more centered on technology integration. Some of the teachers were able to add new practices to their teaching as a consequence of their learning from the webinars or from the lesson study discussions (pictogram 17). Later, they evaluated the student outcomes of these practices which led to the modification of their earlier beliefs about the value of these practices. As another finding, it was shown that following the teaching of the research lessons based on the webinar information or on the discussions of the group members, teachers' reflection on the student outcomes of the taught or retaught lessons contributed teachers' development (pictogram 16a, and 18). This reflection process tended to motivate the teachers to integrate these new insights into their own teaching practices (pictogram 16a and 16b). Further reflection on the student outcomes of the new class implementations resulted in teachers' changing a specific aspect of his/her previous cognition or beliefs.

# CHAPTER 5

# DISCUSSION AND CONCLUSION

This chapter provides a discussion and interpretation of the research findings in relation to the past literature. In accordance with the research questions, firstly the short-term changes of the teachers attending the OPD program are discussed. Later, more long-lasting changes observed in online and face-to-face OLS groups are presented and compared to the findings of earlier studies. This is followed by a discussion of the effective features of the OPD program as the second research question. Finally, the implications of the study for practice and for future studies are put forward.

## 5.1.Change sequences identified for the teachers

The findings of the study pointed out that there were various change sequences observed in both online and face-to-face groups. This result corroborated earlier research which showed that it is not the medium but the learning design that lead to effective PD (Sato &Haegele, 2018; Vrasidas&Zembylas, 2004). In an experimental study, for example, Fishman et al. (2013) found no difference between the online and face-to-face PD program in terms of "teacher knowledge and beliefs, teacher classroom practice, and student learning outcomes" (p.426). Likewise, in a mixed method study that comprised survey data collected from 2148 participants during a three-year period, Kearns and Mancilla (2017) demonstrated that PD workshops promoted the development of 'pedagogical practice' in f2f, blended and online teaching modes. Similar to these studies, the current study revealed that online lesson study as a new form of PD can prove to be equally effective as f2f lesson study.

The analysis of the change sequences in online group 1 indicated that the impact of lesson study discussions in External Domain on the teachers was not as salient in this group as it was in online lesson study group 2 and face-to-face lesson study group. It arose in the live sessions that teachers did not contribute equally to the lesson study

discussions, which resulted in the formation of varying change sequences on teachers. For all of the teachers in the group, the Domain of Practice was a more important source of information since the video recordings helped the teachers to see the ideas in practice and to learn from the other teachers' ways of teaching. As a commonality, the webinar in the external domain tended to yield changes in nearly all of the teachers when the new information presented in the webinars was incorporated in the research lessons and put into practice in DP and the teachers reflected on the outcomes of these lessons. As another finding, all teachers in this group except for one generally tended to utilize reflection as the first mediating process although they were also able to add to their teaching practice by integrating some of the new ideas they gained in the PD program into their classes. Their processes of integration, on the other hand, varied among teachers in that some of the teachers were able to make changes in their teaching in an immediate fashion without any evidence on general or student outcomes. Some teachers needed to see the general positive results of the lesson or more specifically the positive student outcomes in order to transfer that know-how to their classroom teaching.

Compared to the online group 1, the online group 2 displayed more instances of peer-to-peer learning initiated in the lesson study discussions in External Domain. The ideas expressed by teachers during lesson study discussions tended to be implemented in research lessons, which was followed by a reflection on the general or student outcomes of these lessons. Occasionally, these reflections continued with a revision of the lesson plan and the re-teaching of the research lesson which resulted in another reflection on the student outcomes of the lesson on part of the teachers. During lesson planning and revision, the teachers reflected on peers' ideas, expressed their own ideas and reflected on how effective these ideas turned out to be in research lessons as they view the video recordings. This group, therefore, engaged in more detailed change sequences which included a greater number of reflection and enactment processes in the teachers' change sequences. The webinars served as an impetus for change when the web 2.0 tools covered in the webinars were integrated into the research lessons

and the teachers reflected on these lessons. Due to active lesson planning and revision processes, enactment emerged as the first mediating process more than reflection in this group. The teachers were also able to enact new teaching practices in their classrooms as a direct consequence of their learning from the webinars, peers or the video recordings. Other times, they needed to reflect on the results of the research lessons to integrate new practices into their teaching.

The face-to-face lesson study group exhibited cases of teacher learning which was mostly initiated by the lesson study discussions in External Domain. All three teachers shared their ideas and their own teaching practices for lesson planning in the Domain of Practice. These ideas were put into practice in research lessons and the teachers reflected on the general quality of these lessons or on their effects on students. The video recordings in the Domain of Practice also yielded reflection on all three teachers. However, except for one teacher, the webinars did not promote detailed processes of teacher change since one of the teachers had technology-phobia and the other teacher already knew most of the web 2.0 tools covered in the webinars. The more capable peer in this group who used more innovative methods of teaching through effective integration of web 2.0 tools shared many print and online materials she used in her classes with the other teachers, which created new learning opportunities for the remaining teachers. This teacher, however, did not have as many change sequences as the other teachers. In this group, reflection was more common than enactment as the first mediating process of change for two of the teachers while it was equal to the number of enactment in the more capable teacher, who suggested many activities to the group. Reflection, which also arose as a common ending point in teachers' change sequences, was focused more on student outcomes of the research lessons rather than the general results of the lesson.

These findings demonstrated that different domains with the joint effect of the mediating processes of enactment and reflection had an influence on the teachers' development in the OPD program reflecting the "nonlinear" and "iterative" processes of teacher professional growth (Opfer& Pedder, 2011, p.382, 394). It was revealed

that the teachers went through unidirectional and individual pathways of change (Goldsmith et al., 2014; Voogt et al. 2011) although there were some commonalities identified in the change sequences of each teacher. The scrutiny of these change sequences indicated that the lesson study discussions and webinars in the External Domain were important triggers for teacher change since they served as valuable information sources for the teachers. Some, if not all, teachers got new ideas about teaching from the other teachers during lesson study meetings and appreciated learning from peers in the OPD program. At other times, the ideas provided by the group members were included in the lesson plan and put into practice or they were occasionally used for revising the first lesson plan for the second implementation, all of which resulted in some change sequences for teachers. The lesson study discussions in External Domain, however, were not equally effective in each group for promoting change sequences.

These findings align with those of other studies which posited that the creation of social interaction and collaborationcan be a challenge in OPDs (Darling-Hammond, 2017; Powell &Bodur, 2019; Whitehouse, Breit, McCloskey, Ketelhut, & Dede, 2006). In an OPD with a job-embedded design, Powell and Bodur (2019) indicated that the participating teachers complained about the degree of interaction. The difficulty of maintaining a collaborative dialogue among the teachers in PD programs has also been echoed in earlier studies (Akiba, Murata, Howard & Wilkinson, 2019; Horn, Garner, Kane &Brasel, 2017). In their examination of the dialogues in 24 teacher groups, Horn et al. (2017) noted that the vast majority of these dialogues failed to yield "a collective interpretation of teaching" among the teachers (p. 46). Similarly, Horn and Little (2010) compared two teacher study groups within the same school and found that in-depth discussions about the research lessons were identified in one of the groups, which was attributed to the supportive moves of the facilitator. For Horn and Little (2010), the facilitator helped to guide the group's dialogue and maintain their focus on students' understanding and thinking. In a longitudinal multiple case study, Henderson (2007) demonstrated that one teacher group in an OPD tended to

display social engagement at low levels compared to the other group. Henderson (2007), therefore, posited that the role of facilitators was crucial for promoting "participant reciprocity of engagement", "social engagement", and "accountability" in OPDs especially the groups consisted small number of teachers (p. 171).

The research to date has shown that 'providing a rich resource base' is an important consideration in the design of OPDs. (Blitz, 2013; Wideman, 2010; Yendol-Hoppey& Dana, 2010). To this end, webinars were integrated into the design of the current study as a popular and cost-effective means of professional development (Guanci, 2010). Research into the use of webinars in educational settings has provided favorable results for their effectiveness. In a qualitative study, for instance, Wang and Hsu (2008) showed that webinars had the potential to foster "social presence" and "multi-level interaction" among the participants (p.175). In another qualitative study, Mai and Ocriciano (2017) found that many of the teachers were able to implement the teaching techniques introduced in the webinars in their own classes despite varying degrees of success. In the current study, webinars also arose as an effective source of information for teachers initiating many change sequences across teachers. As indicated by all teachers except for one, the web 2.0 tools introduced in the webinars were novel topics which they have not known before. The analysis of the change sequences, therefore, demonstrated that the webinars in the external domain yielded various change sequences in all of the groups. The teachers mostly decided to integrate these tools in research lessons and later reflected on the outcomes of these lessons as a common change sequence. This finding aligns with that of Bustamante and Moeller (2013) who indicated that the teachers of German in an OPD were able to embed new technologies into their classes when they were provided with some hands-on tasks. Similarly, in an OPD program centering on digital gaming, An (2018) showed that it was not enough to look into existing digital games for gaining a detailed understanding of digital based learning but designing one's own DGBL environment was necessary for a better understanding and use of these games. Earlier research also witnessed the inefficiency of short term workshops or webinars focused solely on information

delivery on teachers' teaching practices in comparison to the effectiveness of "authentic interactive activities" that enable processes of "learning by doing"(Gunter & Reeves, 2017, p.1306). It seemed that combining the webinars with the authenticity of lesson planning and classroom teaching helped the teachers to gain increased self-efficacy for technology integration. This finding was also corroborated by Lee and Lee (2014), who noted that authentic tasks such as lesson planning in PD programs helped to build self-efficacy of teachers for technology integration (Lee & Lee, 2014). When the teachers in online and f2f lesson study groups were compared, it was seen that some of the teachers were more adept at integrating the webinar tools into their classes who did need to first see the positive outcomes in research lessons for initiating the integration processes. These teachers were able to do the integration rightaway and reflect on the results of these class implementations as a change sequence. It arose that these teachers had higher self-efficacy compared to the other teachers and therefore were able to adopt new practices more quickly in the PD program (Guskey, 1988; Smylie, 1988). One of the teachers reported to be hesitant about using technolgy in her classes due to the lack of former training and lack of self-confidence about using it as important factors in technology integration (Hong, 2010 & Lam, 2000).

Another finding was that the lesson planning and teaching components within the Domain of Practice were essential triggers of change in all of the groups. Some of the teachers reflected solely on the lesson plan produced by the group. However, it was more often the case that the teaching component of the lesson study procedure tended to yield more change sequences in teachers' development. The teachers tended to reflect on the general or student outcomes of the lessons while this sometimes continued with a change in beliefs or cognition. The changes in beliefs and cognitions brought about changes in classroom behavior for some teachers. At other times, reflection on the results of the research lessons could lead to changed behavior in their common teaching practice. As a striking finding, the effect of Domain of Practice seemed to be more salient when peer-to-peer learning was less intense as in online lesson study group 1. Reporting their learning from the PD program, many of the teachers in this group did not refer to the lesson study discussions in the external

domain but to the video recordings in the domain of practice. They indicated that the videos which enabled them to observe the other teachers' teaching styles, techniques and the unique features of their classes helped them gain new perspectives about teaching. It seemed that when the teachers did not engage in meaningful and extended dialogue within the group, the videos proved fruitful for teacher learning. The benefits of video viewing in teacher education have also been noted in other studies (e.g. Gaudin &Chalies, 2015; Ramsdell, Rose, &Kadera, 2006; Roth et al., 2011) In a large OPLC called Inquiry Learning Forum, the videotapes of teachers' classroom practices served helpful for teachers by fostering detailed discussion and reflection on the strengths and weaknesses of the lessons (Barab, Makinster, Moore & Cunningham, 2001; Barab, MaKinster&Scheckler, 2003). Likewise, some OPDs incorporated online video libraries into their design which encompassed various classroom implementations on different topics. The findings indicated the viewing and discussion on these videos proved improved student learning outcomes across different schools (Shaha, Glassett, &Copas, 2015; Shaha, Glassett, Copas, & Ellsworth, 2015). In a PD program that aimed to develop the coaching knowledge and skills of the PD facilitators, Perry and Boylan (2018) showed that video observations and peer critique were effective in providing the teachers with an understanding of their practice and needs.

The findings of the study showed that a PD program that blended online or face-to-face lesson study with webinars helped to negate some of the inherent challenges in OPD. Due to the interactive and problem-solving oriented structure of lesson study procedure, the teachers were able to remain motivated and content with OPD, which is typically difficult to achieve in OPDs that focus merely on content delivery (Kyalo& Hopkins, 2013). The contextualized research lessons in which practice-focus and collegial sharing were paramount enabled teachers to collaborate and learn from each other although these were unattainable goals in some OPDs with little interactivity and social features (e.g. Baran &Cagiltay, 2006; Scott & Scott, 2010).

### 5.2. Growth networks identified for the teachers

An analysis of growth networks indicated that all teachers except for one had at least one growth network identified as long-term changes in their beliefs and behaviors. That one of the teachers did not have any growth network can be due to the fact that this teacher was different from the other teachers in the sense that she put substantial effort and time for her professional development unlike the other teachers. She often received training courses on technology integration, had international projects with teachers abroad and used social media actively to communicate with other teachers about web 2.0 tools. She also utilized these tools actively in her classes as an early adopter of technology (Rogers, 1995). It is postulated that her technological knowledge was superior to that of the other teachers, which helped them to increase their technological know-how. For this teacher, however, the methodological discussions in the group resulted only in particular change sequences without any long-lasting changes.

The findings of the study highlighted the importance of Domain of Consequence for teachers' professional growth. It was found that there were three main pathways followed by teachers when they go through more permanent processes of development and the commonality of these pathways was that they included a personal reflection in the Domain of Consequence. Each teacher except for one had at least one of these pathways in their development although some teachers had more than one of these pathways. According to Clarke and Hollingsworth (2002), change sequences and growth networks are different in the sense that the former refers to the short-term changes in teachers' cognition and behavior whereas the latter represents more long-lasting changes as a more meaningful outcome of PD programs. For most of the teachers, permanent learning first started when the ideas or web 2.0 tools covered in the webinars or the suggestions provided by group members for lesson planning in the LS group discussions were incorporated into the lesson plan and taught by one of the teachers. The teachers later reflected on the outcomes of these lessons, which brought about the decision to incorporate that idea in their common teaching practice. Following the integration, the teachers reflected on the student outcomes of this implementation and this resulted in a change or reaffirmation of prior beliefs about

teaching and the intention to keep using the new practice in their daily teaching. This pathway was observed in seven of ten teachers. Another pathway was seen in two teachers who utilized the ideas in the webinars or in lesson study meetings in their classroom practice right away and reflected on the student outcomes of these new practices. Evaluative reflection on the outcomes triggered change in prior cognitions and beliefs and the intention to sustain this new practice. As different from the teachers who tended to follow the first pathway, these two teachers did not need to see the positive consequences in class implementations during lesson study procedure. It was apparent that these teachers, who also contributed actively to the lesson study discussions, were more open to change than the other teachers. Finally, the last category of growth networks was detected in three teachers. In this growth network, the webinars or lesson study discussions in external domain initiated the change process with the inclusion of the external information into the lesson plan. The lesson plan was taught by one of the teachers and the teachers reflected on the student outcomes of this lesson resulting in changes in beliefs and cognitions.

This study provided a glimpse of how teacher learning occurred during an OPD program which comprised a set of webinars and online or face-to-face lesson study procedure. The analysis of growth networks demonstrated that the pathways that include reflections on the Domain of Consequence led to the formation of growth networks representing long-lasting changes in teachers' cognition. Compared to the change sequences which are referred as the temporary changes, growth networks required reflection on student outcomes following the class implementations during the lesson study procedure or consequent to new teaching practices in teachers' common teaching. Earlier research that used IMTPG for examining the processes of teacher learning had similar findings. Widjaja et al. (2017) studied how teachers and numeracy coaches from three different schools learnt in a lesson study project and found that DC had an important role in affecting teachers' cognition and practice. They argued that lesson study procedure which allowed teachers to put their ideas into practice helped them to develop a better understanding of students' problems and to adapt their teaching accordingly. In a similar vein, Wongsopawiro et al. (2017)

examined the PCK development of a group of teachers who participated in a one-year action research project by using the IMTPG. In their qualitative study, data collection tools were teachers' action research reports, interviews and teachers' reflection journals. Their findings demonstrated that notwithstanding the varying pace and degree of learning among teachers, the pathways that consisted of a reflection on DC tended to represent 'more complex group networks'. Similarly, Zwart et al. (2007) analyzed the learning processes of the teachers who took part in a reciprocal peer coaching activity for one year with the use of IMTPG. The recordings of the coaching conferences, interviews and digital diaries were utilized as data collection tools to picture teachers' development. The results of the study demonstrated that the reciprocal coaching trajectory in the external domain yielded 'reactive activities' in the domain of practice and domain of consequence, which led to complex change processes. These findings accentuated the importance of reflections on classroom outcomes as the keystone to teacher learning. This study, therefore, lent strength to the PD programs which get teachers to try out new practices in collaboration with colleagues and to co-reflect on student outcomes of these class implementations as the nucleus of professional learning.

As another major finding, the common theme in the growth networks were related to the increased knowledge and skills about incorporating web 2.0 tools into language classes while improvements in pedagogical knowledge were less salient in teachers' growth networks. Especially in online lesson study group 1 where collegial learning was less intense, all of the growth networks centered on technology integration. In the other two groups, on the other hand, the theme of technology integration was again dominant although there were also instances of learning related to the methodology of teaching language skills. It arose that the achievement of pedagogical development was a more challenging process for teachers compared to the uptake of new technologies. This finding was also supported by observation data which showed that the observed teachers made few changes in their common teaching practices except for integrating new web.200 tools into their teaching. Only one of the teachers were observed to possess new realizations about teaching due to the lesson study procedure

but her classroom practices after her participation in the OPD program included only small-scale changes. This could be due to the fact that the class implementations mostly included an incorporation of web 2.0 tools introduced in the webinars into the research lessons. In this way, the teachers had the opportunity to have a first-hand experience using these tools leading to more concrete processes of learning. However, it seemed that the exchange of ideas among the teachers related to teaching methods and techniques during lesson study procedure were not sufficient enough to yield drastic pedagogical transformations.

Related to permanent pedagogical changes, Clarke and Hollingsworth (2002) suggest that "cognitive conflict" might be necessary for teachers to change their firm beliefs about teaching and student learning (Clarke & Hollingsworth, 2002, p.949). It is possible that teachers in this study were not subject to these cognitive conflicts during the OPD program and therefore they could not make big changes in their teaching practices. It could also be that participating in a teacher learning community did not alter but reinforced their existing teaching practices (McLauglin& Talbert, 2001). From a different perspective, it can be argued that teacher change rests on the teachers' power to resist against the impediments to change (Burkman, 1987). It is often the case that teachers are confronted with curricular obligations which require them to have a balance between their instructional strategies and the mandates of the curriculum (Lewis & Perry, 2017). The participants in the study may not have undergone drastic changes in their teaching since they were more concerned with keeping up with the curriculum as a common problem for teachers in Turkish context (Kılıçkaya&Seferoğlu, 2013). It also might be the case that they need more time to internalize the new learning and to formulate and apply the planned changes in their teaching (Lam, 2000).

The relatively short duration of the OPD program can be another explanation for the lack of drastic changes in teachers' practices following the OPD program. It arises in PD studies that developing one's teaching skills is a challenging task requiring long-term effort (Fullan, 2001). This resonates with the findings of other studies which show that a long-term lesson study procedure is significant for an efficient inquiry

process (Akiba et al., 2019). It was observed in LS literature that most of the lesson study projects took at least one year while some incorporated lesson study as an ongoing means of professional development (Fernandez & Yoshida, 2004). Hence, it can be suggested that this OPD program which lasted for 13 weeks might be insufficient to yield the desired changes in teachers' classroom practices.

Since teacher learning encompasses cognitive, emotional and motivational dimensions, there is a need to address all these dimensions in a PD program to influence teacher behavior (Gaines et al., 2019; Korthagen, 2017). Research shows that the development of a "new vision of teaching" can be realized through various means such as viewing role models, reading cases or theoretical information, watching video recordings of effective teaching or engaging in collegial discussions (Shulman & Shulman, 2004, p.3). A "culture of sharing" in teacher learning communities can serve to lead to shifts in teachers' cognition and impact their daily teaching practices (Barab, Makinster et al., 2001, p.72). However, with diverse backgrounds, beliefs and practices, it becomes hard for teachers who are engaged in collaborative work to agree on the ideals of teaching and to influence each other in this respect (Wilson, Rozelle, &Mekeska, 2011). Even the bulk of literature on teacher education has hitherto foregrounded the elusiveness of describing what makes up good teaching (Bowe & Gore, 2017). When teachers do not stand not on a shared ground about teaching, they have little to offer each other in terms of improving practice (Grossman, Wineburg, & Woolworth, 2001). This was also observed in the group meetings in that the teachers in all three groups built their discussions on their common teaching practices with each other having different beliefs and practices about teaching. As also seen in observation data, teachers' daily teaching was shaped more by the practical needs of teachers to deal with the complexity and simultaneity of teaching rather than a sound knowledge of the principles of effective teaching. This can account for the meagre impact of the OPD program on teachers' teaching practices.

Professional learning communities are supposed to be built on the notions of "trust", "respect" and "support"(Bowe & Gore, 2017, p.354). These attributes are

difficult to achieve in these communities although they are necessary for critical analysis and reflections of the teachers (Keown, 2009). Teachers in these communities may pretend to agree with each other in order to avoid conflicts and therefore, fail to get involved in deep discussions that will lead to instructional improvement (Grossman et al., 2001). In the current study, it is considered that the lack of deep discussions in the groups can be due to this group dynamics which can affect teachers' interaction and peer-to-peer learning. To develop a community relationship, a face-to-face meeting was organized with the teachers in the online lesson study group 1 and face-to-face group at the beginning of the study. However, it was not possible for teachers in the online group meeting 2 to participate in this meeting since they were from different cities. It seemed that the face-to-face meeting did not serve to contribute to the creation of a sociable community and the teachers needed more access to social binding activities. As another explanation for the low degree of dialogue among teachers about effective practice, it can be suggested that the participating teachers' pedagogical content knowledge was not advanced enough to contribute to the other teacher's learning (Yoshida, 2012). Former studies indicate that the teachers who are not confident about their teaching skills may tend to abstain from suggesting new activities to the group due to their "intrapersonal dilemmas" (Roblin &Margalef, 2013, p.18). These findings were also observed in the current study as reflected in the dialogues in group meetings. Some of the teachers, who reported to have some deficiencies in their teaching skills in the interviews tended not to express their ideas during the lesson study discussions. Even when they participated in group discussion, these were not enough to trigger any pedagogical change on part of the other teachers.

An overwhelming body of OPD literature suggests that online learning experiences of teachers should be moderated by a facilitator to build social bonds among teachers and to provide them with theoretical and expert knowledge. When there is a lack of "reciprocity", "social engagement" and "accountability" in teacher study groups, it becomes vital for an expert in the field such as a leader teacher or a university staffto interfere in group interaction and to sustain a "regime of participation" (Henderson,

2007, p. 162,170). It is believed that the paucity of change in teachers' practices following their participation in this OPD program can be due to the lack of a facilitator in the OPD program. In this study, Dudley's (2014) version of lesson study was used as a baseline for designing the learning activities of the online and face-to-face lesson study groups. In this version of lesson study, teacher learning is grounded in collegial discussions for joint lesson planning and critiquing the research lessons and there is no room for a facilitator who will guide teachers' thinking and help them focus on particular aspects of teaching. In some forms of lesson study, however, a facilitator was included in the lesson study procedure with various duties for the effective functioning of the group (Akiba et al. 2019; Stepanek, Appel, Leong, Mangan, Mitchell &, 2007; Isoda, 2015; Lewis & Perry, 2015). It was argued in these studies that these facilitators could be seasoned teachers who had prior experience in facilitating professional development in schools or 'university-based experts' with theoretical knowedge about a content area (Fernandez & Yoshida, 2004; Widjaja et al. 2017). The duties of these facilitators included showing or modeling some good examples of teaching, bringing some reading materials or research findings to the group and offering their suggestions in the lesson study meetings (Miyakawa, 2015). They might also help to develop a set of norms for the community and to establish a 'shared language' among teachers and common 'frameworks for analysis of practice' (Lewis et al., 2009). Widjaja et al. (2017), for example, has shown that the involvement of numeracy coaches in lesson study project yielded positive outcomes for teachers' development. Similarly, Akiba et al. (2019) have contended that facilitators having expert knowledge consolidated the learning of teachers who had 'limited content and pedagogical content knowledge'. Due to the observations in this study related to the lack of deep reflections on the research lessons among teachers, it can be argued that the availability of a facilitator in online or face-to-face lesson study groups can lead to more permanent processes of teacher learning. It is postulated that this can be realized more easily when the facilitator has both an insider and outsider role within the group (Roblin &Margalef, 2013). The facilitator can act as a group member by participating in group meetings and offering his/her suggestions and

critical perspective for the development and evaluation of research lessons. As an outsider, the facilitator can also provide the group with sources for the development of pedagogical knowledge. He/she can also ‘engage teachers in in-depth discussion of students' thinking’ (Akiba et al. 2019) and guide the group discourse to coproduce knowledge. To stimulate critical reflection on student learning, the facilitator can also focus on improving teachers’ noticing skills (Luna &Sherin, 2017), which might he helpful for teachers to better realize the student outcomes and other salient observations in the research lessons.

### 5.3.Effective features of the OPD program

This study examined the effect of a PD program that implicated the webinars and online or f2f lesson study procedure on teachers’ knowledge base and teaching practices with the use of Interconnected Model of Teacher Professional Growth (Clarke & Hollingsworth, 2002). This model that sprang from a constructivist approach to teacher learning postulated that teachers’ change was a non-linear, dynamic and active process through which teachers could go through unique change patterns. Different domains including the external domain, domain of practice, personal domain and domain of consequence served as a binding force of teachers’ world in which changes could take place with the mediating processes of reflection and enactment. The findings of the study contributed to the scarcity of scholarship on the impact of an online and blended PD program on Turkish EFL teachers’ growth with a qualitative perspective.

The findings revealed that all of the participating teachers exhibited changes in their cognition and teaching practice as a result of their participation in a professional development program that was predicated on a learning community paradigm. Despite the varying degree of learning among teachers, the different elements of the PD program contributed to teachers’ development in unique ways albeit some common precursors of teacher change. It was apparent that the webinars, the video recordings

of the research lessons, the lesson study discussions and personal ideas of the teachers served to yield changes although the effect of each varied across teachers.

The observations from the current study coincide with those from other studies that found that lesson study contributes to the development of teacher knowledge and practice (Cajkler& Wood, 2016). Earlier research showed that lesson study as a collaborative form of PD helped teachers to foster collective knowledge development through exchange of ideas in lesson study meetings (Lewis et al., 2006). Lesson study, which is grounded in actual classroom practice (Lee, 2008) also enabled teachers to test the teachers' ideas in research lessons and to engage in 'reflective activity' concentrated on classroom practice (Ricks, 2011). This stream of research also demonstrated that lesson study led to the improvement of teachers' subject content knowledge (Lewis & Perry, 2014, 2015). Along the same lines, the development of subject content, pedagogy, pedagogical content and student thinking/learning' were underscorred in other studies (e.g. Cajkler& Wood, 2016; Fernandez, 2005, 2010; Hunter & Back, 2011; Lee, 2008; Leavy & Hourigan, 2016; Lewis & Takahashi, 2013; Lewis et al., 2006; Lewis et al. 2009; Ni Shuilleabhain, 2016;Verhoef & Tall, 2011). The present study aimed to add to the body of literature by throwing more light into how online lesson study procedure combined with a series of webinars could yield both short-term and long-term changes in the cognition and behaviors of a group of Turkish EFL teachers. This study lends strength to the notion that a PD program that merges online lesson study with webinars can serve as an effective means for promoting teacher change (Sharma & Pang, 2015).

An impressive volume of work in OPD shows that OPD has the potential to bring about positive changes in 'teachers' pedagogical and content knowledge', 'classroom practice', and even 'student outcomes' (Rice, 2017). This stream of research also contends that OPD proves more effective when classroom implementations and collegial discussions lie at the centre of the program with an online learning community paradigm (Barab, Hay, Barnett & Squire, 2001; Ching &Hursh, 2014; Lock, 2006; Reeves &Pedulla, 2013). When teachers' learning experiences in the

online environment is situated in their teaching practice and comprise ‘the sharing of work and school-based examples’, teachers are better suited to make changes in their beliefs and practices. (Mackey & Evans, 2011). In an OPD program with 80 English language arts teachers, deKramer, Masters, O'Dwyer, Dash, and Russell (2012), for instance, found that the OPD program built on learning community model resulted in teachers’ development of content knowledge in addition to the gains in student learning.

Several studies have brought forth the importance of the ‘job-embedded’ and ‘authentic’ online PD which paves the way for ‘ongoing reflection’, ‘collaboration’ and ‘support’ for teachers serve to better address the needs of teachers (Powell &Bodur, 2019). In a blended PD program that included a blend of online and face-to-face learning opportunities, Bradshaw, Twining and Walsh (2012) noted that teachers benefited from this program due to its design with a bottom-up approach. In this program which focused on increasing the teachers’ ICT usage, the teachers valued having access to different resources and benefited from engaging in collegial dialogue and reflective practice and implementing new strategies in their classes during their integration of ICT. Kruger, Van Rensburg and De Witt (2016) reported how a distance learning programme, which incorporated ‘work-integrated portfolio’ and ‘audio-visual materials’ on effective practice helped teachers to engage in ‘critical reflection’ leading to changes in their vision of teaching and development of positive attitudes toward such OPD programs. Similarly, Teräs and Kartoglu (2017) implemented an OPD program designed according to the tenets of authentic e-learning and showed that authentics tasks in the program had impacts in the teachers’ ‘professional practice’ and ‘professional identity’. These findings were in line with the principles of adult learning (Knowles, 1990).

### 5.4. Conclusion

This study set out to delve into the change processes of a group of Turkish EFL teachers following their participation in an OPD program that included a series of webinars and online or face-to-face lesson study procedure. Over recent years, there

has been a subsequent corrective swing to collaborative forms of PD due to the inefficiency of PD activities grounded in traditional workshop approach (Chappuis et al., 2009; Widjaja et al., 2017). Representing many key features of professional development, lesson study has been shown to contribute to teacher learning in previous literature (Xu & Pedder, 2015). A review of LS studies indicated that lesson study has been predominantly practiced in face-to-face modality except for two studies that referred to online lesson study. Due to the research gap in the literature, it was aimed to uncover the learning processes of teachers who participated in an online versus face-to-face lesson study procedure. The webinars were incorporated into the design of the study since former research has foregrounded the importance of providing teachers with extra sources of information in OPD programs (Blitz, 2013).

The findings of the study pointed out that all of the teachers in online and f2f lesson study groups exhibited changes in their cognition and behavior with varing degrees and patterns of change as a result of their learning experiences in the OPD program. In the identified change sequences, the webinars and the lesson study discussions in the External Domain and the lesson planning and teaching practices in the Domain of Practice were found to be especially effective for affecting teachers' beliefs and cognition about teaching.It was also noted that the impact of the lesson study discussions located in the External domain was not equally influential in one of the online LS groups due to the lack of teacher discourse on collaborative inquiry. In this group, therefore, teachers rested more on the Domain of Practice and the video recordings of the research lessons served as an important resource for teachers who desired to examine other teachers' ways of teaching. In this study, it was revealed that online lesson study as a new form of PD can prove to be equally effective as f2f lesson study. These findings also corroborated the value of combining webinars as a viable source of information for teachers with lesson study procedure in OPD programs.

The scrutiny of growth networks indicated that reflections on classroom outcomes led to the formation of growth networks representing long-lasting changes in teachers' cognition. This study, therefore, lent strength to the PD programs which get teachers

to try out new practices in collaboration with colleagues and to co-reflect on student outcomes of these class implementations. When the growth networks which signified more permanent forms of teacher learning were analyzed in tandem with observation data, it was revealed that teachers' long-lasting changes centered primarily on technology integration rather than more general pedagogical transformations. It was detected that the three teachers who were observed before and after the OPD program tended to maintain their common teaching practices with only small-scale changes in their teaching following a six month period after the program.

### 5.5. Implications for Practice

This study advances the field by showing that an OPD program that incorporates lesson study and webinars prove effective for teachers' professional growth. The practice-oriented nature of lesson study which encompasses the implementation of research lessons is a valuable means of learning for teachers and can be utilized both in face-to-face and online modality. Considering that many of the growth newtworks were initiated by the webinars in the External Domain, it is plausible to argue that webinars can be offered in OPDs as a worthwhile knowledge source for teachers. It is ideal that webinars or other sources of information provided in PD programs are coupled with the opportunities to test out this new information in teachers' classroom practices and to reflect on the student outcomes of these implementations. In any PD program, be it face-to-face or online, it is vitally important to create efficient collegial dialogue in order to foster critical analysis of teaching and to cobuild knowledge.

Due to some shortcomings experienced during the program, the following suggestions can be made regarding the design and procedure of OPDs. Firstly, since teacher collaboration is the pillar of lesson study practice, it becomes significant to include a facilitator who will help to establish an inquiry community and to guide teachers' interactive discourse on salient features in classroom implementations. By virtue of the low quality and degree of discussion among the teachers during lesson study meetings, it is highly likely that teachers may not learn from each other and thus fail to experience pedagogical improvement. It is contended that this facilitator can be

a seasoned teacher with possibly teaching and research experience who will act as a 'critical friend' to the teachers with both insider and outsider roles. If this facilitator is a university-based researcher, it is important that he/she has extensive knowledge about the culture of teaching in schools and the needs and problems of the teachers and their students. When the facilitator realizes a gap in teachers' pedagogical knowledge, he/she can provide them with extra sources of information in the form of readings or through modelling of effective practice. The facilitator can also interfere in group discussions to manage the group dialogue so that the group develops a feeling of belonging and as part of a learning community engaged in collaborative activity. Besides, the grouping of the teachers in the lesson study projects can be made in such a way that more knowledgeable peers who have expert-like teaching practices are implicated in the groups for the building of an effective community of inquiry.

In this study, teacher learning was found to arise as a result of deliberate reflection on the student outcomes of class implementations. Therefore, it can be argued that the reflection skills of teachers come out on top of teacher learning, which suggests that further PD efforts should focus on developing teachers' reflection skills and help them gain better understandings of their students' thinking. The development of teacher noticing, as a relatively new avenue of research, can be targeted in future PD endeavors to get teachers to better notice the features of effective and ineffective practices.

Finally, OPD programs which strive for leading to permanent changes in teachers' teaching practices can plan a longer period OPD program than a total of 13 weeks. It can be ideal that these programs are ongoing and integrated into the curriculum and daily teaching practices of teachers. Furthermore, teachers with similar problems and areas of interest can be motivated to participate in these programs with the provision of some reward mechanisms.

### 5.6. Implications for Future Studies

This case study gave us a qualitative snapshot of the effect of an OPD program on different groups of Turkish EFL teachers. With the use of various data collection tools including interviews, lesson plans, group meeting transcripts and observation, it was aimed to present a descriptive explanation of teacher learning in online and face-to-face lesson study groups with the use of IMTPG. IMTPG acted as an evaluative framework to describe teacher change in these groups and proved useful in picturing the development of the participating teachers. Due to the qualitative analysis adopted in this study and limited number of participants, no arguments were made concerning the superiority of online or face-to-face lesson study procedure in promoting teacher growth. This can be examined in detail in further experimental studies with the inclusion of more participants. Furthermore, to provide an insight into the the degree of teacher learning caused by webinars, the online lesson study procedures with and without webinars can be compared quantitatively.

In this study, the focal aim was to examine teacher change and this was done with a qualitative research perspective. However, the research findings pointed at various important variables that can affect the efficacy of lesson study procedure.Therefore, it becomes important in future studies to examine such variables as the presence of facilitators, the duration of the program and teacher discourse quantitatively or with mixed method methodology to establish the relationships among these variables. The effects of these variables can be investigated with experimental or correlational studies and these studies can combined with qualitative means of exploration to provide a comprehensive understanding of their impact on teachers' learning. For the effective functioning of the online and face-to-face lesson study groups, it becomes fundamental to uncover the key characteristics of effective facilitators and future research can address this need.

Another theme of the study is related with the significance of teacher dialogue in lesson study groups. The ideal amount and quality of teacher dialogue necessary for collaborative learning can be examined through an in-depth investigation of successful and unsuccessful lesson study groups. It is considered that there is a need for greater

interrogation of what kind of teacher discourse result in increased pedagogical knowledge and skills in future studies. Henceforth, these studies can work towards finding out the key features of group discourse that result in teacher learning.

This study highlights the importance of reflection as an essential skill for teachers who participate in PD programs. It arises that teachers' noticing of student understanding, student learning and other salient outcomes in the lessons becomes requisite for teachers since it affects the quality of discourse in the lesson study groups. This, in turn, influences the quality of the learning within the group. Further research can focus on developing some interventions in lesson study procedure which target the development of these reflection and noticing skills of teachers. The long-term effect of these interventions can be researched in further studies. Finally, further studies can enlarge the focus of the current study by looking into the long-term effects of online lesson study practice on student achievement as an untouched area of research.

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## APPENDICES

### Appendix 1

OzkoseBıyık&Uslu (2016)

| | |
|---|---|
| | **Part 1. Personal Information** |
| 1. | Gender ( ) Female ( ) Male |
| 2. | Year of birth: |
| 3. | Marital Status: ( ) Married ( ) Single ( ) Others |
| 3a. | Do you have any children?<br>( ) Yes ( ) No<br>If your answer to question 3 is no, please continue with the 4th question. |
| 3b. | How many children do you have? 1 2 3 4 and up |
| 3c. | Please write your children's ages starting from the oldest: |
| 4. | The university you received your undergraduate degree from: |
| 5. | The department you received your undergraduate degree:<br>( ) Teaching English as a Foreign Language ( ) English Language and Literature<br>( ) American Culture and Literature ( ) Translation and Interpreting<br>( ) English Philology ( ) Others (Please specify) |
| 6. | Years of experience as an English teacher: |
| 7. | Have you pursued a master's degree? ( ) Yes ( ) No ( ) Currently pursuing |

| | |
|---|---|
| | If your answer to the 7th question is “no”, please continue with the 8th question. |
| 7a. | If your answer to the 7th question is “yes” or “currently pursuing”, please write the name of the department you have received a master’s degree or the department at which you are still a student: |
| 7b. | The year you finished your master’s degree: |
| 8. | Have you pursued a doctoral degree? ( ) Yes ( ) No ( ) Currently pursuing<br>If your answer to the 8th question is “no”, please continue with the 9th question. |
| 8a. | If your answer to the 8th question is “yes” or “currently pursuing”, please write the name of the department you have received a doctoral degree or the department at which you are still a student: |
| 8b. | The year you finished your doctoral degree: |
| 9. | The location of the institution you work at:<br>( ) City center ( ) County (İlçe) ( ) Village<br>Please continue with 9a if your answer to this question is “city center”.<br>Please continue with 9b if your answer to this question is “county (ilçe)”.<br>Please continue with 9c if your answer to this question is “village”. |
| 9a. | 9a. The county (ilçe) and city in which your institution is located (e.g., Karşıyaka/İzmir or Uşak Merkez): |
| 9b. | 9b. The county (ilçe) and city in which your institution is located (e.g., Banaz/Uşak): |

| | |
|---|---|
| 9c. | 9c. The village, county (ilçe), and city in which your institution is located (e.g., Kızılcaören/Banaz/Uşak): |
| 10. | The type of the institution you work at:<br>( ) State School ( ) State University<br>( ) Private School ( ) Private University |
| 11. | The grade level you teach (Check any that apply):<br>( ) Pre-school ( ) Elementary ( ) Middle school ( ) High school<br>( ) University Prep ( ) University Academic<br>( ) Other (Please specify) |
| 12. | Have you ever been abroad before?<br>( ) Yes ( ) No |
| | If your answer to the 12th question is "no", please continue with the 13th question. |
| 12a. | How many times have you been abroad? Please circle the number.<br>1 2 3 4 5 6 7 8 9 10 |
| 12b. | Please write the country name, duration and purpose of your stay separately.<br>(E.g., England, 2 weeks, professional development)<br>1)<br>2)<br>3)<br>4)<br>…. |

| | |
|---|---|
| 13. | Which of the following do you have? (More than one option can be selected.)<br>( )Smart Phone ( )Internet access at home<br>( )None |
| 14. | How often do you use the Internet?<br>( ) More than three hours a day ( ) 1 or 2 hours a day<br>( ) Less than 1 hour a day ( ) A few hours a week<br>( ) Other (Please specify): |

| | **Part 2. Professional Development Activities** | | | | | |
|---|---|---|---|---|---|---|
| | Please select the best option for you. | Always | Very Often | Sometimes | Rarely | Never |
| 1 | I correspond in English through e-mails. | | | | | |
| 2 | I communicate with foreigners in written English. | | | | | |
| 3 | I communicate with foreigners in spoken English. | | | | | |
| 4 | I read online news sites in English. | | | | | |
| 5 | I read books, magazines, etc. in English. | | | | | |
| 6 | I read e-books, e-magazines, etc. in English. | | | | | |
| 7 | I follow online forums in English. | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 8 | I write comments in English to forums, news sites, wikis, etc. | | | | | |
| 9 | I use applications in English on my smart phone. | | | | | |
| 10 | I follow blogs in English. | | | | | |
| 11 | I read shared posts in English on social media (Facebook, Twitter, etc.). | | | | | |
| 12 | I share posts in English on social media (Facebook, Twitter, etc.). | | | | | |
| 13 | I do research in English on Internet search engines (Google, Yandex, etc.). | | | | | |
| 14 | I watch TV series/movies/documentaries etc. in English with English subtitles. | | | | | |
| | | Always | Very Often | Sometimes | Rarely | Never |
| 15 | I watch TV series/movies/documentaries etc. in English without subtitles. | | | | | |
| 16 | I follow recent academic publications in teaching English. | | | | | |
| 17 | I attend professional development events organized by various institutions (publishing houses, universities, etc.) in English Language Teaching (ELT) field. | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 18 | I attend ELT conferences in Turkey. | | | | | |
| 19 | I attend ELT conferences abroad. | | | | | |
| 20 | I put effort in order to participate in professional, cultural, or educational European Union projects as an English teacher. | | | | | |
| 21 | I put effort towards my professional development as an English teacher. | | | | | |
| 22 | After a lesson finishes, I think about what I can change the next time I teach it again. | | | | | |
| 23 | I keep notes in order to remember the changes I want to make. | | | | | |
| 24 | I definitely make the changes I have planned after a class. | | | | | |
| 25 | I get feedback from my colleagues after they observe my classes. | | | | | |
| 26 | I observe my colleagues' classes to provide them with feedback. | | | | | |
| 27 | I collect data through small-scale action research in order to increase the efficiency of my classes. | | | | | |
| 28 | I exchange information and ideas with my colleagues regarding English language teaching. | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 29 | I get feedback from my students regarding my teaching. | | | | | |
| 30 | I make changes in my teaching based on the feedback I get from my students. | | | | | |
| 31 | I try to find solutions to the problems I face in my classes. | | | | | |
| 32 | I try to minimize the differences between my beliefs and practices about teaching. | | | | | |
| 33 | I make use of European Language Portfolio in my classes. | | | | | |
| | **Part 3. Needs**<br>Please specify your need to participate in the professional development programs below. | Always | Very Often | Sometimes | Rarely | Never |
| 34 | English language teaching methods and techniques | | | | | |
| 35 | Innovative classroom activities | | | | | |
| 36 | Materials development in English language teaching | | | | | |
| 37 | Assessing student performance | | | | | |
| 38 | Classroom management | | | | | |
| 39 | Improving my personal speaking skills in English | | | | | |
| 40 | Use of Internet tools in English language teaching | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 41 | Use of mobile applications in English language teaching | | | | | |
| 42 | Use of social media (Facebook, Twitter, Instagram, etc.) in English language teaching | | | | | |
| 43 | Promoting student motivation | | | | | |
| 44 | European Language Portfolio | | | | | |
| 45 | Innovative approaches in English language teaching | | | | | |
| 46 | Creative Drama, story-telling and effective use of body language | | | | | |
| 47 | Student-centered, interactive teaching | | | | | |
| 48 | Understanding new generations | | | | | |
| 49 | Integrating four basic skills in English language teaching | | | | | |

**Part 4. Opinions and Suggestions about Professional Development**

Within the scope of a Marie Curie Project called 'Revitalizing EFL Teachers' Professional Development in Europe through Innovative Programs, there will be five webinars, the topics of which were determined based a nation-wide survey filled up by 820 EFL teachers in Turkey. The titles of the webinars are:

1) Reflective Practice and Professional Development

2) Using New Technologies in Language Teaching

3) New Approaches and Techniques in Language Teaching

| | | |
|---|---|---|
| 4) Ways to Foster Professional Development through Individually-guided Activities<br>5) Ways to Engage Generation X in Language Classes<br><br>Please write your opinions and suggestions about a) the questions related to professional development and b) the question related to the webinar content. Your suggestions about the webinar content will be taken into consideration during the design of the webinars as much as possible. | | |
| 1 | What types of professional development programs should be developed for EFL Teachers? | |
| 2 | What would you like to learn in the webinars? Please write your topic suggestions for the webinars. | |
| 3 | What should be paid attention to in the professional development programs developed for EFL teachers? | |
| 4 | Please write down the names of (or links to) any websites, blogs, Facebook groups, forums or etc. which you find helpful in professional development and English language teaching. | |
| 5 | Please write down the names of any mobile applications which you find helpful in professional development and English language teaching. | |
| 6 | Please write your e-mail if you want to be informed about the project activities. | |

**Appendix 2**

Lesson study group protocol (Dudley, 2014)

This protocol exists to help create common expectations amongst the LS group members. In doing this it will help the group to form a good working relationship that helps members to share ideas, concerns, challenges and 'wonderings' without fear of criticism. All this will aid the sharing and discovery of new practice knowledge.
At all stages in this Lesson Study we will act according to the following:
- All members of the LS group are equal as learners whatever their age, experience, expertise or seniority in school (or beyond)
- All contributions are treated with unconditional positive regard. This does not mean they will not be subject to analysis, doubt or challenge, it means no one will be made to feel foolish for venturing a suggestion. It is often suggestions that make you feel foolish or vulnerable that are of the greatest value and generate the most learning
- We will support whoever teaches the research lesson(s) and make faithful observations, recording as much as possible what pupils say as well as do
- We will use common tools for Lesson Study – planners, pupil interview prompts and approaches to sharing outcomes with each other
- We will use pupils' work and interview comments to inform the post lesson discussion alongside out observations
- We will use the post lesson discussion flow (see page 14), starting by discussing what each case pupil did compared with what we predicted and let the discussion flow from there (See page 13)
- We will listen to each other and to ourselves when we speak and build on the discussion, making suggestions, raising hypotheses, elaborating, qualifying and at all times being accountable to our lesson aims, our case pupils and our observation and other research lesson data.
- We will share what we learn – our new practice knowledge - with our colleagues as accurately and vividly as we can and in such a way that they can benefit from and try it out themselves
- We will share the aims and outcomes of our Lesson Study with our pupils appropriately, depending on their ages and stages of development. Their views, ideas and perspectives will be treated with equal positive regard.

Signed and dated by LS group members.

**Appendix 3**

Lesson Study (LS) Proposal

| Group members: | Time period for LS cycle (months/terms):<br>e.g. 2 lessons with two different year 9 groups? Consecutive lessons with one group? | Year group/subject focus:<br>e.g. measuring surface area (complex shapes): year 9. |
|---|---|---|
| **Nature of the learning challenge:**<br>What do some pupils in one of your classes really struggle with? Be as specific as possible (consider the key concepts, skills, knowledge, tasks that pupils struggle with): | | |
| **Pupil perspectives about the challenge?** (if sought) What do you know about pupils in relation to the challenge? | | |
| **Possible innovation** to address the learning challenge: | | |
| **How will you know** if case pupils have met the learning challenge? What kind of evidence would count and why? | | |
| **What are the main insights/benefits the Lesson Study group hope to gain?**<br>The main insight/benefit is to find out whether or not …….. | | |
| Activities to gain data on learning (tick boxes where appropriate):<br>□ Observation (number of observers: number of case pupils observed: per lesson)<br>□ Lessons videoed?<br>□ Written work/artefacts analysed/post-test? (please give outline of nature of evidence to be collected):<br>□ Interviews (number of pupils to be interviewed/at what stage or stages):<br>□ Other (please specify): | | |
| Resources needed by the group: | | |

# Appendix 4

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Research lesson planning, observation and discussion sheet** Subject, Learning Focus Teacher/Observer<br>Precisely what is this research lesson aiming to teach? (it may be a section of a longer teaching sequence) By the end of this lesson pupils will be able to ……. And we will know this when ……<br>What learning or teaching technique is the research lesson aiming to develop? We are hoping to improve… | | | | | | | |
| Current attainment and success criteria<br>Describe what you are looking for from them by end of lesson in the identified aspect | Case pupil A … … … …<br><br>Success criterion for this focus | | Case pupil B … … … …<br><br>Success criterion for this focus | | Case pupil C … … … …<br><br>Success criterion for this focus | | |
| Stage of lesson sequence | How you predict case pupil(s) A will respond | How they are observed to respond | How you predict case pupil(s) B will respond | How they are observed to respond | How you predict case pupil(s) C will respond | How they are observed to respond | Patterns / issues |
| **Stage …**<br>(approximate time) | | | | | | | |
| **Stage …**<br>(approximate time) | | | | | | | |
| **Final stage …**<br>(approximate time) | | | | | | | |
| What were they able to do? (What progress have they made and how do you know?) | | | | | | | |

**Appendix 5**

Suggested questions for a post lesson interview with the case pupils (Taken from Lesson Study Group at Leicester University)

What did you enjoy most about that lesson?
What did you learn? (What can you do now that you could not do. What can you do better? How is it better?)
What aspect of the teaching worked best for you?
If the same lesson is being taught to another group what would you change. Why would you change that aspect?

## Appendix 6

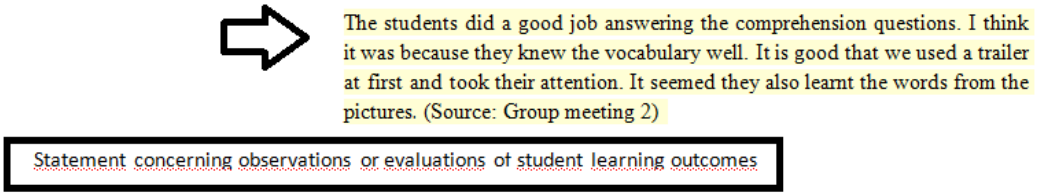
Interview questions with teachers (Taken from Cajkler et al., 2015)

Can you tell me about the process and your participation in it? How useful have you found the process to date in terms of your learning, thinking and classroom practice? What do you think has been important in the process? What have you done that has helped your learning/others' learning? What have others done that has helped your learning?

**Appendix 7**

An example of data analysis process

1. Looking for codes across data sets using the indicators of change




2. Looking for the antecendent and/or following events or factors related to this change in different data sets

As the antecedent event, the group discussed about pre-teaching some vocabulary before the reading passage. As seen in the following group meeting extract, the teachers were divided on pre-teaching some keywords or all the words that the students did not know. Sevgi suggested pre-teaching the keywords since she thought they were enough for understanding the text as seen below

> Beste: I am not sure that teaching only keywords is a good idea. They will not understand the text.
>
> Sevgi: It is enough that we choose some of the words for pre-teaching. That's the ideal thing, I believe. If we teach all of the unknown words, we ignore the rule that says we should not exceed 6 to 7 words in a lesson. We can teach the words by using a ppt. Pictures will help them elicit the meaning of these words.(Source: Group meeting 1)

3. Establishing the relationship between the domains using pre-determined criteria

| Events | Relationship between the domains | Mediating process |
|---|---|---|
| Sevgi offered a particular activity to the group | PD→ ED (LSD) | Enactment |
| The group accepted that idea and integrated into the lesson plan | ED (LSD) → DP (lesson planning) | Enactment |
| She focused on the student learning she observed in the lesson | DP (teaching)- DC | Reflection |

4. Identifying instances of teacher change as change sequences or growth networks using the predetermined criteria

## CURRICULUM VITAE

### PERSONAL INFORMATION

Surname, Name: Songül, Behice Ceyda
Nationality: Turkish (TC)
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### EDUCATION

| Degree | Institution | Year of Graduation |
|---|---|---|
| PhD | METUDepartment of Computer Education and Instructional Technology | 2019 |
| MA | METUDepartment of Foreign Language Education | 2014 |
| BA | METU Department of Foreign Language Education | 2011 |

### WORK EXPERIENCE

| Year | Place | Enrollment |
|---|---|---|
| **2016-Present** | ZonguldakBülent Ecevit University Department of Foreign Languages and Cultures | Instructor |
| **2011-2015** | METU Department of Foreign Language Education | Research Assistant |

### FOREIGN LANGUAGES

Advanced English, Fluent German

### PUBLICATIONS

1. Kara, M., Caner, S., Günay-Gökben, A., Cengiz, C., İşgör-Şimsek, E. &Yıldırım, S. (2018). Validation of an Instrument for Preservice Teachers and an Investigation of

Their New Media Literacy. Journal of Educational Computing Research, 56 (7), 1005-1029.

2. Cengiz, B.C., Seferoğlu, G., &Kaçar, I.G. (2017). EFL teachers' perceptions about an online CALL training. A case from Turkey. EUROCALL Review, 25 (2), 29-37.

3. Cengiz, B.C. (2017).Turkish EFL Teachers' Perceptions about the Transferability of an Online CALL training. In D. Köksal, (Eds). *Researching ELT: Classroom Methodology and Beyond*., Frankfurt: Peterlang Publishing.

4. Uzun, L., Cengiz, B.C., Gürkan, S. (2012). Creating and using blogs and websites for FL Vocabulary Learning and Practice. *Contemporary Online Language Education Journal, 2*(1), 181-194.

**CONFERENCE PRESENTATIONS**

1. Songül, B.C., Delialioğlu, Ö. &ÖzköseBıyık, Ç. (2018). An Investigation of Turkish EFL Teachers' Development through Online Professional Development Program.Proceedings of the 26th International Conference on Computers in Education. Philippines: Asia-Pacific Society for Computers in Education, 26-30 November, Manila, Philippines.

2. Özköse- Bıyık, Ç. &Songül, B.C. (2018). Developing Webinars for Teacher Professional Development: Do's and Don't's. Association for Teacher Educators in Europe, Winter Conference, 15- 16 February.Utrecht.

3. Özköse- Bıyık, Ç. &Songül, B.C. (2017). Off-the-beaten Professional Development Opportunities for English teachers. Proceedings from Eğitimde Gelecek Konferansı, 11-12 November. İstanbul.

4. Kara, M. , Caner, S., Günay-Gökben, A. , İşgör-Şimşeh, E. &Cengiz, B.C.C. (2017). An Investigation of Turkish Pre-service Teachers' New Media Literacy. Proceedings from SITE conference:, 5-9 March. Austin, USA.

5. Songül, B.C. (2017). Lesson Study as a Tool for Teachers' Collaboratıve Professional Development. Proceedings from ICONTE: 9th International Congress on New Trends in Education, 18-20 May. Antalya.

6. Gedik-Bal, N., Songül, B.C. &Özköse- Bıyık, Ç. (2017). An Evaluation of Websites Used by Turkish EFL Teachers. Proceedings from ICONTE: 9th International Congress on New Trends in Education, 18-20 May. Antalya.

7. Cengiz, B.C. (2017). A Review of Language Learning and Teaching at Distance. What have we learnt? Proceedings from SCOFOLA'17 conference, 8-10 September. Zonguldak.

8. Dolmacı, M., Başıbek, N., Cengiz, B.C., Bur, B., Dilek, Y., Kara, B. (2014). Lecturers' perceptions of English medium instruction at engineering departments of higher education: A study on partial English medium instruction at some state universities in Turkey. Procedia- Social and Behavioral Sciences, 116, 1819-1825.

9. Cengiz, B.C. (2013). Virtual life and language education. 1st International Week on English studies. Karabük University, 27-31 May, Karabük, Turkey.

10. Cengiz, B.C. (2013). FLE students' perceptions about written and audio feedback in their research papers. 4th International Conference on New Trends in Education and Their Implications. Akdeniz University, 25-27 April, Antalya, Turkey.

11. Cengiz, B.C. (2012). A comparison between the freshmen and senior EFL students' willingness to communicate (WTC) in L2 English. 1st National Education Conference. Usak University, 20-22 September, Usak, Turkey.

**HOBBIES**

Tennis, Learning Foreign Languages, Reading, Music